The London School of Economics and Political Science

Organising for disruptive innovation: Everyday entrepreneuring efforts at an incumbent technology company

Lisa Whitelaw

A thesis submitted to the Department of Psychological and Behavioural Science of the London School of Economics for the degree of Doctor of Philosophy, London, June 2020

Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

The copyright of this thesis rests with the author. Quotation from it is permitted, provided that full acknowledgement is made. This thesis may not be reproduced without my prior written consent.

I warrant that this authorisation does not, to the best of my belief, infringe the rights of any third party.

I declare that my thesis consists of 76,274 words.

Statement of co-authored work

I confirm that Chapters 3, 4, 5 and 6 were jointly co-authored with my supervisor Lucia Garcia-Lorenzo and I contributed 90% of this work.

Abstract

In an age of disruptions leading organisations need to embrace new ways of working to maintain their competitive advantage. Yet how to do so within the constraints of established business practices remains unclear. In a longitudinal ethnographic case study I investigated in real-time over a period of three years an incumbent organisation's efforts to organise for disruptive innovation from an organisation-creation perspective. Using a processual, practice-based, engaged scholarship approach, I followed the situated development of six potentially disruptive innovation projects on-the-ground as they unfolded at Thales UK, a leading multinational technology company. As a full member of Thales UK Research, Technology and Innovation (RTI), I observed and contributed directly to the company's efforts to organise for disruptive innovation from an insider account. I show how the company's efforts to organise for disruptive innovation interrupted organisational members' collectively held practical understandings of their work, illuminate how the established organisational arrangement is used in everyday performative efforts to organise for disruptive innovation, and illustrate how the entrepreneurial development of disruptive opportunities over time is both shaped by and impacts on the organisational context they develop within. In a confessional tale I share my experience of studying and contributing to the company's efforts to organise for disruptive innovation in real-time as a toolkit for other researchers to engage in similar scholar-practitioner collaborative research arrangements. I draw together my findings in a process model of organising for disruptive innovation in an incumbent organisation. I contribute to the disruptive innovation literature a contextually situated understanding of the process of organising for disruptive innovation in an incumbent organisation. In empirically operationalising organisation-creation theory using a processual, practice-based, engaged scholarship approach, I advance research methods for studying innovation processes in real-time and infuse practical understanding and know-how into a mainly theory-driven body of organisation-creation research.

Acknowledgements

Many people have contributed to this project and supported me during the research and writing process that I express my gratitude.

My appreciation goes out to my research sponsors at Thales UK, Dr. Alvin Wilby, John Meston, Kini Pathmanathan and Lynne Watson for their open-mindedness in supporting this unconventional PhD project for the company. I also thank them for creating an enabling environment for me to successfully develop my thesis alongside my work and taking a keen interest in my research including reading draft articles, sharing their perspectives and embracing my ideas at our feedback meetings. I am grateful to my study participants for openly sharing their experiences of innovation and change at Thales UK, particularly my colleagues working on the focal innovation projects that provided detailed accounts of their entrepreneuring efforts including the hardships they confronted.

To my supervisor Lucia Garcia-Lorenzo, thank you for being an incredible mentor throughout the PhD journey, nurturing my interests and encouraging me to engage widely in developing my ideas. Special thank you to Saadi Lahlou for pushing me to set up 'conditions for success' for a part-time PhD. If it were not for this prerequisite this unique project would not have been born. I am extremely grateful to Ann Langley for having me as a visiting PhD student at HEC Montreal for Winter Term 2018. Ann and the other academics I consulted during this exchange provided invaluable advice on my analysis and conceptualisation. Thank you in particular to Suzanne Rivard who let me audit her very insightful Theory Building course. I also send my appreciation to the wider academic community that I engaged over the course of my PhD journey. I received valuable feedback on my work at conferences and from journal reviews that helped me hone my thesis argument.

I give heartfelt thanks to my family and friends who have supported me during the PhD process. My London roommates provided ongoing support and

Table of contents

Glossary

At-home ethnography: engaging in ethnographic research as a native of one's own research setting

Autoethnography: ethnography of the self; introspectively reflecting on one's own experiences in addition to outwardly observing naturally occurring events

Creativity: novel and useful activity that people do (as opposed to an idea or output)

Disruption: fundamental changes that disturb or re-order the ways in which organisations and ecosystems operate

Disruptive innovation: new products, services and business models that create new markets and re-shape existing ones

Engaged scholarship: a collaborative form of inquiry in which academics and practitioners leverage their different perspectives and competencies to coproduce knowledge about a complex phenomenon that exists under conditions of uncertainty found in the world

Entrepreneuring: processes through which organisations come into being, both the emergence of entirely new organisations as well as the reformation and innovation efforts of established organisations

Ethnography: an exploratory research method in which the researcher participant observes in the daily lives of actors in a particular setting for an extended period of time

Incumbent organisation: market leading organisation in an industry

Innovation: a process by which new value is generated by means of persistent creative action over time

Organisation-creation: the becoming of new ways of organising that create new value for organisations

Practice-based approach: recognise that intelligent activities of actors effect events and achieve outcomes; focus on the situated actions of actors as they cope with and attempt to respond to the demands of their everyday lives

Process ontology: understand and explain the world in terms of interlinked events, activity, temporality and flow rather than variance and relationships among dependent and independent variables; focus on sequence of events that lead to some outcome

List of tables

List of figures

Introduction

As a society we have entered a post-industrial era where organisational agility, creativity and innovation are key to sustaining competitive advantage (Hjorth, 2012, p. 9). Organisations today face the challenge of managing in the age of disruptions, 'fundamental changes that disturb or re-order the ways in which organisations and ecosystems operate' (Ansari, Garud, & Kumaraswamy, 2016a, p. 1). Incessant technological advances and the transformational opportunities they generate are driving continual disruption of not just individual enterprises but entire business ecosystems (Ansari et al., 2016a, p. 1; Kumaraswamy, Garud, & Ansari, 2018, p. 1038). In this modern business context simplified and prescriptive traditional management practices have become obsolete (Kumaraswamy et al., 2018, p. 1038). Yet many large organisations today are still comprised of legacy arrangements based on mechanistic management methods developed in the preceding industrial age (Hjorth, 2012, p. 9-10). While this management philosophy was useful during the industrial era, a time when the world was experiencing immense growth and needed a systematic way to manage scaled industrial operations (Grachev & Rakitsky, 2013, p. 516), such rigid and standardised management approaches are no longer fit-for-purpose. Organisations need to embrace new ways of working to effectively manage in the age of disruptions, yet how to adapt their legacy industrial management practices is not well understood.

Organisational researchers also confront the need to develop more complex and dynamic research methods to study today's fluid and continuously evolving organisational phenomena in-the-flow (Langley & Tsoukas, 2017, p. 20). Also based on scientific management principles, prevailing quantitative research methods seek to develop explanatory and predictive theory based on accurate measures of a discoverable natural world (Flynn, 1998, p. 23; Flyvbjerg, 2001, p. 3; Morgan, 1983, p. 13). Upholding knowledge development criteria in this research tradition, static snapshot variance theorising dominates organisation and management studies today (Langley & Tsoukas, 2017, p. 18). However, by pinning down the world methodologically

to make sense of it, researchers introduce limitations, assumptions and oversimplifications in their understanding of fluid and dynamic organisational phenomena (Hernes, 2008, Chapter 1; Langley & Tsoukas, 2017, p. 13). When it comes to studying processes of disruption, researchers cannot wait for phenomena to stabilise to begin empirical analysis and theorisation (Kumaraswamy et al., 2018, p. 1038). Organisational researchers also need to develop new approaches to understand today's increasingly fast-paced and complex world to support organisations managing in the age of disruptions.

Yet so far disruptive innovation processes in organisations have only been explored in accordance with traditional innovation perspectives. For a long time organisational researchers have explored how organisations can foster innovation necessary for survival in today's post-industrial era. However, it has mainly been investigated from a static, linear, experience-far perspective consistent with classical scientific methods. Innovation in organisations is predominantly conceptualised as an end-state outcome distinct from creativity, is largely explored through firm-level analysis, and objectively theorised from a disconnected academic ivory tower position (Anderson, Potočnik, & Zhou, 2014, p. 1315; Crossan & Apaydin, 2010, p. 1164, 1167, 1178-1179; Wolfe, 1994, p. 406). This is problematic because researchers only access a partial view of innovation by exploring it in isolation from the interrelated process creativity, miss important contextual nuances of how innovation processes are entrepreneurially enacted on-the-ground by only engaging in firm-level analysis, and develop theories that lack practical relevance based on detached from afar accounts (Anderson et al., 2014, p. 1317-1319; Crossan & Apaydin, 2010, p. 1178-1179; Hernes, 2008, Chapter 1; Wolfe, 1994, p. 412). Traditional innovation perspectives that dominate current approaches to investigating innovation processes in organisations produce limited understandings of this fluid and complex phenomenon.

Consistent with traditional innovation perspectives, disruptive innovation research is grounded in Clayton Christensen's classical evolutionary perspective of disruption (Kumaraswamy et al., 2018, p. 1026). Disruptive innovation refers to new products, services and business models that create

new markets and re-shape existing ones (Christensen & Raynor, 2003, p. 51). In established markets disruptive innovations tend to be ignored by the majority because they offer poorer performance than existing products but are adopted by customers on the fringe who are looking for affordable alternatives (Christensen, 1997, p. xv; Christensen & Raynor 2003, p. 34). However, they gain momentum in the market by delivering to these overlooked segments and outperform mainstream products offered by market leading incumbent organisations in the long-term (Christensen, 1997, p. xvi; Christensen & Raynor, 2003, p. 34). Based on this model, current research tends to define disruptive innovation by its end market impact and focus on inter-firm dynamics that precede disruptive market outcomes. Deemed disruptive by its resulting market effect, studies of how disruptive innovations emerge are mainly retrospective and from afar accounts. Research that has explored disruptive innovation in incumbent organisations only looks at challenges they confront in responding to external threats of disruption and how those obstacles can be overcome at a strategic level. Consequently, there is a dearth of real-time empirical studies of the unfolding dynamics of disruptive innovation processes, particularly within the context of leading organisations.

I propose to explore how an incumbent organisation organises for disruptive innovation from an organisation-creation perspective. Organisation-creation is the becoming of new ways of organising that create new value for organisations (Hjorth, 2014, p. 101). While extant research tends to focus on how leading organisations can overcome classical management practices to respond to external threats of disruption at a strategic level, I consider how disruptive opportunities can be entrepreneurially created from within these constraints through everyday entrepreneuring processes (Hjorth, 2014, p. 99). I depart from static, linear, experience-far approaches to studying innovation to investigate disruptive innovation from a processual, practice-based engaged scholarship approach. This approach importantly foregrounds the processual nature of disruptive innovation as an integrative process with creativity, focuses on entrepreneurial actions as sources of disruptive innovation, and collaboratively works with practitioners to co-produce rigorous understanding of and support disruptive innovation efforts in its occurrence

(Anderson et al., 2014, p. 1302; Crossan & Apaydin, 2010, p. 1178; Van de Ven & Johnson, 2006, p. 811). In adopting this approach I build on an emergent stream of research within the disruptive innovation literature that conceptualises disruptive innovation as an ongoing and emergent process and consider that disruptive innovation should be understood performatively rather than defined exclusively by its end outcome (Garud, Gehman, & Tharchen, 2018, p. 502; Kumaraswamy et al., 2018, p. 1033; Petzold, Landinez, & Baaken, 2019, p. 166-167). I add to this nascent stream of research a perspective on disruptive innovation as an unfolding entrepreneuring journey of organisation-creation.

My study takes place at Thales Group, a leading multinational technology company with approximately 80,000 employees operating in 68 countries. Thales is a complex systems provider in the aerospace, space, ground transportation, digital identity and security, and defence and security sectors and has been consistently ranked as a Top 100 Global Innovator (Thales Group, 2020a; Thales Group, 2020b). In January 2015 Thales UK embarked on a transformational change 'Organising for Growth' triggered by both internal and external organisational factors. Internally, Thales Group had set an aggressive growth agenda that UK stakeholders recognised would not be achievable by relying solely on organic growth. Externally, their core markets were also changing with many of their key customers beginning to look beyond their traditional industry partners to co-develop new innovative solutions to their challenges (InnovationXchange UK Ltd., 2019; Ministry of Defence, 2020). Among other changes to improve its 'go to market' capability, the company created Thales UK Research, Technology and Innovation (RTI) to cultivate new disruptive opportunities for the organisation. Thales UK is an opportune case to explore an incumbent organisation's efforts to organise for disruptive innovation as an inventive market leader confronting disruptive growth and innovation challenges.

My motivation for this study is a keen interest in organisational development and change and passion to bridge academic research and industry practice for the betterment of society. My interest in this topic has grown from my own

experiences of organisational change and transitions in the workplace as well as several deliberate and unplanned behavioural and cultural change efforts in different contexts. In 2012 I pursued my curiosity of the varied success of these initiatives in a 1-year MSc. in Organisational and Social Psychology at the London School of Economics and Political Science (LSE) Institute of Social Psychology. There, I was exposed to insightful theories that explained my varied experiences of organisational development and change and inspired me to learn more about how they could be applied in practice to generate 'real' change in society. Yet to my dismay, despite the department's mantra 'there's nothing so practical as a good theory' (Kurt Lewin, 1890-1947) I found that little of this research was used in practice to address real-world issues. This was especially disappointing for me since organisations and societies at large today increasingly confront wicked problems that can really benefit from social psychology concepts.

The more I explored this puzzling letdown I learned that reflective scholars and involved practitioners fail to collaborate due to the forced difference in how they engage with the world. Søren Kierkegaard (1813-1855), an existentialist philosopher, said, 'Life can only be understood backwards, but it must be lived forwards'. Bombarded with the day-to-day happenings of organisational life, forward-looking practitioners are in a continual state of 'thrownness' that requires ongoing improvisation and trial-and-error decision-making from limited information (Weick, 2003, p. 454). Theorists, on the other hand, are removed from the lived experience of organising and are therefore able to reflect on the activities of practitioners. It is only at 'unready-to-hand' moments, when practical breakdowns occur and practitioners partly disengage from their day-to-day work in search for explanations, that interrupted practitioners are in a ready state to collaborate with problem-driven theorists (Weick, 2003, p. 468-469). Forward-looking theorists and backward-looking practitioners can engage in shared processes of abstract action and concrete reflection during 'unready-to-hand' moments.

In 2014 I experienced the rare occurrence of an 'unready-to-hand' moment when the Thales UK senior leadership was in the midst of planning their

Organising for Growth transformation. The organisation was in search of support with the disruptive growth and innovation challenges they were facing and I was interested in further pursuing my interest in organisational development and change. I had the chance to contribute to the company's innovation and change efforts while also testing and expanding my understanding of these phenomena from a social psychology perspective. I was also captivated by Thales' diverse operations and distinctive approach to innovation capability development as an interesting setting for me to explore contextually dependent innovation and change processes. Thales UK RTI is a partially embedded innovation unit, detached from the company's core governance processes in its various business domains yet still part of the organisation's overall infrastructure and budgeting processes. This project has been a unique opportunity for me to explore my academic interests and passion for progress in collaboration with partially uncoupled practitioners to both develop rigorous and practically relevant knowledge of innovation and change, as well as contribute to positive change in society.

In a longitudinal ethnographic case study, I conducted a three-year in-depth investigation of Thales UK's efforts to organise for disruptive innovation. I participant observed as a full member of the company's newly formed RTI organisation during the company's Organising for Growth transformation. I collected transformation-related documents (64), videos (22), and pictures (179) as well as attended transformation-related events (59). I also conducted interviews (43) including meetings with corporate stakeholders leading the Organising for Growth and RTI formation change as well as organisational members working on the ground in the newly formed RTI organisation and business stakeholders between September 2015 and April 2016 to capture their experiences of the changes. In parallel, I followed the development of six potentially disruptive innovation projects on-the-ground as they unfolded at Thales UK over the course of my study. I looked at the everyday entrepreneuring processes through which these disruptive opportunities were creatively developed within the organisational constraints at Thales UK. I attended project-related meetings and events (87) and collected project documents (52), videos (4) and pictures (129). I conducted in-depth interviews

(68) with organisational actors working to progress the focal projects as well as other members and customers of Thales UK RTI involved in the projects. I also collected diary accounts (36) from my colleagues working in the RTI team as well as kept a diary of my own day-to-day experiences (162 personal accounts). Over the course of my project I engaged in regular feedback meetings with my research sponsors and discussed my study findings with participants and other members of the organisation (in 22 reporting back meetings). In 2017 I pursued organisation-wide planned interventions in collaboration with participants across the company based on insights from my research. I attended planned intervention events (34) and collected planned intervention documents (49), videos (4) and pictures (131). During this time I continuously worked alongside the other members of RTI observing their work and catching up regularly with organisational actors involved in the projects.

I present my study findings in a series of four empirical chapters in the form of developmental articles. Drawing on particular aspects of organisation-creation theory, in each empirical chapter I shed light on different facets of organising for disruptive innovation in an incumbent organisation. In the first article (Chapter 3) I draw on knowledge of the tension between managerial and entrepreneurial forces in organisations to explore how organising for disruptive innovation creates tensions for Thales UK as incumbent organisation. In the second article (Chapter 4) I draw on understanding of entrepreneuring tactics to investigate the everyday performative efforts of organising for disruptive innovation at Thales UK. In the third article (Chapter 5) I draw on the notion heterotopian 'spaces for play' to explore the temporal dynamics of organising for disruptive innovation at Thales UK. Finally, in the fourth article (Chapter 6) I draw on understanding of the centrality of self-reflexivity and desire in the enactment of entrepreneuring processes to investigate how Thales UK's efforts to organise for disruptive innovation can be supported through real-time investigation in collaboration with participants. Together, the insights from each of these chapters provide a rich picture of how an incumbent organisation organises for disruptive innovation.

Chapter 3 sheds light on how the company's efforts to organise for disruptive innovation interrupted established organisational practices. This chapter responds to my first research sub-question: how does organising for disruptive innovation create tensions for an incumbent organisation? In my analysis of the transformation-related material I found that Thales UK's efforts to organise for disruptive innovation challenged the organisational members' shared understandings of their day-to-day work. I characterise opposing entrepreneurial and managerial forces underlying three salient organisation-creation tensions related to the organisational members' shared understanding of their goals, competencies and material setup of the company. While extant research has characterised tensions that incumbent organisations face in fostering disruptive innovation at an organisational level, I illustrate how these tensions are rooted in organisational members' collectively held practical understandings of their work and show how these tensions manifest in everyday work life. I develop theory for how classical management practices are practically challenged by an incumbent organisation's efforts to organise for disruptive innovation.

Chapter 4 illuminates how classical management practices were both a constraint and an important enabler for the entrepreneurial creation of disruptive opportunities at the company. This chapter responds to my second research sub-question: what are the everyday performative efforts of organising for disruptive innovation in an incumbent organisation? Drawing on past studies of innovation practices in organisations, I show six everyday entrepreneuring tactics the project actors performed in their daily work using the managerial structure to progress the potentially disruptive innovation projects: creating space for imagination, structuring, engaging with the market, making do, creating common interests, and working on the self. I shed light on how disruptive opportunities can develop within spaces for play at the margins of established managerial practices in incumbent organisations that could not be seen from a strategic level perspective. While extant research focuses on organisational factors that constrain the development of disruptive opportunities in incumbent organisations, I illustrate how established organisational advantages are utilised in the creation of disruptive

opportunities in everyday work life. I develop theory for understanding the everyday performative efforts of how organisational actors leverage established organisational advantages to achieve organisation-creation for disruptive innovation in the already organised context of an incumbent organisation.

Chapter 5 shows how the entrepreneurial development of disruptive opportunities over time was both shaped by and impacted on the company context. This chapter responds to my third research sub-question: what are the temporal dynamics of organising for disruptive innovation in an incumbent organisation? In my processual analysis of the project material I found that the project actors continued entrepreneurial development of the disruptive opportunities over time by sustaining spaces for play. I identify common micro-dynamics that influenced the development of the disruptive opportunities through recurrent spaces for play including sustaining entrepreneurial and disbanding managerial forces, re-aligning with the company strategy, and emerging impacts at the organisation. While extant research explores disruptive innovation in incumbent organisations as an owned market-based outcome, I illustrate how disruptive opportunities develop over time within the constraints of a leading organisation as an unowned process of strategic change. I develop theory for understanding the unfolding dynamics of organising for disruptive innovation in the already organised context of an incumbent organisation.

Chapter 6 sheds light on how the company's efforts to organise for disruptive innovation was supported through real-time research practices that stimulated self-reflexivity and imagination among organisational members. This chapter responds to my fourth research sub-question: how can organising for disruptive innovation be supported through real-time investigation in collaboration with participants in an incumbent organisation? In my reflexive analysis of my own involvement in my study context I show how I supported the development of the disruptive opportunities I followed through a process of simultaneous intervention and observation, action and analysis, and iteratively moving in and out between micro and macro levels of engagement

with my study context. In the form of a confessional tale I discuss the research advantages, impacts and tensions of my collaborative research approach. I contribute to underdeveloped research methods for studying disruptive innovation processes in real-time in collaboration with participants using an ethnographic engaged scholarship approach. By sharing my experience I provide a toolkit for studying disruptive innovation processes in real-time.

Overall, my thesis findings respond to my main research question: how does an incumbent organisation organise for disruptive innovation? By considering how disruptive opportunities can be entrepreneurially created from within the constraints of an already established organisation using an organisation-creation perspective, I provide a contextually situated understanding of the process of organising for disruptive innovation in an incumbent organisation. I illuminate details of the internal, on-the-ground, unfolding dynamics of this fluid and dynamic process and how it can be supported in its emergence. In empirically operationalising organisation-creation theory I further provide a practical understanding of the process of organisation-creation and how it can be studied in organisations. Moreover, my research shows how a processual, practice-based, engaged scholarship research approach can be used to uncover important contextual, relational, and first-hand nuances of unfolding innovation processes.

This thesis document is comprised of seven chapters. The first chapter introduces my processual, practice-based, engaged scholarship approach I use to explore how an incumbent organisation organises for disruptive innovation from an organisation-creation perspective. The second chapter provides an overview of my study context and describes my research methodology. Chapters three, four, five and six present my study findings drawing on particular aspects of organisation-creation theory to shed light on different facets of organising for disruptive innovation in an incumbent organisation. In conclusion, chapter seven summarises the key findings and theoretical implications of my research as well as practical implications, study limitations and opportunities for further research. See Figure 0.1 below for an overview of the main ideas presented in my thesis.

Central thesis question:
How does an incumbent organisation organise for disruptive innovation?

Specific question 1: How does organising for disruptive innovation create tensions for an incumbent organisation?	**Specific question 2:** What are the everyday performative efforts of organising for disruptive innovation in an incumbent organisation?	**Specific question 3:** What are the temporal dynamics of organising for disruptive innovation in an incumbent organisation?	**Specific question 4:** How can organising for disruptive innovation be supported through real-time investigation in collaboration with participants in an incumbent organisation?
Aspect of organisation-creation theory foregrounded: Organisation-creation tensions	**Aspect of organisation-creation theory foregrounded:** Entrepreneuring tactics	**Aspect of organisation-creation theory foregrounded:** Heterotopian spaces for play	**Aspect of organisation-creation theory foregrounded:** Self-reflexivity and desire

Methodology:
• Thematic analysis of organisational members' perceptions of Organising for Growth change
  ➢ Interviews (43) supplemented by transformation-related documents (64), videos (22), and pictures (179) as well as attendance at transformation-related events (59)
	Methodology:
	• Practice analysis of performance of six potentially disruptive innovation projects
	  ➢ Project documents (52), videos (4), pictures (129), attendance at project-related meetings and events (87), interviews (68), diary accounts (36), personal accounts (162)
		Methodology:
		• Process analysis of development of six potentially disruptive innovation projects over time
		  ➢ Project documents (52), videos (4), pictures (129), attendance at project-related meetings and events (87), interviews (68), diary accounts (36), personal accounts (162)
			Methodology:
			• Reflexive analysis of own role in fostering disruptive innovation processes at Thales UK through research activities
			  ➢ Interviews (98), diary accounts (36), videos (30), documents (165), pictures (439), events attended (180), personal accounts (162)

Findings: • Thales UK's disruptive innovation efforts generated everyday organisation-creation tensions • Tensions rooted in practical breakdowns in organisational members' shared understandings of their day-to-day work	**Findings:** • Project actors perform six everyday entrepreneuring tactics at certain times using the managerial structure to progress disruptive opportunities • Entrepreneuring tactics based on actors' localised knowledge of managerial practices consumed	**Findings:** • Project actors continue entrepreneurial development of disruptive opportunities over time by sustaining spaces for play • Micro-dynamics of recurrent heterotopian spaces for play	**Findings:** • Research practices supported development of disruptive opportunities in their emergence by stimulating self-reflexivity and imagination among organisational members • Impacts and tensions of real-time collaborative investigation of entrepreneuring processes

11

Contributions:	Contributions:	Contributions:	Contributions:
• Contextualised perspective of tensions arising from an incumbent organisation's disruptive innovation efforts • Practical tensions arising from organisation-creation processes in context of organising for disruptive innovation in an incumbent organisation • Essential mechanisms of a becoming practice generate tensions with established ways of working in organisations	• Disruptive opportunities can be entrepreneurially developed in the margins of established managerial practices in organisations • How incumbent advantages are leveraged in everyday efforts to entrepreneurially create disruptive opportunities • How organisation-creation for disruptive innovation is achieved in an incumbent organisation • How arrays of innovation practices are collectively used in the process of organisation-creation for disruptive innovation in an incumbent organisation	• Disruptive innovation in incumbent organisations an unowned process of strategic change • Temporal dynamics of organisation-creation for disruptive innovation in an incumbent organisation • How divergent and convergent patterns of action for disruptive innovation play out on-the-ground and the cumulative synthesis of these activities over time in an incumbent organisation	• Disruptive innovation processes can be supported in their emergence using an ethnographic engaged scholarship approach • Organisation-creation processes can be enabled in their occurrence by adopting an interactive research attitude • How ethnographic research methods can be used in engaged scholarship protocol in collaboration with practitioners

Article 1:	Article 2:	Article 3:	Article 4:
Organisation-creation tensions: The becoming of new ways of organising for disruptive innovation in an incumbent organisation	Organisation-creation tactics: The everyday performative efforts of entrepreneurially creating disruptive opportunities in an incumbent organisation	Sustaining spaces for play: How disruptive opportunities are entrepreneurially developed over time in an incumbent organisation	Supporting an incumbent organisation's efforts to organise for disruptive innovation in real-time: An ethnographic engaged scholarship approach

Overall thesis contributions:

• Disruptive innovation:	Contextually situated understanding of organising for disruptive innovation in an incumbent organisation including detailed understanding of the internal, on-the-ground, unfolding dynamics and how these processes can be supported in their emergence
• Organisation-creation:	Practical understanding of the process of organisation-creation and how it can be studied in organisations
• Traditional innovation perspectives:	Processual, practice-based, engaged scholarship research approach to uncover important contextual, relational, and first-hand aspects of unfolding innovation processes

Figure 0.1. Thesis overview*.*

Chapter 1

From a static linear experience-far to processual practice-based engaged scholarship approach to investigating innovation

This first chapter of my thesis presents the theoretical framework I have adopted in my research. The purpose of this section is to describe current research on innovation and outline my approach to study this phenomenon. I explore the salient gaps in the extant innovation literature and the opportunities that a processual practice-based engaged scholarship approach offers to specifically investigate disruptive innovation in an incumbent organisation. Aligned with this approach, I introduce organisation-creation theory as a sensitising lens in my research to respond to a clear void in the disruptive innovation literature.

1.1 Innovation: Traditional perspectives

Innovation is an expansive, inconsistent and fragmented field of study. It is deemed too overabundant even for the most capable scholar to assimilate (Godin & Vinck, 2017, p. 1). A recent review of the concept of innovation across various disciplines yielded over 60 different definitions (Baregheh, Rowley, & Sambrook, 2009, p. 1325). Additionally, the terms creativity, innovation, knowledge and change are often used interchangeably in the literature, making a clear definition of the concept further difficult to achieve (Crossan & Apaydin, 2010, p. 1155; McLean, 2005, p. 228). Several reviews have attempted to clarify the concept of innovation and organise divergent research streams such as the development of a common lexicon (Baregheh et al., 2009, p. 1334), methodological categories for systematic comparison and synthesis of innovation studies (Wolfe, 1994, p. 425), a multi-dimensional framework to connect fragmented areas of enquiry and hone gaps for further research (Crossan & Apaydin, 2010, p. 1154-1155) as well as integrate the

work done in the closely related but also severely disconnected realm of research on creativity (Anderson et al., 2014, p. 1298). Yet the literature remains discrepant with multiple diverse approaches to study innovation, various contested frameworks and major disconnects between academic research and industry practice (Crossan & Apaydin, 2010, p. 1154; Godin & Vinck, 2017, p. 1; Wolfe, 1994, p. 405). Research on innovation is continuously expanding lacking overall coherence.

Although the innovation literature is vast and complex, drawing together reviews that have been conducted highlights particular gaps that require further investigation. These gaps include: i) researchers have predominantly conceived of innovation as a product or outcome separate from creativity ii) the need to focus on entrepreneurial actions as sources of innovation, and iii) the majority of research conducted on the topic is poorly grounded empirically (Anderson et al., 2014, p. 1315; Crossan & Apaydin, 2010, p. 1164, 1167, 1178-1179; Wolfe, 1994, p. 406). The following sections will tease out these salient gaps in the extant innovation literature that informed the theoretical framework I have adopted in my research.

1.1.1 Conceptualising creativity and innovation as an integrative process

Firstly, research is needed that conceptualises innovation as an integrative process with creativity. There is a common distinction in organisational research between creativity being 'the production of novel and useful ideas' and innovation 'the successful implementation of creative ideas within an organisation' (Amabile, Conti, Coon, Lazenby, & Herron, 1996, p. 1155). In accordance with this distinction, there is a clear divergence in how these concepts have traditionally been investigated. The organisational innovation literature has predominantly focused at the firm level, while the creativity literature has mainly looked into the creative abilities and behaviours of individuals at the micro-level (Anderson et al., 2014, p. 1302-1315). Classically located in the passion and hereditary traits of 'genius' people, creativity is sought in the brain and mental processes of individuals by means

of psychometric tests (Amabile & Pillemer, 2012, p. 3; Glăveanu 2010, p. 149). Similarly, innovation is often thought of as a product or outcome within the innovation literature (Crossan & Apaydin, 2010, p. 1167; Garud, Tuertscher, & Van de Ven, 2013, p. 775). As such, the organisational innovation literature has mainly looked into contextual features that either support or inhibit innovation outcomes at the firm level (Anderson et al., 2014, p. 1311-1315; Crossan & Apaydin, 2010, p. 1161-1162). Innovation and creativity are traditionally studied as separate static entities.

However, evidence shows that innovation and creativity are interrelated processual phenomena. There is increasing empirical evidence to suggest that creativity is a contextual, distributed and socially embedded phenomenon and requires investigation at the collective level to truly grasp the underlying mechanisms involved in how creativity arises in situated contexts (Glăveanu, Gillespie, & Valsiner, 2015, p. xii-xiii). Schroeder, Van de Ven, Scudder, and Polley's (1989, p. 107) seminal research on the Minnesota Innovation Research Programme also shows that innovation is an emergent social interaction process that develops over time. Based on these insights innovation processes are understood as 'the sequence of events that unfold as ideas emerge, are developed, and are implemented' (Garud et al., 2013, p. 776). Furthermore, Amabile and Pratt (2016, p. 158) recently published a revision to their model of creativity and innovation in organisations that was initially published by Amabile in 1988. While the original model attempted to portray a consolidated view of creativity and innovation processes in organisations and their interactions, the authors have further developed the model to increase salience of the dynamic nature of creative processes as well as collective level influences based on research findings over the past 28 years (Amabile & Pratt, 2016, p. 164-165). In their recent combined review of the organisational innovation and creativity literature, Anderson et al. (2014, p. 1318) also suggest that creativity and innovation should be investigated as an integrative process to overcome a noticeable lack in theoretical development of these concepts over the past 10 years (Anderson et al., 2014, p. 1317-1318). There is significant evidence to suggest that creativity and innovation are interrelated processual phenomena and should be investigated as such.

1.1.2 Re-focusing on entrepreneurial actions as sources of innovation

Secondly, there is a lack of research focusing on entrepreneurial actions as the driving force of innovation. In his writings Joseph Schumpeter states that entrepreneurs, whether they are based in large established organisations or smaller startups, revolutionise the economic structure of markets from within as agents of innovation (McCraw, 2007, p. 7). Drucker (1985, p. 31) also highlights that entrepreneurs 'upset and disorganise' pre-existing industrial arrangements by responding intelligently to changes and doing things differently. He further states that established organisations must become entrepreneurial if they are to have long-term futures (Drucker, 1985, p. 176). Pinchot (1985, p. xi) also asserts that intrapreneurs are the driving force of innovation and new business creation in organisations. Pinchot (1985, p. ix) describes intrapreneurs as 'dreamers who do. Those who take hands-on responsibility for creating innovation of any kind, within a business.' However, research tends to focus on understanding macro-level organisational features that either support or inhibit innovation in organisations with few studies looking into the day-to-day activities of how innovation processes are enacted in situated organisational contexts in real-time (Anderson et al., 2014, p. 1315, 1319; Crossan & Apaydin, 2010, p. 1161-1162; Wolfe, 1994, p. 412). Despite early contributions that emphasise that entrepreneurial actions drive forward innovation processes in organisations, research has tended to overlook these micro-level activities as sources of innovation in organisations.

Studies of intrapreneurship, entrepreneurship in established organisations, focus on either the individual or the organisational environment in isolation. Part of the literature focuses on the abilities of the individual intrapreneur and their recognition and support in organisations, while other areas have focused on the formation of different types of corporate ventures and their organisational fit or the characteristics of entrepreneurial organisations (Antoncic & Hisrich, 2003, p. 7-8). Efforts to understand the daily working practices of intrapreneurs remain scarce (Park, Kim, & Krishna, 2014, p. 533;

Rigtering & Weitzel, 2013, p. 337). However, recent studies suggest it is important to consider entrepreneurial actors and their context together. Amo and Kolvereid's (2005, p. 17) study of innovation behaviour identified that a model that combined both corporate entrepreneurship strategy and individual personality explained a significantly higher proportion of the variance in innovation behaviour than either of the two models separately. Furthermore, a study of collective cognition in entrepreneurial teams by West (2007, p. 93-94) showed that collective cognition mediates between individual cognitions and firm-level actions and performance demonstrating the socio-cognitive complexity of entrepreneurial activities in organisations. More recently, Rigtering and Weitzel (2013, p. 355) found that individual factors and personal initiative as well as organisational factors including horizontal participation, resource availability and trust in direct manager influence whether employees engage in intrapreneurship activities. These findings suggest further research is needed exploring the interrelationship between entrepreneurial actors and their situated context as agents of innovation.

1.1.3 Developing an empirically grounded understanding of innovation

Thirdly, the innovation literature lacks empirical grounding. The 'linear model of innovation' is the dominant theoretical framework for understanding how innovations develop (Edgerton, 2004, p. 31; Godin, 2006, p. 659). It broadly comprises a series of stages: it begins with basic research typically conducted in universities, moves to applied research and finishes with production and diffusion (Edgerton, 2004, p. 32; Godin, 2006, p. 639). While the exact source of the model is unclear, it has been collectively developed and used by managers, consultants and business schools with support from economists (Godin, 2006, p. 640). However, the few empirical studies that have investigated innovation processes in real-world industry contexts show that innovation processes do not occur in a linear step-wise manner, but are rather unstructured and emergent social-interaction processes involving several ideas, multiple actors, various directions and unforeseen setbacks (Schroeder et al., 1989, p. 107). Several practically-oriented authors have developed

innovation methodologies in recent years that advocate an iterative approach to maturing new offers based on learning through experimentation, fostering customer understanding, developing social networks, and generating ongoing feedback (Baughn & Suciu, 2015, p. 69-71). Thus, the dominant theoretical framework for innovation processes is poorly supported empirically.

Despite lack of empirical support, the linear model of innovation is pervasive. The linear model has been influential in shaping mainstream understanding of innovation processes (Balconi, Brusoni, & Orsenigo, 2010, p. 3; Godin, 2006, p. 640). It is largely taken for granted by policy makers, used as justification for government support for research and has informed the research and development (R&D) strategies of many large organisations (Godin, 2006, p. 659-660). Although few people defend the linear model of innovation, efforts to modify or replace it have been limited due to the complexity of alternative models and lack of robust measures to supplant institutionalised R&D accounting practices (Godin, 2006, p. 640, 660). According to Godin (2006, p. 660), the fact that R&D spending is easy to measure is the main reason why the linear model gained strength and is still used today. Furthermore, its simplicity affords easy orientation for decision-makers negotiating the allocation of funds for innovation (Caracostas, 2007, p. 475; Godin, 2006, p. 660). According to Edgerton (2004, p. 31), the linear model of innovation has only ever existed as a rhetorical tool for practitioners to evade more complex models developed by innovation specialists. Wengenroth (2000, p. 28) asserts that the linear model of innovation is extinct but a new framework has not yet been accepted. Deeply entrenched in institutionalised practices, Pielke (2012, p. 359) discusses that a symbolic revolution is required to displace the linear model of innovation. Empirically grounded research is needed to develop more nuanced theories of how innovation processes develop.

1.1.4 Traditional perspectives in disruptive innovation research

Disruptive innovation is a particular type of innovation. Disruptive innovation refers to new products, services and business models that create new

markets and re-shape existing ones (Christensen & Raynor, 2003, p. 51). According to the Disruptive Innovation Model there are two types of innovations in established markets: sustaining innovations that advance the performance of existing products for established customers and disruptive innovations that are simpler, cheaper and contain novel features compared to their mainstream equivalents (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). New disruptive innovations tend to be ignored by the majority because they initially offer poorer performance than existing products but are adopted by customers on the fringe who are looking for affordable alternatives (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). Disruptive innovations gain momentum in the market by delivering to these overlooked segments and outperform mainstream products offered by market leading incumbent organisations in the long-term (Christensen, 1997, p. xvi; Christensen & Raynor, 2003, p. 34). Focused on innovating around existing customer needs, established organisations risk missing the application of new disruptive innovations and ultimately disruption of their core business (Christensen, 1997, p. xvii; Christensen & Raynor, 2003, p. 33-34). To avoid decline, leading organisations are advised to take the initiative and 'become the disruptor' by simultaneously keeping abreast of market trends and exploring new areas alongside their current business activities (Christensen & Raynor, 2003, p. 18, 49-50, 229-230). The Disruptive Innovation Model has gained significant momentum in both academia and practice, but it is also a severely contested theory (e.g. Danneels, 2004, p. 257; King & Baatartogtokh, 2015, p. 78; Lepore, 2014; Markides, 2006, p. 19; Sood & Tellis, 2011, p. 339-340; Tellis, 2006, p. 34). A subset of the widespread and varied innovation literature focuses on disruptive innovation.

The salient gaps present in the overall innovation literature are reflected in current disruptive innovation research. Firstly, extant research tends to define disruptive innovation by its end outcome and thus focus on inter-firm dynamics that generate disruptive market impacts. Studies have explored relations between market participants such as incumbent organisations, new market entrants, customers, competitors, complementors, and regulators (e.g. Ansari et al., 2016b, p. 1829; Obal, 2013, p. 900; Ozalp, Cennamo, & Gawer,

2018, p. 1203; Rosenbloom & Christensen, 1994, p. 655; Snihur, Thomas, & Burgelman, 2018, p. 1278; Zietsma, Ruebottom, & Slade Shantz, 2018, p. 1242). These market-level and outcome-oriented studies overlook the interrelated situated creative efforts that generate disruptive market changes, particularly those arising within established organisations. Focused on market dynamics, researchers have predominantly conceived of disruptive innovation as an end market outcome separate from creative processes in organisations.

Secondly, disruptive innovation is predominantly explored at the firm level in organisations. Current research has explored incumbents' constraints to foster disruptive innovation processes including challenges related to resource allocation and perceived incentives (e.g. Afuah, 2000, p. 399; Christensen & Bower, p. 207-209; Christensen & Overdorf, 2000, p. 68, 70-71; Danneels, 2002, p. 1097; Denning, 2005, p. 7; Denning 2012. p. 9; Rosenbloom & Christensen, 1994, p. 655), cognitive structure – the mechanisms organisational members use to process and understand information (e.g. Adner, 2002, p. 686; Danneels, 2003, p. 572; Danneels, 2004, p. 254; Govindarajan & Kopalle, 2006, p. 16; Markides, 2006, p. 24; Slater & Mohr, 2006, p. 30-31; Tellis, 2006, p. 38), and organisational structure and routines (e.g. Chesbrough & Rosenbloom, 2002, p. 550; Cozzolino et al., 2018, p. 1184-1185; Henderson, 2006, p. 9; Tripsas & Gavetti, 2000, p. 1158-1159; Tushman & O'Reilly, 1996, p. 17-19). Studies have also looked at how incumbent organisations can strategically intervene in their established business practices to enable disruptive innovation (e.g. Govindarajan & Kopalle, 2006, p. 16-17; Markides, 2006, p. 24; Slater & Mohr, 2006, p. 30; Tellis, 2006, p. 38; Wagner, 2016, p. 987; Wan, Williamson, & Yin, 2015, p. 101-102), or strategically foster disruptive innovation separate from their core business operations (Campbell, Birkinshaw, & Morrison, 2003, p. 30; Chao & Kavadias, 2007, p. 908-909; Christensen & Raynor, 2003, p. 203; Claude-Gaudillat & Quélin, 2006, p. 175; Macher & Richman, 2004, p. 19). These firm-level studies overlook organisational actors' on-the-ground efforts to cultivate disruptive innovation processes in established organisations.

Thirdly, there is a dearth of real-time empirical studies of disruptive innovation in its emergence. Studies of how particular disruptive phenomena transpired are mainly retrospective and from afar accounts (e.g. Afuah, 2000, p. 393-394; Ansari et al., 2016b, p. 1832; Christensen & Bower, 1996, p. 200; Ozalp et al., 2018, p. 1207; Snihur et al., 2018, p. 1285-1286; Sood & Tellis, 2011, p. 344-345). Recent research has used a combination of retrospective and real-time data to explore how incumbent organisations adapt their business models after disruption (Cozzolino et al., 2018, p. 1172-1176) and respond to the emergence of disruptive technologies in heterogeneous market environments (Khanagha et al., 2018, p. 1085-1087), but focus on explaining organisational and market level dynamics as opposed to fully immersing themselves in organisational actors' everyday doings. Further empirical work is needed to refine our understanding of Disruptive Innovation Theory including nuances in how processes of disruption are framed and experienced by different stakeholder groups at specific times over the course of their development (Kumaraswamy et al., 2018, p.1028-1031). An emergent stream of research calls for more studies of disruptive innovation as an ongoing and emergent process focusing on the underlying events and actions that lead to disruptive effects (Kumaraswamy et al., 2018, p. 1033; Petzold et al., 2019, p. 166-167). There is a need for empirically grounded research exploring disruptive innovation in its emergence as an unfolding journey from the perspective of those involved.

1.2 The daily life of innovation

My research responds to key lacks in the innovation literature using a processual, practice-based engaged scholarship approach. This approach: i) foregrounds the processual nature of innovation and creativity as an integrative entrepreneurial process ii) focuses on entrepreneurial actions as sources of innovation and the consequential details of these activities in shaping innovation processes as they unfold, and iii) collaboratively works with practitioners to co-produce rigorous understanding of how innovation processes unfold while supporting development of them in their occurrence.

1.2.1 Processual ontology

My research approach is rooted in a processual ontology. I conceptualise organisations as emergent phenomena continuously 'in-the-making' as opposed to stable structures (Chia, 1999, p. 224; Tsoukas & Chia, 2002, p. 569). In this view organisations are constantly changing as the understandings and behaviours of organisational actors are continuously re-accounted, re-interpreted and re-produced in response to new experiences encountered in their day-to-day work (Tsoukas & Chia, 2002, p. 570). While organisational change is traditionally conceptualised as the result of deliberate, planned interventions, from a processual perspective it is always ongoing emerging from within the flow of everyday organisational life (Chia, 1999, p. 211, 225; Tsoukas & Chia, 2002, p. 570-572; Weick & Quinn, 1999, p. 371-372, 375). As organisational actors make sense of and deal with contingencies, breakdowns and improvisations in their everyday work, they produce emergent change through processes of ongoing accommodations, adaptation and improvement (Weick, 1998, p. 547; Weick & Quinn, 1999, p. 375). Organisational change is therefore unpredictable and unintentional since it is constituted within the endless possibilities of organisational actors' everyday sensemaking efforts (Chia, 1999, p. 222-223; Weick, 1998, p. 548). Seemingly trivial, everyday emergent change processes are an important consideration for organisational researchers because these activities are fundamentally related to transformational change and innovation in organisations (Weick, 1998, p. 551; Weick & Quinn, 1999, p. 378-379). A processual ontology conceptualises organisations as continuously becoming phenomena where everyday activities are foundations for significant effects.

Adopting a processual perspective, I am interested in the everyday entrepreneurial activities that generate innovation processes in organisations. As Hernes (2008, Chapter 1) explains, one cannot disentangle the world into component parts to make sense of it without limitations, assumptions and over-simplifications. Thus, a more nuanced understanding of organisational

phenomena can be achieved by paying attention to activity and perception rather than 'things' (Hernes, 2008, Chapter 1). Using this approach my research moves beyond a traditional focus on the intermediaries involved in innovation processes in organisations (e.g. individuals, firms, or particular creative or innovative outcomes) to study everyday entrepreneurial activity as it occurs over time. I draw on a recent research tradition investigating entrepreneurship from a processual perspective. This research approach explores entrepreneurship as a dynamic and collective phenomenon embedded in interpersonal interactions (Holmquist, 2003, p. 78-82; Steyaert, 2007, p. 465). I define creativity as novel and useful activity (as opposed to an idea or output) that people do and innovation as a process by which new value is generated by means of persistent creative action over time. By focusing on everyday entrepreneurial actions through time I am investigating creativity and innovation as an integrative entrepreneurial process.

1.2.2 Practice-based approach

Embedded in a processual ontology, practice research has gained momentum within organisational studies over the past few decades as a promising analytical framework for understanding contemporary organisational phenomena. Practice theory has been used to investigate strategy-as-practice, organisational learning and knowledge management, design and use of technologies in organisations, and institutional change and maintenance (Feldman & Orlikowski, 2011, p. 1243-1244; Miettinen, Samra-Fredericks, & Yanow, 2009, p. 1309, 1311). A practice approach grounds studies of organisational phenomena in what organisational actors actually do based on an understanding that social life is continuously emerging accomplished through people's ongoing everyday activities (Feldman & Orlikowski, 2011, p. 1240; Miettinen et al., 2009, p. 1309). The emphasis on agency is driven in response to a general dissatisfaction with the limitations of dominant organisational theories rooted in normal science approaches and an effort to humanise organisation and management research (Jarzabkowski, Balogun, & Seidl, 2007, p. 6). Using a practice lens can uncover important and

consequential details about the micro-social happenings of organisational phenomena for it is the enduring efforts of actors in their mundane, everyday doings that generate macro-level phenomena (Nicolini, 2012, p. 3). Practice theory focuses on the localised activities of organisational actors and their relation to the wider social context they are embedded within.

Practice theory is a mixed and evolving research landscape comprised of a collection of related theoretical approaches. Although there is no unified practice theory, there are common features that describe a practice-based approach: i) situated actions are consequential for the ongoing re-production of social life, ii) practices are embodied, and iii) practice theorising dissolves dualisms (Feldman & Orlikowski, 2011, p. 1241; Miettinen et al., 2009, p. 1312; Nicolini, 2012, p. 6). Firstly, practice theories emphasise that social structures are kept in existence through the everyday efforts of people (Nicolini, 2012, p. 3). The ability of people to influence seemingly durable social structures through individual initiative is foregrounded (Feldman & Orlikowski, 2011, p. 1242; Nicolini, 2012, p. 4-5). Consequently, practices are inherently political as actors continuously negotiate the remaking of social life through their everyday activities (Nicolini, 2012, p. 6). Secondly, practice theories highlight the embodied nature of practices and the importance of materiality in the production of social life (Feldman & Orlikowski, 2011, p. 1242; Miettinen et al., 2009, 1312). Knowledge is conceptualised as a collectively shared way of knowing how to act in situated social and material circumstances (Miettinen et al., 2009, p. 1312; Nicolini, 2012, p. 5). Material resources contribute to the accomplishment of practices as well as situate and connect them in time and space (Nicolini, 2012, p. 4). Finally, practice theories transcend dualisms as a way of theorising dissolving separation between traditionally binary concepts such as object versus subject, mind versus body, cognition versus action, and agency versus structure (Feldman & Orlikowski, 2011, p. 1242; Miettinen et al., 2009, p. 1312-1313; Nicolini, 2012, p. 2). Each phenomenon is mutually constituted through action and only exists in relation to the other (Feldman & Orlikowski, 2011, p. 1242). Three common theoretical features unite the eclectic field of practice research.

A practice-based approach is useful for exploring innovation processes in organisations. Crossan and Apaydin (2010, p. 1178) recommend using a practice-based view to combine the currently disconnected micro and macro dimensions prevalent in the innovation literature. A practice-based view takes account of the interaction between micro-level activities and macro-level contextual features by considering the practices that organisational actors conduct in relation to their context, how their actions impact on that context and how that change in turn shapes the behaviours of organisational actors (Crossan & Apaydin, 2010, p. 1178). Real-time observation of day-to-day entrepreneurial activities on-the-ground in organisations would also shed light on the nuances of how innovation processes unfold over time in organisations (Anderson et al., 2014, p.1319; Wolfe, 1994, p. 412). Furthermore, practice theory is a valuable analytical approach for understanding contemporary organisations that are increasingly complex, transient and interconnected by focusing on their dynamics, relations and enactment (Feldman & Orlikowski, 2011, p. 1240; Nicolini, 2012, p. 2). Feldman and Orlikowski (2011, p. 1250) also highlight that practice theory is practical – grounded in the microdynamics of everyday happenings in organisations, insights from practice scholarship can surface opportunities to enable change in organisations and identify ways to support practices that are working. A practice-based approach can illuminate the everyday entrepreneurial doings as sources of innovation and offer useful insights for supporting innovation processes in organisations.

1.2.3 Engaged scholarship

Engaged scholarship is a collaborative research approach within the field of management. Van de Ven and Johnson (2006, p. 803) define engaged scholarship as 'a collaborative form of inquiry in which academics and practitioners leverage their different perspectives and competencies to co-produce knowledge about a complex phenomenon that exists under conditions of uncertainty found in the world.' This research approach appreciates that both scholars and practitioners have valuable knowledge to

contribute to tackling challenging societal problems and therefore have greater ability to progress knowledge in a discipline if they work together rather than in isolation (Van de Ven & Johnson, 2006, p. 803). Through their collaboration in designing, conducting, and implementing research in real-world settings, scholars and practitioners co-produce knowledge that is both practically relevant and academically sound (Van de Ven & Johnson, 2006, p. 809, 811, 816-817). Adopting an engaged scholarship approach researchers can develop empirically grounded theories of innovation while addressing real-world problems in collaboration with practitioners.

Many authors discuss that researchers should engage with practitioners to develop better-grounded innovation theory. Rather than building on abstract theories espoused in the academic literature, Crossan and Apaydin (2010, 1178-1179) propose that researchers ground their theorising in observations of theories-in-use enacted in everyday innovation activities in the workplace. Furthermore, in actually engaging with real-world phenomena alongside industry practitioners scholars experience organisational phenomena first-hand. Researchers dive into the flux of everyday organising activity as opposed to objectively studying it from the outside (Tsoukas & Chia, 2002, p. 571). Tsoukas and Chia (2002, p. 571) emphasise that becoming organisational phenomena can only be truly understood from within therefore researchers should position themselves at the centre of its unfolding to directly experience its dynamic complexities. On a practical level, Caracostas (2007, p. 464-466, 485-486) asserts that closer interaction between innovation researchers and practitioners would help policy-makers make sense of the heterogeneous and fragmented knowledge base they must draw upon in their day-to-day policy work. Within the field of entrepreneurship research, Simba and Ojong (2017, p. 1012) argue that embracing engaged scholarship is an opportunity for academics, policy-makers and practitioners in the field of entrepreneurship to work together to solve social issues. Engaged scholarship is an opportunity for researchers to collaboratively develop practically relevant knowledge of innovation and contribute to tackling real-world challenges drawing on their own and others' first-hand experience.

1.2.4 Organisation-creation

Aligned with my overall processual, practice-based, engaged scholarship approach, I further embrace an organisation-creation perspective in my exploration of an incumbent organisation's efforts to organise for disruptive innovation. Organisation-creation is the becoming of new ways of organising that create new value for organisations through entrepreneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). Entrepreneuring processes are tactical activities inseparably linked to classical management practices in organisations (Hjorth, 2012, p. 4; Hjorth, 2014, p. 108). Drawing on Michel de Certeau's (1980/1984) work, Hjorth (2003) describes how entrepreneurial actions in organisations creatively consume dominant organising forces to generate novelty. Classical managerial thinking and practices in organisations is associated with 'official' strategies – generalised policies developed and enforced by elite institutional groups who lack localised knowledge of the lived experience of their use in practice (Hjorth, 2003). On the other hand, entrepreneuring tactics are the 'art of the weak' – microscopic acts of resistance used to manipulate strategic forces (Hjorth, 2003). Driven by desire rather than short-term economic interest, self-reflexive organisational actors locally withdraw from the reigning managerial order to enact new paths of creative action that are within the space of but different from strategically imposed places in organisations (Hjorth, 2003; Hjorth, 2004, p. 420). Organisation-creation is a theory of how new ways of organising are generated by entrepreneuring processes in organisations.

By tactically consuming 'official' strategy devised by management structures, entrepreneuring processes generate heterotopian spaces for play. These in-between spaces are opportunities for new practices to arise that disrupt the status quo of normalising organisational forces and offer a conduit for organisational change and innovation (Hjorth, 2005, p. 392, 396; Hjorth, 2012, p. 2). New practices that arise within heterotopian spaces for play are essential for fostering innovation processes in organisations because they comprise 'the new' rather than what the organisation currently does (Hjorth, 2012, p. 2). Organisational members create spaces for play all the time in

organisations by working to get things done within everyday organisational constraints (Hjorth, 2005, p. 396). To foster innovation, organisations need to embrace these already existing creative activities that generate new ways of organising and disrupt normalising organisational forces (Hjorth 2005, p. 392, 396). However, because organisational members must make use of managerial strategies in organisations, the field of possibilities for innovation to arise is limited by the existing management order (Hjorth, 2012, p. 11). Innovation processes arise within heterotopian spaces for play embedded within the established managerial structure in organisations.

I draw on organisation-creation theory as a sensitising lens in my research in response to a particular void in the disruptive innovation literature that has not considered how disruptive opportunities can be entrepreneurially created from within the constraints of incumbent organisations. Current research focuses on how leading organisations can overcome classical management practices to respond to external threats of disruption at a strategic level, neglecting an appreciation that new ways of organising for disruptive innovation can emerge from within these constraints. Entrepreneuring processes do not 'add a new piece to the puzzle' of established ways of working but bring into being new orders that 'do not fit into the puzzle' (Hjorth, 2012, p. 2; Hjorth, 2014, p. 105). Thus, I associate entrepreneuring processes with disruptive innovation processes that create and re-order existing market and organisational operations as opposed to sustaining innovation processes that incrementally improve existing customer offers and business operations. While organisation-creation theory provides a useful perspective to consider how disruptive opportunities can be entrepreneurially created within the constraints of an incumbent organisation, it has been rarely empirically operationalised in the literature (see Hjorth, 2004 and Hjorth, 2005 for exceptions). Therefore, we lack a practical understanding of the process of organisation-creation and how it can be studied in organisations. I draw on underutilised organisation-creation theory for theoretical resource in my research exploring an incumbent organisation's efforts to organise for disruptive innovation.

1.3 Gap in the literature and research objectives

My processual, practice-based, engaged scholarship approach responds to three key gaps in the overall innovation literature. These are: i) researchers have predominantly conceived of innovation as a product or outcome separate from creativity ii) the need to focus on entrepreneurial actions as the driving force of innovation in organisations, and iii) the majority of research conducted on the topic is poorly grounded empirically. My research approach is informed by evidence that creativity and innovation are interrelated processual phenomena and should be investigated as such, there is a need for research exploring the interrelationship between entrepreneurial actors and their situated context in generating innovation processes, and empirically grounded research is required to develop more nuanced and practically relevant theories of innovation processes. Building on this evidence my research: i) embraces a processual ontology to foreground the processual nature of innovation and creativity as an integrative entrepreneurial process ii) focuses on entrepreneurial actions as sources of innovation and the consequential details of these activities in shaping innovation processes as they unfold using a practice-based approach, and iii) collaboratively works with practitioners to co-produce rigorous understanding of how innovation processes unfold in their situated context while supporting development of them in their occurrence through engaged scholarship. I adopt a processual, practice-based, engaged scholarship approach in my research developed from clear lacks in previous innovation research.

I specifically apply this approach to investigate an incumbent organisation's efforts to organise for disruptive innovation from an organisation-creation perspective. The salient gaps I identify in the overall innovation literature that warrant this approach are reflected in current studies of disruptive innovation: i) researchers have predominantly conceived of disruptive innovation as a market outcome separate from creative processes in organisations ii) current research lacks focus on entrepreneurial doings as sources of disruptive innovation, and iii) studies of disruptive innovation processes are retrospective and from afar accounts removed from its everyday practice. Using a

processual, practice-based, engaged scholarship approach I draw on organisation-creation theory as a sensitising lens in my research to specifically respond to a clear void in the disruptive innovation literature. While extant research tends to focus on how leading organisations can overcome classical management practices to respond to external threats of disruption at a strategic level, I explore how disruptive opportunities can be entrepreneurially created from within these constraints through everyday entrepreneuring processes. In adopting this perspective I shift the current focus in disruptive innovation research from: i) inter-firm dynamics that generate disruptive market outcomes to a leading organisation's internal efforts to organise for disruptive innovation ii) firm-level exploration of disruptive innovation in incumbent organisations to on-the-ground experience of organising for disruptive innovation iii) retrospective from afar accounts of how particular deemed disruptive phenomena transpired to real-time collaborative investigation of disruptive innovation in its emergence. My research objective is to answer my overall research question that I explore through four sub-questions related to the gaps I've outlined in current research:

Central thesis question:

How does an incumbent organisation organise for disruptive innovation?

Sub-questions:

- How does organising for disruptive innovation create tensions for an incumbent organisation?
- What are the everyday performative efforts of organising for disruptive innovation in an incumbent organisation?
- What are the temporal dynamics of organising for disruptive innovation in an incumbent organisation?
- How can organising for disruptive innovation be supported through real-time investigation in collaboration with participants in an incumbent organisation?

Chapter 2
Methodology

This second chapter of my thesis provides an overview of the case study where my research is based and my research protocol. I describe Thales UK and its relation to Thales Group, the company's history and its current challenges. I also highlight why Thales UK is a particularly rich context for exploring how an incumbent organisation organises for disruptive innovation. In this chapter I also explain my research design, the participants involved in my study, my data collection, analysis and interventions procedure and related ethics. My overall epistemology and position in the research setting is presented in this chapter.

2.1 Study context

My study context is Thales UK, the UK subsidiary of Thales Group. Thales Group is a French-owned, leading multinational technology company with approximately 80,000 employees in 68 countries operating in the aerospace, space, ground transportation, digital identity and security, and defence and security sectors (Thales Group, 2020a; Thales Group, 2020b). Ensuring public safety and security is essential in all of these markets (Thales Group, 2020a). Thales prides itself on being the people that its customers can rely on when making critical decisions reflected in the company's strapline: 'Wherever safety and security are critical, Thales delivers. Together we innovate with our customers to build smarter solutions. Everywhere.' Thales combines its unique diversity of capabilities to deliver world-class high technology solutions in an increasingly fast moving and unpredictable world (Thales Group, 2020a). Developing trusted technology solutions is at the heart of Thales Group's diverse international business operations.

Thales UK is a wholly owned subsidiary of Thales Group. With 6,500 employees at nine key sites, Thales UK is the second largest presence of Thales Group internationally (Thales Group, 2020c). Thales UK's operations reflect Thales Groups' international business interests with five main country business units: Avionics (AVS), Defense Mission Systems (DMS), Ground Transportation Systems (GTS), Land and Air Systems (LAS), and Secure Information and Communication Systems (SIX) (Thales Group, 2020d). As a result of recent acquisitions Thales also has space and digital security divisions in the UK but they are globally managed separate from the rest of the country's operations. In 2018, Thales Group's revenue was 19 billion euros, of which over one billion euros was allocated to self-funded R&D, excluding R&D undertaken with external funding (Thales Group, 2020b). Thales UK accounts for about 13% of Thales Groups' overall revenue and invests over 130 million pounds in R&D annually (Thales Group, 2020c). Thales UK is a major part of Thales Group.

2.1.1 History

Thales Group's diverse market and international presence has grown from a heritage of acquisitions. Thales originated from the company Thomson-CSF that evolved from *Compagnie Française Thomson-Houston* (CFTH), a sister company of General Electric in the United States established in 1893 (Thales Group, 2020e). In 1982 Thomson-CSF was nationalised by the French government and remained entirely state-owned until 1998 (Thales Group, 2020e). As part of a privatisation programme, the French government reduced its stake in a number of large companies but maintains strong presence in certain sectors including the defense industry. Over the years, reduced French State interest has enabled the company to strengthen its business scope and expand internationally (Thales Group, 2020e). Prior to 2000, Thompson-CSF had stake in several defence and aerospace companies in the UK. As a result of a number of transactions the company underwent in 2000 including the acquisition of Racal Electronics, Thompson-CSF became the second largest player in the UK defence industry (Thales Group, 2020e).

Shortly afterwards Thomson-CSF changed its name to Thales in December 2000 (Thales Group, 2020e). Thales has since expanded its civil presence in the areas of transport, security and space. Most recently, in 2019 Thales acquired Gemalto, an international digital security company, to position as a world leader in digital security (Thales Group, 2020e). Today, Thales is partially owned by the French government (25.7%) and Dassault Aviation (24.7%). Thales UK developed from company purchases in line with Thales Group's overall strategic growth agenda.

Thales has not made any real effort to integrate its different business areas over the years. Historically, it allowed the various companies it acquired in the UK to operate semi-autonomously. However, in recent years Thales is trying to join up the different business units of Thales UK into a single integrated organisation 'One Team One Thales' (Thales UK, 2014a). The purpose of this endeavor is to simplify the organisation, increase efficiencies as well as stimulate collaboration and the development of differentiated new market offers. Thales UK has become one legal entity, undergone standardisation of employment agreements, streamlined managerial roles to flatten the organisational structure and encourage more cross-functional and cross-domain working, centralised support functions, and implemented consistent working practices and processes where possible. Still, prioritisation of actions that benefit Thales UK as a whole is a struggle due to the company's matrix organisational structure. Organisational members situated in the various UK business units have both country and global business line reporting responsibilities. However, domain activities are often prioritised over country operations because the global business line authorities based in France control the majority of funding for the UK business units. Thales UK is trying to integrate its operations but the company's structure makes it difficult.

2.1.2 Current challenges

Thales Group has ambitious growth objectives. In 2014 Thales Group launched Ambition 10, a long-term strategic vision and aggressive growth

agenda (Thales Group, 2013). By 2022, the company aims to achieve double-digit growth including increasing its volume of large contracts, greater revenues from service offerings as well as expanding its presence in export and civil markets (Thales Group, 2013). Acknowledging that organic growth will not be enough to achieve the company's ambitious growth targets, in January 2015 Thales UK engaged in a transformational change programme 'Organising for Growth' to better position the business for growth (Thales UK, 2015a). Thales UK was restructured into 'Delivery' and 'Growth' (Thales UK, 2015a). The Delivery part was tasked with delivering existing projects and programmes to the company's high quality standards and Growth was tasked with thinking more long-term about the business to identify and shape new opportunities (Thales UK, 2015a). Key changes to improve the company's 'go-to-market' capability were the formation of a strategy and marketing function to improve the quality of market analysis, the Research, Technology and Innovation (RTI) organisation to focus on disruptive innovation opportunities, separate domestic and export sales teams to provide balanced focus on both domestic and export customers, a services lead to develop new service opportunities, as well as a bid and project management office and supply chain function to efficiently coordinate new opportunities (Thales UK, 2015a). Thales UK's Organising for Growth strategic changes underpin the company's ambitious growth targets.

Thales UK's decision to embark on Organising for Growth was also in response to external pressure to innovate. The company's core markets in the UK are changing with many of their key customers beginning to look beyond their traditional industry partners to co-develop novel solutions to their challenges. Historically, a few prime companies dominated the UK defence sector, but the market is becoming more competitive. The Strategic Defence and Security Review (SDSR) 2015 identified innovation as a key strategic priority reflecting a changing global security and technology landscape (HM Government, 2015). The Ministry of Defence (MoD) is making efforts to attract new suppliers, particularly SMEs (small and medium-sized enterprises) with the aim to increase procurement spend with SMEs to 25% by 2022 (Ministry of Defence, 2020). The MoD has also introduced several initiatives to foster

collaboration among stakeholders in the defence supply chain including the Defence and Security Accelerator (DASA), the Defence Growth Partnership (DGP) and the UK Defence Solutions Centre (UKDSC) (Ministry of Defence, 2020). Furthermore, in the past the MoD tended to fully fund the manufacture of defence capabilities in the UK based on early concept demonstrations but is increasingly encouraging joint working with industry to co-develop new solutions. Similarly, in the UK rail sector Train Operating Companies are looking for novel ways to cater to the burgeoning growth in demand for their services. The industry launched a rail specific innovation group with associated innovation funding schemes and programmes embracing open innovation as a way to share the risks and benefits of introducing new products, processes and services to the market including collaboration with small scale engineering and technology companies (InnovationXchange UK Ltd., 2019). Thales UK's Organising for Growth transformation is also in response to external pressure to innovate in its core markets.

Thales is a particularly rich context for studying how an incumbent organisation organises for disruptive innovation. Thales is a global leader of world-class products and trusted strategic partner for its customers in the UK (Thales Group, 2020f). The company also has a strong basis for innovation with an established history of invention and consistent ranking as a Top 100 Global Innovator (Thales Group, 2020b; Thales Group, 2020g). Thales has a global network of five research and technology laboratories focused on key research themes directly linked to the company's future growth plans (Thales Group, 2020h). The company also has 50 partnership agreements with universities and public research institutes worldwide, supports 200 doctoral candidates working on topics related to the company's critical issues, and 20 innovation hubs promoting customer-focused innovation (Thales Group, 2020i). It also boasts many collaborative relationships with SMEs accounting for 75% of the company's purchasing spend in France (Thales Group, 2020i). Thales UK is an opportune case to explore an incumbent organisation's efforts to organise for disruptive innovation as an inventive market leader confronting disruptive growth and innovation challenges.

2.1.3 Research, Technology and Innovation

The RTI organisation was created in January 2015 as part of Thales UK's transformational change Organising for Growth. RTI was formed from 3 sub-components: Thales UK Research and Technology (TRT), Innovation Hub (IH) and Strategic Growth Opportunities (SGO) (Thales UK, 2015b). The vision for bringing the TRT, IH, and SGO teams together was to join up the technical development and customer and market-focused insight in the company to catalyse growth and profitability (Thales UK, 2015b). Beyond incremental innovation activities owned by the UK business units, RTI's remit was to investigate new and future markets and customers as well as seek transverse opportunities for the organisation. RTI supports all of the Thales UK business areas including Secure Communication and Information Systems (SIX), Land and Air Systems (LAS), Defence Mission Systems (DMS), Avionics (AVS), Ground Transportation Systems (GTS), and Space (TAS) as well as their customers. Figure 2.1 below shows the RTI organisation's position as a strategic-level innovation capability in Thales UK.


Figure 2.1. RTI strategic level position in Thales UK.

The research and technology centre based in Reading, UK was originally part of Racal Electronics that was acquired by Thales in 2000. Comprised of about 100 people, it is one of the last remaining industry-based research and technology laboratories in the UK. It is part of Thales Group's international network of research and technology laboratories and has strong links with

universities across the UK through collaborative research projects and PhD sponsorships. TRT receives one third of its funding from Thales Group as part of the international research and technology network but the other two thirds of its cost must be made up from winning external research funding and providing specialist technical support to the business domains with the aim to break even at year-end. The laboratory's research activities must align with Thales Group's global technology portfolio that sometimes prevents it from prioritising actions that benefit Thales UK as a whole. Prior to the formation of RTI, the UK business units questioned the value of TRT's operations (Thales UK, 2014b). A consultant conducted an assessment in 2014 that detailed these perceptions and was used to inform the formation of RTI (Thales UK, 2014b). TRT is the largest and most established component of RTI.

The IH and SGO components of RTI are much smaller and newer capabilities in Thales UK. The IH was previously called the BTC (Battlespace Transformation Centre), comprised of a team of consultants that supported the UK business units with early stage shaping of bid opportunities and relationship building with key customers. Based in Crawley, UK the team managed a versatile customer demonstration facility to support early customer engagement and shaping major prospect requirements. The IH was funded by an annual levy across the business units based on Thales UK's overall sales. The core team had less than 10 permanent staff, which enabled it to flexibly pull on expertise across the organisation depending on project needs. The SGO team came from the corporate strategy function based at the UK's head office in Weybridge, UK. A small centrally funded group of people had begun to investigate long-term, disruptive and white space market opportunities for the company out width of its five-year strategic business planning cycle. Together, the components of RTI are a catalyst for growth. TRT is a catalyst for technology researching early stage and potentially disruptive technologies, SGO is a catalyst for business intelligence looking externally at disruptive market trends and emerging customer needs, and IH is a catalyst for customer engagement working to understand and shape customer perspectives to pull through emerging ideas and connect them with customers. Figure 2.2 below shows the RTI organisation structure.
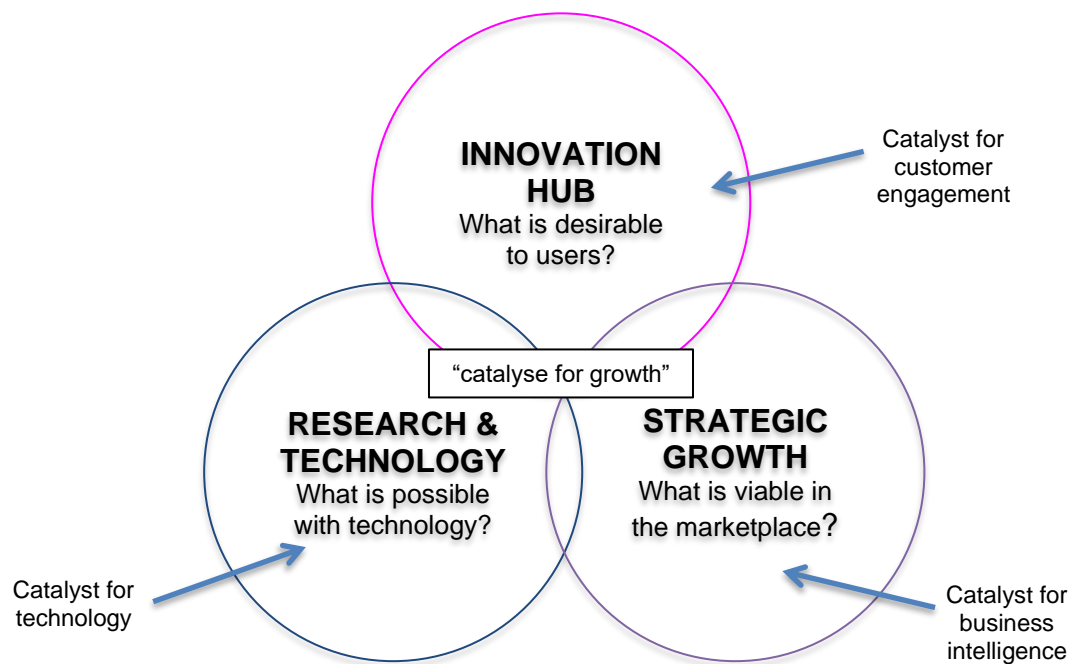
Figure 2.2. RTI organisation structure.

For the duration of my three-year study (2015-2017) RTI's operations reflected this structure but it has evolved in recent years. In January 2017 the VP RTI announced that the IH and SGO teams would merge into a single team. Although they collaborated on some projects during 2017, they did not start to operate as a single team until 2018 when I had ceased data collection. In September 2017 the company opened a new head office location in Green Park, Reading, UK merging three of their main sites – Weybridge, Basingstoke, and Reading. Green Park has since become the nucleus of RTI's operations. At this time the VP RTI also took a decision to reduce the corporate levy to become a completely self-funded capability by 2021 that has forced focus on nearer-term opportunities. RTI has also become more financially and operationally driven in recent years with organisation-wide financial pressures and less centralised funding for its operations. In 2018 the RTI Leadership Team introduced a four-block operating model aligned with Thales Group's increasing priority on digital transformation. Customer, business, and technology development remain intrinsic to RTI's operations embedded in its gate review process to evaluate 'go' or 'no go' decisions on projects. RTI's operating model has developed significantly in recent years.

2.2 Research protocol

I had the opportunity to follow almost from the start Thales UK's efforts to organise for disruptive innovation. I have been employed at Thales UK since October 2014 and was invited to join RTI in March 2015. In this position I worked at the heart of Thales UK's disruptive innovation efforts observing and contributing to the development of innovation and change processes at the company from an insider account. Embracing a processual, practice-based, engaged scholarship approach, I explored the entrepreneuring activity occurring at the organisation as it unfolded and the results of those enduring efforts over time as a full member of the RTI team. Table 2-1 below describes the overall epistemology I adopted in my research.

Table 2-1. Overall epistemology.

Place of observation:	Thales UK
Link between the researcher and the field observed:	At-home ethnography Autoethnography Engaged scholarship
Data collection and processing method:	Qualitative Processual
Data collection:	Observations, sitting in on meetings, interviews, diary accounts, documents, videos, pictures
Temporality:	Longitudinal study (over three years)

I explain in the following sections my research design including my interactive relationship with my research context, the participants in my study, data collection and analysis methods, interventions I engaged in during the course of my research and related ethics of my research approach.

2.2.1 Research design

I designed my study as a longitudinal ethnographic case study. Exploratory qualitative research in the form of ethnographic case studies preserves the spontaneous, informal and contextual nature of innovation in-the-making (Hoholm & Araujo, 2011, p. 938; Langley, Smallman, Tsoukas, & Van de Ven, 2013 p. 6; von Koskull & Strandvik, 2014, p. 144-145). I further chose an ethnographic approach to reveal the lived experience of the everyday entrepreneuring activities that underpin innovation processes that cannot be observed from a strategic level position (de Certeau, 1980/1984; Hjorth, 2003; van Hulst, Ybema, & Yanow, 2013, p. 226-228). For an in-depth understanding of everyday entrepreneuring processes, one must 'get close' to individuals working on it and understand the practices they use (Emerson, Fretz, & Shaw, 2011, p. 2-3; Fayolle, 2003, p. 46-47). It is best to position oneself at the heart of the activity in a situated case to experience it from the perspective of those involved (Emerson et al., 2011, p. 2-3; Fayolle, 2003, p. 46-47). I chose a longitudinal ethnographic case study research design as a dynamic and detailed approach to explore Thales UK's efforts to organise for disruptive innovation.

I delved deeper into the experience of entrepreneurship than a traditional ethnographic approach. Engaging in at-home ethnography as a native of my research setting, I gained a richer understanding of entrepreneurship by experiencing it and contributing to it myself (Alvesson, 2009, p. 159; Ingold, 2011, p. 387; Johannisson, 2011, p. 146-147). I further pursued autoethnography – ethnography of the self – by introspectively reflecting on my own lived experience of entrepreneurship (Adams, Jones, & Ellis, 2015, p. 1-2). Occurring at the intersection of ethnography and practice, autoethnography breaks the traditional separation between researcher and researched to embrace the subjective, messy, uncertain and emotional nature of social reality (Adams et al., 2015, p. 16). By submitting myself to unconditioned genuine involvement in my research context I gained tacit knowledge about the cognitive, emotive and material aspects of entrepreneurship that could not be accessed by means of sole observation

(Johannisson, 2011, p. 146-147). Using this experience-based approach, I aim to uncover the specific nuances and subtleties of the lived experience of innovation by merging my personal experience with my research (Adams et al., 2015, p. 1-2; Johannisson, 2011, p. 146-147). As a full member of the Thales UK RTI team I inquired into my personal experiences of Thales UK's entrepreneuring efforts to organise for disruptive innovation in addition to my outward observations.

Situated projects were the nodes of my study. Focusing on project activities emphasises the on-going processual nature of innovation 'in-the-making' (Hernes, 2008, Chapter 1). It de-centres the individual actors and foregrounds the collective entrepreneuring processes and practical activity occurring (Lindgren & Packendorff, 2003, p. 88-89). My choice to focus on what is happening rather than who is involved was also informed by evidence that innovation processes involve many diverse actors making discrete contributions over time (Schroeder et al., 1989, p. 107). Thus, my research breaks from dominant scientific and individualistic conceptualisations of 'the entrepreneur' to study entrepreneurship as an everyday processual, dynamic and collective activity (Holmquist, 2003, p. 78-82; Steyaert, 2007, p. 81; 453, 456). I identified six potentially disruptive innovation projects that I observed and contributed to on-the-ground as they happened at Thales UK over a three-year period. The six focal projects were identified in consultation with my research sponsors, senior leaders of the Organising for Growth change programme. All selected projects aimed to understand emerging customer needs in new and future markets for the purpose of developing disruptive new products and services. The company is in a leading market position and observed SME competitive entrants in all of the domains. Refer to Appendix A for a summary of the project profiles.

I also paid attention to the wider social context to capture the consequential details of the localised entrepreneuring activities I followed. I embraced Nicolini's (2012, Chapter 9) iterative method of 'zooming in' on the localised entrepreneuring accomplishments and 'zooming out' on the effects of those performances. By foregrounding and backgrounding situated activities and

their wider consequences I looked at how these everyday doings participated in larger, seemingly durable organisational arrangements (Nicolini, 2012, Chapter 9). I explored Thales UK's efforts to organise for disruptive innovation by following the everyday entrepreneuring activities on six selected potentially disruptive innovation projects and their effects at the organisation.

As a full member of the RTI team I embraced a collaborative research approach in my study. Law (2004, Chapter 2) argues that researchers do not just describe social realities but are also involved in creating them. Therefore, it is less a matter of choice for researchers to engage in generating social realities in collaboration with participants – it is inevitable (Law, 2004, Chapter 2). Since it is impossible to separate out the making of realities from researching them, researchers need to be mindful about how they engage with the world to positively contribute to its development (Law, 2004, Chapter 2). Following this approach, I aimed to support Thales UK's efforts to organise for disruptive innovation through my real-time investigation. I used Appreciative Inquiry in my data collection to promote entrepreneurship at the organisation. Cooperrider and Srivastva (1987, p. 131) introduced Appreciative Inquiry that focuses on the core positives and strengths of an organisation to facilitate positive change. By asking positively framed questions and stimulating them to imagine a positive future organisational state, my research activities are intended interventions to inspire participants to enact entrepreneuring activities that are driven by desire (Cooperrider & Sekerka, 2006, p. 225; Hjorth, 2003; Hjorth, 2014, p. 102). Furthermore, organisational actors have greater motivation to implement their ideas if they expect positive outcomes to result from their efforts (Baer, 2012, p. 1105-1106). I regularly reported my research findings to my study sponsors, senior leaders at the company, as well as discussed them with participants at the working level during my study. I also pursued several planned interventions in collaboration with participants across the organisation based on insights from my research. I aimed to support Thales UK's efforts to organise for disruptive innovation in my engagements with my research context.

2.2.2 Participants

The study participants are Thales UK employees. Participants were selected based on their involvement in the Organising for Growth change and the potentially disruptive innovation projects I followed. I invited participants to take part in my study by an email that included the details of my position in the company and the purpose of my research. I notified the study participants that their participation was voluntary and that they could withdraw at any time without consequence. I informed the participants that I was regularly reporting back to my research sponsors, senior leaders of the organisation, but assured them that the data they provided was confidential and anonymous. At the beginning of the study my research sponsors announced publicly that I would be participant observing the company's change and innovation efforts. Of the 61 Thales UK employees that were approached to contribute to the study, none refused to take part in the research or dropped out. Thales UK employees participated in the study voluntarily based on my invitation.

2.2.3 Data collection

I used a multi-method data collection approach to explore how an incumbent organisation organises for disruptive innovation. Varied data collection techniques based on the personal experiences of multiple diverse viewpoints targets depth and breadth of understanding (Di Domenico & Phillips, 2012, p. 655). My multidimensional data collection methods included participant observation, diary accounts, interviews, documents, videos and pictures.

Participant observation: I attended functional and project meetings, worked on projects and recorded my day-to-day experiences in field notes. Described as an untidy but surest way to get directly to the heart of human experience, participant observation is the most reliable way of understanding the subjective experiences of participants by going on the journey with them (Douglas, 1976, p. 112; Waddington, 2004, p. 164). I introspectively reflected on my own experiences of the entrepreneuring efforts I was involved in as well as recorded outward observations of the phenomenon (Adams et al.,

2015, p. 1-2; Alvesson, 2009, p. 160). Observing group interactions is a valuable source of data to highlight the interactions among actors that shape social processes (Emerson et al., 2011, p. 18). I was a core member of the Trust and Training project teams and was proximately involved in the Counter UAV project so naturally attended project-related meetings and events as part of my work. On the other projects I relied on the project actors to invite me to key events. I also facilitated discussions and took notes at the IH monthly team meetings as well as attended the IH team's annual reflections of their overall portfolio of innovation activities. I participant observed in the focal innovation projects as part of the RTI team.

I also attended relevant meetings and events to understand the wider social context both internal and external to the organisation and its development over time. In June 2015 I attended a discussion among senior leaders leading the Organising for Growth change focused on fostering a culture of innovation at Thales UK. I also had the opportunity to meet with the Managing Director of Niteworks, a commercially neutral organisation established by the Ministry of Defence (MoD) in partnership with industry and academia to address complex defence challenges. A key contributor to innovation in the UK defense sector, this meeting was an opportunity to gain in-depth understanding of innovation approaches in the defence sector in particular. I attended several internal and external innovation-related events over the course of my study that provided international and public sphere context for my research as well as opportunities to validate the themes emerging from my work with individuals working to progress innovation initiatives in other parts of Thales Group and other organisations. I participant observed in contextual happenings to capture the social context of the entrepreneuring activities I followed and validate my interpretations.

I was cognisant of my position as both a researcher and a full member of the RTI team during my participant observations. Building trusted relationships with my colleagues was important to access genuine interactions and informal events central to entrepreneuring processes in organisations (Di Domenico & Phillips, 2012, p. 654; Hjorth, 2003). Writing *in situ* can be a barrier for

developing trust and rapport with participants so I tended to only make jottings on-site during meetings when everyone had their notebooks (Emerson et al., 2011, p. 35-36). I reflected and recorded detailed notes of my daily experiences travelling to and from work on the train. I was also aware that my research presence influenced the authenticity of the social interactions I was observing (Di Domenico & Phillips, 2012, p. 654) While my colleagues knew that I was studying the company's innovation efforts, I proactively tried to be perceived as a teammate and minimise disruption of my research activities.

Diary accounts: In addition to my own accounts, I collected monthly diaries from my colleagues in the RTI team that were working on the innovation projects I followed. Diaries are a useful method to capture the daily habits and taken-for-granted aspects of a particular group's routines in a non-intrusive manner (Kitchenham, 2012, p. 300; Symon, 2004, p. 98). I aimed to capture my colleagues' unique perspectives of the entrepreneuring efforts I followed by asking them to describe their activities on their innovation projects (Symon, 2004, p. 99). I asked simple questions to frame the information elicited while encouraging openness (Kitchenham, 2012, p. 300) – what they had been doing to progress their innovation projects, what challenges they had experienced and how they had overcome them as well as their expectations of their project. The diary entries were submitted to me by email. The diary accounts provided the project actors' personal reflections of their entreprenenuring efforts. Refer to Appendix B to view the diary questions I asked the organisational members working on the focal innovation projects.

Interviews: I conducted in-depth interviews with organisational members working on the six focal innovation projects I followed. These detailed personal accounts aimed to capture a rich understanding of how participants' experienced their entrepreneuring efforts and the events they deemed significant (Barlow, 2012, p. 497). Participants were invited to take part in the study by an email that included the details of my position in the company and the purpose of the research. I conducted the interviews face-to-face in private hub rooms at the organisation's various UK sites. I invited the participants to speak openly about their experiences by using open questions and allowing

them to lead the flow of conversation (Barlow, 2012, p. 499; King, 2004, p. 11). My knowledge of the setting enabled interviewees to narrate their experiences without interruption because I understood context-specific terms and language. During the project interviews, the study participants were asked to describe their projects, what they had been doing to progress them, what challenges they had experienced and how they overcame those challenges, their expectations of the project and planned next steps. Repeat interviews were conducted quarterly (on average) with the project actors over the course of the study to discuss the progress of their innovation projects. In-depth interviews with the project actors captured personal accounts of the entrepreneuring efforts and their development over time.

I also conducted interviews with other members of the organisation to understand the consequential details of the entrepreneuring efforts I followed. Between September 2015 and April 2016 I interviewed senior leaders of the company leading the Organising for Growth changes as well as diverse members of the RTI function and wider business. During the interviews, participants were asked to describe the organisation, the purpose of the Organising for Growth change, their experience of how the change had been implemented as well as their expectations of the change and future of the organisation. I also interviewed other members and customers of Thales UK RTI involved in the projects over the course of the study to further capture the effects of the entrepreneuring processes I followed. In-depth interviews with individuals beyond the focal innovation projects enabled understanding of the wider social context and effects of the focal entrepreneuring efforts. Refer to Appendix B to view the topic guides used for data collection.

Documents: I collected documents generated by others and myself during the course of my study. Documents, including pictures and videos, are a record of human activity that can shed light on multiple aspects of a case including historical, political, social, economic and personal dimensions (Olson, 2012, p. 319). I collected strategic and project documents as part of my work in the RTI team. I also obtained historical documents that detail evolution of the organisation's innovation vision, challenges experienced, and lessons learned

from past interventions. I also generated documents in the process of implementing planned interventions based on insights from my research. Additionally, I collected and generated a number of pictures and videos through my involvement in the projects, wider organisational initiatives and events attended and implementation of the planned interventions. During the course of my study I paid attention to key corporate communications via email announcements and consulted the company intranet to contextualise my research. I selected from the material I had access to as part of my work documents that were relevant to my research purpose (Olson, 2012, p. 320). The wide variety of document sources I collected presented different viewpoints of Thales UK's efforts to organise for disruptive innovation.

Refer to Appendix C for a summary of my data corpus including sample data.

2.2.4 Data analysis

I drew on available guidance for theorising from process data (Langley, 1999, p. 691) to derive theoretical insight from the data corpus generated. I started analysing my data *in situ* while I was still completing data collection of my three-year longitudinal study. I initially used a grounded theory strategy (Langley, 1999, p. 699-700) to make sense of my first year of data collected. I followed the Gioia Methodology as a systematic inductive approach to grounded theory development preserving the processual nature of innovation processes in-the-making in my analysis (Gioia, Corley, & Hamilton 2012, p. 16). The data was coded in an inductive bottom-up way so that the themes identified closely aligned with the data (Gioia et al., 2012, p. 20). Similar codes were clustered based on code co-occurrence and my ethnographic impressions to develop first order concepts (Gioia et al., 2012, p. 20-21). The development of the emergent themes was supported by the analysis of videos, documents, pictures and the first author's general observations. Codes emerged to describe the organisational context, the challenges the organisational actors experienced in advancing their innovation projects, the tactics they used to overcome these challenges, and the outcomes they

achieved from their efforts. Iteratively consulting the innovation literature, the first order concepts were organised into second order themes (Gioia et al., 2012, p. 20-21). In a final step of this initial analysis I further abstracted the second order themes into aggregate dimensions based on my conceptual framework (Gioia et al., 2012, p. 20-21). I also identified positive aspects of the company and feedback of the participants' experiences of the Organising for Growth changes in this initial stage of analysis as input to the company's development and change efforts. I initially used a grounded theory strategy to make sense of my first year of data following the Gioia Methodology. Refer to Appendix D to view the data structure generated from this initial analysis.

Following this initial grounded theory strategy, I engaged in in-depth analysis of the project material to conduct a structured investigation of the interactions between the dynamic elements I identified in my initial analysis. As a first step I used a narrative strategy drawing on the variety of forms of project data I collected to generate a detailed account of each of the projects incorporating multiple different viewpoints (Langley, 1999, p. 695). I used the constructs that emerged from my initial analysis to structure the case narratives including the tensions that the project actors confronted in their entrepreneuring efforts, the tactics they used to overcome them, and the generative outcomes that resulted from their accomplishments (Langley, 1999, p. 697). While I used the constructs from my initial analysis to structure the case narratives, I kept open to the emergence of new themes in my engagement with the full three-year data set. The next step of analysis involved the division of the six case stories into sequential episodes to organise the events that occurred over the course of each project and make sense of the project journeys. I used temporal bracketing (Langley, 1999, p. 703-704) to group these episodes into phases of recurrent entrepreneuring activity for each project. Temporal bracketing is a heuristic device for segmenting a shapeless mass of longitudinal data from a case study into comparable units for systematic analysis (Langley, 2012, p. 920-921). Derived from Anthony Giddens' Theory of Structuration (1984), temporal examination of data in time intervals is used to explore how occurrences in one period produce contextual changes that affect subsequent happenings in later periods (Langley, 2012, p. 920). I used a visual mapping

strategy to identify these within case recurrent patterns of entrepreneuring activity on the projects (Langley, 1999, p. 700-703). Visual representation allows the consolidated presentation of large quantities of information, can be easily used to show precedence, parallel processes and passage of time, and is a useful tool for development and verification of theoretical ideas (Langley, 1999, p. 700). Refer to Appendix E to view the visual maps produced for each project. As a final step I compared the within case patterns I identified as a whole across the different project cases (Langley, 1999, p. 704-705). The aim of this last analytical step was to produce an overall process model and associated situated practices for the entrepreneuring activities grounded within the multiple case data (Langley, 1999, p. 705). Refer to Appendices F and G for a summary of the common patterns of process dynamics and situated practices I identified across the six projects. I used a combination of narrative, temporal bracketing, visual representation and case comparison strategies to illuminate the situated and temporal dynamics of the entrepreneuring processes on the focal innovation projects.

I also engaged in a reflexive analysis of the ethnographic material I collected to understand how organising for disruptive innovation in an incumbent organisation can be supported through real-time investigation. Again, I used a grounded theory strategy following the Gioia Methodology as a systematic inductive processual analytical approach (Gioia et al., 2012, p. 16). Initially I focused on my own research practices paying attention to how I engaged with my research context going 'in' participating in the innovation processes and interacting with participants at the micro-level and coming 'out' to report my findings to my sponsors, attend events and implement planned interventions at the macro-level. Again, I used a visual mapping strategy to make sense of the data corpus (Langley, 1999, p. 700-703). I created a timeline visualising my research activities including my attendance at key company, industry and academic events. Refer to Appendix H to view this timeline of my research activities. Through repeated in-depth reading of my personal accounts and discussion of my overall experience I mapped my recurrent research practices that I identified were instances of simultaneous observation and intervention. I developed a process diagram to capture the iterative movement and multiple

dimensions of my research practices. Following this initial analysis, I engaged with the interviews, participants' personal diary accounts, videos, documents, and pictures in addition to my own personal accounts to identify multi-level impacts of my research practices. As a final step of this reflexive analysis I again consulted my own personal accounts and reflections of my overall collaborative research experience to identify the tensions I experienced in the immersive and interactive research process. My staged reflexive analysis revealed my engagements with my research context, the impacts of my multi-dimensional and responsive engagement with my research context, and collaborative research tensions I experienced. Refer to Appendix I to view the data structure generated from this reflexive analysis.

2.2.5 Interventions

As a member of Thales UK I am interested in supporting as well as studying the organisation's efforts to organise for disruptive innovation. As such, my research activities have been designed to impact on the innovation capability of the organisation as well as collect data for my research. As discussed previously, I used Appreciative Inquiry to impact on the organisation as part of my data collection. I also had regular feedback meetings every three to six months with my research sponsors, senior leaders in the organisation, to discuss my findings and my progress on the project. These discussions provided useful feedback for me to validate my interpretations and enable deeper understanding of the company's disruptive innovation efforts (Schwartz-Shea & Yanow, 2009, p. 62; Van de Ven & Johnson, 2006, p. 809). I also sent them a monthly status report on the progress of my project. I also shared my findings with other participants in my study as well as other members of the organisation that served to both contribute to change at the company and further validate my interpretations. Based on discussion of my findings with my research sponsors and other study participants I also pursued several planned interventions based on insights from my research including events, corporate communications and educational materials. Some pictures of the implementation of the planned interventions are included in the sample data in Appendix C.

2.2.6 Ethics

As a complete member of Thales UK, I engaged in at-home ethnography. Conducting research from the position of one's own organisation is challenging because the researcher needs be cognisant of their own preconceptions and taken-for-granted ideas as well as manage political complexity as a result of their personal involvement with their study context (Alvesson, 2009, p. 166, 170-172; Tietze, 2012, p. 56-59). Johannisson (2011, p. 146) also emphasises that researchers that engage in interactive research need to be extremely reflexive and carefully consider their own notions in their particular research context. In my case I participated in the projects I followed on-the-ground as a member of the team, interviewed practitioners working on the projects, internal project customers and other company stakeholders as well as reported back my research findings and provided feedback to senior sponsors in the organisation and led organisation-wide interventions based on insights from my research. I have had to be especially vigilant in strategically managing the relationships between and respecting the feelings and interests of all study participants, like the jester of a royal household (Alvesson, 2009, p. 166; Ybema & Kamsteeg, p. 114). I found that moving between micro and macro levels of engagement with my research context helped me to maintain personal integrity in my interactions with the different stakeholder groups engaged in my study as well as adopt a marginal perspective on the disruptive innovation efforts I observed. As Johaninsson (2011, p. 145) highlights, I had to embrace unexpected outcomes in my research as well as my intentional actions because social reality emerges in the process of engaging with one's context. Refer to Chapter 6 for a more detailed account.

Although there are few examples of appreciative methods in fieldwork, it has been used in research protocol to enhance data collection. Appreciative Inquiry has been used to extract enriched data in research settings because participants tend to open up and share more when talking about positive

aspects (Michael, 2005, p. 226-228). Positively framed questions also help build trust and rapport with participants that might otherwise have difficulty opening up about their personal experiences (Michael, 2005, p. 226-228). In my case, I was cognisant that participants might be reticent in their response to my research enquiry due to the hierarchical and staid nature of the organisation. I perceived that increased sensitivity may also arise due to the fact that I am part of the research context and, although anonymously, reporting back my findings to senior leaders of the organisation. Thus, I used Appreciative Inquiry as part of my research protocol to both deliberately impact on the organisational context and overcome potential barriers to gaining in-depth understanding of my research setting. The use of Appreciative Inquiry as a research tool could be considered partial by focusing on positive aspects of the phenomenon investigated. However, previous work demonstrates that this approach can generate a better understanding of both positive and negative aspects of particular occurrences than a traditional problem-solving approach (Michael, 2005, p. 228). In this case the participants talked equally about negative aspects of the company and their experiences of the disruptive innovation efforts.

The next four empirical chapters of my thesis present my research findings. This first empirical chapter explores the micro-social happenings of how organising for disruptive innovation creates internal tensions for an incumbent organisation. Many large organisations today are still comprised of legacy arrangements based on mechanistic management methods developed in the preceding industrial era (Hjorth, 2012, p. 9-10). The industrial era was spurred by the industrial revolution, a turning point in history that occurred at the beginning of the 18th century, when new manufacturing processes were introduced into society (Ashton, 1948, Chapter 1). During this time Frederick Taylor (with support from other organisational engineers of this time) developed scientific management principles aimed at increasing productivity by means of job simplification and optimisation (Grachev & Rakitsky, 2013, p. 516). These scientific principles include a focus on 'rational economic man', normative approach to work, organisation and incentives, maximum division of labour, and rationalisation of work and motion (Grachev & Rakitsky, 2013, p. 516). While this management philosophy was extremely useful during the industrial era, a time when the world was experiencing immense growth and needed a systematic way to manage scaled industrial operations, such simplified and prescriptive traditional management practices have become obsolete in the age of disruptions (Grachev & Rakitsky, 2013, p. 516; Kumaraswamy et al., 2018, p. 1038). Like many large organisations, Thales UK is organising for disruptive innovation within the context of legacy industrial age management practices.

Organisation-creation theory highlights that entrepreneuring processes that generate new ways of organising emerge within the already organised context of previous organisational arrangements and this creates frictions (Hjorth & Reay, 2018, p. 1). Influenced by the industrial revolution, senior leaders in organisations today enforce managerial practices and processes that are designed to enact an organisation's existing vision of the future as efficiently as possible (Hjorth, 2003; Hjorth, 2005, p. 413; Hjorth, 2012, p. 5-6). With the allocation of resources dedicated to carrying out these pre-determined activities prescribed by the company's set vision, organisational members find little support for entrepreneurial activities that denote risk, uncertainty and

unpredictable outcomes (Hjorth, 2003; Hjorth, 2005, p. 397). In this chapter I foreground the notion organisation-creation tensions to understand how the becoming of new ways of organising for disruptive innovation challenge established managerial ways of working in an incumbent organisation.[1]

---

[1] This paper was presented at the International Organisational Learning, Knowledge and Capabilities (OLKC) conference in April 2019. I received peer-review feedback in the conference submission process and presentation forum. I intend to further develop this paper for publication in the journal Strategic Organization.

Chapter 3

Organisation-creation tensions: The becoming of new ways of organising for disruptive innovation in an incumbent organisation

Abstract

Current disruptive innovation research explores tensions arising from incumbent organisations' disruptive innovation efforts at the organisational level. Using an organisation-creation perspective we explore the micro-social happenings of how new ways of organising for disruptive innovation challenge established working practices in an incumbent organisation. In an ethnographic case study we investigated tensions arising from a transformational change programme that specifically aimed to respond to disruptive market changes at Thales UK, a leading multinational technology organisation. We illuminate how the company's efforts to organise for disruptive innovation interrupted established managerial practices at the organisation. We characterise opposing entrepreneurial and managerial forces underlying three salient organisation-creation tensions related to organisational members' shared understanding of their goals, competencies and material setup of the company. Our results illustrate practical tensions between established and becoming new ways of working for disruptive innovation in an incumbent organisation organising for disruptive innovation. We further show how these organisation-creation tensions are generated by the essential mechanisms of a becoming practice disrupting the company's established working practices.

Introduction

In the age of disruptions, 'fundamental changes that disturb or re-order the ways in which organisations and ecosystems operate' (Ansari, Garud, & Kumaraswamy, 2016, p.1), leading organisations are advised to take the initiative and 'become the disruptor' to maintain their competitive advantage (Christensen & Raynor, 2003, p. 18). Yet efforts to become a disruptive innovator cause tensions for incumbent organisations because it challenges their institutionalised arrangements and customary ways of doing things (Christensen & Overdorf, 2000, p. 70; Denning, 2005, p.4). Disruptive innovation scholars have so far focused on understanding tensions arising from established organisations' disruptive innovation efforts including resource allocation and perceived incentives, cognitive structure, and organisational structure and routines at the organisational level (Chandy & Tellis, 2000, p. 3; Hill & Rothaermel, 2003, p. 259-262; Yu & Hang, 2010, p. 441-443). However, we lack a contextualised understanding of how these challenges manifest in everyday work life to further understanding of how they can be dealt with. Our research addresses this gap by exploring the micro-social happenings of how organising for disruptive innovation creates tensions for an incumbent organisation in everyday work life.

We conceptualise leading organisations' efforts to organise for disruptive innovation as a form of organisation-creation, the becoming of new ways of organising by means of entrepreneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). We further draw on a practice perspective to understand the nature of established ways of working in a leading organisation and how they are challenged by the becoming of new ways of organising for disruptive innovation (Bjørkeng, Clegg, & Pitsis, 2009, p. 147-149; Schatzki, Cetina, & von Savigny, 2001, p. 38). From this perspective we associate established ways of working with managerial practices and the becoming of new ways of organising for disruptive innovation with entrepreneuring processes in incumbent organisations (Hjorth, 2003; Hjorth, 2012, p. 2). We shift investigation of efforts to organise for disruptive innovation in incumbent organisations from the organisational level to on-the-ground emergence of new ways of organising for disruptive innovation.

Our study takes places at Thales UK, the UK subsidiary of the leading multinational technology organisation Thales Group. Using an ethnographic case study research design we explored the everyday tensions arising from a transformational change programme that specifically aimed to respond to disruptive market changes at Thales UK. The first author participant observed as a full member of the Thales UK Research, Technology and Innovation (RTI) team. She collected transformation-related documents (64), videos (22), and pictures (179) as well as attended transformation-related events (59). She also conducted in-depth interviews (43) with people in varied functional positions in the organisation who were involved in the change. The rich ethnographic data corpus enabled us to examine in detail the emergent tensions organisational members experienced in their everyday work life as a result of the company's efforts to organise for disruptive innovation.

Our analysis shows how Thales UK's efforts to organise for disruptive innovation challenged established managerial ways of working at the company including the organisational members' shared understandings of their goals, competencies and material aspects of their work. We illustrate three salient everyday organisation-creation tensions that align with key tensions depicted in the disruptive innovation literature: *prioritising a new future versus today's known deliverables*, *collaborative market proficiency versus technical and domain proficiency*, and *agile united operations versus rigid fragmentation*. We further characterise opposing entrepreneurial and managerial forces underlying these tensions that represent practical frictions between established and becoming new ways of working for disruptive innovation in an incumbent organisation organising for disruptive innovation.

Our study findings provide a detailed ethnographic account of the micro-social happenings of how organising for disruptive innovation creates tensions for a leading organisation. We expand understanding of disruptive innovation by providing a contextualised perspective of tensions arising from incumbent organisations' disruptive innovation efforts. We also add to organisation-creation research discussion of practical tensions arising from the process of

organisation-creation for disruptive innovation in an established organisation. We also further current practice research in organisations by exploring how the essential mechanisms of a becoming practice generate tensions with established ways of working in the context of an incumbent organisation organising for disruptive innovation.

The article is structured as follows. We begin by reviewing the dominant approach to exploring tensions arising from incumbent organisations' disruptive innovation efforts. We then consider these efforts from a contextualised perspective as the becoming of new ways of organising for disruptive innovation in leading organisations. Following this, we introduce our case study and research method. We conclude with a discussion of our results and study contributions.

Tensions Arising from Incumbents' Disruptive Innovation Efforts

Disruptive innovation refers to new products, services and business models that create new markets and re-shape existing ones (Christensen & Raynor, 2003, p. 51). According to the Disruptive Innovation Model there are two types of innovations in established markets: sustaining innovations that advance the performance of existing products for established customers and disruptive innovations that are simpler, cheaper and contain novel features compared to their mainstream equivalents (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). New disruptive innovations tend to be ignored by the majority because they initially offer poorer performance than existing products but are adopted by customers on the fringe who are looking for affordable alternatives (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). Disruptive innovations gain momentum in the market by delivering to these overlooked segments and outperform mainstream products offered by market leading incumbent organisations in the long-term (Christensen, 1997, p. xvi; Christensen & Raynor, 2003, p. 34). Established organisations tend to miss the application of new disruptive innovations as they innovate around their existing customer needs following good management practices and ultimately their established business is disrupted (Christensen, 1997, p. xvii; Christensen & Raynor, 2003, p. 33-34). While there is some debate about the

foundations of the Disruptive Innovation Model (e.g. Danneels, 2004, p. 257; King & Baatartogtokh, 2015, p. 78; Lepore, 2014; Markides, 2006, p. 19; Sood & Tellis, 2011, p. 339-340; Tellis, 2006, p. 34), it has gained significant momentum in both academia and practice.

To avoid decline, leading organisations are advised to take the initiative and 'become the disruptor' by simultaneously keeping abreast of market trends and exploring new areas alongside their existing business activities (Christensen & Raynor, 2003, p. 18, 49-50, 229-230). However, incumbent organisations confront challenges in pursuing disruptive innovations because it requires them to change their existing organisational arrangements and established ways of working (Christensen & Overdorf, 2000, p. 70; Denning, 2005, p.4). Research shows that many established organisations are unsuccessful in identifying and exploiting disruptive innovations before being displaced by new market offers, mainly due to internal organisational tensions rather than external factors (Yu & Hang, 2010, p. 441). Within the disruptive innovation literature, organisational tensions associated with fostering disruptive innovation processes in incumbent organisations center around three core themes: resource allocation and perceived incentives, cognitive structure, and organisational structure and routines (Chandy & Tellis, 2000, p. 3; Hill & Rothaermel, 2003, p. 259-262; Yu & Hang, 2010, p. 441-443). These tensions have mainly been explored however at the strategic level.

Past research explores tensions that decision-makers confront related to their perceived incentives and resource allocation processes. When it comes to investment choices, it is a challenge for budget holders to allocate resources to risky new projects as opposed to sustaining innovations and cost reduction initiatives that ensure shareholder returns and maintain their control and career trajectory (Christensen & Overdorf, 2000, p. 68; Christensen & Raynor, 2003, p. 186-187; Denning, 2005, p. 7; Denning 2012. p. 9). They risk cannibalising their core business losing essential income from existing products and customer relationships in known value networks (Afuah, 2000, p. 399; Christensen & Bower, 1996, p. 207-209; Conner, 1988, p. 9; Reinganum, 1983, p. 741; Rosenbloom & Christensen, 1994, p. 665; Tellis,

2006, p. 34, 37). Furthermore, decision-makers are not inclined to invest in disruptive new initiatives that they know do not align to the company's existing capabilities and it is ill-equipped to exploit (Danneels, 2002, p. 1097; Leonard-Barton, 1992, p. 113-114). Consequently, leading organisations often suffer from resource dependence, locking resources into core business activities based on their normal decision-making criteria (Christensen & Overdorf, 2000, p. 70-71; Danneels, 2002, p. 1097). Disruptive innovation efforts challenge strategic decision-making processes in incumbent organisations.

Secondly, the pursuit of disruptive innovation causes tensions related to established organisations' cognitive structure, the mechanisms organisational members use to process and understand information. A market-focused orientation is required to monitor remote and future markets (Markides, 2006, p. 24; Tellis, 2006, p. 38) as well as develop an understanding of emerging customer needs, technologies and associated demand for new products and services (Adner, 2002, p. 686; Govindarajan & Kopalle, 2006, p. 16; Slater & Mohr, 2006, p. 30-31). But organisational filters purge information that is irrelevant to incumbent organisations' strategic imperative to address their customers' current needs that yield short-term localised gains in organisations (Henderson & Clark, 1990, p. 15-16; Levinthal & March 1993, p. 101-105; Tripsas & Gavetti, 2000, p. 1159). As a result, leading organisations become tightly coupled with their existing customer base, narrowly focus on their local market peak, and struggle to trade-off exploitation gains to engage in market exploration (Danneels, 2003, p. 572; Levinthal, 1997, p. 949; March, 1991, p. 85). With a poor understanding of emerging customer needs, it is difficult for decision-makers to evaluate the potential of disruptive ideas and plan resources and competence development to take advantage of new disruptive opportunities (Danneels, 2002, p.1097; Danneels, 2004, p. 254; Tripsas & Gavetti, 2000, p. 1158). Disruptive innovation initiatives pose changes for incumbent organisations' established information processing mechanisms.

Incumbent organisations' attempt to become a disruptor also causes friction with the way their organisational structure and routines are organised. Institutionalised organisational practices and managerial controls are

designed to carry out the development of existing products and services based on their current competences as efficiently as possible (Henderson & Clark, 1990, p. 17-18). Both internal factors such as physical assets, human capital and political coalitions as well as external factors including public legitimation of organisational activity and exchange relations with other organisations reinforce longstanding practices in established organisations (Hannan & Freeman, 1984, p. 149). Such rigid organisational processes and management layers and the near-term success they deliver are a challenge for large organisations to overcome when implementing innovation and change even when they recognise it is necessary (Christensen & Raynor, 2003, p. 184; Gilbert, 2005, p. 757; Henderson, 2006, p. 9; Johnson, 1988, p. 86-87; Tripsas, 1997, p. 131-132; Tripsas & Gavetti, 2000, p. 1147; Tushman & O'Reilly, 1996, p. 17-19). These inertial forces are a particular hindrance when leading organisations need to adapt their business models in response to disruptions (Chesbrough & Rosenbloom, 2002, p. 550; Cozzolino, Verona, & Rothaermel, 2018, p. 1184-1185). Past research depicts how established organisational structures and routines constrain the development of disruptive innovation in incumbent organisations.

While recognising that disruptive innovation efforts create tensions for incumbent organisations, most of this research remains however at the organisational level of analysis. We lack a contextualised understanding of how these challenges manifest in everyday work life. A more nuanced understanding of the tensions between disruptive innovation efforts and established ways of working in incumbent organisations can expand knowledge of how incumbent organisations can deal with these challenges in organising for disruptive innovation.

A Contextualised Perspective: The Becoming of New Ways of Organising for Disruptive Innovation
We draw on a practice-based approach to understand the nature of established ways of working in incumbent organisations and how they are challenged by incumbent organisations' efforts to organise for disruptive innovation. Embedded in a processual ontology, practice research has gained

momentum within organisational studies over the past few decades as a promising analytical framework for understanding contemporary organisational phenomena. Practice theory has been used to investigate strategy-as-practice, organisational learning and knowledge management, design and use of technologies in organisations, and institutional change and maintenance (Feldman & Orlikowski, 2011, p. 1243-1244; Miettinen, Samra-Fredericks, & Yanow, 2009, p. 1309, 1311). A practice approach grounds studies of organisational phenomena in what organisational actors actually do based on an understanding that social life is continuously emerging accomplished through people's ongoing everyday activities (Feldman & Orlikowski, 2011, p. 1240; Miettinen et al., 2009, p. 1309). Important and consequential details about the micro-social happenings of organisational phenomena can be uncovered using a practice lens for it is the enduring efforts of actors in their mundane, everyday doings that generate macro-level phenomena (Nicolini, 2012, p. 3). In this study we are interested in the micro-social happenings that cause tensions for incumbent organisations in organising for disruptive innovation.

Practice theory focuses on the localised activities of organisational actors and their relation to the wider social context they are embedded within. In their day-to-day work, organisational actors carry out activities as practitioners that are both informed by and shape practices (Schatzki et al., 2001, p. 48, 53). Practices denote the implicit understandings that organisational actors have about how to act based on their past experiences of their own and other actors' doings in their social context (Schatzki et al., 2001, p. 54-55, 74). This practical intelligibility – what makes sense for organisational actors to do – is based on their awareness of particular rules that connect certain activities, teleology or knowledge of the purpose of specific activities for producing particular outcomes, and their affectivity, which is related to their understanding of how things matter collectively (Schatzki et al., 2001, p. 47). When organisational actors enact doings themselves they also contribute to further develop these implicit understandings that, in turn, inform the conduct of future work (Schatzki et al., 2001, p. 45). Organisational actors also develop their sense of self and ascribe meaning to their day-to-day

happenings through these practical experiences (Schatzki et al., 2001, p. 47). Social order, the institutionalised practical arrangements in a particular context, is therefore instituted within practices and changes over time constantly re-produced as organisational actors carry out their day-to-day work (Schatzki et al., 2001, p. 45-46). Established ways of working in incumbent organisations are unconscious activities embedded in taken-for-granted routines that reinforce common practices and uphold social order.

We conceptualise incumbent organisations' efforts to organise for disruptive innovation as a form of organisation-creation, the becoming of new ways of organising by means of entrepreneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). From this perspective established ways of working in leading organisations are managerial practices and processes designed to enact a company's existing vision of the future as efficiently as possible (Hjorth, 2003; Hjorth, 2005, p. 413; Hjorth, 2012, p. 5-6). Managerial practices are carried out by organisational actors self-regulating their behavior according to what is constructed as proper to do in organisations (Hjorth, 2004, p. 416). On the other hand, entrepreneuring processes depart from customary ways of doing things in organisations that denote risk, uncertainty and unpredictable outcomes (Hjorth, 2003; Hjorth, 2005, p. 397). Entreprenuering is a dynamic and collective creative process instantiated in the everyday interactions among various actors and their situated context (Holmquist, 2003, p. 78-82; Steyaert, 2007, p. 465). This processual view of entrepreneurship breaks from a dominant scientific and individualistic conceptualisation of 'the entrepreneur' to consider it an emergent social process that brings new organisational orders into being (Hjorth, 2014, p. 102; Holmquist, 2003, p. 78-82). While managerial forces reinforce established practices, entrepreneurial forces introduce new ways of working in organisations.

In the case of an incumbent organisation organising for disruptive innovation, entrepreneuring processes that create new ways of working for disruptive innovation emerge within the already organised context of the company's managerial practices and processes and this creates frictions (Hjorth & Reay,

2018, p. 1). We draw on a becoming a practice perspective to understand the emergent tensions between managerial and entrepreneurial forces in incumbent organisations when it comes to organising for disruptive innovation. A becoming a practice perspective seeks to understand the process that new emergent practices come into being over time (Bjørkeng et al., 2009, p. 147). Contrary to conventional practice-based studies that focus on shared understandings in a particular community that guide practical activity, a becoming a practice approach explores novel patterns of interaction (Bjørkeng et al., 2009, p. 145). In our research we use this framework to explore the micro-social happenings of how new ways of working for disruptive innovation challenge established working practices in a leading multinational technology organisation.

In their longitudinal ethnographic study of a mega-project alliance, Bjørkeng et al. (2009, p. 149) identify three essential mechanisms of a becoming practice: authoring boundaries, negotiating competencies and adapting materiality. First, authoring boundaries refers to processes by which certain activities are deemed as a legitimate aspect of practicing (or not). Since what it takes to be practicing is still in the making, the boundaries of legitimate action of the emergent practice are in the process of being defined. Second, negotiating competencies refers to processes by which practitioners are constructed as competently performing the emergent practice. This process is related to the becoming of new rules that guide the practical activity and its accomplishment. Third, adapting materiality refers to processes by which material arrangements as necessary elements of the emergent practice are intertwined and produced in practicing. This framework has been used in exploring the process of becoming a practitioner in the banking sector and the implementation of new collaborative practices in the construction industry (Bjørkeng & Clegg, 2010, p. 48-49; van Marrewijk, Veenswijk, & Clegg, 2014, p. 331). We use this framework to explore how efforts to organise for disruptive innovation challenge established notions of legitimate action, competencies and material configurations of everyday work.

In sum, in our research we explore the micro-social happenings of how organising for disruptive innovation creates tensions for a leading company in everyday work life. In adopting this approach we respond to a lack of interest in current disruptive innovation research in exploring how organisational tensions arising from incumbents' disruptive innovation efforts manifest in everyday work life. We shift investigation of efforts to organise for disruptive innovation in incumbent organisations from the organisational level to on-the-ground becoming of new ways of organising for disruptive innovation.

Research Setting and Method

Our study takes place at Thales Group, a leading multinational technology company with approximately 80,000 employees operating in 68 countries. Thales is a complex systems provider in the aerospace, space, ground transportation, digital identity and security, and defence and security sectors and has been consistently ranked as a Top 100 Global Innovator (Thales Group, 2020a). Thales UK is a wholly owned subsidiary of Thales Group. With 6,500 employees at nine key sites, Thales UK is the second largest presence of Thales Group internationally (Thales Group, 2020b). Thales UK's operations reflect Thales Groups' international business interests with UK operations in all of the company's key domains.

The change

Following a period of focus on profitability due to tough economic times and delivery challenges on complex projects, in January 2015 Thales UK embarked on a transformational change 'Organising for Growth'. This change was stimulated by both internal and external factors. Internally, Thales Group had launched Ambition 10, an aggressive growth agenda that the UK stakeholders recognised they would not be able to achieve by relying solely on organic growth. By 2022, the company aims to achieve double-digit growth including increasing its volume of large contracts, greater revenues from service offerings as well as expanding its presence in export and civil markets. Externally, their core markets were also changing with many of their key customers beginning to look beyond their traditional industry partners to co-develop new innovative solutions to their challenges (InnovationXchange

65

UK Ltd., 2019; Ministry of Defence, 2020). Thales UK's Organising for Growth strategic changes are efforts to underpin the company's ambitious growth targets and respond to external pressure to innovate in its core markets.

In carrying out the transformation effort, Thales UK was restructured into 'Delivery' and 'Growth'. The Delivery part was tasked with delivering existing projects and programmes to the company's high quality standards and Growth was tasked with thinking more long-term to identify and shape new business opportunities. Key changes to improve the company's 'go-to-market' capability were the formation of a strategy and marketing function to improve the quality of market analysis, the RTI organisation to focus on disruptive innovation prospects, separate domestic and export sales teams to provide balanced focus on both domestic and export customers, a services lead to develop new service opportunities, as well as a bid and project management office and supply chain function to efficiently coordinate new opportunities. The Organising for Growth transformation comprised several cross-functional strategic changes to increase focus on future growth for the company.

Data collection

The first author participant observed as a full member of the organisation's newly formed RTI organisation during the company's Organising for Growth transformation. Thales UK employed the first author since October 2014 and invited her to join Thales UK Research, Technology and Innovation (RTI) in March 2015. This full engagement offered her the chance to experience the organisational change as well as observe and contribute directly to the company's change and innovation efforts from an insider perspective (Alvesson, 2009, p. 163; Emerson, Fretz, & Shaw, 2011, p. 2-3). The first author collected transformation-related documents (64), videos (22), and pictures (179) as well as attended transformation-related events (59). She also conducted 43 interviews including meetings with 16 corporate stakeholders leading the Organising for Growth change as well as 17 organisational members working on-the-ground in the newly formed RTI organisation and 10 core business stakeholders between September 2015 and April 2016 to capture their experiences of the changes. In the interviews

participants were asked to describe the company, the purpose of the Organising for Growth change, their experience of how the change had been implemented as well as their expectations of the change and future of the company. Please refer to Table 3-1 for a summary of our data corpus.

Table 3-1. Overview of transformation-releated data.

Documents		Videos		Pictures		Events attended		Interviews	
Internal	39	Internal	22	Internal	143	Internal	39	Organising for Growth leaders	10
External	15			External	36	External	20	RTI leaders	6
Historical	10							RTI on-the-ground	17
								Business units	10
Total	64	Total	22	Total	179	Total	59	Total	43

At the beginning of the study, the research sponsors announced publicly that the first author would be participant observing the company's change and innovation efforts. Participants were invited to take part in the study by an email that included the details of the first author's position in the company and the purpose of the research. Participants were selected according to their functional and hierarchical position in the organisation as well as their involvement with the change. The first author conducted all of the study interviews in private hub rooms at the organisation's various UK sites. The study participants were notified that their participation was voluntary and that they could withdraw at any time without consequence. The participants were assured that the data they provided was confidential and anonymous.

Data analysis

We used a processual inductive approach to grounded theory development to analyse the data corpus (Gioia, Corley, & Hamilton, 2012, p. 16). The interview recordings were transcribed verbatim and coded using NVivo qualitative data analysis software (QSR International Pty Ltd. Version 11.3.2, 2016). All of the data was coded in an inductive bottom up way so that the themes identified closely aligned with the data. Similar codes were clustered based on code co-occurrence and the first author's ethnographic impressions to generate first order concepts. The development of the emergent themes

was supported by the analysis of videos, documents, pictures and the first author's general observations. The concepts that emerged were discussed regularly with the second author who provided an outside perspective in the research team, until data saturation was confirmed (Gioia et al., 2012, p. 19). It was clear from the initial coding of the empirical material that the organisational members at Thales UK experienced tensions associated with the Organising for Growth change. Drawing on the literature, the first order concepts were organised into second order themes that described the salient tensions. In a final step we further abstracted the second order themes into aggregate dimensions based on our conceptual framework. Please refer to Table 3-2 for a Gioia tree summary of this analytical process.

Table 3-2. Gioia tree summary of analytical process.

Aggregate dimensions	*2nd order themes*	*1st order concepts*	
Shared understanding in conflict	**Organisation-creation tension**	**Characterisation of entrepreneurial and managerial forces**	
Shared goals	Prioritising a new future versus today's known deliverables	Entrepreneurial force	• Focus on the long-term • Doing things differently • Commit resources to innovation and change • Working in new markets with new customers
		Managerial force	• Focus on delivery and exploiting near-term opportunities • Uncertainty avoidance and low appetite for risk taking • Lack of commitment to innovation and change • Maintain profitability for survival
Shared competencies	Collaborative market proficiency versus technical and domain proficiency	Entrepreneurial force	• Customer and market oriented • Situational and commercial awareness • Collaborating across business and with external parties • Externally present
		Managerial force	• Engineering high quality technology products • Compliance with internal processes and governance • Achievement of individual domain targets • Operating within today's constraints
Shared materiality	Agile united operations versus rigid fragmentation	Entrepreneurial force	• Agile structure and processes to compete in fast-paced market • Clear future vision and alignment of activities • Dynamic and cohesive working environment • High-performance organisation
		Managerial force	• Inflexibility due to bureaucratic processes and project commitments • Fragmented and complex matrix organisational structure • Impersonal and divided workforce • Static and predictable organisation

Findings

Organisational members across the various functional and business areas at Thales UK described new desired ways of organising to fulfill the company's future growth aspirations that we characterise as entrepreneurial forces yet explained that these activities conflicted with institutionalised ways of doing things at the company that we characterise as managerial forces. We identify that these opposing entrepreneurial and managerial forces comprise three salient organisation-creation tensions at Thales UK: prioritising a new future versus today's known deliverables, collaborative market proficiency versus technical and domain proficiency, and agile united operations versus rigid fragmentation. We propose that these organisation-creation tensions correspond with conflicts that the organisational members experienced about shared understandings of their work – their shared goals, competencies and material aspects of the way the company is organised. These incongruities were a practical challenge for the company realising the Organising for Growth change.

Conflicting goals

During Thales UK's Organising for Growth transformation efforts the organisational members experienced conflicting entrepreneurial and managerial forces related to the company's priorities. The organisational members had a desire to focus on the long-term, do things differently and really commit resources to innovation and change. They were enthusiastic about the opportunity to work in new markets with new customers. But the established managerial practices at the organisation prioritised delivery and exploiting near-term opportunities. The company's risk-averse nature and focus on profitability prevented the organisation from being able to invest resources in innovation and change. These conflicting entrepreneurial and managerial forces caused priority dilemmas that the organisational members confronted on a daily basis in their work.

PRIORITISING A NEW FUTURE VERSUS TODAY'S KNOWN DELIVERABLES

TENSION

- Focus on delivery and exploiting near-term opportunities
- Uncertainty avoidance and low appetite for risk taking
- Lack of commitment to innovation and change
- Maintain profitability for survival

- Focus on the long-term
- Doing things differently
- Commit resources to innovation and change
- Working in new markets with new customers

The organisational members described that the Organising for Growth change required them to do things differently as a company to achieve their growth ambitions:

> *"if you don't make a change, you know you maintain a certain trajectory, or there are only certain things you can do in the system in terms of attacking the cost base. Ultimately, you've got to go and find new markets, you've got to go and find new ways of doing new solutions for new customers to deliver that growth."* – Liam (RTI Leadership)

And to remain competitive in the market:

> *"we're liable for disruption from competitors if some of them start to adjust and move in the sector in a more agile way in the future. So I think we are part of a core group that are very similar sets of competitors. Who are, when one wins a contract, then the other one wins, then the other one wins in sort of niche areas and we are all sharing work. It's a dangerous model if there is big disruption going on."*
> – Patrick (RTI Innovation Hub)

In doing things differently the company would embrace different methodologies and approaches to problem solving necessary to thrive in

today's modern business context. The company would be prioritising investment in disruptive step changes and trialing new ideas that may fail:

> *"it was recognised that we needed to be more innovative to keep up with our competitors. And bog standard engineering approaches weren't going to see us into the next decade of work. We have to become more flexible and do different things in different ways" – Max (RTI Innovation Hub)*

> *"new things happen when you lead, when you take risk, when you try new stuff, where you sort of you know you take that big step" – Noah (RTI Research & Technology)*

But in reality the organisational members explained that the company was risk averse and uncomfortable embracing different ways of operating:

> *"it's not a company that is very easy to sell innovation to, not for a lack of willing. I think just because the nature of the company is to, is to guard against risk, really. And when you've got a company whose whole focus and raison d'etre is to try and secure and be safe, actually trying to convince that company to do wacky and off the wall things, is hugely counterculture." – Will (RTI Strategic Growth Opportunities)*

> *"the model for success in the past is not necessarily the model of success for the future and I think some of our senior people find difficulty in terms of envisaging alternative models of success that are not risky for them and their business." – Emma (RTI Research & Technology)*

They explained that the company should make investment decisions based on a long-term view to drive future business success with dedicated resources to pursuing future growth opportunities and next generation product development:

"make sure we're devoting some of our thinking, some of our investment to something that is more medium and long-term, and something with innovation attached to it, so we do have products and services that differentiate themselves against the competitors." – Alan (Sales)

"they need to be willing to put money behind innovation and that comes in the form of people's time, buying bits of kit and stuff to experiment with, even schmoozing new customers and creating a good image" – Aaron (RTI Innovation Hub)

But this conflicted with the company's need to achieve its short-term financial objectives. The organisational members described that decisions were often based on delivering current projects profitably and achieving order intake targets rather than investing in long-term strategic activities:

"Thales has a very short-termist view of the world, so we have the multiyear budget, the two year view… and that creates a certain perspective and approach to life" – Guy (Services)

"their success is measured on what they are doing in that year. Are they profitable that year? So the longer, innovation takes time to come through and mature into something that is tangible. If it doesn't give that return in the first two years, then the interest level goes down, or that's too difficult, I've got to deliver my P&L [Profit and Loss] this year." – Robert (Strategy & Marketing)

The organisational members also described that the importance placed on short-term profits stifles the company's ability to commit to the development of longer-term innovation opportunities and creates lack of trust in senior leadership:

"You know when I used to work in Feranti, we had leaders in Feranti who recognised actually that this is the way. There was a clear vision of

where we needed to get to. These are the products that we need to develop. Right, where are we going to get the funding. Right, customer's got some funding here. We absolutely must do it, not worrying about making a 10% profit because we'll recover it in the future, but if you're not in the game. If you're not on the football pitch, you can't kick the ball, you know. And that's the difference. Whereas the Thales model is sort of talking about the innovation story but I still want the 10% profit." – Malcolm (Technical Directorate)

The organisational members also described that they need to proactively engage with customers early to influence their thinking and shape new business opportunities:

"the relationship with the customer should be strategic. We should be very close to them. We want to understand what their strategy is and what they are trying to achieve. Not necessarily this year or next year but perhaps in five years' time almost and how we help them to get there." – Guy (Services)

However, in reality the company tends to react to new business prospects too late to build strategic relationships with customers and partners and misses opportunities:

"A lot of our bidding effort often is chasing, not shaping. We don't necessarily spend enough money early on, investing time and effort to decide we're not going to bid something. What we do is we bid a lot of stuff and we lose a lot of stuff. So we waste either way, but it is better to waste it early as you waste less." – Sawyer (Bids & Programmes)

The organisational members dreamed of the company strategically moving into new markets and working with new customers including increasing sales of its capabilities in global export markets, growing its civil operations and creating entirely new business units as a result of the company's business development achievements:

"we will have new markets with new businesses doing new things and hopefully we will secure a future beyond where our historic traditional markets actually are." – Duncan (RTI Research & Technology)

"Export growth, services growth, and for the medium to long-term, have a lot more products and offerings that we can have for the global market in the years to come." – Alan (Sales)

But they described that the company had been maintaining its profitability by cutting costs as opposed to sustainable business development and that it could impact its ability to grow in the future:

"there was a challenge around back in 2010 where we were not making a profit, to where we are making a profit now, but that was done through a number of site closures and rationalisation of resources." – Austin (Human Resources)

"our turnover has not really grown in ten years. Our profitability has grown, so you can argue that we have cut costs and things like that… I would worry that we might not be expanding or growing in the areas we want to, because if you cut your cost base too much, you cut your ability to apply effort to grow." – Simon (RTI Leadership)

And if the company continued operating in this way it was at risk of needing to move into new markets to survive rather than strategically:

"particularly in a climate where some of our traditional markets are perhaps no longer accessible to the extent that they once were, competition is increasing, the budgets in those areas are declining… if you just put the focus on the operational efficiency and cutting costs and financial control, then you are in a position where you've got to move into new markets because you've got to create new products and solutions" – Terrance (Technical Directorate)

The organisational members experienced tensions in their everyday work related to their collective understanding of their shared goals. While the Organising for Growth vision implied they should prioritise opportunities for long-term growth, embrace different approaches, dedicate resources to innovation and change, and pursue work in new markets with new customers, they also felt pressure to deliver on their ongoing project commitments, mitigate risk, and maintain the organisation's profitability.

Conflicting competencies

The organisational members also experienced conflicting entrepreneurial and managerial forces in their day-to-day work related to the company's capabilities. They recognised that the Organising for Growth change required the organisation to be more customer and market focused and willing to collaborate across the company's diverse business areas and with external partners. It also required the delivery community to be situationally and commercially aware of their operating environment and actively participate in the marketplace. However, the organisation's core competence is to engineer high quality technology products and comply with bureaucratic processes and governance. It is used to operating within individual business domain constraints as opposed to collaboratively shaping new opportunities. These gaps in required competencies between the company's traditional and desired ways of working were also a practical challenge.

COLLABORATIVE MARKET PROFICIENCY VERSUS TECHNICAL AND DOMAIN PROFICIENCY
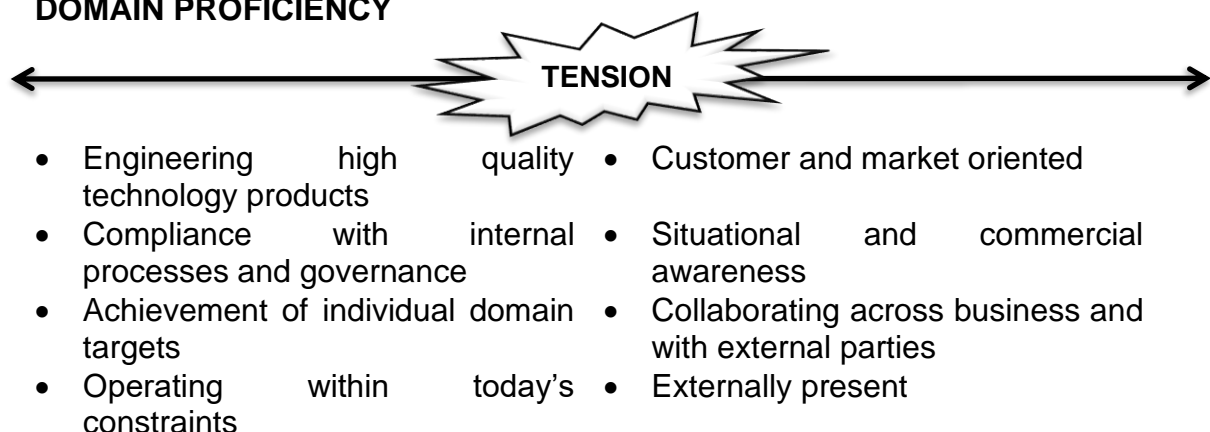
TENSION

- Engineering high quality technology products
- Compliance with internal processes and governance
- Achievement of individual domain targets
- Operating within today's constraints

- Customer and market oriented
- Situational and commercial awareness
- Collaborating across business and with external parties
- Externally present

The organisational members described that the Organising for Growth change required the company to be more outwardly focused, aware of external trends and connected with external industry partners to keep abreast of new developments and strategically shape new market opportunities:

> *"it should be more open and embedded with the supply chain and the customer community around it… we will be much more embedded in this whole kind of ecosystem of innovation and technology around us and not just Thales as a supplier with a set of offerings available it wants to sell. It's a contributor to the strategy of an entire market." – Jim (Technical Directorate)*

They explained that people at the company should be aware of the capability and operations in different business units in the UK and internationally and leverage the whole company capability to address customer needs:

> *"to think across business units or CBUs [Country Business Units] or sites, and thinking, particularly in the go to market, if someone is going to a capture with a customer, are they thinking not just thinking naval, but are they thinking about aerospace and thinking about the cyber offer" – Susan (Human Resources)*

They also explained that people in the company should be more commercially aware to identify profitable market opportunities and to develop commercial models for service contracts:

> *"there needs to be more commercial and market awareness in the engineering community… they need to have more business acumen and understanding that what they are doing has consequences on the profitability of the company." – Robert (Strategy & Marketing)*

> *"all the sales people that we hire from here on in, in normal course should be services sales people, not people who can sell product… We*

need more service solution architects, we need more commercial dealmakers. A lot of our commercial people are more legal than dealmakers, so we need more of those." – Guy (Services)

The organisational members further described that the company needs to be more collaborative working together across the country business domains, internationally and with external partners on transverse opportunities:

"The ability of joint working, of true joint collaborative working on some of these topics, breaking down some of the barriers that are there, working on the right projects… it really is sort of looking outwards rather than inwards and actually realising what you have to do to succeed" – Liam (RTI Leadership)

They also explained that the company needs to engage more frequently with its customers and co-create solutions with them through rapid prototyping and joint workshops:

"improving our ability to understand the customers needs through rapid prototyping, joint workshopping… get Thales and its customers together to rapidly prototype, even if they are just thought experiments, solutions to problem spaces to a) help us understand the customer's needs better b) perhaps to educate the customer about what they really want rather than what they think they want." – Lou (RTI Research & Technology)

The organisational members dreamed of the company having a strong external presence, being perceived as truly innovative in the market and an employer of choice:

"I'd like us to be seen as a great company to work for that uses innovation in its core businesses." – Max (RTI Innovation Hub)

"I'd like you know bright graduates coming out of university to be thinking of applying for jobs at Thales as one of their top two or three employers of choice… I'd like us to be up there with the top employers." – Cameron (RTI Innovation Hub)

But in reality the organisational members explained that predominantly operating in the defence sector the company has traditionally responded to preset customer requirements and not really had to innovate:

"we had a business model that worked very well in the 20th century. It's really important that we evolve one for the 21st century because customers are now expecting us to be innovative, imaginative, to come up with ideas to present to them in terms of solving their business problems rather than waiting for a specification of requirements from an ITT [Invitation-to-Tender]." – Emma (RTI Research & Technology)

"Its customer hasn't really been demanding innovation. It hasn't really had a focus on cost or keeping up to date with new developments." – Marshall (RTI Leadership)

The organisation is therefore skilled at developing high quality technology products based on their key customers' traditional procurement processes as opposed to speculative product development based on an understanding of the market needs:

"we are developing these great things but we're not necessarily developing them with a customer need in mind. We need to be better aware of what the market wants before we go and spend gazillions on designing something that the market might not want." – Guy (Services)

The organisational members described that the company is very technology and product focused and lacks market-facing skills:

"the business is entrenched in this product based selling, product design, product line management, product, product, product, product." – Guy (Services)

"we need to balance that techie capability with a lot more kind of strategic business development capability to understand how we can apply that to a customer, how we can explain it to them in a way that they actually care about" – Jim (Technical Directorate)

The organisational members also described that the company is very internally focused obsessed with organisational processes and governance. A process-driven fixed linear approach permeates the company that it tries to impose on the external world:

"most of the time that I spend in meetings in this company we are talking about internal parts, how we're organised or how we are going to handle practices or how we are going to do whatever. And the amount of time talking about customers and competitors is an order of magnitude less" – Jerry (RTI Leadership)

"we have a bit of a trend at the moment of being slightly inward facing and obsessed with process and governance… we try and explain to the outside world why they should comply with our way of thinking and our way of doing things." – Elias (Sales)

The organisational members also described that the business areas at the company have different priorities, different working practices, and are funded differently and therefore are not incentivised to collaborate:

"There is very, very little in this company that encourages people to think outside the CBU [Country Business Unit] constraints. There is very little that encourages people to collaborate, cooperate between CBUs [Country Business Units]… there is ultimately nothing in it for

> *CBUs [Country Business Units] to cooperate."* – Cameron (RTI Innovation Hub)

They explained that people at the company have to influence to get things done:

> *"the challenge is always trying to come up against that and influencing in a less combative fashion to try and make those organisations work more integratedly as Thales UK and also Thales Group rather than several silos"* – Austin (Human Resources)

The organisational members experienced conflicts in their shared understanding of their required competencies for their work. While the company's established ways of working required them to be capable at engineering high quality technology products, adeptly follow internal processes and governance, and meet their local business targets despite environmental constraints, the Organising for Growth change called for them to be much more externally oriented including being situationally and commercially aware and engaging with customer and market stakeholders.

Conflicting materiality
Conflicting entrepreneurial and managerial forces also manifested in the company's operational structure. In order to realise the Organising for Growth ambition the company structure and processes needed to be more agile and aligned to a clear strategic vision. The organisational members described that the company would be a high-performance organisation with a dynamic and cohesive working environment. However, managerial controls, including complex and fragmented reporting structures and processes for managing resources, caused the company to be inflexible and slow to embrace change. These opposing managerial and entrepreneurial forces caused tensions for the organisational members in their day-to-day work on an operational basis.

AGILE UNITED OPERATIONS VERSUS RIGID FRAGMENTATION

- Inflexibility due to bureaucratic processes and project commitments
- Fragmented and complex matrix organisational structure
- Impersonal and divided workforce
- Static and predictable organisation

- Agile structure and processes to compete in fast-paced market
- Clear future vision and alignment of activities
- Dynamic and cohesive working environment
- High-performance organisation

The organisational members described the company ideally as agile and innovative but in reality it is constrained by inter-politics and process:

> *"my sense is that it's strangling itself somewhat. It's holding itself back by having too much inter-politics, process and that's all driving up the price at the end of the day. So it's making it less competitive and it's pushing us away from our customers, um rather than drawing, you know if we were more agile and really proved to be innovative, I think we'd be moving in the right direction." – Aaron (RTI Innovation Hub)*

They dreamed of the organisation being fully integrated as a single organisation:

> *"making sure that we are working as efficiently as we can as a single organisation… making sure that we can flex ourselves to deploy where we need to be deployed in the most efficient way, with the right people, the right tool set, the right skills, the right competencies" – Sawyer (Bids & Programmes)*

But in reality the organisation is overly complex to effectively deliver:

> *"it is quite complex, probably overly complex. Due to the global presence of Thales, and the way that it's organised in its country*

business units, its business lines, its countries and its products and systems, you end up like a rubrics cube effect. You know, slicing it in almost too many ways. So that you have these people who are being pulled in too many directions to be able to effectively deliver." – Austin (Human Resources)

The organisational members described that the organisational complexity is a result of the way the company has grown from a series of acquisitions:

"It is an octopus of more tentacles than it knows that it has… because Thales has grown by acquisition, mostly, so every time it buys a new company, it effectively has bought a new tentacle, but that tentacle has its own brains. It has you know its own structure and it likes doing things the way it likes doing things, and it doesn't really want to listen to the central brain that is saying 'right you're a part of Thales now and this is the way you need to be working.' And if you buy enough of those, there's never enough resource centrally to ensure that everybody is actually doing things the Thales way". – Nancy (Engineering)

The organisational members described that ideally the company would be a high performing and fun place to work:

"I like innovative, creative environments because that's the sort of person I am. So it will infinitely improve, you know the sort of workplace experience for me by offering opportunities to work closely with other people. I love working with other people particularly those as clever, that sort of think out of the box and come up with new ideas, and are enthusiastic and energised, so that will be great. You know, we can actually have some fun here as well as make money." – Emma (RTI Research & Technology)

But they explained that in reality people at the organisation are bogged down in bureaucratic processes and traditional ways of doing things:

"we do some incredible things all around the world and the UK, but we are stifled by process, backwards thinking, old fashioned thinking and the thoughts of we've never done it that way before, so we can't do it that way in the future." – Max (RTI Innovation Hub)

The organisational members also explained that the company would perform better if it took a more personal approach to managing the business:

"At a conceptual level there is a massive overlap in what we do. It's just the applications are different. We then decide to pigeonhole these applications in things that we call CBUs [Country Business Units] rather than focusing on the skills of the people and their expertise, we focus on the end of that process rather than the core people… as a company we have to address and stop focusing so much on the end product and the product lines and things and more on our deep understanding of some really clever bits of technology and have a better way of quickly bringing the right bits of technology to bear on existing or new problems." – Cameron (RTI Innovation Hub)

They further described that the company is very slow to change and did not expect it to look very different in the future:

"The pace of change here is three or four times slower than comparable sized companies I have worked in, in my view." – Jerry (RTI Leadership)

"we tend to not generate growth easily from the existing businesses. We tend to have a legacy business, built using legacy capabilities and build on that but not really easily expanding out" – Paul (RTI Innovation Hub)

"I don't think it would look very different in five years' time, because I still don't believe the ambition is there as much as it should be to change." – Duncan (RTI Research & Technology)

The organisational members also experienced inconsistencies related to material aspects of their work. In order to achieve the Organising for Growth vision the organisational members described that the company needs an agile and aligned structure and associated processes as well as be a dynamic and high-performance working environment. However, the company's traditional structure and processes were inflexible and fragmented, and the company culture was divided and slow to change.

Discussion

Our research explores the micro-social happenings of how organising for disruptive innovation creates tensions for a leading organisation. Our research responds to a lack of engagement in current disruptive innovation research in understanding how organisational tensions arising from established organisations' disruptive innovation efforts manifest in everyday work life. We investigated tensions arising from Thales UK's Organising for Growth transformational change programme that specifically aimed to respond to disruptive market changes. Our research sheds light on how the company's efforts to organise for disruptive innovation interrupted established managerial practices at the organisation. We characterise opposing entrepreneurial and managerial forces underlying three salient organisation-creation tensions related to organisational members' shared understanding of their goals, competencies and material setup of the company. We present a framework based on our study findings for how the becoming of new ways of organising for disruptive innovation practically challenge established ways of working in an incumbent organisation.

Our research shows three everyday organisation-creation tensions arising from Thales UK's efforts to organise for disruptive innovation: prioritising a new future versus today's known deliverables, collaborative market proficiency versus technical and domain proficiency, and agile united

operations versus rigid fragmentation. The conflicts organisational members at Thales UK experienced in dedicating efforts to disruptive changes in light of financial expectations and risk aversion to testing alternative approaches resonates with resource allocation and perceived incentives tensions described in the disruptive innovation literature (Christensen & Bower, 1996, p. 207-209; Christensen & Overdorf, 2000, p. 70-71; Denning 2012. p. 9). Struggles the organisational members confronted in becoming more outwardly focused and externally aware when the company was entrenched in serving its established markets aligns with cognitive structure tensions illustrated in past research (Danneels, 2003, p. 572; Govindarajan & Kopalle, 2006, p. 16; Henderson & Clark, 1990, p. 15-16; Levinthal, 1997, p. 949; Slater & Mohr, 2006, p. 30-31). The material inconsistencies organisational members experienced in their everyday work such as the need for agility and unity in a context of bureaucratic processes and divergent business operations fits with organisational structure and routine tensions shown in previous research (Hannan & Freeman, 1984, p. 149; Henderson, 2006, p. 9; Henderson & Clark, 1990, p. 17-18; Tripsas, 1997, p. 131-132; Tripsas & Gavetti, 2000, p. 1147). Thales UK's efforts to organise for disruptive innovation triggered everyday organisation-creation tensions that resonate with key themes depicted in the disruptive innovation literature.

The everyday organisation-creation tensions we identify in our research are predicated in opposing managerial and entrepreneurial forces at Thales UK. Managerial forces designed to enact an organisation's existing vision of the future as efficiently as possible reinforced focus on near-term known deliverables, requirements for technical and domain proficiency, and structural and routine rigidities and fragmentation (Hjorth, 2003; Hjorth, 2012, p. 5-6). The established managerial ways of working at Thales UK were guided by organisational actors' implicit understandings about how they should act based on their past experiences of their own and other actors' doings at the company (Hjorth, 2004, p. 416; Schatzki et al., 2001, p. 54-55, 74). On the other hand, entrepreneurial forces inspired new ways of organising that departed from customary ways of doing things at the organisation such as exploring alternative possible futures for the company, collaboratively

engaging with external market stakeholders, and embracing agile and cohesive operations (Hjorth, 2003; Hjorth, 2014, p. 102). Rather than abide by the company's unconscious and taken-for-granted routines that uphold the company's existing institutionalised order, entrepreneuring processes are new paths of creative action that imbue new ways of working in established organisations (Hjorth, 2003; Hjorth, 2014, p. 102; Schatzki et al., 2001, p. 45-46, 74). The everyday organisation-creation tensions arising from Thales UK's efforts to organise for disruptive innovation are instantiated in frictions between managerial and entrepreneurial forces.

Our findings show how these frictions are rooted in practical challenges in organisational members' shared understanding of their goals, competencies and material setup of the company. The entrepreneuring processes that spurred new ways of organising for disruptive innovation at Thales UK required new boundaries of legitimate practice to be authored, new competencies to be negotiated, and the adaptation of existing materiality (Bjørkeng et al., 2009, p. 149; Hjorth, 2014, p. 102). The organisational members' shared understanding of their goals was contended by the entrepreneurial forces thrusting legitimation of activities that prioritised a new future over today's known deliverables. The organisational members' shared understanding of their competencies was challenged by the entrepreneurial processes forcing development of market-facing and collaborative abilities as opposed to technical and domain proficiencies. The organisational members' shared understanding of the material setup of the organisation was contested by the entrepreneuring processes pursuing agile united operations that departed from the company's traditional rigid and fragmented structural and routine arrangements. The becoming of new ways of organising for disruptive innovation resulting from the entrepreneuring processes practically challenged shared understandings of the conduct of work at Thales UK.

We illustrate conflicting entrepreneurial and managerial forces underlying three salient organisation-creation tensions related to organisational members' shared understanding of their goals, competencies and material setup of the company resulting from an incumbent organisation's efforts to

organise for disruptive innovation. We associate these micro-social happenings with themes depicted in past studies of incumbent organisation's disruptive innovation efforts. We present the below process model to represent our research findings. The model shows how the becoming of new ways of organising for disruptive innovation practically challenge established ways of working in an incumbent organisation in everyday work life.

Figure 3.1. Everyday organisation-creation tensions arising from an incumbent organisation's efforts to organise for disruptive innovation.

Contributions and Conclusion

Our study provides a detailed ethnographic account of the micro-social happenings of how organising for disruptive innovation creates tensions for an incumbent organisation. Our findings complement extant disruptive innovation research that has only explored tensions arising from incumbents' disruptive innovation efforts at an organisational level of analysis. While these studies highlight key challenges that established organisations confront in organising for disruptive innovation, we show how in everyday work life these tensions are predicated in opposing managerial and entrepreneurial forces related to organisational members' shared understanding of their goals, competencies and material setup of the company. We provide an illustrative framework of how the becoming of new ways of organising for disruptive innovation practically challenge established ways of working in an incumbent organisation. Our research contributes to advance knowledge of disruptive innovation, organisation-creation and practice research in organisations.

We contribute to the disruptive innovation literature a contextualised perspective of tensions arising from incumbent organisations' disruptive innovation efforts. Extant research focuses on understanding these challenges at the organisational level. Our research complements these existing studies by showing how they relate to everyday organisation-creation tensions resulting from the becoming of new ways of organising for disruptive innovation in established organisations. We illustrate that the becoming of new ways of organising for disruptive innovation cause frictions between opposing entrepreneurial and managerial forces that practically challenge organisational members' shared understanding of their goals, competencies and material aspects of established ways of working in incumbent organisations. We expand the debate on how disruptive innovation efforts create tensions for leading organisations by exploring how these frictions manifest in everyday work life between established and new ways of working for disruptive innovation.

We add to organisation-creation research an understanding of tensions arising from an incumbent organisation's efforts to organise for disruptive innovation. Current organisation-creation research lacks an understanding of how new ways of organising from entrepreneuring processes create frictions with previously organised arrangements. We shed light on specific organisation-creation tensions arising from a leading company's efforts to organise for disruptive innovation. Furthermore, we show how everyday tensions from the emergence of new ways of organising for disruptive innovation relate to the essential mechanisms of becoming a practice. We open discussion of practical tensions arising from organisation-creation processes, particularly within the context of organising for disruptive innovation in an incumbent organisation.

We also contribute to practice research by exploring how the essential mechanisms of a becoming practice generate tensions with established ways of working in the context of an incumbent organisation organising for disruptive innovation. Becoming a practice studies focus on the novel patterns

of interaction that new emergent practices come into being over time. We expand this research by looking into how the essential mechanisms of a becoming practice challenge established working practices in the context that new ways of organising are emerging from within. In our case we show how the emergence of new ways of organising for disruptive innovation challenge organisational members' shared understanding of their goals, competencies and material aspects of established ways of working in incumbent organisations. Our research highlights that becoming practices emerge within the context of already established practices and this creates frictions related to the essential mechanisms of a becoming practice.

We chose an ethnographic case study research design to illuminate the micro-social happenings of how organising for disruptive innovation creates tensions for an incumbent organisation. While this research design enables detailed study of these processes in a situated setting, our contextualised description is specific to Thales UK. Further research is needed to test our depiction of organisation-creation tensions arising from a leading organisation's efforts to organise for disruptive innovation. For instance, if other organisation-creation tensions are salient in other settings, what managerial and entrepreneurial forces comprise them, and how they challenge organisational members' shared understandings of their work. Further research could also explore how organisational actors deal with these tensions in their daily work over time. Our research supports further exploration of the micro-social happenings of how organising for disruptive innovation creates tensions for an established organisation. In adopting this approach we uncovered important nuances of how these frictions manifest in everyday work life between established and new ways of working for disruptive innovation in leading organisations that could not be detected from an organisational level analysis. Further research could usefully build on our research by using an organisation-creation perspective to further explore how tensions arising from incumbent organisations' disruptive innovation efforts manifest in everyday work life.

References

Adner, R. (2002). When are technologies disruptive? A demand-based view of the emergence of competition. *Strategic Management Journal*, 23(8), 667-688.

Afuah, A. (2000). How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, 21(3), 387-404.

Alvesson, M. (2009). At-home ethnography: Struggling with closeness and closure. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 156-174). London: Sage.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016). Special issue call for papers: Managing in the age of disruptions. *Journal of Management Studies*. Retrieved from http://www.socadms.org.uk/wp-content/uploads/JMS-Managing-in-the-Age-of-Disruption-Call-for-Papers.pdf.

Bjørkeng, K., & Clegg, S. (2010). Becoming DragonBankers: Constructing practice through processes of socially situated learning. *Society and Business Review*, 5(1), 48-65.

Bjørkeng, K., Clegg, S., & Pitsis, T. (2009). Becoming (a) practice. *Management Learning*, 40(2), 145-159.

Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. *Journal of Marketing*, 64(3), 1-17.

Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529-555.

Christensen, C. M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail*. Boston: Harvard Business School Press.

Christensen, C. M., & Bower, J. L. (1996). Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal*, 17(3), 197-218.

Christensen, C. M., & Overdorf, M. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, 78(2), 66-76.

Christensen, C. M., & Raynor, M. E. (2003). *The innovator's solution: Creating and sustaining successful growth.* Boston: Harvard Business School Press.

Conner, K. R. (1988). Strategies for product cannibalism. *Strategic Management Journal*, 9, 9-26.

Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). Unpacking the disruption process: New technology, business models, and incumbent adaptation. *Journal of Management Studies*, 55(7), 1166-1202.

Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic Management Journal*, 23(12), 1095-1121.

Danneels, E. (2003). Tight-loose coupling with customers: The enactment of customer orientation. *Strategic Management Journal*, 24(6), 559-576.

Danneels, E. (2004). Disruptive technology reconsidered: A critique and research agenda. *Journal of Product Innovation Management*, 21, 246-258.

Denning, S. (2005). Why the best and brightest approaches don't solve the innovation paradox. *Strategy & Leadership*, 33(1), 4-11.

Denning, S. (2012). The battle to counter disruptive competition: Continuous innovation vs. "good" management. *Strategy & Leadership*, 40(4), 4-11.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes* (2nd ed.). Chicago: University of Chicago Press.

Feldman, M. S., & Orlikowski, W. J. (2011). Theorizing practice and practicing theory. *Organization Science*, 22(5), 1240-1253.

Gilbert, C. G. (2005). Unbundling the structure of inertia: Resource versus routine rigidity. *The Academy of Management Journal*, 48(5), 741-763.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15-31.

Govindarajan, V., & Kopalle, P. R. (2006). The usefulness of measuring disruptiveness of innovations ex post in making ex ante predictions. *Journal of Product Innovation Management*, 23(1), 12-18.

Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American Sociological Review*, 49(2), 149-164.

Henderson, R. (2006). The innovator's dilemma as a problem of organizational competence. *Journal of Product Innovation Management*, 23(1), 5-11.

Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly,* 35(1), 9-30.

Hill, C. W., & Rothaermel, F. T. (2003). The performance of incumbent firms in the face of radical technological innovation. *Academy of Management Review*, 28(2), 257-274.

Hjorth, D. (2003). *Rewriting entrepreneurship - For a new perspective on organisational creativity*. Malmö: Liber.

Hjorth, D. (2004). Creating space for play/invention – concepts of space and organizational entrepreneurship. *Entrepreneurship & Regional Development*, 16(5), 413-432.

Hjorth, D. (2005). Organizational entrepreneurship: With de Certeau on creating heterotopias (or spaces for play). *Journal of Management Inquiry*, 14(4), 386-398.

Hjorth, D. (2012). *Handbook on organisational entrepreneurship*. Cheltenham: Edward Elgar.

Hjorth, D. (2014). Entrepreneuring as organisation-creation. In R. Sternberg, & G. Krauss (Eds.), *Handbook of research on entrepreneurship and creativity* (pp. 97-121). Cheltenham: Edward Elgar.

Hjorth, D., & Reay, T. (2018). Special issue call for papers: Organizational and institutional entrepreneuring: Processes and practices of creating in an organized world. *Organization Studies*. Retrieved from http://entrepreneuriat.com/wp-content/uploads/2018/11/SI-Entrepreneuring-Final-November-18.pdf.

Holmquist. C. (2003). Is the medium really the message? Moving perspective from the entrepreneurial actor to the entrepreneurial action. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 73-85). Cheltenham: Edward Elgar.

InnovationXchange UK Ltd. (2019). *How the rail industry is seizing innovation*. Retrieved from https://www.ixc-uk.com/How_the_Rail_Industry_is_Seizing_Innovation--post--68.html.

Johnson, G. (1988). Rethinking incrementalism. *Strategic Management Journal*, 9(1), 75-91.

King, A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MIT Sloan Management Review,* 57(1), 77-90.

Leonard-Barton, D. (1992). Core capabilities and core rigidities: a paradox in managing new product development. *Strategic Management Journal*, 13, 111-125.

Lepore, J. (2014). The disruption machine: What the gospel of innovation gets wrong. *The New Yorker,* May 23.

Levinthal, D. (1997). Adaption on rugged landscapes. *Management Science*, 43(7), 934-950.

Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14, 95-112.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.

Markides, C. (2006). Disruptive innovation: In need of a better theory. *Journal of Product Innovation Management*, 23, 19-25.

Miettinen, R., Samra-Fredericks, D., & Yanow, D. (2009). Re-turn to practice: An introductory essay. *Organization Studies*, 30(12), 1309-1327.

Ministry of Defence (2020). *Procurement at MoD.* Retrieved from https://www.gov.uk/government/organisations/ministry-of-defence/about/procurement.

Nicolini, D. (2012). *Practice theory, work, and organization*. Oxford: Oxford University Press.

Reinganum, J. F. (1983). Uncertain innovation and the persistence of monopoly. *The American Economic Review*, 73(4), 741-748.

Rosenbloom, R. S., & Christensen, C. M. (1994). Technological discontinuities, organizational capabilities, and strategic commitments. In G. Dosi, D. J. Teece, & J. Chytry (Eds.), *Technology, organization and competitiveness: Perspectives on industrial and corporate change* (pp. 655-685). Oxford: Oxford University Press.

Schatzki, T. R., Cetina, K. K., & von Savigny, E. (2001). *The practice turn in contemporary theory*. London: Routledge.

Slater, S. F., & Mohr, J. J. (2006). Successful development and commercialization of technological innovation: Insights based on strategy type. *Journal of Product Innovation Management*, 23(1), 26-33.

Sood, A., & Tellis, G. J. (2011). Demystifying disruption: A new model for understanding and predicting disruptive technologies. *Marketing Science*, 30(2), 339-354.

Steyaert, C. 2007. 'Entrepreneuring' as a conceptual attractor? A review of process theories in 20 years of entrepreneurship studies. *Entrepreneurship & Regional Development* 19(6), 453–477.

Tellis, G. J. (2006). Disruptive technology or visionary leadership? *Journal of Product Innovation,* 23, 34-38.

Thales Group (2020a). *Thales Group overview*. Retrieved from https://www.thalesgroup.com/sites/default/files/database/document/2020-01/Thales_Group_overview_EN_EX-02012019.pdf.

Thales Group (2020b). *About Thales in the UK*. Retrieved from https://www.thalesgroup.com/en/countries/europe/united-kingdom.

Tripsas, M. (1997). Unraveling the process of creative destruction: Complementary assets and incumbent survival in the typesetter industry. *Strategic Management Journal*, 18, 119-142.

Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal*, 21, 1147-1161.

Tushman, M. L., & O'Reilly, C. A. (1996). Ambidextrous organizations: Managing evolutionary and revolutionary change. *California Management Review*, 38(4), 8-30.

van Marrewijk, A., Veenswijk, M., & Clegg, S. (2014). Changing collaborative practices through cultural interventions. *Building Research & Information*, 42(3), 330-342.

Yu, D., & Hang, C. C. (2010). A reflective review of disruptive innovation theory. *International Journal of Management Review*, 12(4), 435-452.

In the last chapter I showed how the becoming of new ways of organising for disruptive innovation practically challenge classical management practices at Thales UK. Appreciating these tensions, this chapter explores how organisational actors interface with established managerial practices and processes in their everyday efforts to entrepreneurially create disruptive opportunities within the constraints of an incumbent organisation. In recent years an Entrepreneurship-as-Practice (EaP) research community has emerged that is concerned with studying entrepreneurship from a practice perspective. Viewing entrepreneurship as a social practice breaks from methodological individualism that dominates entrepreneurship research and focuses on concrete actions central to the process of entrepreneuring (Johannisson, 2011, p. 136; Steyaert, 2007, p. 468). Rooted in a contemporary understanding of practice – a way of knowing of 'how to get things done' in complex settings – this research community is interested in the routinised ways that entrepreneurs move their bodies, handle objects, interact with others, perceive their world, and explain things (Teague, Tunstall, Champenois, & Gartner, 2018). Many scholars have made promising in-roads to enhance our understanding of entrepreneurship drawing on practice theory (Thompson & Byrne, 2020, p. 35-37). Considering entrepreneurship as a social practice, I explore the everyday performative efforts of organisational actors working on the entrepreneurial creation of disruptive opportunities at Thales UK as incumbent organisation.

Organisation-creation theory highlights that new ways of organising emerge within tactically created spaces for play embedded within organisations' established managerial arrangements. Prevailing managerial practices in organisations are carried out by organisational actors self-regulating their behavior according to what is constructed as proper to do (Hjorth, 2004, p. 416). Driven by desire rather than short-term economic interest, passionate and playful organisational actors carry out entrepreneuring tactics in everyday organisational life that circumvent disciplinary managerial forces imposed on them by organisational structures (Hjorth, 2003). In locally withdrawing from the reigning managerial order, these microscopic acts of resistance create spaces for play that are within the space of but also depart from strategically

imposed places in organisations where imagination, creativity and innovation can be safely unleashed (Hjorth, 2004, p. 420, Hjorth, 2005, p. 392). These in-between spaces within the cracks in surveillance of institutionalised disciplinary mechanisms provide organisational actors the opportunity to develop new ways of working by experimenting with what could be beyond prescribed managerial practices (Hjorth, 2003; Hjorth, 2004, p. 429; Hjorth, 2014, p. 103-104). In this chapter the notion of entrepreneuring tactics from organisation-creation theory is foregrounded to explore the everyday performative efforts of organising for disruptive innovation in the already organised context of an incumbent organisation.[2]

---

[2] I presented a first draft of this paper at the 2016 European Group for Organization Studies (EGOS) conference in the sub-theme 'The Power of Creativity' in July 2016. I incorporated feedback that I received during the conference presentation to further develop the paper for submission to a Special Issue call in the Journal of Management Studies (JMS) 'Managing in the Age of Disruptions' in December 2016. I also submitted the revised manuscript to the 2017 Academy of Management (AoM) conference Entrepreneurship division in August 2017. It was selected as a best paper in the Entrepreneurship division and an abridged version of the manuscript was published in the 2017 AoM Conference Proceedings. Although the paper was not invited for further development for the Journal of Management Studies Special Issue publication, I received valuable feedback from the journal (and AoM) peer-review process to significantly improve the paper. Iterations of this paper were discussed at the 2018 and 2019 Entrepreneurship-as-Practice (EAP) conference paper development workshops in April 2018 and 2019. As part of the 2019 EAP conference, the paper was selected for a paper development workshop for a Special Issue call in the journal Organization Studies (OS) 'Organizational and Institutional Entrepreneuring: Processes and Practices of Creating in an Organized World.' Incorporating feedback from this event a revised version of this manuscript was submitted to this OS Special Issue call in May 2019. I presented this revised version of this paper at the 2019 EGOS conference in the sub-theme 'Managing in the Age of Disruptions' in July 2019. This paper is currently in second round review for the OS Special Issue publication.

Chapter 4

Organisation-creation tactics: The everyday performative efforts of entrepreneurially creating disruptive opportunities in an incumbent organisation

Abstract

Disruptive innovation research focuses on how incumbent organisations can overcome managerial practices to respond to external threats of disruption at a strategic level, neglecting the possibility that new ways of organising for disruptive innovation can emerge from within these constraints. We explore how disruptive opportunities can be entrepreneurially created within the constraints of an incumbent organisation from an organisation-creation perspective. In a longitudinal ethnographic case study we followed for three years the entrepreneuring processes on six potentially disruptive innovation projects as they unfolded at Thales UK, a leading multinational technology organisation. We illuminate how project actors deployed six entrepreneuring tactics on an ongoing basis using the established managerial arrangement to develop disruptive opportunities within tactically created 'spaces for play'. We show how these entrepreneuring tactics are foregrounded differently during three distinct stages of development of the spaces for play to open and maintain them over time. Our results reveal how disruptive innovation processes can develop alongside core business operations in the margins of managerial practices in established organisations. We further illustrate how organisation-creation for disruptive innovation is achieved in the already organised context of an incumbent organisation using multiple different innovation practices together.

Introduction

In the age of disruptions, 'fundamental changes that disturb or re-order the ways in which organisations and ecosystems operate' (Ansari, Garud, & Kumaraswamy, 2016, p. 1), leading organisations need to embrace disruptive innovation processes to maintain their competitive advantage. Disruptive innovation scholars have focused so far on understanding how identified incumbent organisational constraints such as resource allocation and perceived incentives, cognitive structure, and organisational structure and routines inhibit the development of disruptive innovation (Chandy & Tellis, 2000, p. 3; Hill & Rothaermel, 2003, p. 259-262; Yu & Hang, 2010, p. 441-443) and on how those constraints can be overcome through strategy formulation and managerial initiatives (e.g. Christensen & Raynor, 2003, p. 203, 229-230; Govindarajan & Kopalle, 2006, p. 16-17; Markides, 2006, p. 24; Wagner, 2016, p. 987; Wan, Williamson, & Yin, 2015, p. 101-102). While this body of research is informative, it does not consider how disruptive innovation potential can be generated from within incumbent organisations in everyday work life. Our research addresses this gap by exploring how disruptive opportunities can be entrepreneurially created within the constraints of a leading organisation using an organisation-creation perspective.

We understand organisation-creation as the development of new ways of organising that create new value for organisations through entrepreneneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). In using this perspective, we aim to expand the current research focus on incumbent organisations' strategic responses to threat of disruption informed by market-based logics and add a focus on their everyday performative efforts to organise for disruptive innovation. We build on an emergent stream of research that conceptualises disruptive innovation as an ongoing and emergent process and consider that disruptive innovation should be also understood performatively rather than defined exclusively by its end outcome (Garud, Gehman, & Tharchen, 2018, p. 502; Kumaraswamy, Garud, & Ansari, 2018, p. 1033; Petzold, Landinez, & Baaken, 2019, p. 166-167). We add to this emergent stream of research a perspective on disruptive innovation as an unfolding entrepreneuring journey of organisation-creation.

Our study takes place at Thales UK, the UK subsidiary of the leading multinational technology organisation Thales Group. Using a longitudinal ethnographic case study research design we followed the development of six potentially disruptive innovation projects on-the-ground as they unfolded at Thales UK. The first author participant observed as a full member of the Thales UK Research, Technology and Innovation (RTI) team. She collected project documents (52), videos (4) and pictures (129) as well as attended project-related meetings and events (87). She also conducted in-depth interviews (68) with organisational actors working to progress the projects as well as other members of the organisation involved in the projects, collected diary accounts (36) from members of the RTI team as well as kept a diary of her own day-to-day experiences. The rich ethnographic data corpus enabled us to examine in detail the everyday efforts in entrepreneurially organising for disruptive innovation within the context of Thales as incumbent organisation.

Our processual practice-based analysis shows how the project actors used the established organisational arrangement at Thales UK to develop their potentially disruptive innovation projects within 'spaces for play': openings generated in everyday working practices that are within the space of but also depart from prescribed managerial practices in established organisations. Drawing on previous studies of everyday innovation practices in established organisations, we identify six everyday entrepreneuring tactics project actors deploy on an ongoing basis to open and maintain these spaces for play. The project teams creatively consumed managerial practices at the company for *creating spaces for imagination* – cultivating internal sponsorship support for new and different ways of doing things, *structuring* – establishing basic structure for project activities, *engaging with the market* – developing and testing ideas with customer and market stakeholders, *making do* – creatively using resources at hand and improvising in response to unexpected occurrences, *creating common interests* – expending political and practical effort to transmit transformational ideas to diverse stakeholder communities, and *working on the self* – constantly self-reflecting and adjusting activities based on learning from experience. The six identified entrepreneuring tactics

are foregrounded differently during three distinct stages of development of the spaces for play: *mobilisation* – moments of legitimisation, *exploration and testing* – moments of developing new understandings, and *convergence* – moments of consolidation and feedback.

Our results illuminate how disruptive opportunities can develop within spaces for play embedded within the reigning managerial structure of a leading organisation that could not be seen from a strategic level perspective. We add to disruptive innovation research understanding of how disruptive opportunities can be entrepreneurially developed at the margins of established managerial practices in incumbent organisations that has not been considered in past studies of disruptive innovation. We further illustrate how established organisational advantages are leveraged in everyday work life to entrepreneurially create disruptive opportunities from within incumbent organisations. We also advance understanding of how organisation-creation for disruptive innovation is achieved in the already organised context of a leading organisation. We further contribute to innovation practice research an understanding of how arrays of innovation practices are collectively used in everyday disruptive innovation efforts in an incumbent organisation.

The article is structured as follows. We begin by reviewing the dominant approach to exploring disruptive innovation in incumbent organisations and the benefits of looking into organisational actors' everyday efforts to organise for disruptive innovation using a performative approach. We then consider these efforts as an unfolding entrepreneuring journey of organisation-creation and theorise how disruptive opportunities can be entrepreneurially developed within spaces for play at the margins of established managerial practices in incumbent organisations. We then introduce our case study and research method. Finally, we present our findings and conclude with a discussion of our results and study contributions.

Strategic Level Responses to 'the Incumbent's Curse'

The classical evolutionary perspective of disruption (Kumaraswamy et al., 2018, p. 1026) has framed our understanding of the emergence of disruptive

innovation processes: new products, services, and business models that create new markets and re-shape existing ones (Christensen & Raynor, 2003, p. 51). This model describes two types of innovations in established markets: sustaining innovations that advance the performance of existing products for established customers and disruptive innovations that are simpler, cheaper and contain novel features compared to their mainstream equivalents (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). New disruptive innovations tend to be ignored by the majority because they initially offer poorer performance than existing products but are adopted by customers on the fringe who are looking for affordable alternatives (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). Disruptive innovations gain momentum in the market by delivering to these overlooked segments and outperform mainstream products offered by market leading incumbent organisations in the long-term (Christensen, 1997, p. xvi; Christensen & Raynor, 2003, p. 34). Established organisations tend to miss the application of new disruptive innovations as they innovate around their existing customer needs following good management practices and ultimately their established business is disrupted (Christensen, 1997, p. xvii; Christensen & Raynor, 2003, p. 33-34). While there is some debate about the foundations of the Disruptive Innovation Model (e.g. Danneels, 2004, p. 257; King & Baatartogtokh, 2015, p. 78; Lepore, 2014; Markides, 2006, p. 19; Sood & Tellis, 2011, p. 339-340; Tellis, 2006, p. 34), it has strongly influenced perception of disruptive innovation as an opportunity for new market entrants and an external threat for incumbent organisations.

This mainstream perspective has framed how disruptive innovation has been explored in incumbent organisations. Established organisations are portrayed as inhibited by rigid managerial practices, geared up to reap benefits from delivering established products and services to existing customers, whereas small start-ups and new market entrants are seen as better able to pursue disruptive opportunities because they are agile and less wedded to current constraints (Christensen, 1997, p. xvii; Christensen & Overdorf, 2000, p. 70; Christensen & Raynor, 2003, p. 34-35; Denning, 2012, p. 4). Extant research shows that incumbent organisations' management constraints are related to

their resource allocation and perceived incentives, cognitive structure, and organisational structure and routines (Chandy & Tellis, 2000, p. 3; Hill & Rothaermel, 2003, p. 259-262; Yu & Hang, 2010, p. 441-443). When it comes to investment decisions, it is a challenge for decision-makers in leading organisations to allocate resources to risky new projects that risk cannibalising their core business in known value networks or the company is ill-equipped to exploit (Christensen & Overdorf, 2000, p. 68; Danneels, 2002, p. 1097; Rosenbloom & Christensen, 1994, p. 665). Established organisations also struggle to trade-off exploitation gains needed to develop an understanding of emerging customer needs in remote and future markets (Danneels, 2003, p. 572; Govindarajan & Kopalle, 2006, p. 16; Levinthal, 1997, p. 949; Slater & Mohr, 2006, p. 30-31) and have to confront rigid organisational processes and management layers (Christensen & Raynor, 2003, p. 33-34; Hannan & Freeman, 1984, p. 149; Henderson, 2006, p. 9; Henderson & Clark, 1990, p. 17-18; Tripsas & Gavetti, 2000, p. 1158-1159). Extant research presents managerial practices as a constraint for incumbent organisations to foster disruptive innovation processes.

Acknowledging these constraints, disruptive innovation research focuses on how incumbent organisations can overcome managerial constraints to respond to threat of disruption at a strategic level. Studies have looked at how leading organisations can on the one hand strategically intervene in their established business practices to enable disruptive innovation processes by adapting their strategy to develop market-facing competence (e.g. Govindarajan & Kopalle, 2006, p. 16-17; Markides, 2006, p. 24; Slater & Mohr, 2006, p. 30; Tellis, 2006, p. 38), or remedy disruptions through acquisitions (Wagner, 2016, p. 987), and/or changing the firm's structure such as their research and development processes and incentive plans (e.g. Govindarajan & Kopalle, 2006, p. 16; Wan et al., 2015, p. 101-102), their business model (Cozzolino, Verona, & Rothaermel, 2018, p. 1167) and their ability to allow and manage internal capability misalignment (Khanagha, Zadeh, Mihalache, & Volberda, 2018, p. 1081). Other strategies all together avoid the constraints of established business practices suggesting that incumbent organisations form separate teams and funding buckets at corporate level, invest in external

incubators and start-ups, leverage collaborations, or enable spin offs to foster disruptive innovations separate from their core business operations (Campbell, Birkinshaw, & Morrison, 2003, p. 30; Chao & Kavadias, 2007, p. 908-909; Christensen & Raynor, 2003, p. 203; Claude-Gaudillat & Quélin, 2006, p. 175; Macher & Richman, 2004, p. 19). Current disruptive innovation research focuses on how managerial constraints in established organisations can be overcome through managerial initiatives and strategy formulation.

While these studies offer important insights for how incumbent organisations can respond to threat of disruption at a strategic level, the research has so far overlooked how new ways of organising for disruptive innovation can develop from within leading organisations through everyday working practices. Established organisations have many advantages that can be used on a daily basis to enable disruptive innovations to emerge such as having greater knowledge of customer behaviours and needs by interacting with them regularly (Chandy & Tellis, 2000, p. 4) or established trust with their customer base so potential customers may be less apprehensive about adopting a new disruptive offer from an organisation they are familiar with (Chandy & Tellis, 2000, p. 4; Obal, 2013, p. 906). Large companies are also rich in funding and technical capabilities to pursue disruptive innovations (Chandy & Tellis, 2000, p. 4; Rosenbloom & Christensen, 1994, p. 656) as well as have superior market power over distribution channels to reach end consumers (Mitchell, 1989, p. 224). However, we lack an understanding of how these potential advantages are leveraged in everyday work life to foster disruptive opportunities within incumbent organisations.

We propose to complement the current focus in extant research on market-based logics following the classical evolutionary perspective of disruption by exploring the everyday efforts to organise for disruptive innovation within incumbent organisations. We build on an emergent stream of research within the disruptive innovation literature that conceptualises disruptive innovation as an ongoing and emergent process (Kumaraswamy et al., 2018, p. 1033; Petzold et al. 2019, p. 166-167). Rather than define disruptive innovation by its end outcome and work backwards, we seek to understand how disruptive

innovation is performed in its emergence (Garud et al., 2018, p. 502). We expand this nascent research approach by looking at how disruptive innovation processes are performed within the constraints of the already organised context of an incumbent organisation as an unfolding entrepreneuring journey of organisation-creation. We outline our perspective in the following section.

Organising from Within: Disruptive Innovation as an Unfolding Entrepreneuring Journey of Organisation-creation

Organisation-creation has been described in organisation studies as the becoming of new ways of organising that create new value for organisations through entrepreneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). Entreprenuering is a dynamic and collective creative process instantiated in the everyday interactions among various actors and their situated context (Holmquist, 2003, p. 78-82; Steyaert, 2007, p. 465). This processual view of entrepreneurship breaks from a dominant scientific and individualistic conceptualisation of 'the entrepreneur' to consider it an emergent social process that brings new organisational orders into being (Hjorth, 2014, p. 102; Holmquist, 2003, p. 78-82). While in our research we look at the process of organisation-creation in the context of an established organisation's disruptive innovation efforts, organisation-creation can also be entrepreneuring processes that spawn entirely new organisations.

Within established organisations, entrepreneuring is conceptualised as a tactical process inseparably linked to classical management practices (Hjorth, 2012, p. 4; Hjorth, 2014, p. 108). Managerial practices are carried out by organisational actors self-regulating their behavior according to what is constructed as proper to do in organisations (Hjorth, 2004, p. 416). New ways of organising emerge within heterotopian spaces for play that are within the space of but also depart from these strategically imposed places in organisations (Hjorth, 2005, p. 392). Spaces for play are generated by entrepreneuring tactics that creatively consume top-down managerial strategies using localised knowledge of the lived experience of their use in practice (Hjorth, 2003, Hjorth, 2004, p. 420). These microscopic acts of

resistance are the 'art of the weak', a partial misuse of strategic places invisible to institutional observers (de Certeau, 1980/1984). In locally withdrawing from the reigning managerial order, entrepreneuring tactics create spaces where imagination, creativity and innovation can be safely unleashed within the cracks in surveillance of institutionalised disciplinary mechanisms (Hjorth, 2004, p. 420, Hjorth, 2005, p. 392). These in-between spaces provide organisational actors the opportunity to experiment with what could be beyond prescribed managerial practices to develop new ways of working (Hjorth, 2003; Hjorth, 2004, p. 429; Hjorth, 2014, p. 104). Entrepreneuring tactics are short-lived and continuously evolving because they need to adapt to the situated strategic circumstances they are embedded within (Hjorth, 2003; Hjorth, 2005, p. 396). In the process of organisation-creation entrepreneuring tactics creatively consume managerial practices in established organisations.

We contend that an organisation-creation perspective enables us to expand the focus of current disruptive innovation research to include observations of disruptive opportunities emerging within the constraints of management practices in leading organisations. While established managerial ways of working in incumbent organisations may seem rigid, when observed closely they become malleable (Hjorth, Holt, & Steyaert, 2015, p. 599). Organisations hold within them transformative forces simultaneously existing as stable hierarchical orders and networks of connection for new organisational forms to arise (Hjorth, 2014, p. 105). Everyday entrepreneuring processes challenge 'the settled, institutionalised and habituated nature of what already has been organised' and brings people 'to the fringe of action' to create new organisational realities (Farias, Fernandez, Hjorth, & Holt, 2019, p. 555). Entrepreneuring processes open up established orders that allow traditionally unthinkable actions and experiments in new organisational forms (Farias et al., 2019, p. 555; Hjorth et al., 2015, p. 601). However, how organisation-creation is actually achieved from previous organisational arrangements is not well understood (Hjorth, 2014, p. 109; Hjorth & Reay, 2018, p. 1). We explore in our research how organisation-creation for disruptive innovation is achieved in the already organised context of an incumbent organisation.

To inform our investigation we draw on past research looking into innovation practices in established organisations. This research shows how organisational actors connect to and exploit the strategic context in organisations (Burgelman, 1983, p. 237-238; Dougherty & Heller, 1994, p. 214-215; van Dijk, Berends, Jelinek, Romme, & Weggeman, 2011, p. 1486), engage in boundary work to open experimental spaces (Bucher & Langley, 2016, p. 610; Cartel, Boxenbaum, & Aggeri, 2019, p. 81-82; Zietsma & Lawrence, 2010, p. 212-214), engage with market stakeholders to understand and create market interest (Burgelman, 1983, p. 231-232; Dougherty, 1990, p. 66; Dougherty 1992, p. 195-196; Garud, Gehman, & Kumaraswamy, 2011, p. 757), mobilise resources (Baker & Nelson, 2005, p. 330; Burgelman, 1983, p. 232; Garud et al., 2011, p. 757; Kannan-Narasimhan, 2014, p. 484-485), and translate and engage others in the development of novel concepts (Cartel et al, 2019, p. 82; Dougherty, 1992, p.195-196; Garud & Karunakaran, 2018, p. 291-292; Howard-Grenville, 2007, p. 572-573). Many of these studies also highlight how the exploitation of conditions is a situated accomplishment and the centrality of reflexivity in successfully deploying the right tactic at the right time (Garud & Karunakaran, 2018, p. 290-291; Howard-Grenville, 2007, p. 573; van Dijk et al., 2011, p. 1486-1487). While these studies help us characterise tactical activities organisational actors use to promote innovation processes in established organisations, we lack an understanding of how they are collectively used to achieve organisation-creation for disruptive innovation in the context of incumbent organisations.

To sum up, in our research we explore how disruptive opportunities can be entrepreneurially created within the constraints of a leading organisation from an organisation-creation perspective. In adopting this approach we respond to a lack of engagement in current research with the possibility that new ways of organising for disruptive innovation can emerge from within the constraints of established managerial practices in incumbent organisations. We shift investigation of disruptive innovation in established organisations from market-based logics inscribed by the classical evolutionary perspective of disruption to organisational actors' everyday efforts to organise for disruptive innovation.

Research Setting and Method

Our study takes place at Thales Group, a leading multinational technology company with approximately 80,000 employees operating in 68 countries. Thales is a complex systems provider in the aerospace, space, ground transportation, digital identity and security, and defence and security sectors and has been consistently ranked as a Top 100 Global Innovator (Thales Group, 2020). In January 2015 Thales UK embarked on a transformational change 'Organising for Growth' triggered by both internal and external organisational factors. Internally, Thales Group had set an aggressive growth agenda that UK stakeholders recognised would not be achievable by relying solely on organic growth. Externally, their core markets were also changing with many of their key customers beginning to look beyond their traditional industry partners to co-develop novel solutions to their challenges (InnovationXchange UK Ltd., 2019; Ministry of Defence, 2020). As part of this transformation effort, Thales UK Research, Technology and Innovation (RTI) was formed to focus on disruptive opportunities for the company. Our case is a particularly rich context for studying entrepreneuring processes in their emergence because we had the opportunity to follow Thales UK's organisation-creation efforts almost from the start.

Research design and data collection

Using a longitudinal ethnographic case study approach, we followed the development of six potentially disruptive innovation projects on-the-ground as they unfolded at Thales UK over a three-year period. We chose an ethnographic research approach to reveal the lived experience of managerial strategies in use that cannot be observed from an institutional position (de Certeau, 1980/1984). Projects are the nodes of our study to de-center the individual actors and foreground the interaction processes and practical activity occurring (Lindgren & Packendorff, 2003, p. 88-89). The first author was positioned in the company's newly formed RTI organisation where she participant observed as a full member of the team to gain deep insight into the processes and practices involved in the company's efforts to cultivate disruptive opportunities. This full engagement offered her the chance to

observe and contribute directly to the company's fledgling disruptive innovation efforts from an insider perspective (Alvesson, 2009, p. 163; Emerson, Fretz, & Shaw, 2011, p. 2-3).

Six focal projects were identified in consultation with senior leaders of the Organising for Growth change programme. All selected projects aimed to understand emerging customer needs in new and future markets for the purpose of developing disruptive new products and services. The company is in a leading market position in all the domains and observed SME (small and medium-sized enterprise) competitive entrants. Table 4-1 summarises the project profiles.

Table 4-1. Project profiles.

Project name	Domain	Incumbent position	Emergent customer need/ market
Trust	Digital Security	Major European leader in cyber security, worldwide leader in data protection	Internet of Things, cyber threat, digitalisation, automation
Civil UAS	Air Traffic Management	#1 worldwide in air traffic management	Commercial use of unmanned aerial systems
Counter UAV	Defence Countermeasures	#1 in Europe for defence electronics	Control of unmanned aerial vehicle misuse
Mindful Journeys	Transport	#2 worldwide in signaling and supervision of rail networks	Intelligent mobility, smart cities, personalised data services
Bridgwater	Critical Infrastructure Protection	Leader in secure communications and information systems (#2 worldwide in military tactical communications)	Construction of new nuclear power stations
Training	Training and Simulation	Global leader in simulation solutions	Cost-effective training solutions for collective preparedness, generation z digital native learning preferences

UAS: Unmanned Aerial Systems; UAV: Unmanned Aerial Vehicle

The first author attended project-related meetings and events (87) and collected project documents (52), videos (4) and pictures (129). She also conducted interviews with organisational actors working to progress the focal projects (48) as well as other members and customers of Thales UK RTI involved in the projects (20). She also collected diary accounts from her colleagues working in the RTI team (36) as well as kept a diary of her own day-to-day experiences (162 personal accounts).

During the project interviews, the study participants were asked to describe their projects, what they had been doing to progress them, what challenges they had experienced and how they overcame those challenges, their expectations of the project and planned next steps. Repeat interviews were conducted quarterly (on average) with the project actors over the course of the study to discuss the progress of their innovation projects. The diary entries were submitted to the first author by email and consisted of responses to short answer questions about what the project actors had been doing to progress their innovation projects, what challenges they had experienced and how they had overcome them as well as their expectations of their project. Each diary entry was approximately half a page to one page in length.

Each of the projects had funded teams working on them at some stages while at other times one or two actors were working to progress the projects. The first author was a member of the Trust and Training project teams and was proximately involved in the Counter UAV project so naturally attended project-related meetings and events as well as collected artifacts of the day-to-day project activities as part of her work. On the other projects the first author relied on the project actors sharing project artifacts and inviting her to key events. Table 4-2 provides a breakdown of the data corpus by project.

Table 4-2. Data breakdown by project.

Project name	Total number of core business stakeholders involved	Total number of project level actors	Data corpus
Trust	33	18 (min. 1, max. 10 active at a given time)	52 events attended 26 interviews 23 diaries 24 documents 1 video 68 pictures
Civil UAS	16	9 (min 2, max. 7 active at a given time)	1 event attended 18 interviews 2 diaries 4 documents
Counter UAV	18	9 (min 2, max. 8 active at a given time)	7 events attended 15 interviews 18 diaries 10 documents 1 video 24 pictures
Mindful Journeys	15	12 (min 1, max. 6 active at a given time)	1 event attended 12 interviews 7 diaries 2 documents
Bridgwater	5	3 (min 2, max. 3 active at a given time)	1 event attended 4 interviews 2 videos
Training	21	8 (min 1, max. 3 active at a given time)	32 events attended 9 interviews 7 diaries 12 documents 41 pictures

Note: Some interviews, diaries, events and pictures cover more than one project.

At the beginning of the study, the research sponsors announced publicly that the first author would be participant observing the company's innovation efforts. Participants were invited to take part in the study by an email that included the details of the first author's position in the company and the purpose of the research. Participants were selected according to their functional and hierarchical position in the organisation as well as their involvement with the focal innovation projects. All interviews were conducted in private hub rooms at the organisation's various UK sites. The study participants were notified that their participation was voluntary and that they could withdraw at any time without consequence. The participants were

assured that the data they provided, either recorded interview or diary submission, was confidential and anonymous.

Data analysis

We drew on available guidance for theorising from process data (Langley, 1999, p. 691) to derive theoretical insight from the data corpus. First, we constructed detailed case narratives for each project drawing on the variety of forms of project data collected. The six case narratives were structured around the challenges the project actors experienced, their responses to those challenges and the outcomes of those activities. Quotes, document, video and picture material were embedded in the text as well as excerpts from the first author's own and her colleagues' diary accounts to substantiate the case stories. The case stories ranged in length from 62 to 219 pages culminating 723 pages in total. The next step of analysis involved the division of the six case stories into sequential episodes to organise the events that occurred over the course of each project and make sense of the project journeys. We used 'temporal bracketing' (Langley, 1999, p. 703-704) to group these episodes into phases of recurrent entrepreneuring activity for each project. We then compared the overall patterns of recurrent entrepreneuring activity observed on each project across the six project cases.

As a final step of our analysis and the main focus for this paper we conducted a practice analysis looking into the everyday 'sayings' and 'doings' (Schatzki, Cetina, & von Savigny, 2001, p. 50) the project actors engaged in to open and maintain the spaces for play during each recurrent phase of entrepreneuring activity. While many practice-based studies look at how common practices are reinforced in organisations, we focused instead on the everyday entrepreneuring activities the project actors engaged in to circumvent institutionalised ways of doing things at Thales UK. We created a series of tables for each of the projects that represented the recurrent phases of entrepreneuring activity that we identified in our initial stage of analysis and looked in detail at what the project actors did in each phase. These project tables were 60 pages in length. We then looked for patterns of practical activity in the table series for each project and then across projects and

clustered similar practical activities. We created a consolidated table of clustered practical activities that were carried out in each phase of play across all the projects. As a final step we went back through the series of tables for each project to validate the consolidated table of practical activities across the six project cases.

Findings

The projects we followed progressed through phases of entrepreneuring activity that represented tactically created spaces for play within the dominant managerial structure at Thales UK. This recurrent pattern of activity comprised three stages: mobilisation – moments of legitimisation, exploration and testing – moments of developing new understandings, and convergence – moments of consolidation and feedback. Within these spaces for play the project actors broke free from established ways of doing things at the organisation in the mobilisation stage to experiment and play with new ideas in the exploration and testing stage but eventually needed to come back and re-align with the core business operations to secure additional resources and support to further progress their projects in the convergence stage. It is important to note that the pattern of entrepreneuring activity we identified is not a linear, step-wise process. Once a space for play was successfully opened, the project actors moved back and forth between mobilisation, exploration and testing, and convergence depending on the demands of their situation. They often experienced setbacks where they needed to re-mobilise resources or at times were forced to converge unexpectedly to for example update key stakeholders or showcase their work at company events. The cycle of play completed when the project actors had been through all of the stages of play and worked to re-align their projects with the company strategy to secure additional resources and support to open a subsequent space for play.

In our detailed analysis of what the project actors did to open and maintain the spaces for play, we identified six entrepreneuring tactics that the project actors engaged in using the established organisational arrangement at Thales UK. These were creating space for imagination – cultivating internal sponsorship support for new and different ways of doing things, structuring –

establishing basic structure for project activities, engaging with the market – developing and testing ideas with customer and market stakeholders, making do – creatively using resources at hand and improvising in response to unexpected occurrences, creating common interests – expending political and practical effort to transmit transformational ideas to diverse stakeholder communities, and working on the self – constantly self-reflecting and adjusting activities based on learning from experience. While we observed that the project actors needed to engage in aspects of all the entrepreneuring tactics during each stage of play, particular tactics were foregrounded in each stage. See Table 4-3 for summary of the entrepreneuring tactics we identified in each stage of play in our analysis.

Table 4-3. Entrepreneuring tactics used to open and maintain spaces for play.

Entrepreneuring tactic/Managerial practice consumed	Mobilisation	Exploration and testing	Convergence
Creating space for imagination	• Align with strategic priorities • Convince business sponsor(s) of 'different' approach	• Regular communication with business sponsor(s) • Maintain understanding of/ shape strategic priorities	• Align project findings/ ideas with strategic priorities • Manage business sponsor(s) expectations of ideas • Only pursue activities with business sponsorship
Strategic context	Strategic business plan, Group initiatives, Thales UK corporate priorities		
Structuring	• Agree aim/ purpose of project • High level project plan/ physical space/ tools/ role definition	• Stakeholder mapping • Regular team meetings/ breakdown project goals into individual tasks • Visualisation/ discussion to make sense of accumulated learning / ideate	• Constraints to maintain project momentum/ keep up with pace of market • Consolidate project findings/ recommendations
Business planning	Clear aim, fixed deliverable, risk mitigation		
Engaging with the market	• Identify emergent customer need/ potential market opportunity	• Engage with market stakeholders to understand future market needs • Secondary research • Attend/ host industry events • Test learning/ ideas	• Present information/ ideas validated with credible sources • Use network developed to capture feedback on activities • Use network developed to identify and pursue potential partnerships for next steps of development
Market position	Company network, customer relationships, reputation		

Making do	• Secure resources/ appropriate skills/ people • Accept compromises to get project going (adjust as needed later)	• Make do with available resources • Draw on network to fill gaps in knowledge/ capabilities • Prioritise activities that achieve project aim/ have momentum/ are urgent • Use wits to improvise when unexpected challenges occur	• Identify needed skills/ resources for next steps of development • Justify resource investment in next stage of development • Keep up project momentum • Pivot if necessary
Company resources	Skills, money, time, space/equipment, IT		
Creating common interests	• Engage with relevant stakeholders to understand/ influence interests • Buy in of relevant stakeholders to value of activity/ approach	• Align key stakeholder interests • Spend time with target stakeholders to understand language/ connect with 'their world'	• Socialise project findings/ recommendations with target stakeholders (output event/ presentation to key stakeholders) • Tailor story to target audience interests/ improve narrative based on interaction • Communicate widely about value of project activities
Business interests	Business value, exploitation, targets, profit		
Working on the self	• Belief in value of activity/ 'right thing to do' (vs. business as usual approach) • Comfortable with uncertainty of unknown project outcome	• Continual reflection that doing right activities to achieve overall project aim • Make decisions/ adjust goals and activities based on accumulated learning • Belief in potential of ideas • Comfortable with uncertainty/ complexity of emergent learning on project	• Belief in findings/ recommendations ('right thing' vs. tactical activity /quick win) • Comfortable with delivering challenging messages • Consider possible outcomes/ open to possibility of greater potential • Carry forward learning in next steps of development
Human capital	Individual knowledge and experience, social position		

Mobilising spaces for play

The mobilisation stage represents the patterns of entrepreneuring activity required to open the spaces for play. Two main tactics: *creating space for imagination* and *structuring* were foregrounded during this initial stage as project actors worked to legitimise their project activities in Thales.

To open spaces for play the project actors rooted their work in the strategic priorities of senior stakeholders at Thales to gain support for their project activities. For example, Patrick and Eli used Doug's, a Strategy Director at Thales, strategic interest in exploiting existing countermeasure capabilities to address an emerging customer need of controlling unmanned aerial vehicle (UAV) misuse in the aviation sector to kick off the Counter UAV project. While Doug requested the team's support with developing a technology roadmap to build a technical solution for the target market, Patrick and Eli believed it was important to explore the stakeholder environment and understand the customers' real issues before investing in a solution to the problem. Using a case study example where the team had used a market-focused approach to understand business opportunities for the company in the nuclear sector, Patrick and Eli negotiated a project scope with Doug that included both technology workshops and market exploration:

> *"What we did was we showed them what we had done in the nuclear sector and we tried to convince them of the approach that they wanted to take. Because they much more wanted a technology roadmap type process and developing technology and we proposed what we had done in the nuclear sector and they went 'well it looks interesting, could you apply the same approach in aviation?'"* – Patrick (interview, Counter UAV Project)

> *"we ended up doing the technology workshop as part of it to sort of help shape the internal technology and also mainly to make sure that we were fulfilling that requirement for the customer. And then say we'll also do this bit on the side, which we thought was the main value-add."* – Eli (interview, Counter UAV Project)

Patrick and Eli used Doug's strategic interest in developing a new Counter UAV technology solution to embed their alternative market-focused approach within the strategic context at the organisation (Burgelman, 1983, p. 237-238). By framing their market-focused approach as supporting the technology development requirement, Patrick and Eli wove their traditionally 'undoable' and 'unthinkable' activities into legitimate practices and understandings at the organisation (Dougherty & Heller, 1994, p. 214-215).
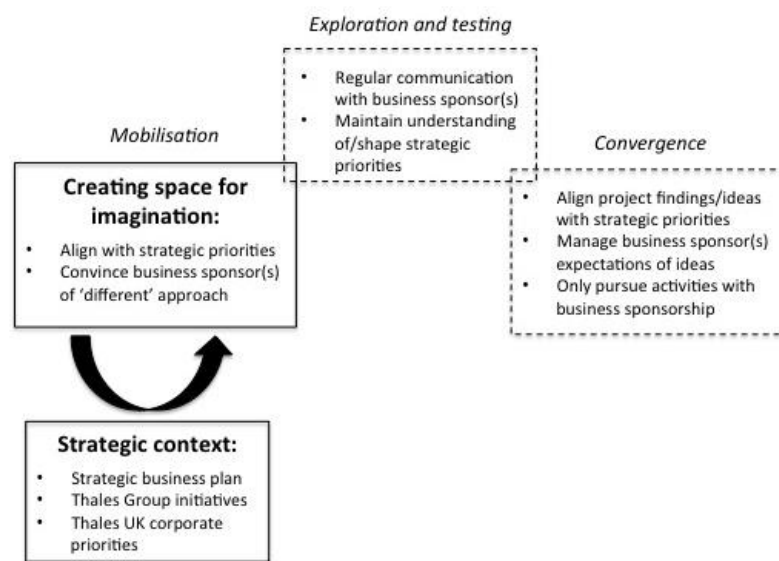
Figure 4.1. Creating space for imagination tactic.

While creating space for imagination was forefront during the mobilisation stage, the project actors continued to engage in this entrepreneuring tactic during the exploration and testing and convergence stages. In the exploration and testing phase they continued to have regular communication with their project sponsors to maintain an understanding of and shape the organisation's strategic priorities. Jaxon and Caleb explain their ongoing interactions with their sponsors on the Bridgwater project where they were working to position Thales in the emerging new nuclear market in the UK:

> *"we proactively go in, arrange discussions… to update them on what we are doing, how we are getting on, what it means, so they don't have to come to us"* – Jaxon (interview, Bridgwater Project)

> *"always staying close to them and working closely with them and taking them on the journey… And then it's understanding their context"* – Caleb (interview, Bridgwater Project)

In the convergence stage the project actors worked to align their project findings and ideas with the company's strategic priorities when presenting their work back to the organisation. If they lost strategic buy in for their work, the project actors exploited heterogeneity, multiplicity, and ambiguity in the organisation's strategic context to find renewed sponsorship for their work (van Dijk et al., 2011, p. 1496-1497). For example, on the Trust project the initial project sponsors were uncomfortable with the team's recommendations for how the company could be positioned in the emerging Internet of Things market. In response to this challenge the project team re-directed the project and carried forward insights from their work in different avenues with different sponsors supporting the different strands of activity:

> *"we kind of went down a really interesting avenue, tried to create some really interesting thinking and then we brought it back into the organisation and they kind of went, whew… This is not where we expected it to go"* – Patrick (interview, Trust Project)

> *"we are re-directing the project and off the back of that bootstrapping next in terms of the direction we are looking at going and what it's created is sort of three or four different projects, looking at different things for different reasons"* – Patrick (interview, Trust Project)

The project actors also predominantly engaged in the *structuring* tactic to mobilise the spaces for play. In addition to securing sponsorship, the project actors needed to agree with the organisation how the project would be carried out. It was a struggle to get the financial controllers to invest finite innovation

resources into potentially disruptive innovation projects without guaranteed return on investment. The project actors negotiated high-level processes or agreed key deliverables to satisfy the company's need for certainty while also setting boundaries for an experimental space where the team could play with new possibilities for action (Bucher & Langley, 2016, p. 609-610). For example, on the Civil UAS project where Kirk and Will were exploring opportunities for Thales in the emerging civil unmanned aerial systems market, they created a high-level process for how their team would operate to satisfy the organisation's need for planning and process. They created a 'Business Readiness Level' process that reflected the company's existing 'Technology Readiness Level' process to help the business stakeholders understand and be comfortable with the level of uncertainty they were dealing with on their project:

> "the Business Readiness Levels akin to Technology Readiness Levels is a way to get the business on board with the maturity of what we do… once you create a standard that people can understand and they can interface to. It kind of helps people be comfortable with the ambiguity that you are working on." – Will (interview, Civil UAS Project)
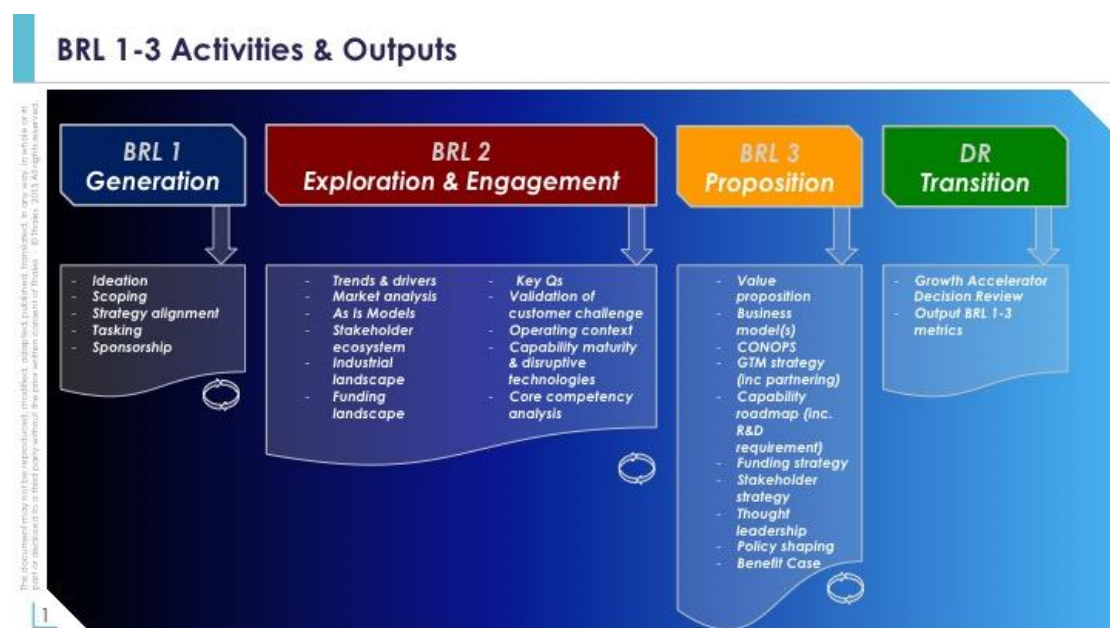
Figure 4.2. Business readiness level process. *Copyright image reproduced with permission from Thales.*

In structuring this high-level process with the company stakeholders, the Civil UAS project team used the company's existing routines to set boundaries for a flexible working environment for the team (Bucher & Langley, 2016, p. 610). While it created assurance for the company stakeholders to allocate resources to the project, the Business Readiness Level process was non-prescriptive in detailing exactly what outputs would be achieved and how at each stage of development shielding the project team from institutional scrutiny (Zietsma & Lawrence, 2010, p. 214).
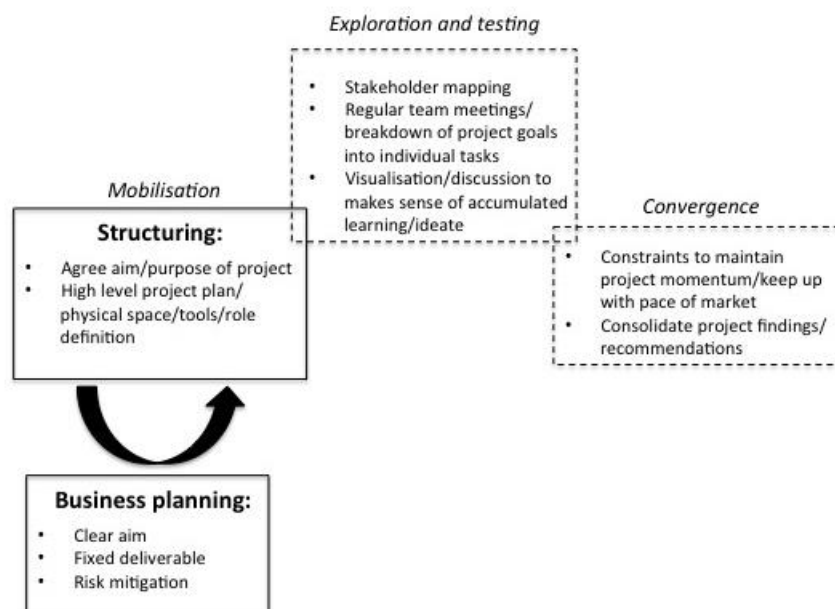
Figure 4.3. Structuring tactic.

We also observed the project actors engage in the structuring tactic in the exploration and testing and convergence stages. Exploring emerging markets, the project team sometimes got 'lost' in ambiguity and uncertainty in the exploration and testing stage of play. During these moments, the high-level processes and key deliverables agreed with the organisation served as semistructures for the project teams to balance between order and disorder in the exploration and testing stage (Brown & Eisenhardt, 1997, p. 28-29). During the convergence stage the project actors dissolved the boundaries they set when they connected back to the core organisation to deliver their

agreed outputs. The project actors understood that the project was closed momentarily until further sponsorship support was secured to legitimise further work (Bucher & Langley, 2016, p. 610).

Exploration and testing within spaces for play
During the inner exploration and testing stage two tactics were foregrounded: *engaging with the market* and *making do*. The entrepreneuring processes that occurred during this stage of play centered on developing new understandings.

During the exploration and testing stage the project actors both engaged directly with customer and market stakeholders and conducted secondary research to understand the future customer needs in the emerging markets they were exploring. We observed the project actors use the internal company network to access key stakeholders in the target markets, leveraging the incumbent organisation's existing network, customer relationships and market reputation. For example, Eli explained that they used internal references to contact potential customer and other market stakeholders they engaged on the Counter UAV project:

> *"We drew up a kind of table almost of all the different stakeholders it would be useful to speak to and then we just tried to speak to them. Mainly we got through, mostly through internal references… You can get to almost anybody through the organisation if you ask the right person." – Eli (interview, Counter UAV Project)*

The project team consumed the company's established market position to understand the needs and perspectives of potential customer and market stakeholders and develop their own thinking about potential market offers (Dougherty, 1990, p. 66; Dougherty 1992, p. 195-196; Garud et al., 2011, p. 757).
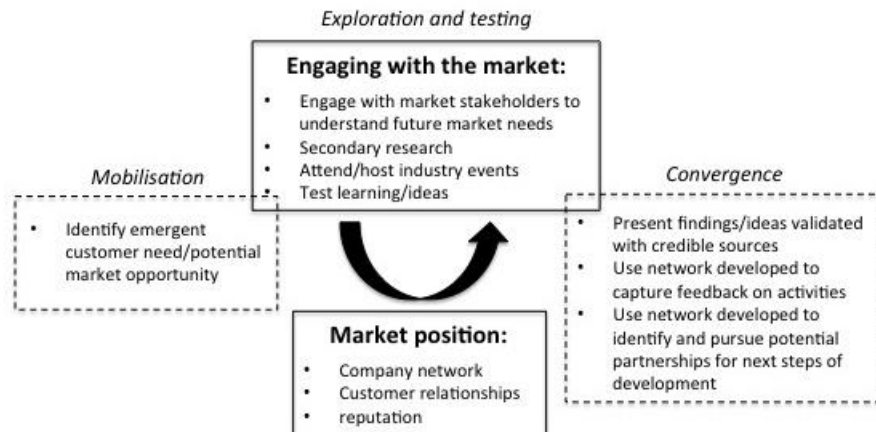
Figure 4.4. Engaging with the market tactic.

Although engaging with the market as a tactic was most prevalent during the exploration and testing stage, it was also relevant in the mobilisation and convergence stages. In the mobilisation stage the project actors reached out to the customer-facing community in the organisation to confirm that the project activities they were pursuing were linked to an emergent customer need or potential market opportunity. In the convergence stage we observed the project teams use their external engagements to show market interest in their ideas when presenting back their findings and recommendations to the organisation (Burgelman, 1983, p. 238). The project teams would often have a slide listing all of the external organisations and stakeholders that they engaged in their projects to prove their understanding of the market needs and justify the market viability of the ideas proposed. For the Counter UAV project, the team created an infographic to communicate the learning journey they had been on including all of the external stakeholders they had engaged over the course of their work that provided credibility for their ideas:
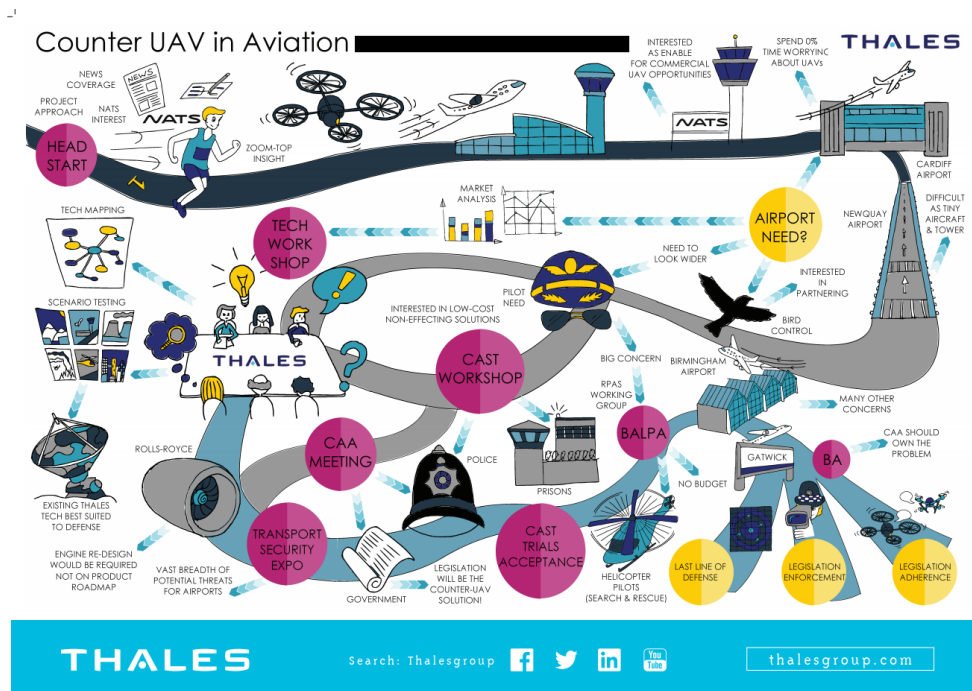
Figure 4.5. Counter UAV project journey.

The *making do* tactic was also forefront during the exploration and testing stage. While some formal resources were dedicated to the project activities those resources were finite and so the project actors needed to make do with limited resources. As Patrick describes, who secured added resources at different stages of the Trust, Training, Counter UAV and Civil UAS projects, the project actors used official funds made available to them as a baseline and then obtained additional resources through more informal means:

> *"it's a mix of my funding to give it some baseline structure, and then try and beg, steal and borrow people as much as we can to help." – Patrick (interview, Civil UAS Project)*

The project teams obtained additional resources for their work through a number of different means including internal leadership development programmes at the company, the graduate and specialist and expert communities in the organsiation that had more flexible time allowances, internship and contract roles, civil service and educational industry placement schemes as well as external industry partners to fill gaps in capability. As Patrick further describes, the team drew on support from across the business

to help fill gaps in technical knowledge and mature their thinking when working to develop a concept demonstrator of a proposed solution for the emerging Civil UAS market:

> *"we had a lot of help from around the business units… we've had some help from Commercial to sit with us. We've had some help from LAS [Land and Air Systems] sit with us. We've had some help from France come and sit with us. You know just to get a few people, TRT [Thales Research and Technology] freed up a few people to help technically… Days here and there that just helped us think about our maturity and what we need to do and what the gaps are." – Patrick (interview, Civil UAS Project)*

The project actors became adept at creating something from nothing by bootlegging hidden company-wide resources (Baker & Nelson, 2005, p. 353-354; Burgelman, 1983, p. 232; Garud et al., 2011, p. 757). As Kannan-Narasimhan (2014, p. 485) describes, the project actors used organisational ingenuity to consume company resources needed to progress their projects.
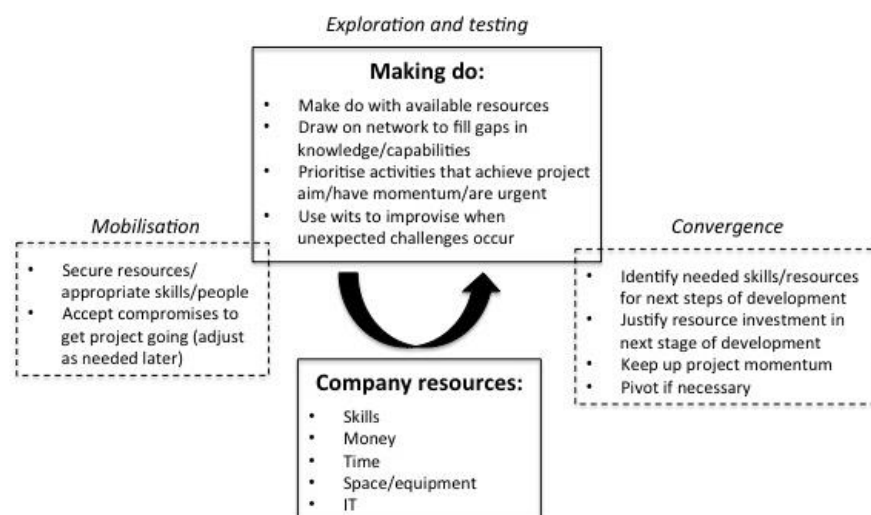
Figure 4.6. Making do tactic.

Again, the *making do* tactic was not exclusively used only during the exploration and testing stage. We observed the project actors using their

network to draw on flexible resources in the company when agreeing project resource allocation in the mobilisation stage. Also, during the convergence stage project actors used the resources available to them in defining the next steps for their project, keeping up momentum or 'pivoting' (making a turn) their projects.

Convergence of the spaces for play

The convergence stage of play represents the pattern of entrepreneuring processes we observed during moments of consolidation and feedback. The two main tactics deployed at this stage were: *creating common interests* and *working on the self*.

When it came to the convergence stage, the project teams carefully crafted a narrative to communicate their learning journey and recommended next steps to secure ongoing support from the organisation to further develop their ideas. Drawing on their understanding of the target audience's values and interests from spending time with them over the course of their project, the project teams worked to embed the value of their work within the established business interests at the organisation (Howard-Grenville, 2007, p. 572-573). For instance, on the Bridgwater Project they planned an output event to capture and communicate the benefits of the project activities as part of their effort to differentiate Thales from other organisations in the new nuclear sector:

> *"early June we're going to hold a big output event in a local theatre with a load of, there'll be about two hundred people this time, but there'll be stakeholders as well and they will tell their story. The journey they've been on, what they've learned and what their ideas are to the stakeholders who are interested in those ideas... that benefit will be captured and communicated" – Caleb (interview, Bridgwater Project)*

Effective translation of the transformational ideas they were developing required both political and practical effort (Carlile, 2004, p. 559). The project teams often used physical prototypes to practically engage target

stakeholders in the ideas they presented (Garud & Karunakaran, 2018, p. 291, Schrage, 2000). For example, on the Mindful Journeys project the project team had developed an interactive demo to explain their proposed Mindful Journeys concept and capture feedback from them:

> *"that really worked because you had this interactive demo that you could talk through and it was a great way of explaining it." – Brian (interview, Mindful Journeys Project)*

The project actors used the target stakeholders' existing schemas to imbue the new transformational ideas they were developing in the organisation (Howard-Grenville, 2007, p. 572-573).
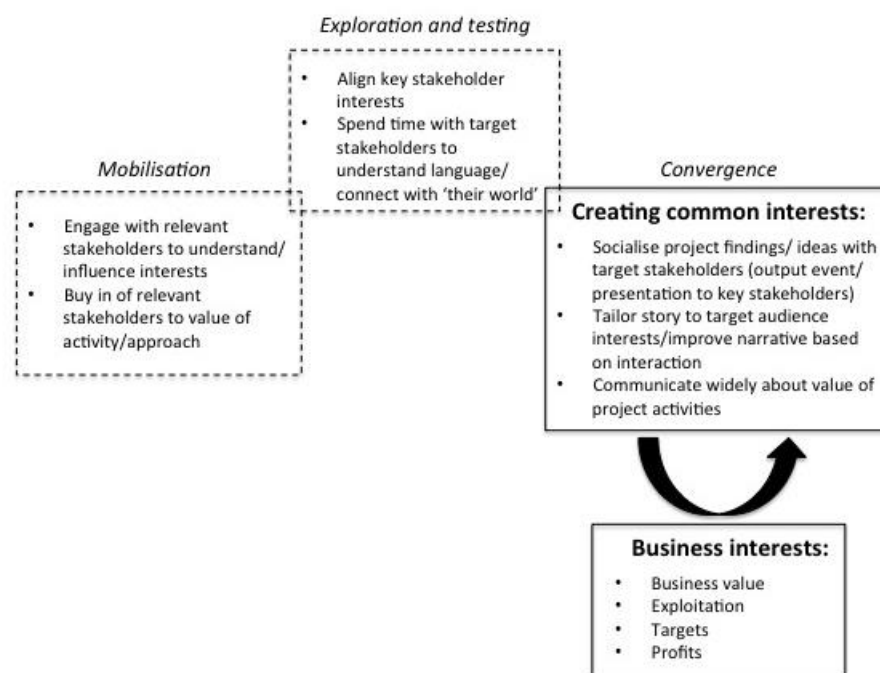
Figure 4.7. Creating common interests tactic.

Although the tactic of creating common interests was most prominent during the convergence stage it was also relevant in the mobilisation and exploration and testing stages. In the mobilisation stage, project actors engaged relevant stakeholders that often had different ideas about how those funds should be

best spent and worked to get their buy in for their project activities. While the project teams were focused on market engagement during the exploration and testing stage, they maintained regular communication with relevant internal stakeholders at the organisation. This was important for both understanding and influencing the various business interests and anchoring their work within the meaning structure of the core organisation (Cartel et al., 2019, p. 82; Howard-Grenville, 2007, p. 572-573). For example, in the later stages of the Civil UAS project, the project team was working to develop a concept demonstrator of a proposed solution for the emerging Civil UAS market. Anna, the Project Lead during this phase of the project, explained that it was important to engage the core business stakeholders throughout their project work and shape the project based on their input, so they would not be surprised at the end:

> *"I think it's one of the most critical things in these processes. I believe it's not about locking it away and tucking it away and letting RTI [Research, Technology and Innovation] do it, then go 'ta da.' It has to be worked through the whole way with it… people prefer to be engaged, not wowed and surprised" – Anna (interview, Civil UAS Project)*

At the convergence stage of play the working on the self entrepreneuring tactic was also forefront. The project teams believed in the recommendations that they provided to the organisation. Thus, they engaged with their context in an aesthetic way of knowing in reasoning their actions (Creed, Taylor, & Hudson, 2019, p. 416-417). For example, when reporting back their findings on the Training project the project team needed to deliver a quite difficult message to senior stakeholders at the organisation. Rather than conform to habituated ways of knowing and doing at the organisation the project team delivered a difficult message to the company:

> *"the information was met by stakeholders, so slightly mixed. Some people didn't get it, some people got it, some people were a bit scared to get it. But the main thing is that it demonstrated our findings and our*

firm belief in recommendations going forward." – *Meredith (interview, Training Project)*

The project actors used their knowledge of the limitations of the current conditions at the organsation to enact possible alternative forms of action (Creed et al., 2019, p. 425).
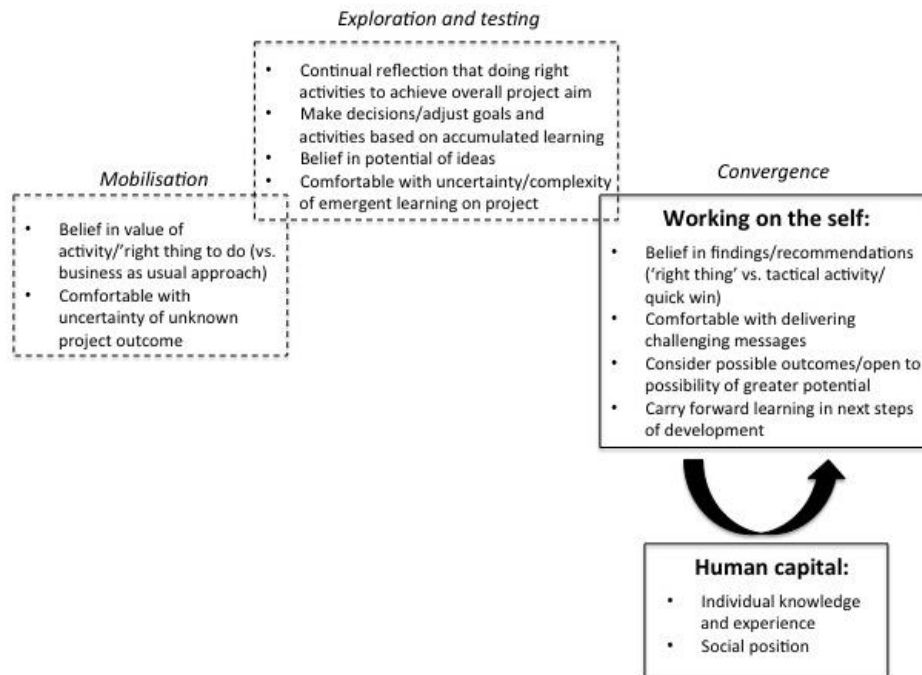
Figure 4.8. Working on the self tactic.

While the tactic of working on the self was forefront during the convergence stage, it was crucial throughout the entrepreneuring processes we followed. As has been discussed in other studies of innovation practices (e.g. Howard-Grenville, 2007, p. 573; van Dijk et al., 2011, p. 1506-1508), the entrepreneuring processes we observed were situated accomplishments and there is 'no magic formula' for how they should be used. The project actors drew on their embedded knowledge of their situated circumstances to craft a contextually situated response to the challenges they faced in opening and maintaining spaces for play at Thales UK. The project teams also described how they continuously learned their way forward. As Caleb and Jaxon describe on the Bridgwater project, they learned their way forward testing and

validating ideas about what they thought was right to position the organisation in the emerging new nuclear market in the UK and adjusted their activities based on their learning:

> *"Learn. We learn our way forward. So, if we have hunches about what's right, we act on those hunches and we discover whether those hunches have got some validity or not." – Caleb (interview, Bridgwater Project)*

> *"based on what we have learned, that objective or that outcome shifts slightly, but it shifts for a reason. It shifts as a result of the fact that we've acted, we've done something, we've discovered something" – Caleb (interview, Bridgwater Project)*

As Garud and Karunakaran (2018, p. 290-291) describe, the project teams engaged in reflection-through-action, both reflecting while acting in interpreting the validity of their actions *in situ*, and reflecting on the outcomes of their actions in adjusting their project goals based on their learning from doing. By working on the self, project actors made use of their own past knowledge, experience and social position to pursue novelty on their projects (Howard-Grenville, 2007, p. 572; van Dijk et al., 2011, p. 1506-1508).

Discussion

Our research explores how disruptive opportunities can be entrepreneurially created within the constraints of an incumbent organisation from an organisation-creation perspective. Our research responds to a key gap in disruptive innovation research that overlooks the possibility that new ways of organising for disruptive innovation can develop from within the constraints of established managerial practices in incumbent organisations and the everyday efforts involved. Considering disruptive innovation as an unfolding entrepreneuring journey of organisation-creation, we followed over a period of three years the entrepreneuring processes on six potentially disruptive innovation projects as they unfolded at the leading multinational technology organisation Thales UK. Our research sheds light on how the disruptive

opportunities we followed developed within tactically created spaces for play at the margins of established managerial practices that could not be seen from a strategic level perspective. We identify six entrepreneuring tactics used to open and maintain these spaces for play using the established organisational arrangement and situate them in time showing how particular tactics were prominent in distinct stages of development of the spaces for play. We present a framework based on our study findings for how organisation-creation for disruptive innovation is achieved in the already organised context of a leading organisation.

Our research shows that established managerial practices, including the organisation's strategic and business planning practices, existing market position and resources, business interests and human capital, are both a constraint and enabler for the emergence of disruptive opportunities at Thales UK. For example, the company's strategic interest in developing a new technology solution to control UAV misuse in the aviation sector enabled the emergence of the Counter UAV project but the project actors were confined by the business enticement to exploit its existing countermeasure capabilities and therefore included focus on internal technology shaping in the project scope (Christensen & Overdorf, 2000, p. 70-71; Henderson & Clark, 1990, p. 17-18; Levinthal, 1997, p. 949). The company's limited innovation funds and existing capabilities constrained the project teams' activities but they were also able to creatively bootleg latent company resources to support their work (Christensen & Overdorf, 2000, p. 68; Danneels, 2002, p. 1097). The project teams also leveraged and needed to work within the confines of established relationships, beliefs and political coalitions both internally and external to the organisation in testing and communicating the value of the potentially disruptive concepts they were pursuing (Hannan & Freeman, 1984, p. 149; Tripsas & Gavetti, 2000, p. 1158-1159). The established managerial practices provided strategic places that the project actors entrepreneurially consumed to progress the potentially disruptive innovation projects we followed.

The tactical consumption of the managerial processes we identified generated spaces for play where potentially disruptive concepts could be developed and

experimented with at the margins of the company's established managerial practices. As Hjorth et al. (2015, p. 599) describe, we observed the seemingly rigid managerial practices at Thales UK become loose allowing exploration of emergent customer and market needs that departed from established ways of doing things at the company. Within these fissures in the established managerial framework, the project teams played with alternative cyber security and data protection models on the Trust project, possible futures for commercial use of unmanned aerial systems on the Civil UAS project, novel solutions for controlling unmanned aerial vehicle misuse on the Counter UAV project, a potentially transformational rail customer experience service on the Mindful Journeys project, developed an unconventional strategy to position the company in the new nuclear sector on the Bridgwater project, and fundamentally challenged the company's traditional approach to delivering training solutions on the Training project. The entrepreneuring processes opened up the established organisational order allowing the project teams to engage in the development of traditionally unimaginable ideas and experiment with entirely different possible futures for the organisation (Farias et al., 2019, p. 555; Hjorth et al., 2015, p. 601).

The project actors used their localised knowledge of the managerial practices in use in creatively consuming them to generate the spaces for play. The project actors tapped into Thales' incumbent organisational advantages to foster disruptive innovation such as its funding and technical capabilities (Chandy & Tellis, 2000, p. 4; Rosenbloom & Christensen, 1994, p. 656), established market position and customer relationships (Chandy & Tellis, 2000, p. 4; Mitchell, 1989, p. 224; Obal, 2013, p. 906) through their on-the-ground real-time engagement with the company's everyday managerial practices and processes. While some disruptive innovation research focuses on how leading organisations can intervene in their established business practices to enable disruptive innovation processes (e.g. Cozzolino et al., 2018, p. 1167; Govindarajan & Kopalle, 2006, p. 16; Khanagha et al., 2018, p. 1081; Markides, 2006, p. 24; Slater & Mohr, 2006, p. 30; Tellis, 2006, p. 38; Wan et al., 2015, p. 101-102), our research findings suggest that incumbent organisations can also benefit from enabling their circumvention to support

the emergence of disruptive opportunities. Other authors suggest that established organisations should pursue disruptive innovation initiatives separate from their core business operations (e.g. Campbell et al., 2003, p. 30; Chao & Kavadias, 2007, p. 908-909; Christensen & Raynor, 2003, p. 203; Claude-Gaudillat & Quélin, 2006, p. 175; Macher & Richman, 2004, p. 19), but this prevents organisational actors from developing the needed contextual knowledge of managerial practices in use to leverage incumbent advantages in the development of disruptive opportunities. Our research highlights the importance of situated knowledge for leveraging established organisational advantages in the entrepreneurial development of disruptive opportunities in everyday working practices in incumbent organisations.

We characterise and situate in time six entrepreneuring tactics the project actors used to locally open and maintain spaces for play at the margins of established managerial practices at Thales UK. We identify three stages of development of the spaces for play: *mobilisation* – moments of legitimisation, *exploration and testing* – moments of developing new understandings, and *convergence* – moments of consolidation and feedback. In the initial mobilisation stage the project actors consumed the company's strategic context and business planning processes by creatively aligning the potentially disruptive innovation projects with the company's strategic priorities and negotiating high level plans and deliverables to legitimise their work and open experimental spaces (Bucher & Langley, 2016, p. 610; Burgelman, 1983, p. 237-238; Dougherty & Heller, 1994, p. 214-215; van Dijk et al., 2011, p. 1486). In the inner exploration and testing stage they creatively consumed the company's existing market position and resources to understand and create market interest as well as pull in required capabilities to progress their projects (Baker & Nelson, 2005, p. 353-354; Burgelman, 1983, p. 330; Dougherty, 1990, p. 66; Dougherty 1992, p. 195-196; Garud et al., 2011, p. 757; Kannan-Narasimhan, 2014, p. 485). Finally, in the convergence stage we observed the project actors consume diverse business interests at the company as well as their own human capital to engage others in the collective development of their proposed concepts and depart from habituated ways of knowing at the organisation (Cartel et al, 2019, p. 82; Creed et al., 2019, p.

416-417; Dougherty, 1992, p.195-196; Garud & Karunakaran, 2018, p. 291-292; Howard-Grenville, 2007, p. 572-573; van Dijk et al., 2011, p. 1496-1497). We present the below process model to capture our research findings. The model shows how organisation-creation for disruptive innovation is achieved in the already organised context of an incumbent organisation.
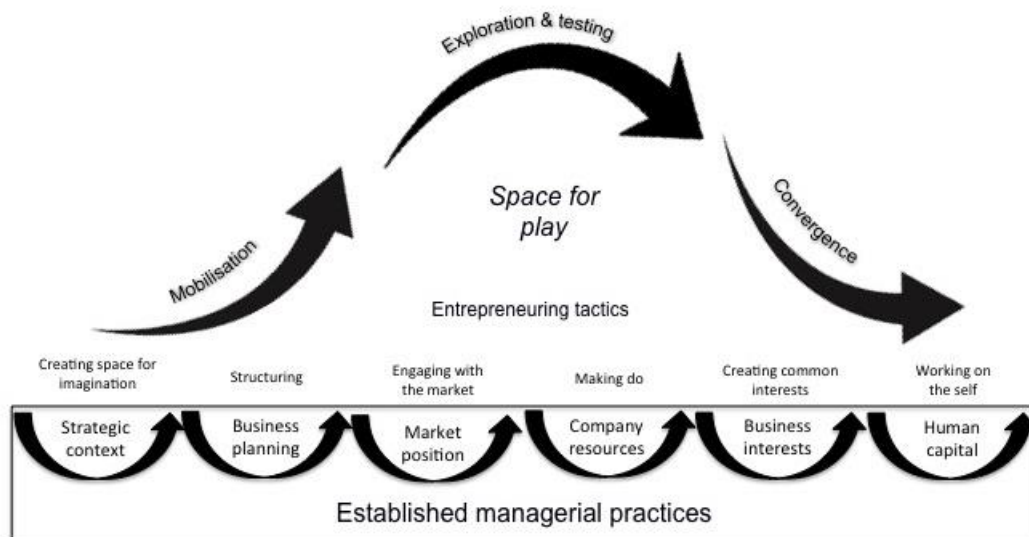
Figure 4.9. Organisation-creation for disruptive innovation in an incumbent organisation.

Contributions and Conclusion

Our study provides a longitudinal ethnographic account of how six potentially disruptive innovation projects were entrepreneurially developed within spaces for play embedded within the established managerial structure at Thales UK. Our findings complement extant research on disruptive innovation in incumbent organisations that is grounded in market-based logics inscribed by the classical evolutionary perspective of disruption. While these studies focus on how leading organisations can overcome established managerial practices to respond to threat of disruption at a strategic level, we show how disruptive opportunities can develop on the fringes of managerial practices in leading organisations. We introduce a framework of how organisation-creation for disruptive innovation is achieved in the already organised context of an incumbent organisation. Our research contributes to disruptive innovation, organisation-creation and innovation practice research in several ways.

We contribute to the disruptive innovation literature an appreciation for how disruptive opportunities can develop within spaces for play embedded within the reigning managerial structure of incumbent organisations. Extant research focuses on how leading organisations can intervene in their established business practices to enable disruptive innovation processes or all together avoid their established business practices because they are incongruent with the ways of working needed to facilitate disruptive innovation processes. Our research complements these studies by showing how flexible working practices needed to enable disruptive innovation processes can coincide with established business practices within entrepreneurially created spaces for play at the margins of an incumbent organisation's managerial practices. We open discussion of how disruptive opportunities can be entrepreneurially developed alongside established managerial practices in leading organisations that disruptive innovation research has so far not considered.

We further add to disruptive innovation research an understanding of how established organisational advantages are leveraged in everyday efforts to entrepreneurially develop disruptive opportunities within the constraints of an incumbent organisation. Extant research has characterised how leading organisations' perceived incentives, cognitive structure, and organisational structure and routines constrain the development of disruptive opportunities. We complement these studies by showing how managerial practices are also an important enabler for the development of disruptive opportunities in incumbent organisations. We show how managerial practices are creatively consumed in everyday entrepreneuring processes to utilise established organisational advantages in the development of disruptive opportunities within the constraints of an incumbent organisation. Although disruptive innovation research acknowledges that leading organisations have several advantages to foster disruptive innovation, we extend this debate by showing how these advantages are leveraged in everyday work life to entrepreneurially create disruptive opportunities in established organisations.

We also contribute to organisation-creation research an understanding of how organisation-creation for disruptive innovation is achieved in the already organised context of an incumbent organisation. Current organisation-creation research lacks an understanding of how organisation-creation is actually achieved from previous organisational arrangements. We shed light on specific entrepreneuring tactics used to consume particular managerial practices to entrepreneurially develop disruptive opportunities in a leading organisation. Furthermore, we situate these entrepreneuring tactics in time showing how they are used in particular stages of development of spaces for play. We further the organisation-creation conversation by illustrating the practical nuances of how this process is achieved, particularly within the context of organsing for disruptive innovation in an incumbent organisation.

Finally, we contribute to research on innovation practices an understanding of how specific innovation practices are collectively used in the process of organisation-creation for disruptive innovation in an established organisation. While the innovation practices we identified have been documented in other contexts, they tend to be explored separately rather than collectively and have not been explored in the case of disruptive innovation efforts in a leading organisation. By focusing on the lived experience of entrepreneuring processes in our research we show how arrays of innovation practices are collectively used in everyday efforts to organise for disruptive innovation in an incumbent organisation, including how specific practices are deployed in particular stages of development of the unfolding disruptive innovation journey. We further the debate in innovation practice research by opening discussion of how multiple different innovation practices are used together in everyday innovation efforts in organisations.

We chose a longitudinal ethnographic case study research design to illuminate the contextually specific nuances of everyday entrepreneuring processes at Thales UK. While this research design enables intensive study of entrepreneuring processes in a situated setting, our contextualised description is specific to Thales UK. Further research is needed to test our depiction of organising for disruptive innovation in the already organised

context of an incumbent organsation. For example, if other entrepreneuring tactics are salient in other settings, what managerial practices they consume, and how they are used to open and maintain spaces for play within the established organisational arrangement. Further research could also explore how organisation-creation for radical innovation is achieved in the already organised context of a leading organisation and compare similarities and differences with our findings for the case of disruptive innovation efforts. Our research endorses further exploration of disruptive innovation as an ongoing and emergent entrepreneuring journey of organisation-creation. In adopting this approach we were able to uncover important nuances of how disruptive potential can arise at the margins of managerial practices in an established organisation that could not be seen from a strategic level perspective. Further studies could usefully build on our research by using an organisation-creation perspective to further explore everyday performative efforts to organise for disruptive innovation in incumbent organisations in its emergence.

References

Alvesson, M. (2009). At-home ethnography: Struggling with closeness and closure. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 156-174). London: Sage.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016). Special issue call for papers: Managing in the age of disruptions. *Journal of Management Studies*. Retrieved from http://www.socadms.org.uk/wp-content/uploads/JMS-Managing-in-the-Age-of-Disruption-Call-for-Papers.pdf.

Baker, T., & Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50, 329-366.

Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory and time-based evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, 42, 1-34.

Bucher, S., & Langley, A. (2016). The interplay of reflective and experimental spaces in interrupting and reorienting routine dynamics. *Organization Science*, 27(3), 594-613.

Burgelman, R. A. (1983). A process model of internal corporate venturing in the diversified major firm. *Administrative Science Quarterly*, 28, 233-244.

Carlile, P. R. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, 15(5), 555-568.

Campbell, A., Birkinshaw, J., & Morrison, A. (2003). The future of corporate venturing. *MIT Sloan Management Review*, 45(1), 30-37.

Cartel, M., Boxenbaum, E., & Aggeri, F. (2019). Just for fun! How experimental spaces stimulate innovation in institutionalized fields. *Organization Studies*, 40(1), 65-92.

Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. *Journal of Marketing*, 64(3), 1-17.

Chao, R. O., & Kavadias, S. (2007). A theoretical framework for managing the NPD portfolio: When and how to use strategic buckets. *Management Science*, 54(5), 907-921.

Christensen, C. M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail.* Boston: Harvard Business School Press.

Christensen, C. M., & Raynor, M. E. (2003). *The innovator's solution: Creating and sustaining successful growth.* Boston: Harvard Business School Press.

Christensen, C. M., & Overdorf, M. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, 78(2), 66-76.

Claude-Gaudillat, V., & Quélin, B. V. (2006). Innovation, new market and governance choices of entry: The internet brokerage market case. *Industry and Innovation*, 13(2), 173-187.

Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). Unpacking the disruption process: New technology, business models, and incumbent adaptation. *Journal of Management Studies*, 55(7), 1166-1202.

Creed, W. E. D., Taylor, S. S., & Hudson, B. A. (2019). Institutional aesthetics: Embodied ways of encountering, evaluating, and enacting institutions. *Organization Studies, 00(0)*, 1-21.

Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic Management Journal*, 23(12), 1095-1121.

Danneels, E. (2003). Tight-loose coupling with customers: The enactment of customer orientation. *Strategic Management Journal*, 24(6), 559-576.

Danneels, E. (2004). Disruptive technology reconsidered: A critique and research agenda. *Journal of Product Innovation Management*, 21, 246-258.

de Certeau, M. (1984). *The practice of everyday life*. (S. Rendall, Trans.). Berkeley: University of California Press. (Original work published 1980).

Denning, S. (2012). The battle to counter disruptive competition: Continuous innovation vs. "good" management. *Strategy & Leadership*, 40(4), 4-11.

Dougherty, D. (1990). Understanding new markets for new products. *Strategic Management Journal,* 11, 59-78.

Dougherty, D. (1992). Interpretive barriers to successful product innovation in large firms. *Organization Science*, 3(2), 179-202.

Dougherty, D., & Heller, T. (1994). The illegitimacy of successful product innovation in established firms. *Organization Science*, 5(2), 200-218.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes* (2nd ed.). Chicago: University of Chicago Press.

Farias, C., Fernandez, P., Hjorth, D., & Holt, R. (2019). Organizational entrepreneurship, politics and the political. *Entrepreneurship & Regional Development*, 31(7-8), 555-566.

Garud, R., Gehman, J., & Kumaraswamy, A. (2011). Complexity arrangements for sustained innovation: Lessons from 3M Corporation. *Organization Studies,* 32(6), 737-767.

Garud, R., Gehman, J., & Tharchen, T. (2018). Performativity as ongoing journeys: Implications for strategy, entrepreneurship, and innovation. *Long Range Planning*, 51, 500-509.

Garud, R., & Karunakaran, A. (2018). Process-based ideology of participative experimentation to foster identity-challenging innovations: The case of Gmail and AdSense. *Strategic Organization*, 16(3), 273-303.

Govindarajan, V., & Kopalle, P. R. (2006). The usefulness of measuring disruptiveness of innovations ex post in making ex ante predictions. *Journal of Product Innovation Management*, 23(1), 12-18.

Hannan, M. T., & Freeman, J. (1984). Structural intertia and organizational change. *American Sociological Review*, 49(2), 149-164.

Henderson, R. (2006). The innovator's dilemma as a problem of organizational competence. *Journal of Product Innovation Management*, 23(1), 5-11.

Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly,* 35(1), 9-30.

Hill, C. W., & Rothaermel, F. T. (2003). The performance of incumbent firms in the face of radical technological innovation. *Academy of Management Review*, 28(2), 257-274.

Hjorth, D. (2003). *Rewriting entrepreneurship - For a new perspective on organisational creativity*. Malmö: Liber.

Hjorth, D. (2004). Creating space for play/invention – Concepts of space and organizational entrepreneurship. *Entrepreneurship & Regional Development*, 16(5), 413-432.

Hjorth, D. (2005). Organizational entrepreneurship: With de Certeau on creating heterotopias (or spaces for play). *Journal of Management Inquiry*, 14(4), 386-398.

Hjorth, D. (2012). *Handbook on organisational entrepreneurship*. Cheltenham: Edward Elgar.

Hjorth, D. (2014). Entrepreneuring as organisation-creation. In R. Sternberg, & G. Krauss (Eds.), *Handbook of research on entrepreneurship and creativity* (pp. 97-121). Cheltenham: Edward Elgar.

Hjorth, D., Holt, R., & Steyaert, C. (2015). Entrepreneurship and process studies. *International Small Business Journal*, 33(6), 599-611.

Hjorth, D., & Reay, T. (2018). Special issue call for papers: Organizational and institutional entrepreneuring: Processes and practices of creating in an organized world. *Organization Studies*. Retrieved from http://entrepreneuriat.com/wp-content/uploads/2018/11/SI-Entrepreneuring-Final-November-18.pdf.

Holmquist. C. (2003). Is the medium really the message? Moving perspective from the entrepreneurial actor to the entrepreneurial action. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 73-85). Cheltenham: Edward Elgar.

Howard-Grenville, J. A. (2007). Developing issue-selling effectiveness over time: Selling as resourcing. *Organization Science*, 18(4), 560-577.

InnovationXchange UK Ltd. (2019). *How the rail industry is seizing innovation*. Retrieved from https://www.ixc-uk.com/How_the_Rail_Industry_is_Seizing_Innovation--post--68.html.

Kannan-Narasimhan, R. (2014). Organizational ingenuity in nascent innovations: Gaining resources and legitimacy through unconventional actions. *Organization Studies*, 35(4), 483-509.

Khanagha, S., Zadeh, M. T. R., Mihalache, O. R., & Volberda, H. W. (2018). Embracing bewilderment: Responding to technological disruption in heterogeneous market environments. *Journal of Management Studies*, 55(7), 1079-1121.

King, A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MIT Sloan Management Review,* 57(1), 77-90.

Kumaraswamy, A., Garud, R., & Ansari, S. (2018). Perspectives on disruptive innovations. *Journal of Management Studies*, 55(7), 1025-1042.

Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691-710.

Lepore, J. (2014). The disruption machine: What the gospel of innovation gets wrong. *The New Yorker,* May 23.

Levinthal, D. (1997). Adaption on rugged landscapes. *Management Science*, 43, 934-950.

Lindgren, M., & Packendorff, J. (2003). A project-based view of entrepreneurship: Towards action-orientation, seriality and collectivity. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 86-102). Cheltenham, UK: Edward Elgar.

Macher, J. T., & Richman, B. D. (2004). Organizational responses to discontinuous innovation: A case study approach. *International Journal of Innovation Management*, 8(1), 87-114.

Markides, C. (2006). Disruptive innovation: In need of a better theory. *Journal of Product Innovation Management*, 23(1), 19-25.

Ministry of Defence (2020). *Procurement at MoD.* Retrieved from https://www.gov.uk/government/organisations/ministry-of-defence/about/procurement.

Mitchell, W. (1989). Whether and when? Probability and timing of incumbents' entry into emerging industrial subfields. *Administrative Science Quarterly*, 34(2), 208-230.

Obal, M. (2013). Why do incumbents sometimes succeed? Investigating the role of interorganizational trust on the adoption of disruptive technology. *Industrial Marketing Management*, 42(6), 900-908.

Petzold, N., Landinez, L., & Baaken, T. (2019). Disruptive innovation from a process view: A systematic literature review. *Creativity and Innovation Management*, 28, 157-174.

Rosenbloom, R. S., & Christensen, C. M. (1994). Technological discontinuities, organizational capabilities, and strategic commitments. In G. Dosi, D. J. Teece, & J. Chytry (Eds.), *Technology, organization and competitiveness: Perspectives on industrial and corporate change* (pp. 655-685). Oxford: Oxford University Press.

Schatzki, T. R., Cetina, K. K., & von Savigny, E. (2001). *The practice turn in contemporary theory*. London: Routledge.

Schrage M (2000) *Serious play: How the world's best companies simulate to innovate*. Boston: Harvard Business Press.

Slater, S. F., & Mohr, J. J. (2006). Successful development and commercialization of technological innovation: Insights based on strategy type. *Journal of Product Innovation Management*, 23(1), 26-33.

Sood, A., & Tellis, G. J. (2011). Demystifying disruption: A new model for understanding and predicting disruptive technologies. *Marketing Science*, 30(2), 339-354.

Steyaert, C. (2007). 'Entrepreneuring' as a conceptual attractor? A review of process theories in 20 years of entrepreneurship studies. *Entrepreneurship & Regional Development* 19(6), 453–477.

Tellis, G. J. (2006). Disruptive technology or visionary leadership? *Journal of Product Innovation,* 23(1), 34-38.

Thales Group (2020). *Thales Group overview*. Retrieved from https://www.thalesgroup.com/sites/default/files/database/document/2020-01/Thales_Group_overview_EN_EX-02012019.pdf

Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal*, 21, 1147-1161.

van Dijk, S., Berends, H. Jelinek, M., Romme, A. G. L., & Weggeman, M. (2011). Micro-institutional affordances and strategies of radical innovation. *Organization Studies*, 32(11), 1485-1513.

Wagner, M. (2016). Managing disruptive innovation with technology acquisitions: The informing case of software-based high-technology industries. *Technology Analysis & Strategic Management*, 28(8), 979-991.

Wan, F., Williamson, P. J., & Yin, E. (2015). Antecedents and implications of disruptive innovation: Evidence from China. T*echnovation*, 39-40, 94-104.

Yu, D., & Hang, C. C. (2010). A reflective review of disruptive innovation theory. *International Journal of Management Reviews*, 12(4), 435-452.

Zietsma, C., & Lawrence, T. B. (2010). Institutional work in the transformation of an organizational field: The interplay of boundary work and practice work. *Administrative Science Quarterly*, 55(7), 189-221.

In the previous chapter I showed how organisational actors at Thales UK entrepreneurially created disruptive opportunities within spaces for play at the margins of the company's established managerial practices. Building on this insight, this chapter investigates how they develop over time. A growing movement of process scholars has taken an interest in studying how organisational phenomena 'emerge, change, and unfold over time' (Langley et al., 2013, p. 1, 10). Concerned with capturing the 'moving picture' of dynamic organisational phenomena, temporality is at the heart of process theorising (Hernes, 2014, p.1; Langley et al., 2013, p. 1). In exploring temporality, process scholars depart from a clock-time understanding of time as an independent variable on the x-axis and instead interpret the unfolding dynamics of organisational phenomenon in terms of process-time (Reinecke & Ansari, 2017, p. 406). Process-time is non-linear and experiential endogenous to events, activities and processes, whereas clock-time is measurable and standardised, independent of events and actions (Reinecke & Ansari, 2017, p. 404). From a process-time perspective, organisational actors constitute the temporal rhythm of organisational phenomenon in their everyday actions (Langley et al., 2013, p. 5; Orlikowski & Yates, 2002, p. 695). Future-making is thus an 'unowned' process of organisational actors coping with unexpected occurrences in their day-to-day work (MacKay & Chia, 2013, p. 222-223). Considering disruptive innovation as an emergent unowned process, I explore the entrepreneurial development of disruptive opportunities over time at Thales UK as incumbent organisation.

Organisation-creation theory highlights that new practices developed within tactically created heterotopian spaces for play impact on strategic management forces and enable change in established organisations (Hjorth, 2005, p. 392; Hjorth, 2012, p. 2, 11). Heterotopias, juxtaposing worlds within worlds reflecting yet disturbing the established arrangements they are embedded in, exist alongside and work in relation to the wider society that they exist but have their own rules, culture and context (Foucault, 1984/1986, p. 5-6). Heterotopias are situated in time both insulated and accessible at certain times based on their opening and closing (Foucault, 1984/1986, p. 6-7). The way that a heterotopia functions is shaped by as well as influences

change in the context that it is embedded (Foucault, 1984/1986, p. 5). The interrelationship between heterotopian spaces for play and the managerial context they are embedded foregrounds the interaction between managerial and entrepreneurial forces over time in established organisations. Organisational strategies and the entrepreneuring tactics used to consume them constantly influence one another – existing strategies shape the tactics used in practice to generate and maintain spaces for play and, in turn, what is actually practiced impacts on the dominant organising forces that shape the next iteration of entrepreneuring activity (Hjorth, 2003; Hjorth, 2012, p. 4). Drawing on the notion heterotopian spaces for play from organisation-creation theory, this chapter investigates the temporal dynamics of organising for disruptive innovation in an incumbent organisation.[3]

---

[3] This paper was discussed at the 11th International Process Symposium (PROS) professional development workshop in June 2019. This paper has been accepted for presentation at the upcoming 2020 EGOS conference in the sub-theme 'Entrepreneurship In and Around Organizations'. I intend to further develop this paper for publication in the Journal of Management Studies.

Chapter 5

Sustaining spaces for play: How disruptive opportunities are entrepreneurially developed over time in an incumbent organisation

Abstract

Disruptive innovation research focuses on disruptive innovation in incumbent organisations as an owned market-based outcome, either an exogenous force that leading organisations have no control over or a phenomenon that can be strategically predicted and deliberately acted upon. We explore the temporal dynamics of how disruptive opportunities are entrepreneurially developed over time within the context of an incumbent organisation from an organisation-creation perspective. In a longitudinal ethnographic case study we followed for three years the entrepreneuring processes on six potentially disruptive innovation projects as they unfolded at Thales UK, a leading multinational technology organisation. We illuminate how project actors continued entrepreneurial development of the disruptive opportunities by sustaining 'spaces for play' embedded within the established organisational arrangement. We identify key micro-dynamics that influenced the development of the disruptive opportunities through these recurrent spaces for play and that these entrepreneuring efforts were both shaped by and impacted on the organisational context. Our research expands understanding of disruptive innovation as an unowned process of strategic change. We further show the temporal dynamics of organisation-creation for disruptive innovation in an incumbent organisation including how recurrent divergent and convergent activities generate accumulated novelty over time.

146

Introduction

In the age of disruptions, 'fundamental changes that disturb or re-order the ways in which organisations and ecosystems operate' (Ansari, Garud, & Kumaraswamy, 2016a, p. 1), leading organisations need to embrace disruptive innovation processes to maintain their competitive advantage. Disruptive innovation scholars have so far focused on understanding disruptive innovation as an owned market-based outcome, either an exogenous force that established organisations have no control over (e.g. Adner, 2002, p. 686; Christensen, 1997, p xvii; Christensen & Bower, 1996, p. 207-209; Henderson, 2006, p. 6; Rosenbloom & Christensen, 1994, p. 655) or a phenomenon that can be strategically predicted and deliberately acted upon (e.g. Christensen & Raynor, 2003, p. 203, 229-230; Christensen & Overdorf, 2000, p. 66; Govindarajan & Kopalle, 2006, p. 16-17; Macher & Richman, 2004, p. 3; Markides, 2006, p. 24; Slater & Mohr, 2006, p. 30; Tellis, 2006, p. 38). While this research is useful to understand environmental constraints facing incumbents and the kinds of strategic activities they can engage in to foster disruptive innovation, these studies have not explored how established organisational and market arrangements and the actions of organisational actors interact over time in the emergence of disruptive innovation processes in established organisations (MacKay & Chia, 2013, p. 209). Our research addresses this gap by exploring the temporal dynamics of how disruptive opportunities are entrepreneurially developed over time within the context of a leading organisation from an organisation-creation perspective.

We understand organisation-creation as the development of new ways of organising that create new value for organisations through entrepreneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). In using this perspective, we aim to expand the current research focus on disruptive innovation as an owned market-based outcome following the classical evolutionary perspective of disruption by exploring the temporal dynamics of organising for disruptive innovation in an incumbent organisation as an unowned process of strategic change (MacKay & Chia, 2013, p. 209-210). We build on an emergent stream of research that conceptualises disruptive innovation as an ongoing and emergent process and consider that disruptive

innovation should be also understood performatively rather than defined exclusively by its end outcome (Garud, Gehman, & Tharchen, 2018, p. 502; Kumaraswamy, Garud, & Ansari, 2018, p. 1033; Petzold, Landinez, & Baaken, 2019, p. 166-167). We add to this emergent stream of research a perspective on disruptive innovation as an unfolding entrepreneuring journey of organisation-creation.

Our study takes place at Thales UK, the UK subsidiary of the leading multinational technology organisation Thales Group. Using a longitudinal ethnographic case study research design we followed the development of six potentially disruptive innovation projects on-the-ground as they unfolded at Thales UK. The first author participant observed as a full member of the Thales UK Research, Technology and Innovation (RTI) team. She collected project documents (52), videos (4) and pictures (129) as well as attended project-related meetings and events (87). She also conducted in-depth interviews (68) with organisational actors working to progress the projects as well as other members of the organisation involved in the projects, collected diary accounts (36) from members of the RTI team as well as kept a diary of her own day-to-day experiences. The rich ethnographic data corpus enabled us to examine in detail the temporal dynamics of organising for disruptive innovation within the context of Thales as incumbent organisation.

Our processual analysis revealed common micro-dynamics that influenced the development of the disruptive opportunities through recurrent phases of activity that represented heterotopian spaces for play. These heterotopian spaces for play were comprised of three stages: *mobilisation* – moments of legitimisation, *exploration and testing* – moments of developing new understandings, and *convergence* – moments of consolidation and feedback. Drawing on processual innovation research we identify *sustaining entrepreneurial* and *disbanding managerial* forces that influenced the development of the disruptive opportunities through the stages of play, *re-aligning* with the company strategy at the convergence stage was paramount for opening subsequent heterotopian spaces for play, and the ongoing

entrepreneuring efforts generated *emerging impacts* at the organisation that were incorporated into later developments on the projects.

Our research sheds light on disruptive innovation as an unowned process of strategic change that would not have been uncovered from a retrospective analysis based on its end outcome. We add to disruptive innovation research an understanding of the unpredictable and uncertain nature of emerging disruptive innovation processes arising from organisational actors' situated response to challenges they confront in their day-to-day work. We also contribute to organisation-creation research an understanding of the temporal dynamics of organisation-creation for disruptive innovation in the already organised context of an incumbent organisation. We further advance processual innovation research through an understanding of how divergent and convergent patterns of action play out on-the-ground and the cumulative synthesis of these activities over time in the case of an incumbent organisation organising for disruptive innovation.

The article is structured as follows. We begin by reviewing the dominant perception of disruptive innovation in leading organisations as an owned market-based outcome and the benefits of exploring disruptive innovation in its emergence to understand the temporal dynamics of organising for disruptive innovation in incumbent organisations. We then consider this process as an unfolding entrepreneuring journey of organisation-creation and theorise how disruptive opportunities are entrepreneurially developed within heterotopian spaces for play that emerge within as well as impact on the established organisational arrangement they are embedded. We then introduce our case study and research method. Finally, we present our findings and conclude with a discussion of our results and study contributions.

Disruptive Innovation as an Owned Market-based Outcome

The classical evolutionary perspective of disruption (Kumaraswamy et al., 2018, p. 1026) has framed our understanding of the emergence of disruptive innovation processes: new products, services, and business models that create new markets and re-shape existing ones (Christensen & Raynor, 2003,

p. 51). This model describes two types of innovations in established markets: sustaining innovations that advance the performance of existing products for established customers and disruptive innovations that are simpler, cheaper and contain novel features compared to their mainstream equivalents (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). New disruptive innovations tend to be ignored by the majority because they initially offer poorer performance than existing products but are adopted by customers on the fringe who are looking for affordable alternatives (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). Disruptive innovations gain momentum in the market by delivering to these overlooked segments and outperform mainstream products offered by market leading incumbent organisations in the long-term (Christensen, 1997, p. xvi; Christensen & Raynor, 2003, p. 34). Established organisations tend to miss the application of new disruptive innovations as they innovate around their existing customer needs following good management practices and ultimately their established business is disrupted (Christensen, 1997, p. xvii; Christensen & Raynor, 2003, p. 33-34). While there is some debate about the foundations of the Disruptive Innovation Model (e.g. Danneels, 2004, p. 257; King & Baatartogtokh, 2015, p. 78; Lepore, 2014; Markides, 2006, p. 19; Sood & Tellis, 2011, p. 339-340; Tellis, 2006, p. 34), it has strongly influenced perception of disruptive innovation as an owned market-based outcome.

An owned process perspective views social entities including strategic actors and their environment as causal agents in determining an organisation's strategic outcomes (MacKay & Chia, 2013, p. 209-210). What happens is attributed to managerial choice – the deliberate plans and conscious efforts of managerial agents, or environmental determinism – the causal influence of pre-existing environmental forces (MacKay & Chia, 2013, p. 208-209). Conversely, an unowned process perspective considers how choice, chance, and environmental circumstances dynamically interact to generate unintended consequences that shape future organisational circumstances (MacKay & Chia, 2013, p. 209-210). Unintended consequences are necessarily generated by organisational actors coping with incomplete and partial understandings of the situations they face in their everyday work (MacKay &

Chia, 2013, p. 209-210, 211). Since latent possibilities exist in every action taken, the effects of organisational actors' everyday work is thus essentially pluralistic (MacKay & Chia, 2013, p. 209-210, 211-212). In contrast to an unowned process perspective that privileges chance, coincidence, and inadvertent consequences, an owned process perspective prioritises managerial choice and environmental determinism.

Aligned with an owned process perspective, disruptive innovation is traditionally conceived as either an exogenous force that leading organisations have no control over or a phenomenon that can be strategically predicted and deliberately acted upon. Some studies focus on how leading organisations inevitably fail due to the market structure of the industry that it operates or its own lack of adaptive capability (e.g. Adner, 2002, p. 686; Christensen, 1997, p xvii; Christensen & Bower, 1996, p. 207-209; Henderson, 2006, p. 6; Rosenbloom & Christensen, 1994, p. 655). Other studies explore how incumbent organisations can deliberately respond to threat of disruption through managerial initiatives and strategy formulation. For instance, by intervening in their established business practices to enable disruptive innovation processes (e.g. Cozzolino, Verona, & Rothaermel, 2018, p. 1167; Govindarajan & Kopalle, 2006, p. 16-17; Khanagha, Zadeh, Mihalache, & Volberda, 2018, p. 1081; Markides, 2006, p. 24; Slater & Mohr, 2006, p. 30; O'Reilly & Tushman, 2008, p. 202; Tellis, 2006, p. 38; Wagner, 2016, p. 987; Wan, Williamson, & Yin, 2015, p. 101-102) or pursuing disruptive innovation initiatives separate from their core business operations (e.g. Campbell, Birkinshaw, & Morrison, 2003, p. 30; Chao & Kavadias, 2007, p. 908-909; Christensen & Raynor, 2003, p. 203; Claude-Gaudillat & Quélin, 2006, p. 175; Macher & Richman, 2004, p. 19). Extant research investigates disruptive innovation in established organisations from an owned process perspective with its impact determined by environmental circumstances or conscious managerial choices.

Yet there is evidence to suggest there is utility in exploring the temporal dynamics of the emergence of disruptive innovation as an unowned process. Multiple diverse stakeholders collectively shape disruptive innovation

processes and the dynamics of their interrelations change over time based on their ongoing actions (Kumaraswamy et al., 2018, p. 1033; Petzold et al., 2019, p. 158). Organisations are therefore forced to perform rather than try to predict this dynamic and complex process (Kumaraswamy et al., 2018, p. 1033). However, the few available empirical studies of disruptive innovation processes look retrospectively at how particular disruptive phenomena transpired (e.g. Afuah, 2000, p. 393-394; Ansari et al., 2016b p. 1832; Christensen & Bower, 1996, p. 200; Ozalp, Cennamo, & Gawer, 2018, p. 1027; Rosenbloom & Christensen, 1994, p. 661; Snihur, Thomas, & Burgelman, 2018, p. 1285-1286; Sood & Tellis, 2011, p. 344-345). Such backward-looking accounts tend to overlook the unexpected occurrences of unfolding organisational phenomenon in their emergence (MacKay & Chia, 2013, p. 210). Informants can re-interpret past happenings based on new understandings accrued through time when retrospectively consulting them about their experiences (Langley & Stensaker, 2012, p. 152). Furthermore, rich contextual information about the ups and downs of the entrepreneurial journey as it happens can be lost when informants re-plot past events and experiences into a coherent narrative after-the-fact (Langley & Stensaker, 2012, p. 152). A more nuanced understanding of the temporal dynamics of organising for disruptive innovation in incumbent organisations can be gained by engaging with the phenomenon in its emergence.

We propose to complement the current focus in extant research on disruptive innovation in incumbent organisations as an owned market-based outcome following the classical evolutionary perspective of disruption by exploring the temporal dynamics of organising for disruptive innovation as an unowned process of strategic change (MacKay & Chia, 2013, p. 209-210). We build on an emergent stream of research within the disruptive innovation literature that conceptualises disruptive innovation as an ongoing and emergent process (Kumaraswamy et al., 2018, p. 1033; Petzold et al., 2019, p. 166-167). Rather than define disruptive innovation by its end outcome and work backwards, we seek to understand how disruptive innovation is performed in its emergence (Garud et al., 2018, p. 502). We expand this nascent research approach by looking at the temporal dynamics of organising for disruptive innovation in a

leading organisation as an unfolding entrepreneuring journey of organisation-creation. We outline our perspective in the following section.

Disruptive Innovation as an Unfolding Entrepreneuring Journey of Organisation-Creation

Organisation-creation has been described in organisation studies as the becoming of new ways of organising that create new value for organisations through entrepreneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). Entreprenuering is a dynamic and collective creative process instantiated in the everyday interactions among various actors and their situated context (Holmquist, 2003, p. 78-82; Steyaert, 2007, p. 465). This processual view of entrepreneurship breaks from a dominant scientific and individualistic conceptualisation of 'the entrepreneur' to consider it an emergent social process that brings new organisational orders into being (Hjorth, 2014, p. 102; Holmquist, 2003, p. 78-82). While in our research we look at the process of organisation-creation in the context of an established organisation's disruptive innovation efforts, organisation-creation can also be entrepreneuring processes that spawn entirely new organisations.

Within established organisations, entrepreneuring is conceptualised as a tactical process inseparably linked to classical management practices (Hjorth, 2012, p. 4; Hjorth, 2014, p. 108). Managerial practices are carried out by organisational actors self-regulating their behavior according to what is constructed as proper to do in organisations (Hjorth, 2004, p. 416). New ways of organising emerge within heterotopian spaces for play that are within the space of but also depart from these strategically imposed places in organisations (Hjorth, 2005, p. 392). Spaces for play are generated by entrepreneuring tactics that creatively consume top-down managerial strategies using localised knowledge of the lived experience of their use in practice (Hjorth, 2003, Hjorth, 2004, p. 420). These microscopic acts of resistance are the 'art of the weak', a partial misuse of strategic places invisible to institutional observers (de Certeau, 1980/1984). In locally withdrawing from the reigning managerial order, entrepreneuring tactics create in-between spaces where imagination, creativity and innovation can be

safely unleashed within the cracks in surveillance of institutionalised disciplinary mechanisms (Hjorth, 2004, p. 420; Hjorth, 2005, p. 392). Entrepreneuring tactics are short-lived and continuously evolving because they need to adapt to the situated strategic circumstances they occur (Hjorth, 2003; Hjorth, 2005, p. 396). In the process of organisation-creation, entrepreneuring tactics creatively consume managerial practices to open heterotopian spaces for play where new ways of organising can develop within already established organisational orders.

We contend that an organisation-creation perspective enables us to expand the focus of current disruptive innovation research to include observations of disruptive innovation as an unowned process of strategic change. Heterotopian spaces for play are radically other spaces seated within yet withdrawn from prescribed managerial practices in organisations (Hjorth, 2003; Hjorth, 2005, p. 392). Juxtaposing worlds within worlds reflecting yet disturbing the established arrangements that they are embedded within, heterotopias exist alongside and work in relation to the wider society that they exist but have their own rules, culture and context (Foucault, 1984/1986, p. 5-6). The way that a heterotopia functions is shaped by as well as influences change in the context that it is embedded (Foucault, 1984/1986, p. 5). Moreover, heterotopias are situated in time both insulated and accessible at certain times based on their opening and closing (Foucault, 1984/1986, p. 6-7). New practices that arise within heterotopian spaces for play in organisations are essential for fostering innovation in companies because they comprise 'the new' rather than what the organisation currently does (Hjorth, 2012, p. 2). These emergent practices impact on strategic management forces in organisations offering a conduit for organisational change and innovation (Hjorth, 2005, p. 392, 396; Hjorth, 2012, p. 2). However, the process of how organisation-creation unfolds from previous organisational arrangements is not well understood (Hjorth, 2014, p. 109; Hjorth & Reay, 2018, p. 1). We explore in our research the temporal dynamics of how organisation-creation for disruptive innovation emerges in the case of an already organised incumbent organisation context.

To inform our study we draw on past research looking into innovation processes in organisations from a processual perspective. Dooley and Van de Ven (2017, p. 576) show that the temporal sequence of organisational innovation can be characterised as a meta-pattern of recurrent cycles of divergent and convergent activities. Divergent activities focus on discovery and exploring new directions branching out from an organisation's normal operations, whereas convergent activities close in and narrow down possibilities focusing on implementation, execution and exploitation (Dooley & Van de Ven, 2017, p. 575-576). Each cycle begins with the investment of additional resources, followed by a 'honeymoon' period of divergent activities that continues until resources are exhausted or a solution is found, and finally a period of convergence focused on exploitation or initiating another cycle (Dooley & Van de Ven, 2017, p. 576-577). Organisational innovation processes are only sustainable over time if a full cycle of divergence and convergence is completed – unconstrained or continuous periods of divergence can make convergence impossible while convergence with no divergence can result in stasis and ultimately death of the innovation cycle (Dooley & Van de Ven, 2017, p. 580). Although this meta-pattern of recurrent cycles of divergent and convergent activities is well-founded in past research, further work is needed to understand on-the-ground dynamics of this unfolding process (Dooley & Van de Ven, 2017, p. 588).

Complementary to this meta-view, other processual innovation scholars draw on Usher's (1954) work to describe the micro-details of how innovation processes unfold as a process of cumulative synthesis (Garud, Gehman, Kumaraswamy, & Tuertscher, 2017, p. 452; Kumaraswamy et al., 2018, p. 1030). Usher's (1954) model of cumulative synthesis is comprised of four interrelated mechanisms: perception of an incomplete pattern – an unfulfilled want, setting the stage – bringing together of contextual conditions necessary for novelty, act of insight – act that goes beyond customary ways of doing things, and critical revision – novelty studied and fully understood in relation to its context (Garud et al., 2017, p. 452-454; Kumaraswamy et al., 2018, p. 1030). Usher's (1954) model depicts innovation as a collective and distributed process of accumulated acts of insights that generate novelty over time

(Garud et al., 2017, p. 452). Emergent ideas are part of a series of acts of insight that set the stage for subsequent acts of insight to build upon (Garud et al., 2017, p. 453). Usher (1954, p. 79) highlights that acts of insight are 'a chance occurrence in the sense of being unforeseen and unplanned' stressing the unpredictable nature of unfolding innovation processes. Usher's (1954) model of cumulative synthesis places emphasis on the importance of context and unpredictable occurrences that over time may lead to new products and services (Garud et al., 2017, p. 453). Usher's (1954) model of cumulative synthesis sheds light on innovation as an unowned process but we lack an understanding of how this process unfolds in the case of organisation-creation for disruptive innovation within a leading organisation.

To sum up, in our research we explore the temporal dynamics of how disruptive opportunities can be entrepreneurially developed over time within the context of an incumbent organisation from an organisation-creation perspective. In adopting this approach we respond to a lack of interest in exploring disruptive innovation processes in established organisations in their emergence. We shift investigation of disruptive innovation in leading organisations as an owned market-based outcome following the classical evolutionary perspective of disruption to the temporal dynamics of organising for disruptive innovation as an unowned strategic change process.

Research Setting and Method

Our study takes place at Thales Group, a leading multinational technology company with approximately 80,000 employees operating in 68 countries. Thales is a complex systems provider in the aerospace, space, ground transportation, digital identity and security, and defence and security sectors and has been consistently ranked as a Top 100 Global Innovator (Thales Group, 2020). In January 2015 Thales UK embarked on a transformational change 'Organising for Growth' triggered by both internal and external organisational factors. Internally, Thales Group had set an aggressive growth agenda that UK stakeholders recognised would not be achievable by relying solely on organic growth. Externally, their core markets were also changing with many of their key customers beginning to look beyond their traditional

industry partners to co-develop novel solutions to their challenges (InnovationXchange UK Ltd., 2019; Ministry of Defence, 2020). As part of this transformation effort, Thales UK Research, Technology and Innovation (RTI) was formed to focus on disruptive opportunities for the company. Our case is a particularly rich context for studying entrepreneuring processes in their emergence because we had the opportunity to follow Thales UK's organisation-creation efforts almost from the start.

Research design and data collection

Using a longitudinal ethnographic case study approach, we followed the development of six potentially disruptive innovation projects on-the-ground as they unfolded at Thales UK over a three-year period. We chose an ethnographic research approach to reveal the lived experience of managerial strategies in use that cannot be observed from an institutional position (de Certeau, 1980/1984). Projects are the nodes of our study to de-center the individual actors and foreground the interaction processes and practical activity occurring (Lindgren & Packendorff, 2003, p. 88-89). The first author was positioned in the company's newly formed RTI organisation where she participant observed as a full member of the team to gain deep insight into the processes and practices involved in the company's efforts to cultivate disruptive innovation processes. This full engagement offered her the chance to observe and contribute directly to the company's fledgling disruptive innovation efforts from an insider perspective (Alvesson, 2009, p. 163; Emerson, Fretz, & Shaw, 2011, p. 2-3).

Six focal projects were identified in consultation with senior leaders of the Organising for Growth change programme. All selected projects aimed to understand emerging customer needs in new and future markets for the purpose of developing disruptive new products and services. The company is in a leading market position in all the domains and observed SME (small and medium-sized enterprise) competitive entrants. Table 5-1 summarises the project profiles.

Table 5-1. Project profiles.

Project name	Domain	Incumbent position	Emergent customer need/ market
Trust	Digital Security	Major European leader in cyber security, worldwide leader in data protection	Internet of Things, cyber threat, digitalisation, automation
Civil UAS	Air Traffic Management	#1 worldwide in air traffic management	Commercial use of unmanned aerial systems
Counter UAV	Defence Countermeasures	#1 in Europe for defence electronics	Control of unmanned aerial vehicle misuse
Mindful Journeys	Transport	#2 worldwide in signaling and supervision of rail networks	Intelligent mobility, smart cities, personalised data services
Bridgwater	Critical Infrastructure Protection	Leader in secure communications and information systems (#2 worldwide in military tactical communications)	Construction of new nuclear power stations
Training	Training and Simulation	Global leader in simulation solutions	Cost-effective training solutions for collective preparedness, generation z digital native learning preferences

UAS: Unmanned Aerial Systems; UAV: Unmanned Aerial Vehicle

The first author attended project-related meetings and events (87) and collected project documents (52), videos (4) and pictures (129). She also conducted interviews with organisational actors working to progress the focal projects (48) as well as other members and customers of Thales UK RTI involved in the projects (20). She also collected diary accounts from her colleagues working in the RTI team (36) as well as kept a diary of her own day-to-day experiences (162 personal accounts).

During the project interviews, the study participants were asked to describe their projects, what they had been doing to progress them, what challenges they had experienced and how they overcame those challenges, their expectations of the project and planned next steps. Repeat interviews were conducted quarterly (on average) with the project actors over the course of

the study to discuss the progress of their innovation projects. The diary entries were submitted to the first author by email and consisted of responses to short answer questions about what the project actors had been doing to progress their innovation projects, what challenges they had experienced and how they had overcome them as well as their expectations of their project. Each diary entry was approximately half a page to one page in length.

Each of the projects had funded teams working on them at some stages while at other times one or two actors were working to progress the projects. The first author was a member of the Trust and Training project teams and was proximately involved in the Counter UAV project so naturally attended project-related meetings and events as well as collected artifacts of the day-to-day project activities as part of her work. On the other projects the first author relied on the project actors sharing project artifacts and inviting her to key events. Table 5-2 provides a breakdown of the data corpus by project.

Table 5-2. Data breakdown by project.

Project name	Total number of core business stakeholders involved	Total number of project level actors	Data corpus
Trust	33	18 (min. 1, max. 10 active at a given time)	52 events attended 26 interviews 23 diaries 24 documents 1 video 68 pictures
Civil UAS	16	9 (min 2, max. 7 active at a given time)	1 event attended 18 interviews 2 diaries 4 documents
Counter UAV	18	9 (min 2, max. 8 active at a given time)	7 events attended 15 interviews 18 diaries 10 documents 1 video 24 pictures
Mindful Journeys	15	12 (min 1, max. 6 active at a given time)	1 event attended 12 interviews 7 diaries 2 documents
Bridgwater	5	3 (min 2, max. 3 active at a given time)	1 event attended 4 interviews 2 videos
Training	21	8 (min 1, max. 3 active at a given time)	32 events attended 9 interviews 7 diaries 12 documents 41 pictures

Note: Some interviews, diaries, events and pictures cover more than one project.

At the beginning of the study, the research sponsors announced publicly that the first author would be participant observing the company's innovation efforts. Participants were invited to take part in the study by an email that included the details of the first author's position in the company and the purpose of the research. Participants were selected according to their functional and hierarchical position in the organisation as well as their involvement with the focal innovation projects. All interviews were conducted in private hub rooms at the organisation's various UK sites. The study participants were notified that their participation was voluntary and that they could withdraw at any time without consequence. The participants were

assured that the data they provided, either recorded interview or diary submission, was confidential and anonymous.

Data analysis

We drew on available guidance for theorising from process data (Langley, 1999, p. 691) to derive theoretical insight from the data corpus. First we constructed detailed case narratives for each project drawing on the variety of forms of project data collected. The resulting six case narratives were structured around the challenges the project actors experienced, their responses to those challenges and the outcomes of those activities. We also paid close attention to how the project actors differentiated themselves and their ways of working from 'traditional thinking and doing' at the organisation in constructing the case narratives. Quotes, document, video and picture material were embedded in the text as well as excerpts from the first author's own and her colleagues' diary accounts to substantiate the case stories. The case stories ranged in length from 62 to 219 pages culminating 723 pages in total. The next step of analysis involved the division of the six case stories into sequential episodes to organise the events that occurred over the course of each project and make sense of the project journeys. We used 'temporal bracketing' (Langley, 1999, p. 703-704) to group these episodes into phases of recurrent entrepreneuring activity for each project. We then compared the overall patterns of recurrent entrepreneuring activity observed on each project across the six project cases.

We identified that the recurrent phases of entrepreneuring activity we identified across all of the projects represented heterotopian spaces for play that opened and closed through time. We plotted the episodes on a series of curves that represented the recurrent phases of play. We also noted emergent changes that were generated in each phase of play on each of the projects. We further identified that some of the projects progressed through multiple phases of play while others stopped or pivoted in a different direction. We engaged in an in-depth plotting of the momentum of each project over time. We noted that strategic managerial forces at the organisation caused the projects to slow or lose momentum while the project actors engaging in

entrepreneuring activities increased project momentum when confronted by these challenges. We also identified that projects successfully progressed to open the next heterotopian space for play by re-aligning with the company strategy at the convergence stage while projects that stopped or pivoted were unsuccessful at 'hooking' into the company strategy at this moment.

Findings

Our analysis revealed common micro-dynamics that influenced the development of all of the projects through recurrent phases of activity that represented heterotopian spaces for play. These heterotopian spaces for play were comprised of three stages: mobilisation – moments of legitimisation, exploration and testing – moments of developing new understandings, and convergence – moments of consolidation and feedback. In the mobilisation stage the project teams needed to align their work with the company interests and convince business sponsors of their proposed 'different approach' on their projects. They agreed a high level plan for the project with the business stakeholders to secure the necessary resources they needed for the project while also creating a flexible working environment for the team. In the exploration and testing stage the project teams iteratively developed and tested new transformational business ideas by engaging with market stakeholders, conducting secondary research about future trends in the domain, and attending and hosting industry events. They made do with available resources, leveraged their network to fill gaps in knowledge and capabilities, and used their wits to improvise when unexpected challenges occurred. They also regularly engaged with their project sponsors and other business stakeholders to maintain an understanding of as well as shape their interests and priorities. In the convergence stage the project teams worked to align their ideas with the interests of the business stakeholders. They consolidated their project findings and developed a tailored story to communicate their recommendations. The project actors engaged in distinct activities during the stages of development of the spaces for play.

In our detailed analysis of the temporal dynamics of how these projects unfolded over time, we identified that sustaining entrepreneurial and

162

disbanding managerial forces influenced progression of the projects through the stages of development of the heterotopian spaces for play, re-aligning with the company strategy at the convergence stage was paramount for opening subsequent heterotopian spaces for play, and the ongoing entrepreneuring efforts generated emerging impacts at the organisation that were incorporated into later developments on the projects. Dominant managerial forces imposed disbanding pressures on the projects but entrepreneurial forces sustained the spaces for play and kept the projects going. Successful projects – projects that maintained momentum over the course of the study – progressed to subsequent spaces for play by aligning with the company's strategic interests at the convergence stage. Projects stopped or pivoted in a different direction when they were unable to 'hook' into the company strategy at this moment. Over the course of each phase of play the project teams' entrepreneuring efforts generated individual and contextual impacts that resulted in organisational change at the company. See Table 5-3 for a summary of the micro-dynamics we identified in each heterotopian space for play in our analysis.

Table 5-3. Microdynamics of heterotopian spaces for play.

Micro-dynamic	Description
Sustaining entrepreneurial forces	*Prioritising a new future*
	• Multidisciplinary team approach/ different thinking • Focus on long-term/ new market opportunities/ influencing market • Project working days/ sprints/ permanent workspace • Prioritise learning/ organisational development and change
	Collaborative market proficiency
	• Market-focused approach • External customer/ market engagement/ desk research/ industry events/ networking • Draw on industry best practice • Cross-company stakeholder engagement/ international communication • Storytelling/ visualisation/ demos to communicate findings
	Agile united operations
	• Shared team understanding/ belief in recommendations • Pull on resource/ skills from across company • Alignment of business stakeholders' priorities • Flexible working practices • Quick iterative approach to ideas/ solution development • Build on learning on projects
Disbanding managerial forces	*Today's known deliverables*
	• Business discomfort with different approach/ uncertain outcomes • Finite resources • Lack of commitment from senior leadership at company • Business stakeholders focused on delivering current projects and programmes • Business stakeholders interested in near-term sales/ exploitation of opportunities • Near-term priorities/ demands on project team's time • Pressure to deliver

	Technical and domain proficiency	
	- Technical/product mindset - Preconceived solution/ ideas - Internal process/ governance - Individual business areas prioritise local benefits	
	Rigid fragmentation	
	- Organisational politics - Lack of strategy/ consolidated information - Bureaucracy/ rigid business practices and processes - Complex stakeholder environment/ stove-piped business interests - Lack of team cohesion	
Re-aligning with the company strategy	- Thales Group strategy/ priorities - Thales UK corporate strategy/ priorities - Business unit strategy/ priorities - RTI strategy/ priorities - Customer interests	
Emerging impacts	*Individual impacts*	
	- Personal development - Engagement - Identity construction - Learning from experience	
	Contextual impacts	
	- New avenues for opportunities - Customer influence and brand differentiation - New practices and processes - Influencing thinking and practices in business - Cross-company knowledge sharing and collaboration	

Sustaining and disbanding forces

The projects did not move through the stages of development of the spaces for play we identified in a linear step-wise manner. Once a space for play was successfully opened, the project teams moved back and forth between the mobilisation, exploration and testing and convergence stages depending on the demands of their situation. The project teams often experienced setbacks where they needed to re-mobilise resources or at times were forced to converge unexpectedly. The phase of play completed when the project team had been through all of the stages of development of the spaces for play and worked to re-align their projects with the company strategy to secure additional resources and support to open a subsequent space for play. See Figure 5.1 for an overview of the project trajectories. Each of the projects progressed through between two and four spaces for play over the course of the three-year study. Separations between the phases of play are demarcated with a dotted line.
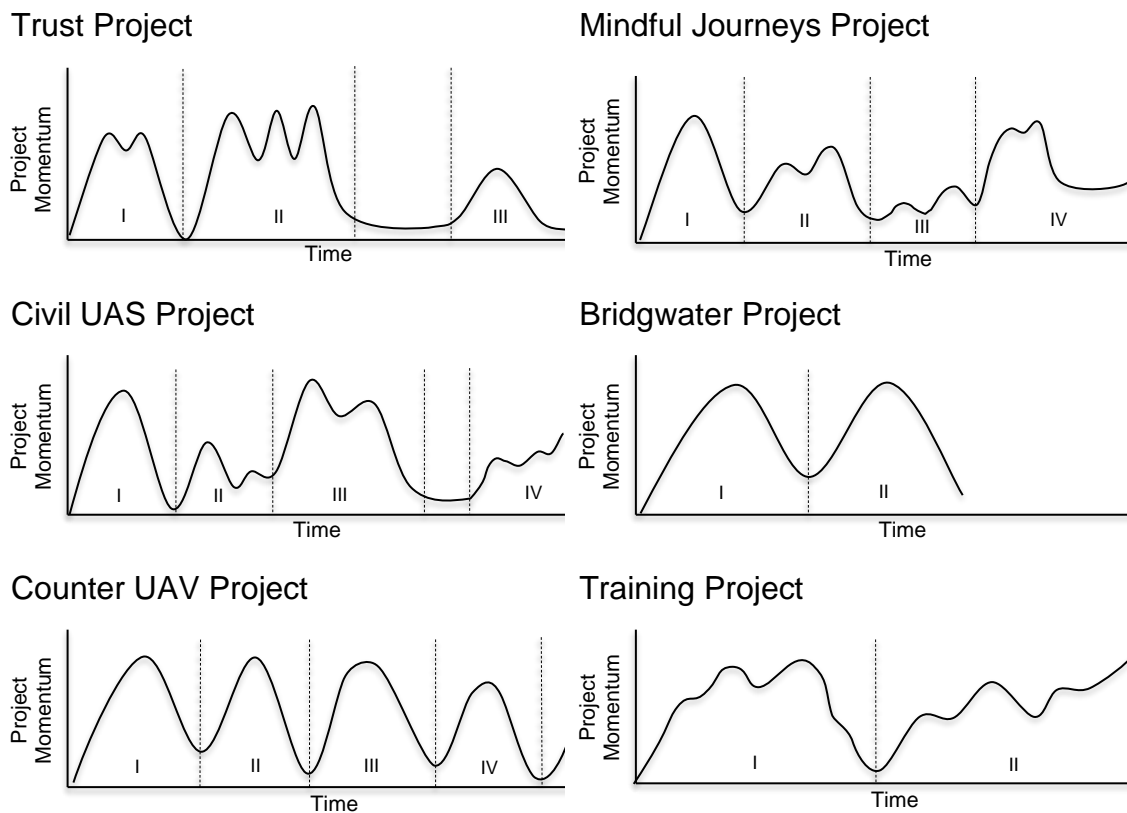
Figure 5.1. Project trajectories.

As seen in the images of the project trajectories it was not a smooth transition through the stages of play. Disbanding managerial forces caused the projects to lose momentum at times, but the project teams engaged in sustaining entrepreneurial forces to keep the projects going. For instance, in the second phase of the Mindful Journeys project, Brian, the Project Lead, moved back and forth between the mobilisation and exploration and testing stages of play. After the initial phase of the project completed Brian struggled to convince key stakeholders at the organisation to invest in further development of the Mindful Journeys concept. Therefore, he worked to secure funding from external sources to carry forward the project. He carried forward insights from his project in a collaborative bid proposal into an external funding body. Having gained support from the organisation to prepare the bid proposal in a period of mobilisation the project transitioned to the exploration and testing stage where the team worked with members of the GTS (Ground Transportation Systems) business unit to prepare and submit the collaborative proposal. After learning that they were unsuccessful in the competition because their proposed solution did not have a clear exploitation plan the project transitioned back to the mobilisation stage:

> *"the worst scores were for how do you intend to exploit this and take it to market? And how do we intend to, those sorts of things, the business side. And one of the reviewer's comments, because you basically get a few sentences from each, for each question was that there is no clear product exploitation strategy." – Brian (interview, Mindful Journeys Project, Phase II)*

Brian explained that they did not have an exploitation plan in their proposal because the company did not have a clear product roadmap for intelligent mobility. The company was managerially focused on delivering its existing products and services to its current customers and was not engaged in developing product roadmaps for future offers in emerging markets:

"It doesn't matter how well you plan a technical delivery, and how ambitious you make it, technically and outcome-wise, if you have no product strategy, it's very difficult to make up one... We've got people who are ambitious and will say 'look I will build a technically ambitious solution', but they don't have a credible product strategy roadmap. And that's not their fault, we just don't think to have that sort of way of pulling through research into product roadmaps." – Brian (interview, Mindful Journeys Project, Phase II)

Brian was able to sustain the space for play by working with some members of the organisation with business acumen to engage in a business modeling activity building on the competition feedback. Again, the team transitioned to an exploration and testing phase looking into possible business models for the proposed service. At the end of the process they could not confirm a viable business model for the solution and decided not to pursue the activity further in a stage of convergence:

"So we tried, we spent a couple of months between RTI [Research, Technology and Innovation], TRT [Thales Research & Technology] and GTS [Ground Transportation Systems] trying to identify all the different product offerings that you could have, is it the data, is it the service, is it an app? And it wasn't particularly satisfactory." – Brian (interview, Mindful Journeys Project, Phase II)

The Mindful Journeys project lost momentum and then converged completely because the project team was not able to demonstrate a viable business case for the proposed service offering. The managerial need for a business case imposed a disbanding force on the project. In an entrepreneuring effort Brian pursued a business modeling activity to keep the project going but eventually the disbanding managerial force outweighed the sustaining entrepreneurial force on the project resulting in closure of the space for play.

The project teams also converged unexpectedly at times such as in the second phase of the Trust project. The project team was working to develop a

customer demonstrator of the Trust offer in collaboration with the SIX (Secure Information and Communication Systems) business unit, but the technical development was lagging. The SIX technical team was struggling to make progress on the project alongside delivering a nearer-term customer contract. When the project team suddenly realised there would be no technical output for the project, they were thrown into the convergence stage of play. They worked to consolidate the work they had done and re-focus the project on solely delivering the market-focused component of the customer demonstrator:

> *"when we knew the technology was missing you know it very quickly we either go we stop and wait, or consolidate what we are doing and run it alone. And we chose the second option." – Patrick (interview, Trust Project, Phase II)*

> *"it's less about the ideation, it's less about new ideas, it's about what have we got that we can wedge in and make fit. And when you think like that it's a different mindset isn't it? Because you're trying to make the narrative work and the piecing together all the material rather than 'oh, did you know this? And let's build on that.'" – Patrick (interview, Trust Project, Phase II)*

> *"we suddenly went from ideation, in trying to pull it all together, into delivery… I think that switch over everyone found uncomfortable, probably because we didn't realise we were doing it" – Patrick (interview, Trust Project, Phase II)*

The disbanding managerial force to focus on delivering and exploiting near-term opportunities outweighed the entrepreneurial longer-term focus on the Trust project and caused the project team to converge earlier than expected. The space for play came to a close as the project actors consolidated their project work and prepared to feedback their findings and recommendations to the business. The project teams' progression through the stages of the spaces for play was messy dependent on the demands of the situation.

Disbanding managerial forces caused the projects to lose momentum while the project actors' entrepreneuring efforts kept the projects moving forward.

Re-aligning with the company strategy at convergence stage

Successful projects – projects that maintained momentum over the course of the study – progressed to subsequent spaces for play by aligning with the company's strategic interests at the convergence stage. On the other hand, projects stopped or pivoted in a different direction when they were unable to 'hook' into the company strategy at this moment. Below we compare two different projects at the convergence stage, one that was able to immediately re-open a space for play and another where the core project did not progress but the project actors still managed to open a subsequent space for play in a different direction.

The first phase of the Civil UAS project converged when the project team had identified a potential business opportunity for the organisation in the emerging Civil UAS (unmanned aerial systems) market and needed to mobilise additional resources to pursue the opportunity. They consolidated the work that they had done and crafted a compelling pitch of their recommendations to the business for further investment. They delivered their presentation to the Thales UK CEO (Chief Executive Officer) and other key members of the Thales UK Management Board (UKMB). The project team reflected that presenting about the Civil UAS opportunity to this audience was a challenge because they needed to take a diverse set of stakeholders on a journey to understand the extremely complex external opportunity they had identified and related internal impacts:

> *"There's disruptions to regulators, there's disruptions to customers, there's disruptions to the technologies all at once. It was a bit kaleidoscopic in terms of being able to at any given time to just sort of stop the world and go ok if we join enough of those things together there's an opportunity that, you know takes advantage of all of the disruption at the same time. And the hard part about that was actually not us figuring it out, because if you spend enough time on it you can*

figure it out, the hard part was you then got to take a lot of people with you on that journey, and they all come from different perspectives" – Kirk (interview, Civil UAS Project, Phase I)

Despite the challenging stakeholder audience and novelty of the situation for the organisation, the Thales UK CEO endorsed the project team's recommendations. He connected them to the Head of the Land and Air Systems Global Business Unit (LAS GBU) to secure funding to further develop the Civil UAS project:

"we did the presentation and it ended up going on for quite a long time. It was the first time that group had done something like this, and it appears to have been very successful. It's the upper end of our range of expectations." – Kirk (interview, Civil UAS Project, Phase I)

"The outcome was Owen [Thales UK CEO] said 'yes we need to take this and go and see Carter [Head of LAS GBU] and get him to agree as well and then we can put lots of resource into it and get it running and all of those things.' He asked for a couple of bits of further elaboration on a couple of slides which was a good intervention and you know it's probably things in an ideal world we would have done anyway beforehand. But fundamentally the major strategies, major recommendations all accepted" – Kirk (interview, Civil UAS Project, Phase I)

The project team clearly anchored the opportunity they presented as relevant to the Air Traffic Management (ATM) business line in the Land and Air System (LAS) business area based on their understanding of key stakeholders' priorities in this domain:

"it leans quite heavily on one bit of the business, and it leans on something which is existential for that bit of the business. So something will definitely happen, because if it doesn't sage people in and around that business, including Carter [Head of LAS GBU] as a good example,

know full well that business is in deep trouble. So as it's evolved, what we have managed to do is make it look, if not exactly like the sort of more, you know the majority of the weight is resting on a sensible sort of area. Not the entirety of it and there are still some bits that the Group will find really challenging but it's clear that the answer is probably built in roughly that area of the business" – Kirk (interview, Civil UAS Project, Phase I)

The project team aligned their project findings and recommendations with the strategic interests of the LAS business area to secure further investment in the Civil UAS project. The project team successfully 'hooked' their work into the company strategy at the convergence stage that enabled them to mobilise a subsequent heterotopian space for play to continue the project.

Conversely, after the first phase of the Training project the project team was unable to 'hook' into the core business interests at the convergence stage and thus was unsuccessful in progressing the project further:

"I think, the thinking is right. I think we've got a different way of approaching the problem. I think we can't get the internal sponsor, like healthcare, and if you can't get the internal sponsor, you can't carry on with the head room to really do the thinking we believe that you need to do on these projects to give them a chance of working." – Patrick (interview, Training Project, Phase I)

While other projects had successfully continued by securing buy in from the organisation at the convergence stage, the core recommendations for future training solutions were not taken up by the business at this critical moment:

"I don't know how you create sponsorship if you can't get the organisation bought into what you want to do. And for some reason, Eli [IH Consultant], on Counter UAV [Unmanned Aerial Vehicle], for some reason on Digital Trust in terms of the technology, we've somehow got a better buy in. And I can't work out what the difference is. I can't really

> *work out what the difference is. There is no obvious, easy recommendation. Eli [IH Consultant] is very affable, but so are you, and me. Is Eli [IH Consultant] any better than us? I'm not sure. I don't think he is. You know, has he been luckier? Maybe… I'm disappointed that you can't take forward the Training project but I can't see a way of doing it, like the healthcare thing. I can't see at the moment how you would do it." – Patrick (interview, Training Project, Phase I)*

While they could not see a way forward to continue the project on its initial trajectory, the project team was able to carry forward some of the insights from their work in another vein. The project team separately developed a live foresighting capability idea that came from the project under the digitalisation workstream based on outputs from the first phase of the Trust project:

> *"touching on some of the digitalisation bit that I've managed to create an umbrella for, might enable some of that stuff to carry on… Foresighting capability. Putting that under digitalisation, making it a very digitally orientated foresighting capability, moving forward with the stuff that we are doing around OSINT [Open Source Intelligence] and aligning all of those dots might keep it going." – Patrick (interview, Training Project, Phase I)*

While the Civil UAS project team was successful in opening a subsequent space for play by aligning with the LAS GBU business strategy, the Training project team was unsuccessful at securing further buy in for their work from the company. However, they ultimately managed to pivot their work and carry forward some of their insights in an alternate avenue. Projects progressed to a subsequent space for play by aligning with the company strategy at the convergence stage. On the other hand, projects stopped or pivoted when they were unable to 'hook' into the company strategy at this time.

Emerging impacts

The entrepreneuring activities disrupted customary ways of doing things at the company. As a result of their entrepreneuring efforts the project actors

impacted on the understandings and behaviours of the stakeholders they engaged and developed themselves. See Table 5-3 for a summary of the individual and contextual impacts we observed across all of the project trajectories.

For example, on the Trust project the project actors were working to leverage capability in one part of the company in the other business domains. In doing so they engaged stakeholders across the company's different business areas to understand their challenges and potential opportunities for applying the particular capability. One of the stakeholders that worked in one of the business units acknowledged the impact of the project team's work in the organisation:

> *"the work you guys have been doing trying to work out what Trust is… I think it's very interesting work that is very powerful and I think that having a shared understanding of that and a shared messaging across the different businesses in Thales UK has got to be a good thing" – Mick (interview, Trust Project, Phase I)*

The project activities influenced the thinking of organisational members across the company. Employees in different areas of the business that were traditionally fragmented began to adopt a shared understanding of a new concept as a result of the project. The project actors also explained that they developed personally from their efforts as explained by one of the Trust project team members:

> *"I think I'm a more rounded person, six months or a year later… I feel comfortable talking about some of the methodologies that we have used. I feel fairly comfortable facilitating and running workshops or demonstrations using those methodologies in other parts of the business. So, personally it's been a really good year for me. It's very different to what I have normally been doing. I do miss some of the technical stuff, but I have to change and adapt, like Thales does." – Max (interview, Trust Project, Phase I)*

Max developed new skills and confidence from carrying out activities that were different from customary ways of doing things at Thales UK. Rather than conducting his usual technical work, he developed an understanding of innovation methodologies and group facilitation. He explained that the activities he engaged in enabled both him and the organisation to change and adapt.

The project activities also generated external impacts. For instance, Jaxon and Caleb influenced the thinking of their customer and other key stakeholders in the new nuclear market in the UK through their work on the Bridgwater project:

> *"through all these sorts of engagements, engagements with SMEs [small and medium-sized enterprises] that are in that ecosystem and the college itself, there's been various other discussions around wider opportunities where Thales can play in terms of delivering capability"* – *Jaxon (interview, Bridgwater Project, Phase I)*

> *"by virtue of that you can start to infer that there is a positioning effect and we are starting to raise the profile of Thales as the name behind that. So we are starting to achieve that objective."* – *Caleb (interview, Bridgwater Project, Phase I)*

The project actors' entrepreneuring efforts created new business opportunities for the company and differentiated Thales in the UK's emerging new nuclear market. The project actors' entrepreneuring efforts generated emerging impacts external to the organisation in addition to producing internal changes at the company.

The effects generated from the entrepreneuring activities influenced later stages of development of the projects. As discussed above, digitalisation was incorporated into the RTI Innovation Hub's key strategic themes as a result of the work done in the initial phase of the Trust project. Subsequently, the

Training project team leveraged this emerging impact to further develop insights from their work. Similarly, learning from the initial phases of both the Civil UAS (unmanned aerial systems) and Counter UAV (unmanned aerial vehicle) projects was integrated into a sprint project to develop a minimum viable product (MVP) of a potential offer for the emerging Civil UAS market called 'ProDrone':

> *"So what we've been able to do, in a way with all our projects, is pivot off them. And so what we've now in effect done is combined TopDrone, Civil UAS [Unmanned Aerial Systems], Green Drone together. The biggest pivot on TopDrone is the methodology of how we did it. The pivot on Civil UAS [Unmanned Aerial Systems] is targeting towards the market, the pivot on ProDrone is we recognise how to tackle the commercial market. So, what we're trying to do is pull all three together, and what we've got agreement on is a 3-month stint of project. To try and do a start-finish MVP [Minimum Viable Product], which will be a great opportunity." – Patrick (interview, Counter UAV Project, Phase IV)*

The ProDrone project team applied a methodology developed from previous work on the Counter UAV project in creating an application called 'TopDrone' for UAV (unmanned aerial vehicle) pilots and accumulated understanding of the emerging Civil UAS market over the course of the Civil UAS project.

Patrick reflected how many of the innovation projects built on offshoots from previous projects and the key was to leverage these emergent outcomes in subsequent efforts to keep the projects going and generate ongoing value for the organisation:

> *Still lots of innovation projects going on, creating off shoots of other interesting opportunities… For me the key thing here is to continue to progress these projects, and then use them to pivot off to create value and opportunity for the organisation. – Patrick (diary, Counter UAV Project, Phase IV)*

Over the course of each phase of play the project teams' entrepreneuring efforts generated situated emerging individual and contextual impacts that resulted in organisational development and were used in downstream entrepreneuring efforts. See Table 5-3 for a summary of the individual and contextual impacts we observed across all of the project trajectories.

Discussion

Our research explores the temporal dynamics of how disruptive opportunities are entrepreneurially developed over time within the constraints of an incumbent organisation from an organisation-creation perspective. Our research responds to a key gap in disruptive innovation research that has not explored the unfolding dynamics of disruptive innovation in its emergence. Considering disruptive innovation as an unfolding entrepreneuring journey of organisation-creation, we followed over a period of three years the entrepreneuring processes on six potentially disruptive innovation projects as they unfolded at the leading multinational technology organisation Thales UK. Our research sheds light on disruptive innovation as an unowned process of strategic change that would not have been uncovered from a retrospective analysis based on its end outcome. We identify key micro-dynamics of the entrepreneurial development of disruptive opportunities within heterotopian spaces for play embedded within the established organisational arrangement that comprise this unpredictable process. We present a model based on our study findings showing the temporal dynamics of organisation-creation for disruptive innovation in the already organised context of an incumbent organisation.

Our research shows how the project actors continued development of the disruptive opportunities we followed by sustaining heterotopian spaces for play. As Dooley and Van de Ven (2017, p. 576) describe, the potentially disruptive innovation projects we followed developed through recurrent cycles of divergent and convergent activities that coincided with the opening and closing of the heterotopian spaces for play. The infusion of resources in the mobilisation stage of play enabled the project actors to engage in divergent

activities in the subsequent exploration and testing stage of play that tended to last for as long as the upfront agreed resources lasted (Dooley & Van de Ven, 2017, p. 577). In the final convergence stage the project actors worked to exploit the work they had accomplished using the company's strategic interests to open a subsequent space for play (Dooley & Van de Ven, 2017, p. 577). If the project actors were unsuccessful in their initial attempt to align their work with the company strategy we observed them pivot their approach, still leveraging their accumulated learning but hooking into another aspect of the company strategy to further develop their work (Ries, 2011, p. 149). We found that this recurrent cycle of divergent and convergent activity was not a linear, step-wise process. The project actors moved back and forth between mobilisation, exploration and testing, and convergence depending on the demands of their situation. As experienced by Brian on the Mindful Journeys project, they often experienced setbacks where they needed to re-mobilise resources or at times were forced to converge unexpectedly as shown on the Trust project. However messy, we observed that re-aligning with the company strategy at the convergence stage was critical to sustain continued development of the projects over time.

The ongoing entrepreneuring efforts to open and sustain these heterotopian spaces for play were both shaped by and impacted on the organisational context. As Foucault (1984/1986, p. 5) describes, we observed the heterotopian spaces for play exist alongside and work in relation to the reigning managerial framework they were embedded. The dominant managerial forces at the organisation caused the projects to lose moment at times and the project actors engaged in entrepreneuring activities to sustain the heterotopian spaces for play and keep the projects going. The challenges imposed by the strategic forces shaped the project actors' response and overall project trajectory. Equally, the entrepreneuring activities taking place within the heterotopian spaces for play impacted on the business environment they were embedded. We show from an individual perspective how the project actors developed personally, felt more engaged in their work, developed their sense of self, and learned from their experiences in working to progress the potentially disruptive innovation projects. The project activities also generated

contextual changes including producing new avenues for opportunities, customer influence and brand differentiation, new practices and processes, influencing thinking and practices in the core business, and cross-company knowledge sharing and collaboration. The heterotopian spaces for play that the disruptive opportunities developed within are distinct yet not completely isolated from Thales UK's established ways of working.

The emerging impacts from the entrepreneuring efforts generated changes at the company that were used in further pursuits of novelty at the organisation. As emphasised in Usher's (1954) model of cumulative synthesis, the entrepreneurial development of disruptive opportunities at Thales UK was a collective and distributed process in which the outcomes from each heterotopian space for play input to future entreprenerring occurrences (Garud et al., 2017, p. 452-453). For instance, when the project team made a pivot on the Training project they used the outcome from the first phase of the Trust project that influenced the RTI strategy to include digital transformation. Similarly, learning from both the Civil UAS and Counter UAV projects were synthesised in the mobilisation of the ProDrone Sprint to develop and test a minimum viable product for the emerging Civil UAS market. As Usher (1954, p. 79) highlights, these acts of insight that enabled further development of the projects were unplanned. When carrying out the initial activities that these later activities built upon the project teams did not know what outcomes they would produce from their work or how they would be utilised in future entrepreneuring efforts. Yet these non-deliberate unexpected doings were essential occurrences for sustaining ongoing development of the potentially disruptive innovation projects we followed.

Our findings shed light on disruptive innovation in incumbent organisations as an unowned process of strategic change. As highlighted by some disruptive innovation studies (e.g. Adner, 2002, p. 686; Christensen, 1997, p xvii; Christensen & Bower, 1996, p. 207-209; Henderson, 2006, p. 6; Rosenbloom & Christensen, 1994, p. 655), the established organisational and market arrangement inhibited the development of the potentially disruptive innovation projects we followed imposing challenges and causing the projects to lose

momentum at times. However, their influence on the project trajectories was not purely deterministic since the project actors' entrepreneuring efforts circumvented the strategic management forces imposed on them to drive forward the projects and those efforts also impacted on the organisational context. While we found that the project actors' entrepreneuring activities were central to the development of the potentially disruptive innovation projects we followed, it was not a deliberate, pre-planned process. While other disruptive innovation research implies that disruptive innovation can be strategically predicted and deliberately acted upon (e.g. Christensen & Raynor, 2003, p. 203, 229-230; Christensen & Overdorf, 2000, p. 66; Govindarajan & Kopalle, 2006, p. 16-17; Macher & Richman, 2004, p. 3; Markides, 2006, p. 24; Slater & Mohr, 2006, p. 30; Tellis, 2006, p. 38), our findings suggest that the emergence of disruptive innovation in established organisations is an unpredictable process generated by organisational actors responding to immediate challenges they confront in their everyday work (MacKay & Chia, 2013, p. 209-210, 211). While extant disruptive innovation is traditionally conceived as either an exogenous force that incumbent organisations have no control over or a phenomenon that can be strategically predicted and deliberately acted upon, our findings illuminate the uncertain and uncontrollable nature of emerging disruptive innovation processes.

We illustrate key micro-dynamics of the entrepreneurial development of disruptive opportunities within heterotopian spaces for play embedded within the established organisational arrangement at Thales UK. We identify that disbanding managerial and sustaining entrepreneurial forces influence the development of the disruptive opportunities through three stages of development of the spaces for play: *mobilisation* – moments of legitimisation, *exploration and testing* – moments of developing new understandings, and *convergence* – moments of consolidation and feedback. The project actors moved back and forth between mobilisation, exploration and testing, and convergence depending on the demands of their situation. Re-aligning with the company strategy at the convergence stage is crucial for sustaining ongoing development of disruptive opportunities. Projects stopped or pivoted in a different direction when they were unable to 'hook' into the company

strategy at this moment. The ongoing entrepreneuring efforts in the recurrent heterotopian spaces for play generate emerging individual and contextual impacts that change the organisational environment and input to future entrepreneuring efforts at the organisation. We present the below process model to capture our research findings. The model shows the temporal dynamics of organisation-creation for disruptive innovation in the already organised context of an incumbent organisation.
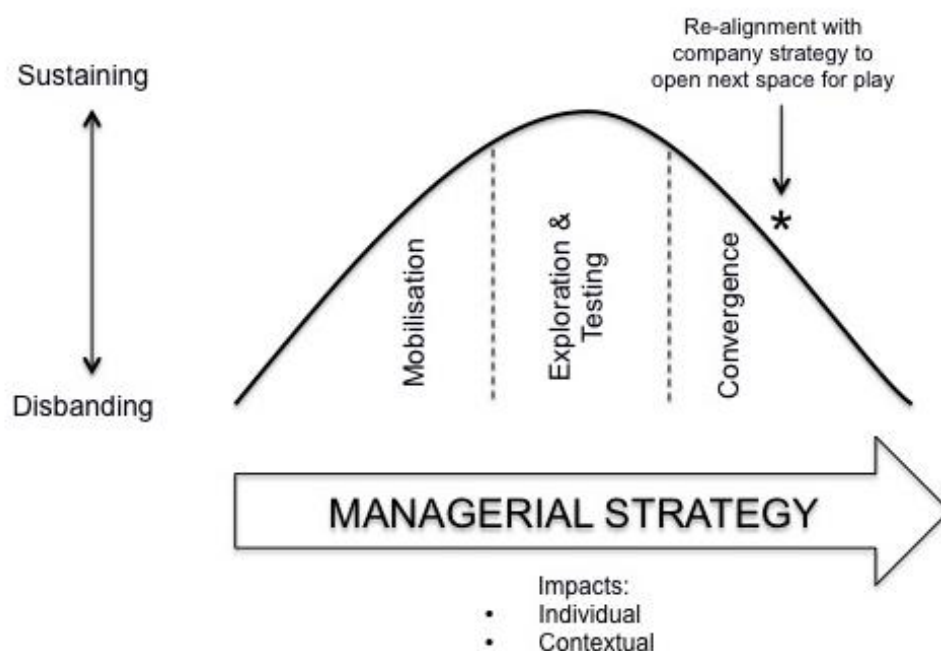
Figure 5.2. Temporal dynamics of organisation-creation for disruptive innovation in an incumbent organisation.

Contributions and Conclusion

Our study provides a longitudinal ethnographic account of how six potentially disruptive innovation projects were entrepreneurially developed over time within spaces for play embedded within the established managerial structure at Thales UK. Our findings complement extant research on disruptive innovation that explores how disruptive innovation transpires retrospectively based on its end outcome. While this body of research mainly portrays disruptive innovation as an owned market-based outcome, we show how the emergence of disruptive innovation in established organisations is an

181

unowned process of strategic change. We introduce a framework of the temporal dynamics of organisation-creation for disruptive innovation in the already organised context of an incumbent organisation. Our research contributes to further understanding of disruptive innovation, organisation-creation and processual innovation research.

We contribute to the disruptive innovation literature an appreciation of disruptive innovation in incumbent organisations as an unowned process of strategic change. Extant research traditionally considers disruptive innovation as either an exogenous force that leading organisations have no control over or a phenomenon that can be strategically predicted and deliberately acted upon. Our research complements these studies by showing how incumbent organisations have agency in responding to threat of disruption yet cannot strategically predict or control disruptive outcomes. We highlight the mutual effect of contextual circumstances and the everyday actions of organisational actors in shaping the unfolding dynamics of disruptive innovation processes in a leading organisation. We open discussion of the unpredictable and uncertain nature of emerging disruptive innovation processes arising from organisational actors' situated problem-solving efforts in their day-to-day work.

We add to organisation-creation research by illustrating the temporal dynamics of organisation-creation for disruptive innovation in the already organised context of an incumbent organisation. Current organisation-creation research lacks an understanding of the process of how organisation-creation unfolds from previous organisational arrangements. We shed light on key micro-dynamics of the entrepreneurial development of disruptive opportunities within recurrent heterotopian spaces for play arising within a leading organisation organising for disruptive innovation. We show how managerial and entrepreneurial forces interact over time in the development of disruptive opportunities, how individual heterotopian spaces for play connect with one another through alignment with the company strategy, and how their resultant impacts are used in future entrepreneuring efforts. We extend the organisation-creation conversation by illuminating the temporal dynamics of organisation-creation for disruptive innovation in an incumbent organisation.

We also contribute to processual innovation research an understanding of how divergent and convergent patterns of action play out on-the-ground and the cumulative synthesis of these activities over time in the case of a leading organisation organising for disruptive innovation. We show how managerial and entrepreneurial forces interact in the enablement and waning of divergent activities and the importance of re-aligning with the company strategy during moments of convergence to sustain subsequent cycles of divergent and convergent activity. We also show how entrepreneuring efforts in one cycle of divergent and convergent activity generate emerging impacts that have downstream consequences for entrepreneuring efforts in subsequent cycles. We further the debate in processual innovation research by explaining how recurrent divergent and convergent activities occur and generate accumulated novelty over time in the case of disruptive innovation processes unfolding in the context of an incumbent organisation.

We chose a longitudinal ethnographic case study research design to illuminate the contextually specific nuances of everyday entrepreneuring processes at Thales UK. While this research design enables intensive study of entrepreneuring processes in a situated setting, our contextualised description is specific to Thales UK. Further research is needed to test our depiction of the temporal dynamics of organising for disruptive innovation in the already organised context of an incumbent organisation. For example, how the micro-dynamics we identify in our research play out in other settings, including the interplay of sustaining entrepreneurial and disbanding managerial forces and cumulative development of the emerging impacts of recurrent heteroptopian spaces for play over time. Further research could also explore the temporal dynamics of organisation-creation for radical innovation in the already organised context of a leading organisation and compare similarities and differences with our findings for the case of disruptive innovation efforts. Our research endorses further exploration of disruptive innovation as an ongoing and emergent entrepreneuring journey of organisation-creation. In adopting this approach we were able to uncover important nuances of how disruptive innovation unfolds as an unowned

process that would not have been uncovered from a retrospective analysis based on its end outcome. Further studies could usefully build on our research by using an organisation-creation perspective to further explore the temporal dynamics of organising for disruptive innovation in incumbent organisations in its emergence.

References

Adner, R. (2002). When are technologies disruptive? A demand-based view of the emergence of competition. *Strategic Management Journal*, 23(8), 667-688.

Afuah, A. (2000). How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, 21(3), 387-404.

Alvesson, M. (2009). At-home ethnography: Struggling with closeness and closure. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 156-174). London: Sage.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016a). Special issue call for papers: Managing in the age of disruptions. *Journal of Management Studies*. Retrieved from http://www.socadms.org.uk/wp-content/uploads/JMS-Managing-in-the-Age-of-Disruption-Call-for-Papers.pdf.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016b). The disruptor's dilemma: TiVo and the U.S. television ecosystem. *Strategic Management Journal*, 37(9), 1829-1853.

Campbell, A., Birkinshaw, J., & Morrison, A. (2003). The future of corporate venturing. *MIT Sloan Management Review*, 45(1), 30-37.

Chao, R. O., & Kavadias, S. (2007). A theoretical framework for managing the NPD portfolio: When and how to use strategic buckets. *Management Science*, 54(5), 907-921.

Christensen, C. M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail*. Boston: Harvard Business School Press.

Christensen, C. M., & Bower, J. L. (1996). Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal*, 17(3), 197-218.

Christensen, C. M., & Overdorf, M. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, 78(2), 66-76.

Christensen, C. M., & Raynor, M. E. (2003). *The innovator's solution: Creating and sustaining successful growth.* Boston: Harvard Business School Press.

Claude-Gaudillat, V., & Quélin, B. V. (2006). Innovation, new market and governance choices of entry: The internet brokerage market case. *Industry and Innovation*, 13(2), 173-187.

Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). Unpacking the disruption process: New technology, business models, and incumbent adaptation. *Journal of Management Studies*, 55(7), 1166-1202.

Danneels, E. (2004). Disruptive technology reconsidered: A critique and research agenda. *Journal of Product Innovation Management*, 21, 246-258.

de Certeau, M. (1984). *The practice of everyday life.* (S. Rendall, Trans.). Berkeley: University of California Press. (Original work published 1980).

Dooley, K., & Van de Ven, A. (2017). Cycles of divergence and convergence: Underlying processes of organization change. In A. Langley, & H. Tsoukas (Eds.), *The Sage handbook of process organization studies* (pp. 574-590). London: Sage.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes* (2nd ed.). Chicago: University of Chicago Press.

Foucault, M. (1986). Of other spaces. (J. Miskowiec, Trans.). *Diacritics,* 16(1), 22–27. (Original work published 1984).

Garud, R., Gehman, J., Kumaraswamy, A., & Tuertscher, P. (2017). From the process of innovation to innovation as process. In A. Langley, & H. Tsoukas (Eds.), *The Sage handbook of process organization studies* (pp. 451-465). London: Sage.

Garud, R., Gehman, J., & Tharchen, T. (2018). Performativity as ongoing journeys: Implications for strategy, entrepreneurship, and innovation. *Long Range Planning*, 51, 500-509.

Govindarajan, V., & Kopalle, P. R. (2006). The usefulness of measuring disruptiveness of innovations ex post in making ex ante predictions. *Journal of Product Innovation Management*, 23(1), 12-18.

Henderson, R. (2006). The innovator's dilemma as a problem of organizational competence. *Journal of Product Innovation Management*, 23(1), 5-11.

Hjorth, D. (2003). *Rewriting entrepreneurship – For a new perspective on organizational creativity*. Malmö: Liber.

Hjorth, D. (2004). Creating space for play/invention – Concepts of space and organizational entrepreneurship. *Entrepreneurship & Regional Development*, 16(5), 413-432.

Hjorth, D. (2005). Organizational entrepreneurship: With de Certeau on creating heterotopias (or spaces for play). *Journal of Management Inquiry*, 14(4), 386-398.

Hjorth, D. (2012). *Handbook on organisational entrepreneurship*. Cheltenham: Edward Elgar.

Hjorth, D. (2014). Entrepreneuring as organisation-creation. In R. Sternberg, & G. Krauss (Eds.), *Handbook of research on entrepreneurship and creativity* (pp. 97-121). Cheltenham: Edward Elgar.

Hjorth, D., & Reay, T. (2018). Special issue call for papers: Organizational and institutional entrepreneuring: Processes and practices of creating in an organized world. *Organization Studies*. Retrieved from http://entrepreneuriat.com/wp-content/uploads/2018/11/SI-Entrepreneuring-Final-November-18.pdf.

Holmquist. C. (2003). Is the medium really the message? Moving perspective from the entrepreneurial actor to the entrepreneurial action. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 73-85). Cheltenham: Edward Elgar.

InnovationXchange UK Ltd. (2019). *How the rail industry is seizing innovation*. Retrieved from https://www.ixc-uk.com/How_the_Rail_Industry_is_Seizing_Innovation--post--68.html.

Khanagha, S., Zadeh, M. T. R., Mihalache, O. R., & Volberda, H. W. (2018). Embracing bewilderment: Responding to technological disruption in heterogeneous market environments. *Journal of Management Studies*, 55(7), 1079-1121.

King, A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MIT Sloan Management Review,* 57(1), 77-90.

Kumaraswamy, A., Garud, R., & Ansari, S. (2018). Perspectives on disruptive innovations. *Journal of Management Studies*, 55(7), 1025-1042.

Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691-710.

Langley, A., & Stensaker, I. (2012). Longitudinal research and analysis. In G. Symon, & C. Cassell (Eds.), *Qualitative organizational research: Core methods and current challenges* (pp. 149-167). London: Sage.

Lepore, J. (2014). The disruption machine: What the gospel of innovation gets wrong. *The New Yorker,* May 23.

Lindgren, M., & Packendorff, J. (2003). A project-based view of entrepreneurship: Towards action-orientation, seriality and collectivity. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 86-102). Cheltenham, UK: Edward Elgar.

Macher, J. T., & Richman, B. D. (2004). Organizational responses to discontinuous innovation: A case study approach. *International Journal of Innovation Management*, 8(1), 87-114.

MacKay, R. B., & Chia, R. (2013). Choice, chance, and unintended consequences in strategic change: A process understanding of the rise and fall of NorthCo Automotive. *Academy of Management Journal*, 56(1), 208-230.

Markides, C. (2006). Disruptive innovation: in need of a better theory. *Journal of Product Innovation Management*, 23(1), 19-25.

Ministry of Defence (2020). *Procurement at MoD*. Retrieved from https://www.gov.uk/government/organisations/ministry-of-defence/about/procurement.

O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, 28, 185-206.

Ozalp, H., Cennamo, C., & Gawer, A. (2018). Disruption in platform-based ecosystems. *Journal of Management Studies*, 55(7), 1203-1241.

Petzold, N., Landinez, L., & Baaken, T. (2019). Disruptive innovation from a process view: A systematic literature review. *Creativity and Innovation Management*, 28, 157-174.

Ries, E. (2011). *The lean startup*. New York: Crown Publishing Group.

Rosenbloom, R. S., & Christensen, C. M. (1994). Technological discontinuities, organizational capabilities, and strategic commitments. In G. Dosi, D. J. Teece, & J. Chytry (Eds.), *Technology, organization and competitiveness: Perspectives on industrial and corporate change* (pp. 655-685). Oxford: Oxford University Press.

Slater, S. F., & Mohr, J. J. (2006). Successful development and commercialization of technological innovation: Insights based on strategy type. *Journal of Product Innovation Management*, 23(1), 26-33.

Snihur, Y., Thomas, L. D. W., & Burgelman, R. A. (2018). An ecosystem-level process model of business model disruption: The disruptor's gambit. *Journal of Management Studies*, 55(7), 1203-1241.

Sood, A., & Tellis, G. J. (2011). Demystifying disruption: A new model for understanding and predicting disruptive technologies. *Marketing Science*, 30(2), 339-354.

Steyaert, C. (2007). 'Entrepreneuring' as a conceptual attractor? A review of process theories in 20 years of entrepreneurship studies. *Entrepreneurship & Regional Development* 19(6), 453–477.

Tellis, G. J. (2006). Disruptive technology or visionary leadership? *Journal of Product Innovation,* 23(1), 34-38.

Thales Group (2020). *Thales Group overview*. Retrieved from https://www.thalesgroup.com/sites/default/files/database/document/2020-01/Thales_Group_overview_EN_EX-02012019.pdf

Usher, A. P. (1954). *A history of mechanical inventions*. Boston: Harvard University Press.

Wagner, M. (2016). Managing disruptive innovation with technology acquisitions: The informing case of software-based high-technology industries. *Technology Analysis & Strategic Management*, 28(8), 979-991.

Wan, F., Williamson, P. J., & Yin, E. (2015). Antecedents and implications of disruptive innovation: Evidence from China. T*echnovation*, 39-40, 94-104.

The first three empirical chapters of my thesis focused on Thales UK's efforts to organise for disruptive innovation as incumbent organisation. This last empirical chapter explores my own role in supporting Thales UK's efforts to organise for disruptive innovation through my collaborative research approach. Embracing an engaged scholarship approach in my research I sought to both develop practically grounded knowledge of disruptive innovation processes in its emergence and contribute to Thales UK's growth and innovation ambitions. Engaged scholars share the core values social justice – a care for societal wellbeing and knowledge generation for public good, and citizenship – a responsibility to engage with wider society in their work as a citizen of the world (Beaulieu, Breton, & Brousselle, 2018, p. 5). Key principles guiding their scholarly activities are: upholding academic rigour while ensuring their work is valuable and relevant for society, engaging in reciprocal partnerships that deliver beneficial outcomes for academia and the practical stakeholders involved, adopting a problem-driven perspective focused on solving real-world issues, working collaboratively across disciplinary and sectorial boundaries to optimise societal impact from their activities, and working to democratise scientific knowledge for everyone to access (Beaulieu et al., 2018, p. 5, 9). Upholding these values and principles I share my research experience as a toolkit for other researchers to also study and contribute to the emergence of disruptive innovation processes in organisations in real-time.

Organisation-creation theory highlights how self-reflexivity and imagination are central to entrepreneuring processes in organisations. Self-reflexive organisational actors who are driven by desire rather than short-term economic interest enact entrepreneurial actions in organisations (Hjorth, 2003; Hjorth, 2014, p. 102). However, in modern organisations the 'cultural' and 'social' man has been crowded out of the workplace by the 'economic' man through the process of the industrial revolution (Hjorth, 2003). The 'economic' man, who is conditioned by the company to carry out pre-determined activities to maintain control and predictability, constructs playfulness and passion as non-organisational (Hjorth, 2003). The desire for novelty organises self-reflexive organisational actors conducting

entrepreneurial actions in opposition to dominant managerial strategies carried out by simply doing economic actors (Hjorth, 2005, p. 396). Drawing on the notions self-reflexivity and desire from organisation-creation theory, I describe how my collaborative research practices supported the emergence of entrepreneuring processes at Thales UK by stimulating self-reflexivity and imagination among organisational members alongside collaboratively developing rigorous and practically relevant knowledge of organising for disruptive innovation in an incumbent organisation.[4]

---

[4] I presented a first draft of this paper at the 2017 EGOS conference in the sub-theme 'Long-shots and Close-ups: Organizational Ethnography, Process and History' in July 2017. This paper has been accepted for discussion at the upcoming 2020 AoM conference in the Research Methods division in August 2020. I intend to further develop this paper for publication in the Journal of Management Inquiry.

Chapter 6

Supporting an incumbent organisation's efforts to organise for disruptive innovation in real-time: An ethnographic engaged scholarship approach

Abstract

This article contributes to underdeveloped research methods for studying and contributing to disruptive innovation processes in real-time. Embracing an ethnographic engaged scholarship approach, we worked with participants at Thales UK, a leading multinational technology company, over a period of three years to explore how an incumbent organisation's efforts to organise for disruptive innovation can be supported through real-time investigation. We show how our collaborative research practices supported the emergence of entrepreneuring processes at the company by stimulating self-reflexivity and imagination among organisational members. Our reflexive analysis illustrates how we accomplished this through a process of simultaneous intervention and observation, action and analysis, and iteratively moving in and out between micro and macro levels of engagement with our study context. We present our findings in the form of a confessional tale highlighting the research advantages, impacts and tensions of engaging with our research context at the level of language and practice in a multidimensional and responsive manner as both researcher and employee. We seek to bridge theory and practice of innovation processes through our engaged scholarship approach and by sharing our research experience as a toolkit for other researchers to also study and contribute to the emergence of innovation processes in organisations in real-time.

Introduction

In the age of disruptions, 'fundamental changes that disturb or re-order the ways in which organisations and ecosystems operate' (Ansari, Garud, & Kumaraswamy, 2016a, p. 1), leading organisations need to embrace disruptive innovation processes to maintain their competitive advantage. Yet research methods for examining complex and unpredictable disruptive innovation processes in-the-making are underdeveloped (Kumaraswamy, Garud, & Ansari, 2018, p. 1038; Wolfe, 1994, p. 412). Current studies of disruptive innovation are retrospective and from afar accounts that miss the opportunity to uncover detailed nuances of the lived experience of disruptive innovation efforts while also contributing to them in their occurrence (e.g. Ansari et al., 2016b, p. 1832; Christensen & Bower, 1996, p. 200; Cozzolino, Verona, & Rothaermel, 2018, p. 1172-1176; Khanagha, Zadeh, Mihalache, & Volberda, 2018, p. 1085-108). Our research addresses this gap by exploring how an incumbent organisation's efforts to organise for disruptive innovation can be supported through real-time investigation using an ethnographic engaged scholarship approach.

We understand organisational ethnography as an exploratory research method in which the researcher participant observes in the daily lives of actors in a particular organisational setting for an extended period of time (Neyland, 2011, p. 26). Through immersion in the research setting, ethnographers can achieve an in-depth understanding of complex and dynamic organisational processes as they unfold (van Hulst, Ybema, & Yanow, 2017, p. 226). While often not a deliberate aim, engaging with one's study context at the level of everyday language and practice is also an opportunity to enact change as part of the researcher's involvement (Sykes & Treleaven, 2009, p. 227). Engaged scholarship is a collaborative research approach in which academics and practitioners unite their different perspectives to jointly generate knowledge that advances both academic and practical understanding (Van de Ven & Johnson, 2006, p. 803). In adopting an ethnographic engaged scholarship approach, we embrace a constructivist research ontology that understands researchers produce networked and fluid realities as well as describe them (Law, 2004, Chapter 2).

We further draw on an organisation-creation perspective in our research to expand the current focus on exploring disruptive innovation from an objective detached view to an embedded and interactive research approach. We understand organisation-creation as the development of new ways of organising that create new value for organisations through entrepreneneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). We contend that everyday entrepreneuring processes that generate new ways of organising for disruptive innovation can be supported through real-time collaborative research practices. We build on an emergent stream of research that conceptualises disruptive innovation as an ongoing and emergent process and consider that disruptive innovation should be also understood performatively rather than defined exclusively by its end outcome (Garud, Gehman, & Tharchen, 2018, p. 502; Kumaraswamy et al., 2018, p. 1033; Petzold, Landinez, & Baaken, 2019, p. 166-167). We add to this emergent stream of research a perspective on disruptive innovation as an unfolding entrepreneuring journey of organisation-creation that can be supported through real-time collaborative research practices.

Our study takes place at Thales UK, the UK subsidiary of the leading multinational technology organisation Thales Group. Using an ethnographic engaged scholarship approach we explored and supported an incumbent organisation's efforts to organise for disruptive innovation in real-time. The first author participant observed as a full member of the Thales UK Research, Technology and Innovation (RTI) team during the company's Organising for Growth transformational change that specifically aimed to respond to disruptive market changes. As part of her involvement she followed and contributed to the company's efforts to organise for disruptive innovation in its occurrence. Working with the study participants she generated a data corpus comprised of in-depth interviews (98), participant diary accounts (36), videos (30), documents (165), pictures (439), events attended (180) and personal accounts (162). The rich ethnographic data corpus enabled us to self-reflexively examine our collaborative research practices.

Our reflexive analysis revealed how our collaborative research practices supported the emergence of entrepreneuring processes that generate new ways of organising for disruptive innovation by stimulating self-reflexivity and imagination among organisational members. We show how we accomplished this through a process of simultaneous intervention and observation, action and analysis, and iteratively moving in and out between micro and macro levels of engagement with our study context. We further illustrate how the first author's embedded position and responsive movement in and out of the study context enabled us to gain an enriched understanding of the disruptive innovation efforts occurring while producing practically relevant organisational change interventions tailored to our study setting. We present our findings in the form of a confessional tale (Van Maanen, 2011, p. 73) highlighting the research advantages, impacts and tensions of engaging with our research context at the level of language and practice in a multidimensional and responsive manner as both researcher and employee.

We seek to bridge the current gap between theory and practice of innovation processes (Crossan & Apaydin, 2010, p. 1154; Wolfe, 1994, p. 405) through our engaged scholarship approach and by sharing our research experience as a toolkit for other researchers to study and contribute to the emergence of innovation processes in real-time. We add to the disruptive innovation literature an understanding of how researchers can both support and enhance their understanding of emerging disruptive innovation processes through real-time collaborative research practices that cannot be achieved retrospectively or from afar. We also contribute to the organisation-creation literature an appreciation of how organisation-creation processes can be enabled in their occurrence by adopting an interactive research attitude. We further advance ethnographic research methods by illuminating how this research approach can be used in engaged scholarship.

This article is structured as follows. We begin by discussing the dominant approach to studying disruptive innovation processes retrospectively and from afar and the opportunities an ethnographic engaged scholarship approach presents. We then consider an incumbent organisation's disruptive innovation

efforts from an organisation-creation perspective and discuss the benefits and challenges of adopting a collaborative research approach to both study and contribute to the emergence of entrepreneuring processes that generate new ways of organising for disruptive innovation as they unfold. Following this, we introduce our case study and research method. We conclude with a discussion of our results and study contributions.

Retrospective From Afar Approaches to Studying Disruptive Innovation

Disruptive innovation refers to new products, services and business models that create new markets and re-shape existing ones (Christensen & Raynor, 2003, p. 51). According to the Disruptive Innovation Model there are two types of innovations in established markets: sustaining innovations that advance the performance of existing products for established customers and disruptive innovations that are simpler, cheaper and contain novel features compared to their mainstream equivalents (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). New disruptive innovations tend to be ignored by the majority because they initially offer poorer performance than existing products but are adopted by customers on the fringe who are looking for affordable alternatives (Christensen, 1997, p. xv; Christensen & Raynor, 2003, p. 34). Disruptive innovations gain momentum in the market by delivering to these overlooked segments and outperform mainstream products offered by market leading incumbent organisations in the long-term (Christensen, 1997, p. xvi; Christensen & Raynor, 2003, p. 34). Established organisations tend to miss the application of new disruptive innovations as they innovate around their existing customer needs following good management practices and ultimately their established business is disrupted (Christensen, 1997, p. xvii; Christensen & Raynor, 2003, p. 33-34). While there is some debate about the foundations of the Disruptive Innovation Model (e.g. Danneels, 2004, p. 257; King & Baatartogtokh, 2015, p. 78; Lepore, 2014; Markides, 2006, p. 19; Sood & Tellis, 2011, p. 339-340; Tellis, 2006, p. 34), it has framed our understanding of how disruptive innovations occur.

Although this classical evolutionary perspective of disruption (Kumaraswamy et al., 2018, p. 1026) is widely accepted, real-time empirical studies of how

disruptive innovation processes emerge on-the-ground are scarce. Deemed disruptive by its end market impact, the few empirical studies of disruptive innovation processes are mainly retrospective and from afar accounts. Researchers predominantly draw on archival data and interviews with key individuals after-the-fact to reconstruct how particular disruptive phenomenon transpired (e.g. Afuah, 2000, p. 393-394; Ansari et al., 2016b, p. 1832; Christensen & Bower, 1996, p. 200; Ozalp, Cennamo, & Gawer, 2018, p. 1207; Snihur, Thomas, & Burgelman, 2018, p. 1285-1286; Sood & Tellis, 2011, p. 344-345). This is problematic because researchers can miss rich contextual nuances and unexpected occurrences of messy and dynamic disruptive innovation processes as they unfold (Langley & Stensaker, 2012, p. 152; MacKay & Chia, 2013, p. 210). Informants can also re-interpret past happenings based on new understandings accrued through time when retrospectively consulting them about their experiences (Langley & Stensaker, 2012, p. 152). More dynamic and nuanced research methods are needed to study fluid and complex disruptive innovation processes as they unfold.

Ethnography is a promising method for investigating messy and dynamic disruptive innovation processes in their emergence because one is able to follow the unforeseeable events and everyday challenges that actors face in situated contexts in real-time (Hoholm & Araujo, 2011, p. 938; von Koskull & Strandvik, 2014, p. 144-145). By participating in everyday organisational life, researchers can develop a detailed understanding of the lived experience of disruptive innovation efforts from within (van Hulst et al., 2017, p. 227-228). Through sustained nearness the researcher is able to attend to what people in organisations actually do as opposed to what they say they do and decipher the discreet meanings of what they observe and experience to the situated social setting in which they occur (Becker, 1996, p. 58; Watson, 2011, p. 204-205; Yanow, 2006, p. 1745-1746). As Ybema, Yanow, Wels, and Kamsteeg (2009, p. 2) emphasise, 'attending to the extraordinary in the mundane, day-to-day aspects of organising, can lead to a fuller, more grounded, practice-based understanding of organisational life.' Researchers can produce rich contextual accounts of unfolding disruptive innovation processes by means of

deep, intimate engagement with actors in their natural environment using ethnographic research methods.

Recent studies demonstrate the value of using ethnographic research methods to uncover detailed nuances of innovation processes as they happen in organisations. Based on their ethnographic case study of a food-product innovation project over time, Hoholm and Olsen (2012, p. 353) identify that organisational actors need to continuously manage frictions between parallel divergent and convergent forces that influence the direction of innovation projects. Similarly, in their ethnographic investigation of a service innovation at a bank, von Koskull and Strandvik (2014, p. 147-148) highlight the interrelated planned and emergent processes involved in how innovation processes unfold over time through their detailed understanding of ongoing unpredicted events. Although not fully immersed in the study context, Petschick (2015, p. 229) shows that even frequent short-term field visits provide useful contextualisation of observed interactions and aid in identifying ruptures and change events that occur during innovation processes. Within the disruptive innovation literature, recent studies have used a combination of retrospective and real-time data to explore how incumbent organisations adapt their business models after disruption (Cozzolino et al., 2018, p. 1172-1176) and respond to the emergence of disruptive technologies in heterogeneous market environments (Khanagha et al., 2018, p. 1085-1087). However, these studies focus on explaining organisational and market level dynamics as opposed to fully immersing themselves in organisational actors' everyday doings. Despite demonstrated value in using ethnographic research methods to explore innovation processes in-the-making, we lack real-time ethnographic studies of disruptive innovation.

Furthermore, current retrospective and from afar accounts of disruptive innovation miss the opportunity to contribute to the development of disruptive opportunities in their emergence. Within the field of management, engaged scholarship is a collaborative research approach in which academics work with practitioners in designing, conducting and implementing research in real-world settings (Van de Ven & Johnson, 2006, 811). Working together scholars

197

and practitioners can leverage their different perspectives to tackle complex problems (Van de Ven & Johnson, 2006, 803). Ingold (2014, p. 389-390) suggests that researchers only conduct 'real' ethnography when they actively correspond with their study context by making sense of their findings *in situ* and apply imagined theories in practice in collaboration with participants. Researchers can generate knowledge rooted in real-world practical experience by engaging with study participants throughout the research process (Ingold, 2014, p. 391-393). Such collaborative sensemaking of research findings also serves to reduce personal bias in the researchers' interpretations by involving others in the development of their analysis (Schwartz-Shea & Yanow, 2009, p. 62; Van de Ven & Johnson, 2006, p. 809). Participant observing members' efforts to apply research findings in practice also enables theorists to gain a richer understanding of innovation processes as they occur (Sykes & Treleaven, 2009, p. 224-225). More nuanced understandings of complex and dynamic disruptive innovation processes can be gained by collaboratively working with practitioners to make sense of and support their disruptive innovation efforts in its occurrence.

We propose to complement the current focus in extant research on retrospective from afar accounts of disruptive innovation by exploring how organising for disruptive innovation in an incumbent organisation can be supported through real-time investigation using an ethnographic engaged scholarship approach. We build on an emergent stream of research within the disruptive innovation literature that conceptualises disruptive innovation as an ongoing and emergent process (Kumaraswamy et al., 2018, p. 1033; Petzold et al., 2019, p. 166-167). Rather than define disruptive innovation by its end outcome and work backwards, we seek to understand and contribute to the performance of disruptive innovation in its emergence (Garud et al., 2018, p. 502). We expand this nascent research approach by looking at how an incumbent organisation's efforts to organise for disruptive innovation as an unfolding entrepreneuring journey of organisation-creation can be supported in real-time. We outline our perspective in the following section.

An Ethnographic Engaged Scholarship Approach to Studying Organising for Disruptive Innovation in Real-time

Organisation-creation has been described in organisation studies as the becoming of new ways of organising that create new value for organisations through entrepreneuring processes (Hjorth, 2014, p. 102; Hjorth & Reay, 2018, p. 1). Within established organisations, entrepreneuring is a tactical process inseparably linked to classical management practices (Hjorth, 2012, p. 4; Hjorth, 2014, p. 108). Driven by desire rather than short-term economic interest, passionate and playful organisational actors carry out entrepreneuring processes in everyday organisational life within the cracks in surveillance of managerial structures in organisations (Hjorth, 2003). While managerial practices reinforce established ways of doing things in organisations, entrepreneuring is the pursuit of creating and actualising imagined opportunities and desired newness (Hjorth, 2003; Hjorth, 2014, p. 102). The desire to create, invent and transform organises self-reflexive organisational actors in opposition to dominant managerial strategies in organisations (Hjorth, 2005, p. 396). Self-reflexivity and desire drive forward entrepreneuring processes that depart from established ways of doing things in organisations in the process of organisation-creation.

Drawing on an organisation-creation perspective enables us to expand the current focus of disruptive innovation research on retrospective from afar accounts to include investigations that support disruptive innovation in its emergence. Considering disruptive innovation processes as an unfolding entrepreneuring journey of organisation-creation highlights how organisational actors' everyday entrepreneuring efforts that generate new ways of organising for disruptive innovation can be supported using an ethnographic engaged scholarship approach. Engaging with their research context at the level of language and practice, organisational ethnographers can consciously co-construct knowledge with participants and enact organisational change as part of their involvement in the study setting (Sykes & Treleaven, 2009, p. 227). Based on a socially constructed understanding of the world, many organisational ethnographers believe that their impact on the research context is unavoidable and therefore adopt a constructivist and interpretive attitude in

their investigations (Ybema et al., 2009, p. 8). We are embracing an interactive constructivist and interpretive orientation in our research striving to enable an incumbent organisation's efforts to organise for disruptive innovation as well as understand them.

Yet it is unclear how theorists can best engage with their study context to generate sustainable change in organisations. It is not well documented how research has been conducted to promote lasting organisational change (Clark, 1972). Lewin (1951) introduced the action research approach in the mid-1940s as an iterative step-wise process of information gathering and analysis, planning, action, observation and re-assessment based on simultaneous action and reflection. Over the years, this step-wise approach has been developed to embrace a more responsive attitude to engaging with one's study context. McNiff (2000) describes it as more a process of improvisation rather than adhering to a fixed plan. Clark (1972) emphasises that intervention strategies intended to instigate organisational change need to be multi-functional, multi-level, and tailored to the organisational context to be successful since organisations comprise unique sub-cultures including members with varying motivations and influence. When it comes to supporting innovation processes in their emergence, Gustavsen (2005, p. 281-282) shows how engaging in dialogue and collaboration with participants can enable innovation processes while also observing them. We aim to generate sustainable organisational change through our involvement in our study setting by collaboratively engaging with our research context in a multi-dimensional and responsive manner.

We are embracing every act as an opportunity to generate change as part of 'being' in our research setting (McNiff, 2000). Even the very act of inquiring into the situation-at-hand can have an impact (Berg, 2004). Using the act of inquiry as an opportunity for intervention, Cooperrider and Srivastva (1987, p. 131) introduced Appreciative Inquiry that focuses on the core positives and strengths of an organisation to facilitate positive change. Rooted in a social constructivist understanding of organisations, Appreciative Inquiry seeks to influence the everyday conversations among organisational actors

(Cooperrider, Barrett, & Srivastva, 1995, p. 157-159). By asking positively framed questions, researchers elicit past positive experiences that connect organisational members and stimulate them to enact new possibilities for the organisation (Cooperrider & Sekerka, 2006, p. 225). Rather than imposing a preconceived planned change, Appreciative Inquiry is a generative process that empowers organisational actors to locally enact positive realities that resonate with their own experiences (van der Haar & Hosking, 2004, p. 23). In relation to fostering disruptive innovation processes, we used Appreciative Inquiry to inspire entrepreneuring processes at Thales UK as a productive and positive force driven by desire (Hjorth, 2003; Hjorth, 2014, p. 102). Furthermore, in their study of individual motivation to put ideas into practice Baer (2012, p. 1105-1106) shows that organisational actors that perceive positive outcomes of their efforts are more likely to successfully implement creative ideas in organisations. We used Appreciative Inquiry to support an incumbent organisation's efforts to organise for disruptive innovation as part of our involvement in our study context.

Since the first author is an employee at Thales UK and actively worked on disruptive innovation initiatives as part of the RTI team during the course of the study, we engaged in both at-home ethnography and autoethnography in our research endeavour. At-home ethnography is when researchers engage in ethnography as natives of one's own research setting (Alvesson, 2009, p. 159). Being a full cultural participant of the study context, many at-home ethnographers also conduct autoethnography – ethnography of the self – by introspectively reflecting on their own experiences in addition to outwardly observing naturally occurring events around them (Adams, Jones, & Ellis, 2015, p. 1-2; Alvesson, 2009, p. 160). Reflecting on their own lived experience, the researcher is able to access a more nuanced understanding of the complexities of organisational phenomena by drawing on their own sense of identity, their emotions, as well as their interpretations and relationships with others (Adams et al., 2015, p. 15-16). According to Johannisson (2011, p. 147), cognitive, emotive and material aspects of entrepreneuring processes can only be captured within the context that they are experienced. It is through this interactive approach that researchers can

reflect on tacit knowledge gained through their lived experience (Johannisson, 2011, p. 146). Even deeper learning of disruptive innovation efforts can be achieved by personally pursuing them and introspectively reflecting on one's own lived experience of those undertakings.

In many ways conducting research in one's own context as a complete-member-observer is an advantage to access a valuable insider account and impact on the realities produced, but it also poses intellectual and political challenges. Researchers in this position need to engage in 'making the familiar strange rather than the strange familiar' (Van Maanen, 1995, p. 20), simultaneously allowing themselves to be immersed in the depth and complexity of organisational life as actors while also maintaining reflexive distance as observers (Ybema & Kamsteeg, 2009, p. 102-103). Furthermore, at-home ethnographers must be especially vigilant in managing the relationships between and respecting the feelings and interests of all study participants (Alvesson, 2009, p. 166). Researchers engaged in at-home ethnography and autoethnography particularly within their own organisation must demonstrate extreme reflexivity by constantly striving to make themselves aware of personal biases that may influence their interpretations of their own and others' accounts (Adams et al., 2015, p. 2; Alvesson, 2009, p. 170-172; Tietze, 2012, p. 56-59). There are several strategies that researchers can use to distance themselves from an overly familiar field and take a 'disengaged engaged approach' (Ybema & Kamsteeg, 2009, p. 108). Some authors suggest breaking the friendship bond through movement out of the field, zooming in and out on different practices, engaging in multi-site ethnography or investigating new subjects and settings, and distancing by immersion to investigate front stage versus back stage processes and discrepancies between official discourses and informal activities (Ybema & Kamsteeg, 2009, p. 111-113). Conceptual work can also be used to create intellectual detachment when conducting research in one's own organisation (Tietze, 2012, p. 68). However, further work is needed to elucidate how researchers can develop a reflexive stance while also interacting with their study context to generate change when exploring innovation processes in-the-making (Clark, 1972; Ybema & Kamsteeg, 2009, p. 115).

To sum up, in our research we explore how an incumbent organisation's efforts to organise for disruptive innovation can be supported through real-time investigation using an ethnographic engaged scholarship approach. In adopting this approach we respond to a lack of research studying and contributing to disruptive innovation in its emergence as an unfolding entrepreneuring journey of organisation-creation. We shift investigation of disruptive innovation in incumbent organisations from an objective detached view to an embedded and interactive research approach.

Research Setting and Method

Our study takes place at Thales Group, a leading multinational technology company with approximately 80,000 employees operating in 68 countries. Thales is a complex systems provider in the aerospace, space, ground transportation, digital identity and security, and defence and security sectors and has been consistently ranked as a Top 100 Global Innovator (Thales Group, 2020). In January 2015 Thales UK embarked on a transformational change 'Organising for Growth' triggered by both internal and external organisational factors. Internally, Thales Group had set an aggressive growth agenda that UK stakeholders recognised would not be achievable by relying solely on organic growth. Externally, their core markets were also changing with many of their key customers beginning to look beyond their traditional industry partners to co-develop novel solutions to their challenges (InnovationXchange UK Ltd., 2019; Ministry of Defence, 2020). As part of this transformation effort, Thales UK Research, Technology and Innovation (RTI) was formed to focus on disruptive opportunities for the company. Our case is a particularly rich context for studying and contributing to entrepreneuring processes in their emergence because we had the opportunity to follow and be involved in Thales UK's organisation-creation efforts almost from the start.

Research design and data collection

Adopting an ethnographic engaged scholarship approach, the first author worked at the heart of innovation activity as a full member of the company's newly formed Thales UK RTI organisation. In this position, she was able to

'get close' to practitioners of disruptive innovation at the company to participant observe their working practices from an insider perspective (Alvesson, 2009, p. 163; Emerson, Fretz, & Shaw, 2011, p. 2-3). Situated projects were the nodes of our study. Focusing on project activities de-centres the individual actors and foregrounds the collective entrepreneuring processes and practical activity occurring (Lindgren & Packendorff, 2003, p. 88-89). We followed the development of six potentially disruptive innovation projects on-the-ground as they unfolded over a three-year period as part of Thales UK RTI. The projects were identified in consultation with senior leaders of the Organising for Growth change programme. All selected projects aimed to understand emerging customer needs in new and future markets for the purpose of developing disruptive new products and services. The company is in a leading market position in all the domains and observed SME (small and medium-sized enterprise) competitive entrants. We also paid attention to the wider social context to capture the consequential details of the localised entrepreneuring activities. We embraced Nicolini's (2012, Chapter 9) iterative method of 'zooming in' on the localised entrepreneuring accomplishments and 'zooming out' on the effects of those performances.

We used multiple data sources to capture the disruptive innovation efforts occurring from diverse perspectives including first person accounts from individuals working in different levels of the organisational hierarchy and various functions as well as documents, videos, pictures and observations. The first author collected historical, strategic and project documents, videos and pictures and reflected on her day-to-day experiences. She also conducted interviews with organisational actors involved in the potentially disruptive innovation projects as well as members of Thales UK RTI and the wider business. Past research shows that Appreciative Inquiry can be used as an interview tool to capture richer data of participants' experiences because people tend to openly provide more details when focusing on positive aspects (Michael, 2005, p. 226-228). When conducting the interviews, the first author asked positively framed questions about what the participants like about the company and their work, their best experience of innovation, what customers value about the company, their expectations of the Organising for Growth

change and their desired future for the organisation. Participants working on the potentially disruptive innovation projects shared interview and diary accounts of their desired outcome for their projects and how they were overcoming challenges they experienced. The first author also collected documents, videos and pictures of the planned interventions. The study participants range from board members to organisational members in early stages of their career and working at the call face in different business and functional areas of the company. The data corpus consists of in-depth interviews (98), diary accounts (36), videos (30), documents (165), pictures (439), events attended (180), reporting back meetings (22), and field notes of the first author's day-to-day experiences (162 personal accounts). See Table 6-1 below for an overview of our data corpus.

Table 6-1. Overview of data corpus.

Source	Events attended	Interviews	Diaries	Documents	Videos	Pictures	Reporting back meetings
Across Thales UK	39	43	0	49	22	143	13
External	20	0	0	15	0	36	0
Projects	87	68	36	52	4	129	9
Personal accounts	0	0	162	0	0	0	0
Planned interventions	34	0	0	49	4	131	0
Total	180	98	198	165	30	439	22

Note: Some interviews capture more than one kind of information.

At the beginning of the study, the research sponsors announced publicly that the first author would be participant observing the company's change and innovation efforts. Participants were invited to take part in the study by an email that included the details of the first author's position in the company and the purpose of the research. Participants were selected according to their functional and hierarchical position in the organisation as well as their involvement with the Organising for Growth change and focal innovation projects. All interviews were conducted in private hub rooms at the

organisation's various UK sites. The study participants were notified that their participation was voluntary and that they could withdraw at any time without consequence. The participants were assured that the data they provided, either recorded interview or diary submission, was confidential and anonymous.

During the course of the study the first author regularly reported the research findings to her research sponsors, senior leaders at the company, as well as discussed them with participants at the working level. A number of planned interventions were pursued in collaboration with participants across the organisation based on insights from the research including events, corporate communications and educational material to foster disruptive innovation processes at the company. The first author also attended and presented at relevant company, industry and academic events. The first author's involvement in internal and external innovation-related events provided international and public sphere context for the situated disruptive innovation efforts being observed. See the timeline below (Figure 6.1) for an overview of our research activities. During Phase 1, the first 2 years of the project, the first author was embedded in the potentially disruptive innovation projects working as a member of the project teams in Thales UK RTI. In Phase 2, she worked to implement organisation-wide planned interventions in collaboration with participants across the company based on insights from the research. During this time she continued to work alongside the other members of RTI observing their work and catching up regularly with organisational actors involved in the projects.
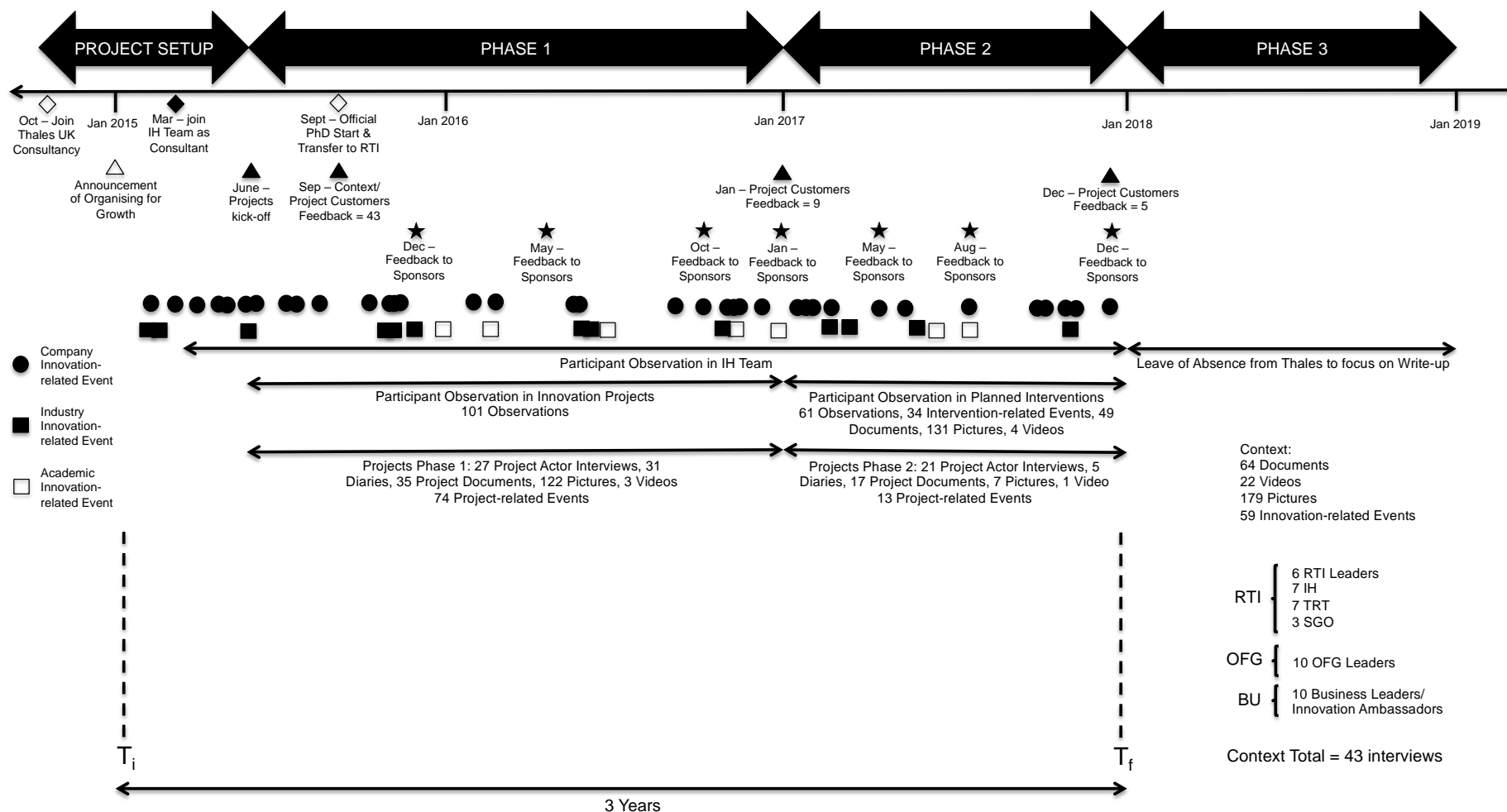
Figure 6.1. Timeline of research activities.

Data analysis

The findings for this paper were developed from a reflexive analysis of the ethnographic material we collected. Initially, we focused on our own practices as researchers paying attention to how the first author engaged with the research context going 'in' participating in the disruptive innovation efforts and interacting with participants at the micro-level and coming 'out' to engage in reporting her findings to her sponsors, attend events and implement planned interventions at the macro-level. We created a timeline visualising the first author's involvement with the research context including her attendance at key company, industry and academic events (see Figure 6.1 above). Through repeated in-depth reading of the first author's personal accounts and discussion of her overall experience we mapped the first author's recurrent research practices that we identified were instances of simultaneous observation and intervention. We developed a process diagram to capture the iterative movement and multiple dimensions of our research practices. Next we engaged with the interviews, participants' diary accounts, videos, documents, and pictures in addition to the first author's personal accounts to identify the impacts of our research practices. We organised the codes that emerged from this analysis into multi-level themes (Gioia, Corley, & Hamilton, 2012, p. 20-21). As a final step in our analysis we again engaged with the first author's personal accounts and reflections of her overall collaborative research experience to identify the tensions she experienced. Again, we grouped the codes that emerged into themes that reflected her immersive and interactive research experience (Gioia et al., 2012, p. 20-21). There are three aggregate dimensions of our staged analysis: engagements with our research context, impacts of our multi-dimensional and responsive research engagements, and collaborative research tensions.

Emerging themes from our overall research project were reported back to the research sponsors throughout the analysis. Seven face-to-face feedback sessions were conducted with the research sponsors. The research findings were also discussed with other participant groups at nine face-to-face reporting back meetings. The first author also delivered six presentations of our findings to stakeholders in the wider organisation. At these events she

actively collaborated with participants to apply insights from our analysis and deepen our understanding of the disruptive innovation efforts occurring by participant observing in the participants' sensemaking and implementation activities (Ingold, 2014, p. 389-390; Sykes & Treleaven, 2009, p. 224-225). The first author also sent two email communications to all study participants, one in May 2017 and the other in December 2017. The purpose of these communications was to share her findings with the study participants, update them on the progress of her research, as well as make them aware of the planned interventions pursued based on insights from the research and outcomes achieved.

Findings

We set out to understand how we could engage with participants at Thales UK to both support their efforts to organise for disruptive innovation and enhance our understanding of this process as it unfolded. We supported the development of disruptive opportunities at Thales UK in their emergence by stimulating self-reflexivity and imagination among organisational members. Our reflexive analysis shows that we accomplished this by engaging in a process of simultaneous intervention and observation, action and analysis, and iteratively moving in and out between micro and macro levels of engagement with our study context. In this section we present the collaborative research practices we conducted to support organising for disruptive innovation at Thales UK, the research advantages, organisational impacts generated and tensions the first author experienced in engaging with our research context at the level of language and practice in a multidimensional and responsive manner as both researcher and employee.

The process diagram below (Figure 6.2) shows the observation/intervention practices we engaged in with our research context. Each interaction we carried out in the study setting whether at the micro or macro level of engagement were aimed at both intervention and observation outcomes (Berg, 2004; McNiff, 2000).
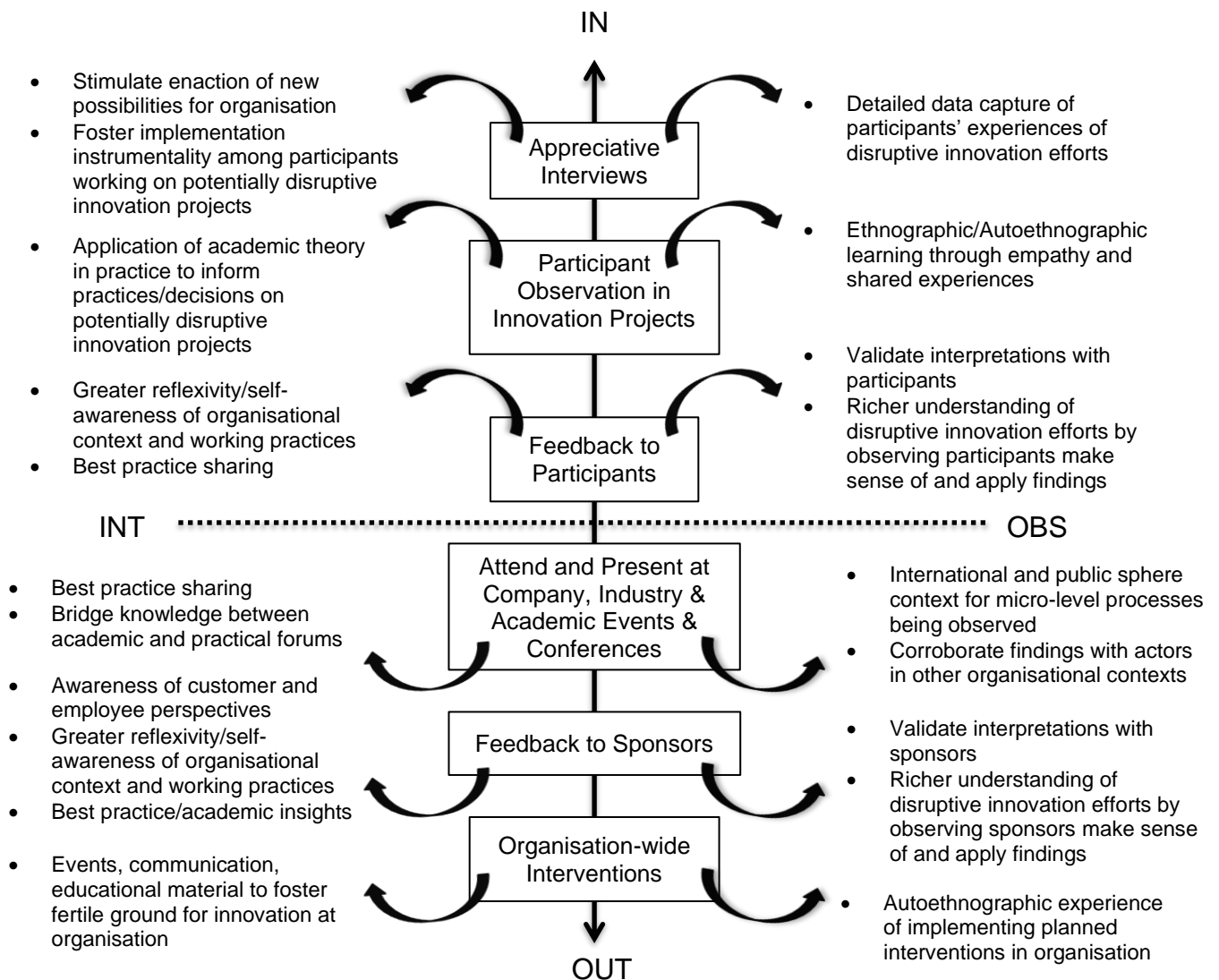
Figure 6.2. Process diagram of engagements with our research context.

Observing and supporting disruptive innovation efforts at the micro-level

At the micro-level, the first author conducted appreciative interviews with the study participants, participant observed in the potentially disruptive innovation projects and discussed her findings with participants at the working level.

As Cooperrider and Sekerka (2006, p. 225) suggest, positive inquiry encouraged the participants to share about past positive experiences and dream of new possibilities for the organisation. Participants from diverse business and functional areas across the company shared about common positive core aspects of the organisation based on their past experiences. For

210

example, many of the participants discussed how the company's international scale and diversity of operations provides a dynamic and varied work environment where employees can change roles and try new things:

> *"Thales is a great place to work because of the range of things you can do here. You are not stuck in a particular job of a particular shape and size. I am testament to the fact that you can change country, you can change job" – Nancy (Engineering)*

The participants often made links between the positive aspects they identified and their day-to-day activities and discussed immediate actions they could take to enact the positive future they described. For example, one of the participants working in bid management at the organisation discussed how Thales UK RTI could support the bids and sales team to shape opportunities for new business growth:

> *"you stand up a two-day session in the design thinking studio and go drains up, everything in, and do it properly and come out with something completely amazing that nobody had even thought about and you can guarantee that it will win because it is just so spectacular, you know. The customer will love it!" – Sawyer (Bids & Programmes)*

Furthermore, positive inquiry helped the participants working on the potentially disruptive innovation projects to focus on potential positive outcomes of their efforts. For example, when one participant was asked how they knew what they were doing was working, they discussed ways they could develop their working practices to advance their projects:

> *"I think I've still got two areas we need to address. One is project management. And I'm hoping Thursday we can test a different approach to that. And the other one is communication of our story and our transformational bit… Because developing those two will help both maturity with the organisation helping us, and also then bringing*

everyone on the journey with what we are doing" – Patrick (Potentially Disruptive Innovation Project Actor)

Thus, the use of Appreciative Inquiry seemed to foster what Baer (2012, p. 1105-1106) calls 'implementation instrumentality' – perceived positive outcomes of efforts to implement creative ideas – among the participants working on the potentially disruptive innovation projects. The project actors also expressed that their experience of engaging in the interview and diary account process throughout the project was useful for them to reflect on their own practices and unpick the challenges they were experiencing by focusing on what is working. In addition to supporting their motivation on the projects we followed, the participants also applied their learning about disruptive innovation practices to other projects they were working on at the company.

The use of Appreciate Inquiry in the data collection process also helped the researcher to elicit difficult-to-capture nuances of participants' experiences of the disruptive innovation efforts occurring. It was anticipated that participants might have difficulty opening up about their personal experiences due to the hierarchical and staid nature of the company. In particular, it was foreseen that increased sensitivity may arise due to the fact that the interviewer was part of the research context and, although anonymously, intended to report her findings to senior leaders of the company. As seen in past research, the use of Appreciative Inquiry in this case seemed to help build trust and rapport with participants (Michael, 2005, p. 226-228). The participants opened up and often rambled on, sometimes forgetting the questions they were asked.

Through participant observing in the potentially disruptive innovation projects the first author supported the development of the projects by contributing a social psychology perspective complementary to the other project team members' mainly technical and business skillsets. For example, on one of the projects the team was working to develop a customer demonstrator of a new offer. Drawing on her understanding of knowledge processes, the first author helped to develop a customer journey map and customer engagement tool to articulate the offer to different customer audiences underpinned by theoretical

concepts from social psychology literature. Through these activities she simultaneously supported the project team and experienced first-hand the challenges faced when communicating new transformational ideas to target stakeholders that informed our analysis.

Throughout the course of the project the first author also discussed her findings with participants working on the potentially disruptive innovation projects. This contributed to greater self-reflexivity and best practice sharing among the participants working on the potentially disruptive innovation projects as well as served to validate the researcher's interpretations. For example, below is an excerpt from the first author's personal diary reflecting on how a discussion she had with one of her colleagues in Thales UK RTI contributed to our analysis as well as supported the participants' reflection and learning about the disruptive innovation efforts:

> *As I was leaving the office today I spoke to [colleague] about my research. He was curious about how it was all going and I shared with him some of my findings. He thought that the practices I had identified really resonated with his experience as well as the de Certeau strategy/tactics theoretical framing. He also thought the model I've been struggling with to visualise the innovation practices I was observing was actually pretty good. [Colleague] is one of the people working in the innovation projects I have been following so the fact that he is supportive of my findings is good validation of my thinking/analysis (First Author's Personal Account)*

The participants also contributed to identifying ways the research findings can be used to foster disruptive innovation processes at the company. For example, one of the participants suggested that educational material about disruptive innovation practices could help promote disruptive innovation processes at the company. In response to this suggestion, the first author developed an educational toolkit to educate employees and managers about practices that can be used to progress disruptive innovation initiatives at the company based on our findings:

Figure 6.3. Creative Disruption Educational Toolkit prototype trial with Future Leaders Programme in Edinburgh (May 2017).
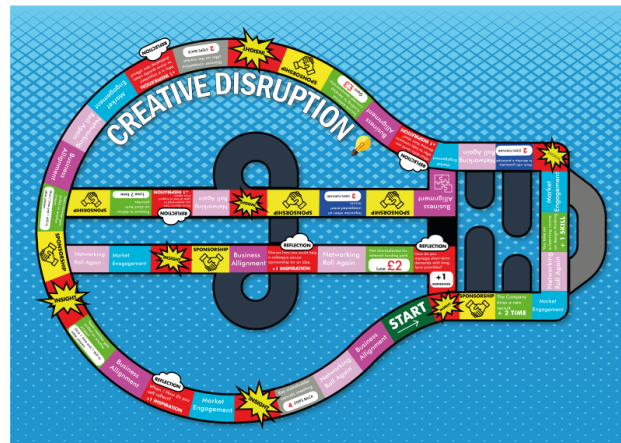
Figure 6.4. Creative Disruption Educational Toolkit board.

Going 'in' engaging with our research context at the micro-level enabled the first author to get a close-up of her own and the other participants' experiences of entrepreneuring as well as contribute to the disruptive innovation efforts occurring.

Observing and supporting disruptive innovation efforts at the macro-level
At the macro-level, the first author regularly presented her research findings to her research sponsors, participated in company, industry and academic conferences and events and pursued organisation-wide interventions based on insights from the overall research project.

Engaging in regular feedback and discussion of the research findings with the research sponsors stimulated greater reflexivity and self-awareness of the organisational context and working practices for them as well as supported the application of insights from our research in practice. For example, feedback of the participants' experiences of the Organising for Growth changes was incorporated into refining the Thales UK RTI operating model. Furthermore, the research sponsors actively tried to identify ways they could apply insights from the research into current happenings at the company when discussing the findings at the regularly scheduled feedback meetings as described in another personal diary entry by the first author:

> *Today I had my feedback session with my research sponsors. As requested I provided them with an action plan based on my findings to better support organisational members working on innovation on-the-ground in the company and shared with them my idea of creating a board game to educate both managers and employees about innovation practices. They really liked the idea and are supportive of me testing my findings in the academic/industry innovation best practice network I am involved with as part of the development. I was very happy that they took the feedback seriously and were immediately thinking about what they can be doing to address some of the issues such as creating opportunities for open dialogue between senior leaders and staff at the company's new head office (First Author's Personal Account)*

In agreement with the study sponsors, insights from the research were incorporated into a number of planned interventions to promote disruptive innovation processes at the company including events, corporate communication and educational material. As part of this work, positive core themes distilled from the analysis – international business with leading depth and breadth of capability and expertise, solving tangible real-world customer problems, heritage of innovation and huge potential, good people that are clever and hard-working, trusted by customers to deliver high quality complicated things, open-minded organisation with good intentions, and

enjoyable work environment with opportunities to try new things – were used to foster employee engagement, cross-company integration and a culture of disruptive innovation at Thales UK.

The first author drew on her own lived experience of leading the implementation of the planned interventions to inform our understanding of the disruptive innovation efforts at the company (Adams et al., 2015, p. 15-16; Johannisson, 2011, p. 146-147). For example, she worked to create common interests among multiple diverse stakeholders across the business to implement the initiatives she pursued, a practice she had observed the participants working on the potentially disruptive innovation projects have needed to engage in to progress their initiatives. In a diary entry, the first author described that she presented her work at an Employee Engagement Network meeting where she worked to engage other organisational members from across the business to support the implementation of the planned interventions and learned about ways she could tailor the activities to the company's existing priorities. The Employee Engagement Network is comprised of employee engagement champions from across the company's diverse business and functional areas that facilitate the annual People Survey and work to locally implement improvements based on the survey results:

> *Today I shared about my research design/findings, key insights from the research that were also echoed at the previous employee engagement network meeting and also described the planned interventions I am working to implement this year. Overall, the feedback from the group was very positive – they said the analysis was spot on and also liked the interventions and thought they would work well in the company, particularly the activities planned for the company's new head office. I also learned about some existing activities in the company that I can look to align my activities with (First Author's Personal Account)*

The first author also participated in company, industry and academic events and conferences. Through her involvement in these forums she brought

learning from other industry contexts and academic insights into the company to support the development of the disruptive innovation initiatives she observed. For example, she organised a series of meetings where other companies shared about their innovation practices with her colleagues as well as introduced her colleagues to potentially useful contacts to further their innovation initiatives. Engaging in these forums also provided international and public sphere context for the disruptive innovation efforts we were experiencing at the micro-level and enabled us to corroborate our findings with entrepreneuring efforts in other areas of Thales Group as well as other industry contexts.

By participant observing in the research sponsors' and other participants' efforts to make sense of and apply our findings *in situ* we gained a deeper understanding of the disruptive innovation efforts occurring (Sykes & Treleaven, 2009, p. 224-225). We were exposed to a more nuanced understanding of the organisational constraints at a macro-level as well as the complexities of implementing organisation-wide initiatives within the company's diverse business operations. It also made us aware of other business initiatives and the rationale for strategic level decisions that further contextualised the micro-level processes we observed.

Moving 'out' engaging with our research context at the macro-level provided useful contextual and background information about the disruptive innovation efforts being observed. The first author simultaneously input to strategic level thinking and doing at the organisation through her macro-level interactions with our research context.

Impacts of multi-dimensional and responsive engagement with our research context
Impacts of our collaborative research practices can be observed across multiple levels and functional communities in the organisation. See Figure 6.5 below outlining the impacts of our responsive and multi-dimensional engagement with our research context.
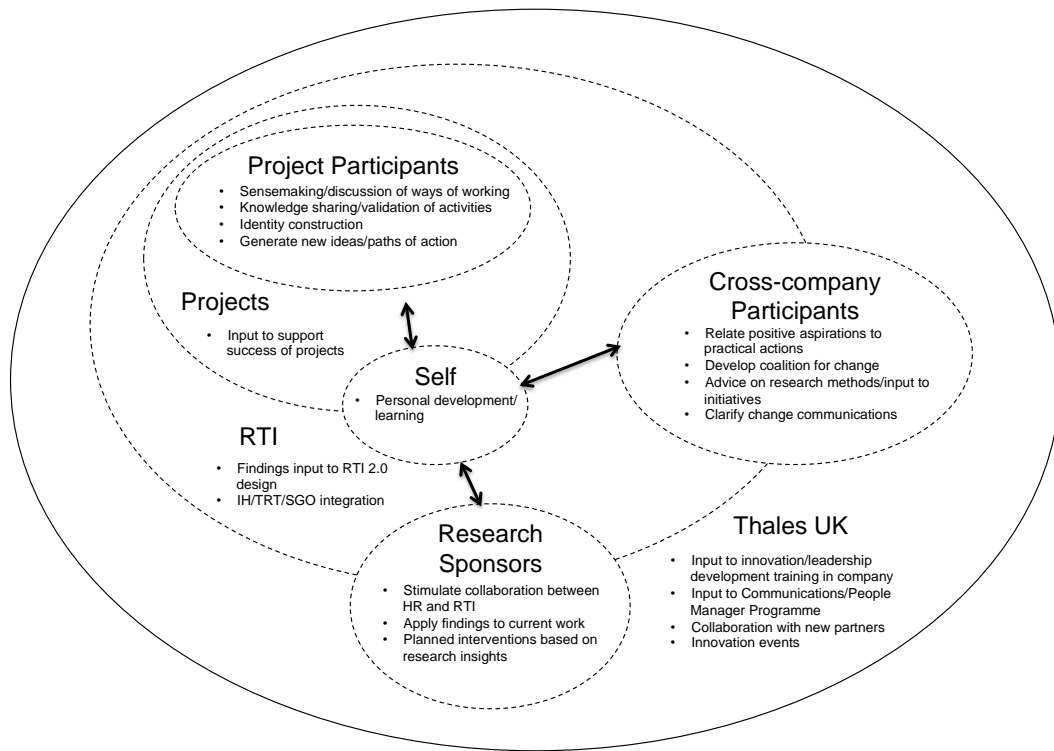
Figure 6.5. Impacts of our multi-dimensional and responsive research engagements.

Our efforts to observe and support organising for disruptive innovation in real-time by engaging with our research context in a multi-dimensional and responsive manner resulted in whole system impacts at the company.

Self. Through her involvement in the potentially disruptive innovation projects and efforts to implement organisation-wide interventions based on insights from our research the first author developed personally and learned from her experiences. For example, the first author developed her ability to create common interests when pursuing new organisational initiatives both through her learning working with her colleagues to develop a customer engagement tool on one of the projects as well as working with diverse stakeholder groups across the company to implement organisation-wide interventions. Over the course of the study the first author developed new understandings and abilities from her engagement in the research context.

Projects and project participants. Within the projects, the first author input to the success of the potentially disruptive innovation projects she was involved in as well as impacted on the understandings and experiences of the project participants. She facilitated discussion of the teams' ways of working and new concepts at the organisation, facilitated knowledge sharing and validation of the project teams' activities and the generation of new ideas and paths of action. The participants working on the potentially disruptive innovation projects also developed their identity through their involvement with the research as intrapreneurs at the company. The first author's participation in the research context contributed to the company's disruptive innovation efforts at the project level.

RTI and research sponsors. At the functional level, the research activities fostered integration between the different research, strategic growth and innovation sub-components of Thales UK RTI as well as contributed to its operational improvement by providing feedback of customer and employees' experiences of the disruptive innovation efforts being observed. The feedback meetings with the sponsors also stimulated collaboration between Human Resources and Thales UK RTI to both incorporate insights into their current work as well as support the development of cross-functional interventions based on insights from the research. Our collaborative research practices supported functional level developments at the company.

Cross-company participants and Thales UK. Our collaborative research activities also influenced thinking and doing at the company at an organisational level. The researchers' interaction with participants from different business and functional areas of the organisation triggered them to relate their positive aspirations to practical actions. These interactions also served to connect change agents interested in working together to enable disruptive innovation processes at the company as well as clarify change communications because some of the participants were not aware of the Organising for Growth changes. The researchers' planned interventions contributed to innovation and leadership development training at the company as well as raised awareness of disruptive innovation at meetings and events.

The company also collaborated with new partners stimulated by the research activities. Our involvement in the research context generated several organisational-level changes at the company.

We identified impacts at the individual, project, functional and organisational levels resulting from our collaborative research practices.

Tensions of dual researcher-employee role

While our collaborative research practices generated impacts that supported the emergence of new ways of organising for disruptive innovation at Thales UK, the first author also experienced a number of tensions in her dual researcher-employee role (Tietze, 2012, p. 68). She experienced both lucid – more easily apparent – and elusive – difficult to articulate – tensions over the course of the project (Law, 2004, p. 2, 6). See Table 6-2 for a summary of the tensions the first author experienced as both engaged practitioner and reflective academic.

Table 6-2. Collaborative research tensions.

Engaged practitioner	Reflective academic
Lucid tensions	
Participant observation	
Live/breathe data	Head space/conceptualisation
Intriguing happenings	PhD requirements
Relevant research	Rigorous research
Elusive tensions	
Conflicting goals	
Meaningful and impactful work	Obsession with publishing/ theoretical contribution
Ownership/responsibility to fix organisational problems	Passionate aptitude for research
Companies willing to listen/collaborate/want to learn	Strategic level advocacy for impact but institutional constraints
Need to develop business expertise	No hybrid career paths
Conflicting competencies	
Set timeline/pressure to deliver	Creative process
Implementing partially formed ideas	Test ideas at conferences
Conflicting materiality	
Slides 'too wooly'	Slides 'too pretty'
Business acumen	Philosophical debate

Lucid tensions. The lucid tensions had to do with the first author's experience of conducting participant observation, challenges commonly discussed in the literature (e.g. Alvesson, 2009, p. 166-172; Van Maanen, 1995, p. 20; Ybema & Kamsteeg, 2009, p. 102-103). Most significantly, she struggled to adequately reflect on her findings living and breathing her data daily while immersed in the study context. It was not until she had a year sabbatical from her work environment that she was able to critically assess the empirical material and conceptualise. Yet during that time she also felt less connected to her study context and worried that she might develop an ivory tower perspective causing lost relevance of her work. She also grappled with the challenge of wanting to collect more data driven by curiosity of the interesting phenomena she was studying and wanting to know what would happen next on the projects she was following. Facing the demands of the academic community the project needed to be bounded to keep it within scope to meet her PhD requirements. She also felt pressure from an academic perspective to not go 'too native' in her participant observation to maintain 'rigour' in her study. At the same time, she would not have had access to the rich ethnographic material from which she developed important insights had she not had insider access and embraced closeness with her study context.

Elusive tensions. The elusive tensions had to do with the first author's experience of engaging in novel research practices as a scholar-practitioner that is not as openly discussed in the literature. She experienced conflicting goals, competencies and material aspects of her ethnographic engaged scholarship research practices (Bjørkeng, Clegg, & Pitsis, 2009, p. 149). She experienced conflicting goals related to her career trajectory aspiring to be a 'pracademic' blurring the boundary between the realms of industry and academia. She wanted to do meaningful research that had an impact on real-world problems and felt she was achieving this through her project. Yet in the academic realm she experienced a low value ascribed to solving real-world issues, an obsession with publishing and making a theoretical contribution to scholarly knowledge. While at a strategic level the academy preached a vision of impact, in reality the institutional structures did not support engaged scholarship. Key reports and government strategies (e.g. Dowling Report

(Royal Academy of Engineering, 2015), UK Industrial Strategy (HM Government, 2017)) signal a desire for greater collaboration between industry and academia but this greater push for 'impact' is practiced as blogs and thought pieces as opposed to meaningful engagement with real-world stakeholders. She also experienced tension in envisioning a pracademic career path. She was told that she needed to pick one side, build up expertise and then transfer that know-how to the other domain. The Careers talk at the university only presented traditional academic routes – post docs, junior professor, lectureship roles OR pure industry, no hybrid paths were discussed. She also witnessed senior professors at the university struggle to write books aimed at both academic and practitioner audiences that have different interests, speak different languages and have different values. She was passionate about research and the feedback she received at conferences confirmed she had an aptitude for academic work but felt unenthused by a life of chasing publications over doing meaningful work that could really make a difference for people. She often questioned herself – why was she subjecting herself to the pain of doing a PhD while working if there was no way forward to bridge the realms of academia and industry that she felt so passionately about?

The first author also felt tensions related to her competencies as a scholar-practitioner. With experience working as a project manager, she felt pressure to adhere to set timelines and deliver valuable results from her research from a business perspective. At feedback meetings with her sponsors she always strived to deliver value to the company from her thesis with 'quick wins' and 'answers' at the ready. She felt ownership and responsibility to fix the company's problems and deliver solutions in return for the investment in her research. These demands she imposed on herself as an engaged practitioner were in opposition to the need to undertake a messy, non-linear creative process as a reflective scholar. The PhD process was an explorative process of discovery, crafting clarity of 'fuzzy' ideas over time including making wrong turns, finding dead ends and cul-de-sacs. She was advised that a good way to facilitate this sensemaking is to attend conferences to articulate and test ideas with experts in your field. Yet as a scholar-practitioner the first author was

representing her company as well as her university. She proactively shared draft papers with her company sponsors in advance of attending the conferences to make sure they were happy with the way she was portraying the organisation. Knowing that her sponsors would read the content it was a challenge in the writing process to show the depth and value of our ethnographic data yet not give too much information away about the company's strategic innovation projects and maintain anonymity of the project actors. Not once did the company sponsors express concerns about the content but instead were interested in the ideas she articulated. They wanted to use her partially formed ideas right away to inform their practice, demonstrate thought leadership and credibility of their activities. In the academic realm researchers tend not to talk authoritatively on topics until they are expert, so this was uncomfortable for her. But she saw how her ideas were positively influencing thinking and practice at the organisation and that sharing her partially formed ideas was delivering the greatest value from her research. Had she waited until the end of the project to share her findings the company would have missed a multitude of opportunities to incorporate her insights into their work when it was practically relevant for them. She also would have missed the opportunity to corroborate her findings with the study participants and leverage the different practitioner perspectives at her disposal to strengthen her ideas (Schwartz-Shea & Yanow, 2009, p. 62; Van de Ven & Johnson, 2006, p. 809).

Physically, she never felt like she completely fit in to either the academic or industry communities of practice. When presenting her ideas on the industry side she received feedback that her slides were 'too wooly' and the terminology was too difficult. Yet on the academic side her slides were perceived as 'too pretty', highly visual and colourful for an academic audience. On one occasion when she presented her research at a university seminar, an esteemed academic deemed it a 'consulting presentation'. Throughout the project the first author constantly struggled to find the right language and medium to translate her research between industry and academic audiences. The business stakeholders also told her they perceived her as an academic and that she needed to develop her commerciality. One of the company

sponsors even took the time to help her develop her business acumen by engaging in a number of business training sessions with her. While she appreciated that she tended to talk more in abstract terms while her colleagues tended to use practical examples in their explanations, on the academic side she always found herself asking 'the practical questions' in the seminar discussions as opposed to leading philosophical debates.

The first author experienced lucid and elusive collaborative research tensions in our endeavour to support Thales UK's efforts to organise for disruptive innovation and enhance our understanding of this process as it unfolded.

Discussion

Our research explores how an incumbent organisation's efforts to organise for disruptive innovation can be supported through real-time investigation using an ethnographic engaged scholarship approach. Our research responds to a key gap in disruptive innovation research that has only investigated the emergence of disruptive innovation retrospectively and from afar. Considering disruptive innovation as an unfolding entrepreneuring journey of organisation-creation, we explored how we could support the emergence of everyday entrepreneuring processes to generate new ways of organising for disruptive innovation at Thales UK adopting an embedded and interactive position. Our research sheds light on how our collaborative research practices supported the emergence of entrepreneuring processes at the company by stimulating self-reflexivity and imagination among organisational members. We accomplished this through a process of simultaneous intervention and observation, action and analysis, and iteratively moving in and out between micro and macro levels of engagement with our study context. In our confessional tale we highlight the research advantages, impacts and tensions of engaging with our research context at the level of language and practice in a multidimensional and responsive manner as both researcher and employee.

Current retrospective and from afar studies of disruptive innovation miss the opportunity to gain in-depth understanding of everyday disruptive innovation efforts while also contributing to them in their occurrence (e.g. Ansari et al.,

2016b, p. 1832; Christensen & Bower, 1996, p. 200; Cozzolino et al., 2018, p. 1172-1176; Khanagha et al., 2018, p. 1085-108). Adopting an embedded and interactive position in our research, the first author oscillated between going in, getting a close-up of her own and others' experiences of the disruptive innovation efforts occurring on-the-ground, and moving out, engaging with the phenomenon at the macro-level. Going on the entrepreneurial journey in collaboration with participants at Thales UK, the first author gained tacit knowledge of the lived experience of these efforts including emotional highs and lows, interpersonal relations, and material struggles of generating new ways of organising for disruptive innovation in an incumbent organisation that could not be gleaned from a retrospective from afar account (Adams et al., 2015, p. 15-16; Johannisson, 2011, p. 146-147). Working with participants in multiple diverse positions to make sense of and apply our findings *in situ* also enabled deeper understanding of and validated our interpretations of the unfolding disruptive innovation processes (Schwartz-Shea & Yanow, 2009, p. 62; Van de Ven & Johnson, 2006, p. 809). Furthermore, by 'being there' iteratively moving between micro and macro levels of collaborative engagement with a diverse range of participants, we developed an overall multi-dimensional intervention strategy tailored to the organisational context (Clark, 1972; McNiff, 2000). The first author's embedded position and continuous movement between different modes of collaborative engagement with our study context influenced and enriched our understanding of the unfolding disruptive innovation processes in their emergence.

Our collaborative research practices stimulated self-reflexivity and imagination among organisational members at Thales UK that supported the development of new ways of organising for disruptive innovation in multiple ways. Using Appreciative Inquiry surfaced the participants' desires that drive forward entrepreneuring processes in organisations by encouraging them to share about past positive experiences and dream of new possibilities for the organisation (Hjorth, 2003; Hjorth, 2014, p. 102). Many of them made links between the positive aspects they imagined and their day-to-day activities and discussed immediate actions they could take to enact the positive future they described (Cooperrider & Sekerka, 2006, p. 225). We also stimulated

implementation instrumentality among the participants working on the potentially disruptive innovation projects through our research practices helping them to focus on potential positive outcomes of their efforts (Baer, 2012, p. 1105-1106). Furthermore, our research activities stimulated the project actors to reflect on their daily practices through explanation and recording of their experiences in interview and diary accounts. Our stakeholder feedback activities also stimulated reflexivity and new imaginings at multiple levels in the organisation that supported organisational learning about everyday disruptive innovation practices at the company. In our engagements with our study context at the level of language and practice we supported the emergence of entrepreneuring processes at the organisation by surfacing organisational members' desires and stimulating them to self-reflect on their day-to-day work in real-time.

While our ethnographic engaged scholarship approach enabled us to support the emergence of as well as gain in-depth understanding of unfolding disruptive innovation processes at Thales UK, the first author also experienced several tensions in her dual researcher-employee role (Tietze, 2012, p. 68). She experienced more apparent lucid tensions related to her participant observation position and more difficult to articulate elusive tensions related to her scholar-practitioner position (Law, 2004, p. 2, 6). Oscillating in and out from the micro-level occurrences and engaging with other internal and external parties at the macro-level helped the first author to re-surface and create distance from her embedded position in the research context (Ybema & Kamsteeg, 2009, p. 111-112). The researcher needed to travel between different business sites to interview various stakeholders, participated in off-site industry and academic meetings and events and worked at the university and home on her study days that helped to 'break the friendship bond' and prevent the researcher from developing too close relations with the study participants. Straddling the academic-industry interface also positioned the first author as an outsider rather than a mainstream member of the organisation that prevented the urge to conform to norms in the business environment and mitigate one-sidedness in her at-home descriptions (Alvesson, 2009, p. 170). However, our novel scholar-practitioner

collaborative research practices also generated tensions for the first author related to her goals, competencies and material aspects of her scholar-practitioner work (Bjørkeng et al., 2009, p. 149). She experienced conflicting expectations about the meaning, ownership and impact of her research efforts, struggled to manage the creative research process within an operational business context, and questioned her own identity and future career path (Tietze, 2012, p. 68). The first author confronted several tensions in her embedded and interactive position as both researcher and employee.

In a confessional tale we share our collaborative research experience as a toolkit for other researchers interested in studying and contributing to innovation processes in their emergence. Involved researchers should consider how every act of engagement with their study context is an opportunity to both contribute to and enhance their understanding of disruptive innovation processes in their occurrence. Our findings highlight how Appreciative Inquiry can be used to foster innovation in organisations by stimulating entrepreneuring processes as well as enhance our understanding of them in their emergence. Furthermore, working with participants to make sense of and apply research findings *in situ* has benefits for both researchers and industry stakeholders serving to enable innovation processes as well as enhance our understanding of them as they unfold. This collaborative approach also supports the development of a shared evidence-based body of knowledge of innovation processes among theorists and practitioners based on connectivity and reciprocity (Antonacopoulou, Dehlin, & Zundel, 2011, p. 47; Van de Ven & Johnson, 2006, p. 816-817). Although there are many benefits of scholar-practitioner collaborative partnerships it is important that researchers are also aware of the tensions involved in engaging in scholar-practitioner collaborative research arrangements as both researcher and employee. We aim to support effective scholar-practitioner collaborations by sharing about our collaborative research practices as well as the resulting impacts and tensions of those research efforts. While an ethnographic engaged scholarship approach requires considerable reflexivity, careful stakeholder management and handling of tensions, the benefits it derives for both industry and academic partners is unquestionable.

Contributions and Conclusion

Our study provides a confessional tale of the research advantages, impacts and tensions of our collaborative research experience studying and supporting an incumbent organisation's efforts to organise for disruptive innovation in its occurrence. Our findings complement extant disruptive innovation research that has only conducted retrospective and from afar accounts of the emergence of disruptive innovation. While these studies offer important insights about how particular disruptive phenomenon transpired, we show how disruptive innovation efforts can be supported in its occurrence using an ethnographic engaged scholarship approach. We provide a toolkit for other researchers to also study and contribute to the emergence of innovation processes in organisations in real-time. Our research contributes to advance understanding of disruptive innovation, organisation-creation and ethnographic research methods.

We contribute to the disruptive innovation literature an understanding of how disruptive innovation processes can be supported in their emergence using an ethnographic engaged scholarship approach. Extant retrospective and from afar studies of disruptive innovation miss the opportunity to contribute to and access a richer understanding of the development of disruptive innovation processes in their occurrence. We highlight how researchers can support the emergence of entrepreneuring processes that generate new ways of organising for disruptive innovation in organisations by stimulating self-reflexivity and imagination among organisational members. Furthermore, by engaging with their study context at the level of language and practice in a multidimensional and responsive manner researchers can access a deeper understanding of disruptive innovation processes as they happen while generating sustainable change as part of their involvement. We open discussion of how researchers can both support and enhance their understanding of emerging disruptive innovation processes through real-time collaborative research practices.

We add to organisation-creation research an appreciation of how organisation-creation processes can be enabled in their occurrence by adopting an interactive research attitude. By asking participants to reflect on their daily practices and experiences and discussing our findings with them we stimulated self-reflexivity among organisational actors at Thales UK. Furthermore, using Appreciative Inquiry we surfaced participants' desires by encouraging them to share about past positive experiences and dream of new possibilities for the organisation. In asking positively framed questions we also stimulated implementation instrumentality among the participants working on the innovation projects by helping them to focus on potential positive outcomes of their efforts. We shed light on how researchers can support the emergence of entrepreneuring processes by surfacing actors' desires and stimulating them to self-reflect on their day-to-day work. We extend the organisation-creation conversation by showing how researchers can support the emergence of entrepreneuring processes as part of studying them in real-time using a collaborative research approach.

We also contribute to knowledge of ethnographic research methods an understanding of how this research approach can be used in engaged scholarship. While previous research highlights that engaging with one's study context at the level of language and practice is an opportunity to enact change as part of the researcher's involvement, we lack an understanding of how this can be achieved and the associated challenges. In sharing our research experience in a confessional tale we openly discuss the research advantages, impacts and tensions of our collaborative research approach. We highlight that engaging with one's study context in a multi-dimensional and responsive manner is important for generating sustainable change as part of the researcher's involvement in the study context. Furthermore, we illuminate lucid and elusive tensions that arise from engaging in scholar-practitioner collaborative research arrangements as both researcher and employee and strategies to deal with them. We expand debate of how ethnographic research methods can be best used in engaged scholarship protocol in collaboration with practitioners.

We chose an ethnographic engaged scholarship approach to both study and contribute to the emergence of disruptive innovation processes at Thales UK. While this research design enabled us to support as well as gain in-depth understanding of unfolding disruptive innovation processes in this context, our results are specific to this study setting. Further research is needed to test whether the research advantages, interventions and enriched observations we achieved in our case are obtainable in other settings. Additionally, further research is needed to enhance understanding of the tensions we experienced and whether similar or other tensions arise in other cases. Researchers could also explore whether the collaborative research practices we engaged in are relevant for supporting other types of innovation processes, such as radical or sustaining innovation processes, and the resulting impacts and tensions of those research efforts. Our research highlights the value of embracing an ethnographic engaged scholarship approach to both contribute to and enrich our understanding of emerging disruptive innovation processes in real-time that could not be accomplished retrospectively or from afar. Further studies could usefully build on our research by exploring how innovation processes can be supported in their occurrence embracing an embedded and interactive position. By shedding light on the key aspects of our approach that enabled us to capture the nuances of disruptive innovation processes while enacting organisational change as it happens as well as the challenges we confronted, we share our experience as a toolkit for other scholars to conduct similar case studies. This will better inform our understanding of how innovation processes arise and can be fostered in organisations while also enacting real change for the betterment of the society along the way.

References

Adams, T. E., Jones, S. H., & Ellis, C. (2015). *Autoethnography*. Oxford: Oxford University Press.

Afuah, A. (2000). How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, 21(3), 387-404.

Alvesson, M. (2009). At-home ethnography: Struggling with closeness and closure. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 156-174). London: Sage.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016a). Special issue call for papers: Managing in the age of disruptions. *Journal of Management Studies*. Retrieved from http://www.socadms.org.uk/wp-content/uploads/JMS-Managing-in-the-Age-of-Disruption-Call-for-Papers.pdf.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016b). The disruptor's dilemma: TiVo and the U.S. television ecosystem. *Strategic Management Journal*, 37(9), 1829-1853.

Antonacopoulou, E. P., Dehlin, E., & Zundel, M. (2011). The challenge of delivering impact: Making waves through the ODC debate. *Journal of Applied Behavioural Science*, 47(1), 33-52.

Baer, M. (2012). Putting creativity to work: The implementation of creative ideas in organizations. *Academy of Management Journal*, 55(5), 1102-1119.

Becker, H. (1996). The epistemology of qualitative research In R. Jessor, A. Colby, & R. Shweder (Eds.), *Ethnography and human development: Context and meaning in social inquiry* (pp. 53-72). Chicago: University of Chicago Press.

Berg, B. L. (2004). *Qualitative research methods*, (5th ed.). Boston: Pearson Education.

Bjørkeng, K., Clegg, S., & Pitsis, T. (2009). Becoming (a) practice. *Management Learning*, 40(2), 145-159.

Christensen, C. M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail*. Boston: Harvard Business School Press.

Christensen, C. M., & Bower, J. L. (1996). Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal*, 17(3), 197-218.

Christensen, C. M., & Raynor, M. E. (2003). *The innovator's solution: Creating and sustaining successful growth.* Boston: Harvard Business School Press.

Clark, P. A. (1972). *Action research & organizational change.* London: Harper & Row.

Cooperrider, D., L. Barrett, F., & Srivastva, S. (1995). Social construction and appreciative inquiry: A journey in organizational theory. In D. Hosking, P. Dachler, & K. Gergen (Eds.), *Management and organization: Relational alternatives to individualism* (pp. 157-200). Aldershot, UK: Avebury.

Cooperrider, D. L., & Sekerka, L. E. (2006). Towards a theory of positive organizational change. In J. V. Gallos (Ed.), *Organization development* (pp. 223-238). San Francisco: Jossey-Bass.

Cooperrider, D. L., & Srivastva, S. (1987). Appreciative inquiry in organizational life. *Research in Organizational Change and Development*, 1, 129-169.

Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). Unpacking the disruption process: New technology, business models, and incumbent adaptation. *Journal of Management Studies*, 55(7), 1166-1202.

Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47(6), 1154-1191.

Danneels, E. (2004). Disruptive technology reconsidered: A critique and research agenda. *Journal of Product Innovation Management*, 21, 246-258.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes* (2nd ed.). Chicago: University of Chicago Press.

Garud, R., Gehman, J., & Tharchen, T. (2018). Performativity as ongoing journeys: Implications for strategy, entrepreneurship, and innovation. *Long Range Planning*, 51, 500-509.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15-31.

Gustavsen, B. (2005). Innovation and action research. *International Journal of Action Research*, 1(3), 267-289.

Hjorth, D. (2003). *Rewriting entrepreneurship – For a new perspective on organizational creativity.* Malmö: Liber.

Hjorth, D. (2005). Organizational entrepreneurship: With de Certeau on creating heterotopias (or spaces for play). *Journal of Management Inquiry*, 14(4), 386-398.

Hjorth, D. (2012). *Handbook on organisational entrepreneurship*. Cheltenham: Edward Elgar.

Hjorth, D. (2014). Entrepreneuring as organisation-creation. In R. Sternberg, & G. Krauss (Eds.), *Handbook of research on entrepreneurship and creativity* (pp. 97-121). Cheltenham: Edward Elgar.

Hjorth, D., & Reay, T. (2018). Special issue call for papers: Organizational and institutional entrepreneuring: Processes and practices of creating in an organized world. *Organization Studies*. Retrieved from http://entrepreneuriat.com/wp-content/uploads/2018/11/SI-Entrepreneuring-Final-November-18.pdf.

Hoholm, T., & Araujo, L. (2011). Studying innovation processes in real-time: The promises and challenges of ethnography. *Industrial Marketing Management*, 40(6), 933-939.

Hoholm, T. & Olsen, P. (2012). The contrary forces of innovation: A conceptual model for studying networked innovation processes. *Industrial Marketing Management*, 41, 344-356.

HM Government. (2017). Industrial strategy: Building a Britain fit for the future. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf.

Ingold, T. (2014). That's enough about ethnography! *Journal of Ethnographic Theory*, 4(1), 383-395.

InnovationXchange UK Ltd. (2019). *How the rail industry is seizing innovation*. Retrieved from https://www.ixc-uk.com/How_the_Rail_Industry_is_Seizing_Innovation--post--68.html.

Johannisson, B. (2011). Towards a practice theory of entrepreneuring. *Small Business Economics*, 36(2), 135-150.

Khanagha, S., Zadeh, M. T. R., Mihalache, O. R., & Volberda, H. W. (2018). Embracing bewilderment: Responding to technological disruption in

heterogeneous market environments. *Journal of Management Studies*, 55(7), 1079-1121.

King, A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MIT Sloan Management Review,* 57(1), 77-90.

Kumaraswamy, A., Garud, R., & Ansari, S. (2018). Perspectives on disruptive innovations. *Journal of Management Studies*, 55(7), 1025-1042.

Langley, A., & Stensaker, I. (2012). Longitudinal research and analysis. In G. Symon, & C. Cassell (Eds.), *Qualitative organizational research: Core methods and current challenges* (pp. 149-167). London: Sage.

Law, J. (2004). *After method: Mess in social science research*. New York: Routledge.

Lepore, J. (2014). The disruption machine: What the gospel of innovation gets wrong. *The New Yorker,* May 23.

Lewin, K. (1951). Problems of research in social psychology. In D. Cartwright (Ed.), *Field theory in social science: Selected theoretical papers* (pp. 155-169). New York: Harper & Row.

Lindgren, M., & Packendorff, J. (2003). A project-based view of entrepreneurship: Towards action-orientation, seriality and collectivity. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 86-102). Cheltenham: Edward Elgar.

MacKay, R. B., & Chia, R. (2013). Choice, chance, and unintended consequences in strategic change: A process understanding of the rise and fall of NorthCo Automotive. *Academy of Management Journal*, 56(1), 208-230.

Markides, C. (2006). Disruptive innovation: In need of a better theory. *Journal of Product Innovation Management*, 23(1), 19-25.

McNiff, J. (2000). *Action research in organizations*. New York: Routledge.

Michael, S. (2005). The promise of appreciative inquiry as an interview tool for field research. *Development in Practice*, 15(2), 223-230.

Ministry of Defence (2020). *Procurement at MoD*. Retrieved from https://www.gov.uk/government/organisations/ministry-of-defence/about/procurement.

Neyland, D. (2011). *Organizational ethnography*. London: Sage.

Nicolini, D. (2012). *Practice, theory, work, & organization*. Oxford: Oxford University Press.

Ozalp, H., Cennamo, C., & Gawer, A. (2018). Disruption in platform-based ecosystems. *Journal of Management Studies*, 55(7), 1203-1241.

Petschick, G. (2015). Ethnographic panels for analyzing innovation processes. *Historical Social Research*, 40(3), 210-232.

Petzold, N., Landinez, L., & Baaken, T. (2019). Disruptive innovation from a process view: A systematic literature review. *Creativity and Innovation Management*, 28, 157-174.

Royal Academy of Engineering. (2015). The Dowling review of business-university research collaborations. Retrieved from https://www.raeng.org.uk/publications/reports/the-dowling-review-of-business-university-research.

Schwartz-Shea, P., & Yanow, D. (2009). Reading and writing as method: In search of trustworthy texts. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 56-82). London: Sage.

Snihur, Y., Thomas, L. D. W., & Burgelman, R. A. (2018). An ecosystem-level process model of business model disruption: The disruptor's gambit. *Journal of Management Studies*, 55(7), 1203-1241.

Sood, A., & Tellis, G. J. (2011). Demystifying disruption: A new model for understanding and predicting disruptive technologies. *Marketing Science*, 30(2), 339-354.

Sykes, C., & Treleaven, L. (2009). Critical action research and organizational ethnography. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 215-230). London: Sage.

Tellis, G. J. (2006). Disruptive technology or visionary leadership? *Journal of Product Innovation,* 23(1), 34-38.

Thales Group (2020). *Thales Group overview*. Retrieved from https://www.thalesgroup.com/sites/default/files/database/document/2020-01/Thales_Group_overview_EN_EX-02012019.pdf.

Tietze, S. (2012). Researching your own organization. In G. Symon, & C. Cassell (Eds.), *Qualitative organizational research: core methods and current challenges* (pp. 53-71). London: Sage.

van der Haar, D., & Hosking, D. M. (2004). Evaluating appreciative inquiry: A relational constructionist perspective. *Human Relations*, 57(8), 1017-1036.

Van de Ven, A. H., & Johnson, P. E. (2006). Knowledge for theory and practice. *Academy of Management Review*, 31(4), 802-821.

van Hulst, M., Ybema, S., & Yanow, D. (2017). Ethnography and organizational processes. In A. Langley, & H. Tsoukas (Eds.), *The Sage handbook of process organization studies* (pp. 223-236). London: Sage.

Van Maanen, J. (1995). An end to innocence: The ethnography of ethnography. In J. Van Maanen (Ed.), *Representation in ethnography* (pp. 1–35). Thousand Oaks: Sage.

Van Maanen, J. (2011). *Tales of the field: On writing ethnography (2nd ed.).* Chicago: University of Chicago Press.

von Koskull, C., & Strandvik, T. (2014). Discovering the unfolding of service innovations. *Journal of Business & Industrial Marketing*, 29(2), 143-150.

Watson, T. J. (2011). Ethnography, reality and truth: The vital need for studies of 'how things work' in organizations and management. *Journal of Management Studies*, 48(1), 202-217.

Wolfe, R. (1994). Organizational innovation: Review, critique and suggested research directions*. *Journal of Management Studies*, 31(3), 405-431.

Yanow, D. (2006). Talking about practices: On Julian Orr's talking about machines. *Organization Studies*, 27(12), 1743-1756.

Ybema, S., & Kamsteeg, F. (2009). Making the familiar strange: A case for disengaged organizational ethnography. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 101–119). London: Sage.

Ybema, S., Yanow, D., Wels, H., & Kamsteeg, F. (2009). Studying everyday organizational life. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 1-20). London: Sage.

Chapter 7
Conclusion

Embracing a processual, practice-based, engaged scholarship approach I draw on organisation-creation theory to investigate a leading organisation's efforts to organise for disruptive innovation. My approach importantly: i) foregrounds the processual nature of innovation and creativity as an integrative entrepreneurial process ii) focuses on entrepreneurial actions as sources of innovation and the consequential details of these activities in shaping innovation processes as they unfold, and iii) collaboratively works with practitioners to co-produce rigorous understanding of how innovation processes unfold while supporting development of them in their occurrence. My study builds on an emergent stream of research that conceptualises disruptive innovation as an ongoing and emergent process performed over time (Garud et al., 2018, p. 502; Kumaraswamy et al., 2018, p. 1033; Petzold et al., 2019, p. 166-167) by exploring disruptive innovation in an incumbent organisation as an unfolding entrepreneuring journey of organisation-creation. I pursued four sub-questions to explore my overall research question:

Central thesis question:
How does an incumbent organisation organise for disruptive innovation?

Sub-questions:
- How does organising for disruptive innovation create tensions for an incumbent organisation?
- What are the everyday performative efforts of organising for disruptive innovation in an incumbent organisation?
- What are the temporal dynamics of organising for disruptive innovation in an incumbent organisation?
- How can organising for disruptive innovation be supported through real-time investigation in collaboration with participants in an incumbent organisation?

In the next section I discuss different aspects of organising for disruptive innovation at Thales UK that were foregrounded using an organisation-creation perspective. Following discussion of these insights that correspond with the four empirical chapters of my thesis I present the overall theoretical implications of my research results. Finally, I reflect on the practical implications and limitations of my study and opportunities for further research.

7.1 Organisation-creation as a theoretical lens for understanding how an incumbent organisation organises for disruptive innovation

Using an organisation-creation perspective to investigate Thales UK's efforts to organise for disruptive innovation, I shed light on different facets of organising for disruptive innovation in an incumbent organisation. My findings convey how classical management practices are practically challenged by a leading company's efforts to organise for disruptive innovation, the everyday performative efforts of entrepreneurially creating disruptive opportunities in the margins of established managerial practices in this context, the temporal dynamics of how these disruptive opportunities are entrepreneurially developed over time, and how a leading company's disruptive innovation efforts can be supported through real-time collaborative research practices.

My first empirical chapter explored how organising for disruptive innovation creates tensions for Thales UK. Organisation-creation theory highlights that entrepreneuring processes in organisations take place in an already organised context of established ways of doing things and this causes friction (Hjorth & Reay, 2018, p. 1). I present three salient organisation-creation tensions that organisational members at Thales UK experienced as a result of the company's disruptive innovation efforts: *prioritising a new future versus today's known deliverables*, *collaborative market proficiency versus technical and domain proficiency*, and *agile united operations versus rigid fragmentation*. I argue that at the heart of these tensions are practical conflicts in organisational members' shared understanding of their goals,

competencies, and material aspects of their work. Organisation-creation theory sensitised my research to the fact that the becoming of new ways of organising for disruptive innovation interrupts established ways of doing things in incumbent organisations.

My second empirical chapter investigated the everyday performative efforts of organising for disruptive innovation at a leading organisation. Organisation-creation theory brings to the fore the tactical nature of entrepreneuring processes in established organisations. By creatively consuming the strategic forces imposed on them, entrepreneurial efforts locally withdraw from the reigning managerial order to enact new paths of creative action (Hjorth, 2003; Hjorth, 2004, p. 420). My analysis revealed six entrepreneuring tactics the project actors performed in their day-to-day work using the established organisational arrangement to develop the potentially disruptive innovation projects: *creating space for imagination*, *structuring*, *engaging with the market*, *making do*, *creating common interests*, and *working on the self*. I discuss how these entrepreneuring tactics are foregrounded differently during three distinct stages of development of the spaces for play: *mobilisation* – moments of legitimisation, *exploration and testing* – moments of developing new understandings, and *convergence* – moments of consolidation and feedback. I contend that disruptive opportunities can be entrepreneurially created alongside established managerial practices in incumbent organisations and illustrate how particular arrays of innovation practices are collectively used to achieve organisation-creation for disruptive innovation in this already organised context. Working with organisation-creation as a theoretical framework illuminated that established managerial practices are both a constraint and important enabler for the emergence of new ways of organising for disruptive innovation in incumbent organisations.

My third empirical chapter examined the temporal dynamics of organising for disruptive innovation at Thales UK. Organisation-creation theory highlights that entrepreneuring processes in organisations arise within heterotopian spaces for play embedded within the space of but depart from prescribed managerial practices and that new ways of working emerging within these

spaces impact on the organisation's strategic managerial forces (Hjorth, 2004, p. 420; Hjorth, 2005, p. 392, 396; Hjorth, 2012, p. 2). My findings illuminate how project actors continued entrepreneurial development of the disruptive opportunities over time by sustaining spaces for play. I describe common micro-dynamics that influenced the development of the disruptive opportunities through recurrent spaces for play including *sustaining entrepreneurial* and *disbanding managerial* forces, *re-aligning* with the company strategy at the convergence stage, and *emerging impacts* at the organisation. I argue that organising for disruptive innovation in an established company is an unowned process of strategic change both influenced by and impacting on the organisational context. Organisation-creation theory elucidated the mutually constitutive nature of entrepreneuring efforts and the established organisational arrangement and its effect on the unfolding dynamics of organising for disruptive innovation in an incumbent organisation.

Lastly, my fourth empirical chapter explored how organising for disruptive innovation can be studied and supported in real-time in collaboration with participants in a leading organisation. Organisation-creation theory highlights that self-reflexivity and desire are central to entrepreneuring processes in organisations. Driven by desire rather than short-term economic interest, entrepreneuring processes are self-reflexive efforts as opposed to the prescribed doings of managerial actors (Hjorth, 2003; Hjorth, 2014, p. 102). I illustrate how I stimulated self-reflexivity and imagination among organisational members through my collaborative research approach that supported the emergence of entrepreneuring processes that generate new ways of organising for disruptive innovation at Thales UK. I discuss how this was accomplished through a process of simultaneous intervention and observation, action and analysis, and iteratively moving in and out between micro and macro levels of engagement with my study context. While asserting the benefits of my collaborative research approach I also reflect on the tensions I experienced. Using organisation-creation as a theoretical lens sensitised me to the impacts of my research activities in studying Thales UK's efforts to organise for disruptive innovation in real-time in collaboration with participants.

Pulling together my findings I present the below process model (Figure 7.1) depicting organising for disruptive innovation in an incumbent organisation. Efforts to organise for disruptive innovation take place in an already organised context of *established organisational practices* comprised of organisational members' *shared understanding* of their *goals*, *competencies* and *material* aspects of their work. *Self-reflexive* organisational actors entrepreneurially create *desired* disruptive opportunities by engaging in *entrepreneuring tactics* in their everyday work using the managerial structure to *mobilise* heterotopian spaces for play where potentially disruptive ideas can be *explored and tested*. These activities generate *organisation-creation tensions* with established ways of working at the organisation. Despite these challenges, characterised as *disbanding managerial forces*, entrepreneuring tactics are continuously enacted to *sustain* the heterotopian spaces for play and further develop the desired disruptive opportunities over time. The ongoing entrepreneuring activity generates *emerging impacts* at the organisation as the disruptive opportunities unfold that develops the established organisational practices at the organisation. At the *convergence* stage of play the self-reflexive organisational actors engage in *re-aligning* their ideas with the organisational strategy in order to mobilise a subsequent space for play to further develop the disruptive opportunities. *Sustaining entrepreneurial forces* drive forward the emergence of new ways of organising for disruptive innovation while *disbanding managerial forces* cause the organisation-creation process to slow or even stop.
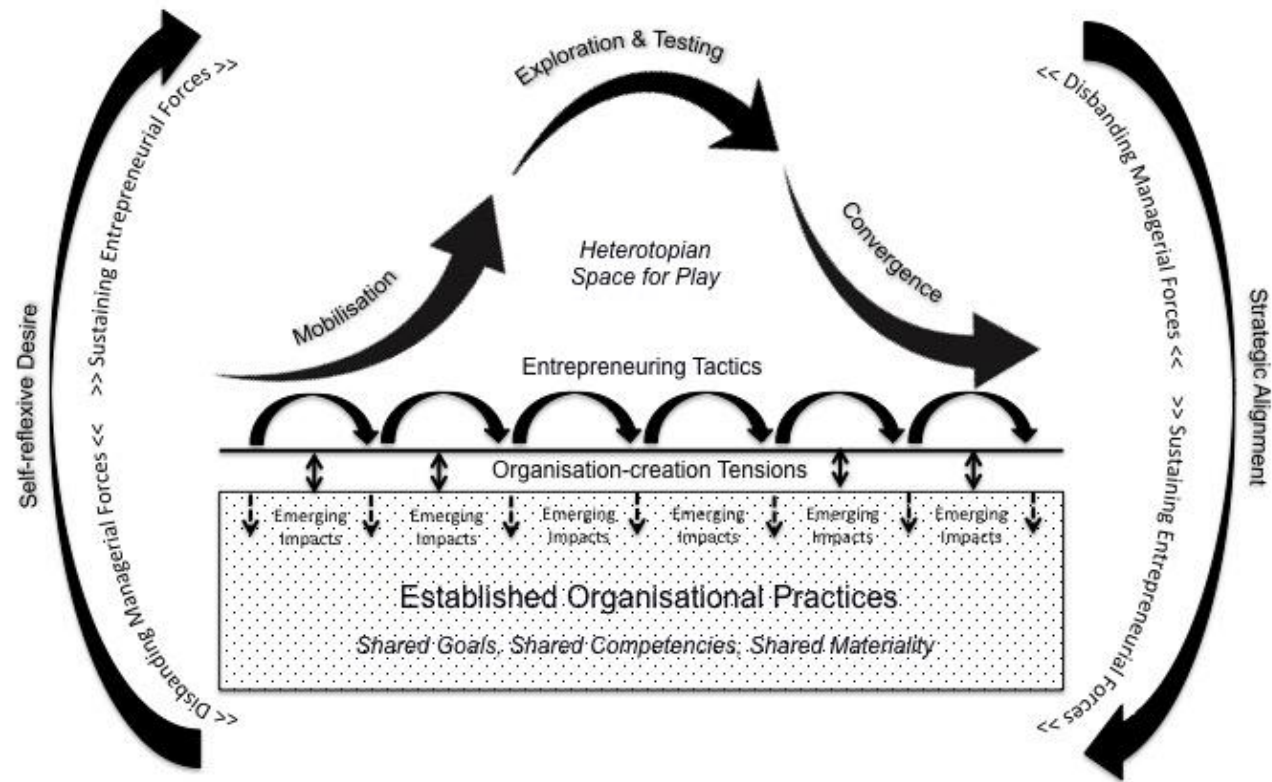
Figure 7.1. Organising for disruptive innovation in an incumbent organisation.

7.2 Theoretical implications of my research

My study findings contribute to deepen our understanding of organising for disruptive innovation in incumbent organisations as well as the process of organisation-creation and how it can be studied in organisations. My research also advances traditional approaches to study innovation more generally.

7.2.1. Contributions to disruptive innovation research

There are four core theoretical implications of my study findings for disruptive innovation research that culminate in a contextually situated understanding of organising for disruptive innovation in incumbent organisations. In illuminating these insights, I demonstrate the relevance of an organisation-creation perspective, a mainly theory-driven and overlooked stream of research, for disruptive innovation scholars and practitioners.

Firstly, my research contributes a focus on the internal dynamics of organising for disruptive innovation in incumbent organisations. Preoccupied with the end market impacts of disruptive innovation processes, current research mainly focuses on market dynamics that generate disruptive outcomes. Studies have explored interactions between market participants such as market leaders, new market entrants, customers, competitors, complementors, and regulators (e.g. Ansari et al., 2016b, p. 1829; Obal, 2013, p. 900; Ozalp et al., 2018, p. 1203; Rosenbloom & Christensen, 1994, p. 655; Snihur et al., 2018, p. 1278; Zietsma et al., 2018, p. 1242). I complement this existing research by looking into the internal dynamics of an incumbent organisation's disruptive innovation efforts. I investigate internal struggles organisational actors confront in their everyday work, the day-to-day performative efforts of entrepreneurially creating disruptive opportunities within an established company context, and their unfolding dynamics over time. Drawing on an organisation-creation perspective, I bring to the fore the interplay of managerial and entrepreneurial forces in these internal dynamics. My findings have implications for theorising the internal dynamics of leading organisations' disruptive innovation efforts.

Secondly, my research provides an understanding of the on-the-ground experience of organising for disruptive innovation in an incumbent organisation. Scholars have explored challenges that incumbent organisations face in pursuing disruptive innovation (e.g. Chandy & Tellis, 2000, p. 3; Hill & Rothaermel, 2003, p. 259-262; Yu & Hang, 2010, p. 441-443) or incumbent organisations' strategic responses to threat of disruption (e.g. Christensen & Raynor, 2003, p. 203, 229-230; Govindarajan & Kopalle, 2006, p. 16-17; Markides, 2006, p. 24; Wagner, 2016, p. 987; Wan et al., 2015, p. 101-102). However, these themes have only been investigated at the organisational level. My research complements this extant research by exploring everyday entrepreneuring efforts at a leading company. I highlight the micro-social happenings of how organising for disruptive innovation creates tensions for organisational actors in their everyday work, the entrepreneuring tactics organisational actors deploy on a day-to-day basis to entrepreneurially create disruptive opportunities, and the micro-dynamics of their entrepreneurial development over time. Using an organisation-creation perspective, I highlight the local-contextual and micro-social subtleties of organising for disruptive innovation in an established organisation. My results provide important insights for theorising the everyday life of organising for disruptive innovation in incumbent organisations.

Thirdly, my research adds a processual understanding of organising for disruptive innovation in incumbent organisations. Extant research tends to define disruptive innovation by its end outcome and look retrospectively at how particular disruptive phenomena transpired (e.g. Afuah, 2000, p. 393-394; Ansari et al., 2016b; Christensen & Bower, 1996, p. 200; Ozalp et al., 2018, p. 1207; Snihur et al., 2018, p. 1285-1286; Sood & Tellis, 2011, p. 344-345). By exploring the unfolding dynamics of disruptive innovation, my research illuminates recurrent patterns of activity in organising for disruptive innovation at a leading organisation. I identify recurrent tensions between entrepreneurial and managerial forces, continual patterns of entrepreneuring tactics and common micro-dynamics of heterotopian spaces for play, and resulting generative impacts. Drawing on an organisation-creation

perspective, I illuminate temporal dynamics and emergent contextual changes resulting from ongoing entrepreneuring efforts for disruptive innovation over time in an incumbent organisation. My study findings are significant for theorising patterns of how new ways of organising for disruptive innovation develop over time in leading organisations.

Fourthly, I contribute an interactive approach to support incumbent organisations' efforts to organise for disruptive innovation. Disruptive innovation processes have so far only been studied retrospectively and from afar based on an objective detached view (e.g. Ansari et al., 2016b, p. 1832; Christensen & Bower, 1996, p. 200; Cozzolino et al., 2018, p. 1172-1176; Khanagha et al., 2018, p. 1085-108). This research approach misses the opportunity to uncover detailed nuances of the lived experience of leading organisations' disruptive innovation efforts while also contributing to them in their occurrence adopting an ethnographic engaged scholarship approach. Using an organisation-creation perspective, I illustrate how real-time research practices can stimulate self-reflexivity and imagination among organisational members to support the emergence of entrepreneuring processes that generate new ways of organising for disruptive innovation. My study results raise important considerations for how researchers can support disruptive innovation processes as well as study them in real-time by collaboratively engaging with their research context.

Overall, my thesis contributes to the disruptive innovation literature a contextually situated understanding of organising for disruptive innovation in an incumbent organisation. Current research focuses on market dynamics, incumbent organisations' strategic level challenges and responses to external threats of disruption, and generates retrospective from afar accounts of how particular disruptive phenomena transpired based on an objective detached view. My research sheds light on internal, on-the-ground, unfolding dynamics of organising for disruptive innovation in incumbent organisations and how these processes can be supported in their emergence.

7.2.2. Contributions to organisation-creation research

My study findings also advance organisation-creation research in two key ways. My results illustrate the process of organisation-creation for disruptive innovation in the already organised context of an established organisation. I also shed light on how organisation-creation theory can be empirically operationalised in a real-world industry setting.

By applying organisation-creation theory to explore a leading company's disruptive innovation efforts, my research enhances understanding of the process of organisation-creation in organisations. A mainly theory-driven body of research, organisation-creation theory has rarely been operationalised in real-world industry settings (see Hjorth, 2004 and Hjorth, 2005 for exceptions). In my research I characterise organisation-creation tensions, everyday entrepreneuring tactics, and micro-dynamics of heterotopian spaces for play that have not been empirically explored in the organisation-creation literature. Organisation-creation theory also focuses on how the emergence of new ways of organising arising within spaces for play impact on strategic managerial forces inside organisations. My study findings illuminate how spaces for play can incubate the development of new disruptive products and services that can have external market impacts in addition to internal changes to established ways of doing things in organisations. Thus, my research expands understanding of the process of organisation-creation in organisations by providing a practical understanding of key concepts and highlighting its potential impact beyond organisational boundaries.

Additionally, my research advances understanding of how organisation-creation processes can be studied in organisations. Other than advocating that ethnographic research methods should be used to access covert entrepreneuring activities that cannot be seen from a strategic level perspective (Hjorth, 2003), research methods for studying organisation-creation processes are not well defined. I demonstrate how at-home ethnography is a useful method to access an insider account of organisation-creation processes in their emergence. Furthermore, I illustrate how

researchers can support the development of organisation-creation processes as they occur using a collaborative research approach. I also elucidate how temporal bracketing (Langley, 2012, p. 919) is a useful analytical tool to make sense of unfolding organisation-creation processes. Using this technique I identified recurrent patterns of activity in organising for disruptive innovation in an incumbent organisation. My research provides practical guidance for studying organisation-creation processes in organisations.

With few empirical studies of the process of organisation-creation in real-world industry settings, my research expands understanding of this process and how it can be studied in organisations. My research infuses practical understanding and know-how into a mainly theory-driven body of organisation-creation research.

7.2.3 Advancing traditional perspectives of innovation

In my review of the extant innovation literature I conclude that innovation is commonly conceptualised as a static outcome separate from creativity, is predominantly investigated through firm-level analysis, and objectively theorised from a disconnected academic ivory tower position. Adopting a processual, practice-based, engaged scholarship approach in my research I've uncovered important contextual, relational and first-hand insights about the process of organising for disruptive innovation in an incumbent organisation that could not have been achieved using the traditional perspectives outlined. My study findings resonate with contemporary research on creativity, entrepreneurship and innovation processes in organisations.

Considering innovation and creativity as an integrative entrepreneurial process illuminated how disruptive innovation emerges over time and the everyday creative actions that constitute this process. Aligned with recent studies of creativity from a social and cultural psychology perspective (Glăveanu et al., 2015, p. xiii), my study shows that creativity is a contextual, distributed and socially embedded phenomenon. It was the collective efforts

of several actors rather than the innate abilities of any particular individuals that progressed disruptive opportunities at Thales UK. The project actors used their situated understanding of key stakeholders' interests and priorities to secure sponsorship for and deliver perceived value of their activities in their localised context. Furthermore, the creative ideas the projects teams were working to develop evolved over time based on feedback and contributions from different organisational actors over time. Adopting a processual ontology enabled me to explore the interrelated creative processes involved in organising for disruptive innovation in an incumbent organisation.

Looking into daily entrepreneurial actions in a leading organisation as sources of innovation further highlighted nuances of how disruptive innovation is actually enacted in everyday organisational life that could not be seen from a firm-level analysis. My study findings support contemporary research conceptualising entrepreneurship as a dynamic and collective phenomenon embedded in the interactions between everyday actors and their situated context (Holmquist, 2003, p. 78-82; Steyaert, 2007, p. 465). Again, it was not particular entrepreneurial types advancing the disruptive opportunities but key actors in all different roles and positions at the company acting entrepreneurially at the needed moment when they were inspired by the disruptive potential of the projects. Furthermore, the project actors used trial-and-error learning to determine their next steps on the projects as opposed to relying on pre-ordained expertise. All of the project actors learned as they went along and leaned on the organisation for support to find a way through the challenges they encountered. Embracing a practice-based perspective enabled me to explore entrepreneurship as a relational and improvised phenomenon rather than a particular individually owned ability.

Finally, by actually being there collaboratively engaging with participants in their everyday innovation work I experienced first-hand the interpersonal dynamics and emotional highs and lows involved in entrepreneurially creating disruptive opportunities in an established organisation. Akin to Schroeder et al.'s, (1989, p. 107) findings, my research shows that innovation is a messy and emergent social interaction process that cannot be controlled. While

classical representations of innovation processes depict it as a linear, step-wise process (Edgerton, 2004, p. 32; Godin, 2006, p. 639), my study findings align with more recent practically oriented authors that advocate an iterative approach to innovation development (Baughn & Suciu, 2015, p. 69-71). Adopting an engaged scholarship approach enabled me to depart from classical linear and step-wise conceptualisations of innovation to experience its unpredictable nature in a practically situated context.

Using a processual, practice-based, engaged scholarship approach in my research enabled me to uncover contextual, relational, and first-hand insights about the process of organising for disruptive innovation in an incumbent organisation that resonate with contemporary perspectives of creativity, entrepreneurship and innovation. Future research using this approach could further enrich our understanding of how innovation processes arise and can be supported in organisations that is still not well understood.

7.3 Practical implications

My study findings have significant implications for organisations managing in the age of disruptions. While current research mainly looks at how incongruent existing business and disruptive innovation efforts should be managed separately (e.g. Campbell et al., 2003, p. 30; Chao & Kavadias, 2007, p. 908-909; Christensen & Raynor, 2003, p. 203; Claude-Gaudillat & Quélin, 2006, p. 175; Macher & Richman, 2004, p. 19), I show that disruptive opportunities can be entrepreneurially developed alongside established managerial practices in organisations. This has meaningful implications for strategy, training, leadership, and collaborative partnerships in organisations.

The results of my research question the dominant view in current research that disruptive innovation should be deliberately managed and strategised in organisations. As an unowned process of strategic change, disruptive innovation in organisations arises from organisational actors creatively improvising the entrepreneurial development of disruptive opportunities in

their day-to-day work. Rather than only focus on deliberate strategic-level efforts to cultivate disruptive innovation, organisational leaders should also consider ways to enable organisational actors to carry out entrepreneuring efforts on-the-ground in organisations. This could include helping them to identify and influence potential sponsors at the company or finding ways to use existing resources in new ways. Organisational leaders could also consider ways to create organisational spaces for employees to engage in political and practical effort required to socialise their ideas across different stakeholder groups to further develop their ideas. Organisations should complement strategic-level efforts to cultivate disruptive opportunities by working to enable on-the-ground entrepreneuring processes.

Since entrepreneuring tactics are dependent on strategic space to occur, it is important for organisational leaders to create the context for entrepreneuring processes to arise. Organisational leaders still need to set the direction for the company and inspire others to want to enact that vision. But rather than solely supporting management practices that completely coincide with achieving that pre-determined vision as efficiently as possible, organisational leaders need to be open to that vision being collectively co-created by organisational actors situated on-the-ground in organisations. In doing so they set the stage for novelty and tactical poaching of resources for new and different ways of working. As Chia and Holt (2009, p. 186) discuss, such openness to new possibilities enables flexibility and adaptation. Entrepreneuring is a generative process that usefully supports organisational development even if the projects themselves do not result in the development of new disruptive products and services. Organisational leaders can set the stage for entrepreneuring processes to arise by creating strategic spaces for entrepreneurial consumption by organisational actors in their day-to-day work.

While often viewed as negative frictions that need to be resolved or avoided, I consider tensions between managerial and entrepreneurial forces as an essential feature of the emergence of new ways of working for disruptive innovation in organisations. Managerial practices offer a context for novelty and resources to be leveraged in everyday entrepreneuring efforts. In

departing from established ways of doing things to enact new ways of organising for disruptive innovation entrepreneuring processes necessarily contest organisational members' collectively held shared understandings of their day-to-day work. Rather than try to resolve or avoid these tensions, organisational leaders should embrace them as a positive indication that their employees are challenging established ways of doing things at the company and introducing novelty into their business operations. Organisation-creation tensions are a necessary aspect of the becoming of new ways of working in the process of organisation-creation for disruptive innovation in organisations.

Organisations can also pursue educational initiatives to encourage would-be intrapreneurs to engage in entrepreneuring processes in their day-to-day work as well as develop managers to create an enabling environment for them to occur. Employees can be educated on the kinds of tactics used to progress disruptive opportunities within established organisational constraints. It is extremely important for this education to emphasise that organisational actors need to be self-reflexive in their enactment of entrepreneuring efforts. If organisational leaders try to dictate entrepreneurial activities or organisational actors expect prescriptive instructions for how to be entrepreneurial they would not be successful. It is the situated response to contextual demands based on cumulative experimental learning that progresses disruptive opportunities. Likewise, managers can be educated on the entwined and interdependent relationship between managerial and entrepreneurial forces in organisations and their enablement in their day-to-day work. For example, a more nuanced approach than traditional stage-gate review processes could be adopted for managing innovation processes such as evaluating the success of projects and making decisions based on the learning achieved (Leifer, O'Connor, & Rice, 2001, p. 107). This requires evaluating managers to shift their mindset from 'control-to-task' to 'monitor-and-redirect' (Leifer et al., 2001, p. 107). Both employees and managers can be educated about how they can enable entrepreneuring processes in their everyday work.

It is crucial that organisational leaders and managers understand that entrepreneuring processes are contextually specific in their efforts to support

these processes in organisations. As potentially disruptive innovation projects unfold the project demands are constantly changing and require situated responses to those demands. Even if the right support is provided at one point it does not guarantee the longer-term success of the project. Thus, organisational leaders and managers need to be open and flexible to the ebbs and flows of the project demands. Furthermore, organisational leaders and managers need to listen to the organisational actors working to progress disruptive opportunities on-the-ground to understand what is needed to enable their development. Project actors have the practical knowledge of what is needed to progress the project and know better than managers' detached 'birds-eye-view' of the situation (Chia & Holt, 2009, p. 159). It is therefore important for organisational leaders to trust in the people intimately connected with disruptive opportunities rather than try to apply their own 'best practice' managerial logic to problems-at-hand. Since entrepreneuring tactics are contextually dependent, organisational leaders and managers should consider the situated needs of disruptive initiatives and timing of their efforts.

Overall, my study findings support a shift to a more pluralistic and entrepreneurial leadership style in organisations. Van de Ven, Polley, Garud, and Venkataraman (1999, Chapter 7) suggest that innovation processes demand pluralistic leaders that are able to switch between different leadership styles depending on the context. A multidimensional leadership style is needed for divergent activities while convergent activities call for a unidimensional leadership style (Van de Ven et al., 1999, Chapter 7). Similarly, Hjorth and Gartner (2012, p. 362) assert that there needs to be a shift from management to a greater emphasis on leadership in today's post-industrial economy. While management is focused on efficiency and control, leadership is about moving people and being moved (Hjorth & Gartner, 2012, p. 362). An entrepreneurial leadership approach is needed in today's post-industrial economy with 50% emphasis on management and 50% emphasis on entrepreneurship, as opposed to 80% emphasis on management and only 20% on entrepreneurship as in the previous industrial age (Hjorth & Gartner, 2012, p. 363). In balancing emphasis on managerial and entrepreneurial forces, organisational leaders lead in order to become led rather than dictate

a particular endpoint to be achieved (Hjorth & Gartner, 2012, p. 368). Oganisational leaders need to be open and responsive to the entrepreneurial needs of their employees in organising for disruptive innovation.

My research findings also have implications for how the development of disruptive opportunities in organisations can be supported through scholar-practitioner collaborative research arrangements. Rather than waiting until disruptive innovation outcomes have been achieved and contribute to retrospective accounts of how disruptive innovation processes came into being after-the-fact, organisations can benefit from proactively collaborating with academic partners to make sense of and apply their research findings *in situ*. My research sheds light on the value of whole company commitment to and engagement in these collaborative research arrangements. Multi-level and cross-functional interactions between researchers and practitioners are important for generating sustainable organisational change (Clark, 1972). While this increases complexity of the research process, organisations and researchers can work together to develop practically relevant and academically sound knowledge of organising for disruptive innovation while also supporting practitioners to achieve potentially transformational societal outcomes in their occurrence.

In sum, organisations need to think differently about how they can effectively organise for disruptive innovation. Organisational leaders can complement strategic-level efforts to cultivate disruptive opportunities by adapting their strategy, training, and leadership practices and collaboratively working with academia in their disruptive innovation efforts to foster entrepreneuring processes on-the-ground alongside their existing business operations.

7.4 Study limitations

There are several limitations of my study related to my research design, scope and position in the field.

While my in-depth longitudinal ethnographic case study research design illuminated detailed insights about the process of organising for disruptive innovation in an incumbent organisation, my research findings are based on the specific transformation efforts I followed at Thales UK. Over the course of my project I engaged with the Cambridge University Institute for Manufacturing (IfM) Strategy Technology and Innovation Management (STIM) Consortium, an academic-industry forum where people working on innovation initiatives in large companies come together with academic experts to discuss shared innovation challenges and best practice. I tested the themes emerging from my analysis at Thales UK in my regular engagements with this community. I also had the opportunity to discuss my results with individuals working on innovation in other areas of Thales Group internationally during my study. While my research findings resonate with the experiences of innovation practitioners in these other contexts, my research findings are illustrative of the organisational setting where I conducted my study.

In any research project there are inevitable limitations in scope and timing as well as implications of the researchers' own position in the field. Even though I was quite ambitious in my project scope following the development of six different potentially disruptive innovation projects over the course of three years, following a greater number of project cases over a longer period of time could develop even richer insights. In deciding the projects to follow for my research I was limited by the interests of my research sponsors and my own position in the company (Yanow, Ybema, & van Hulst, 2012, p. 343). The business units initiated only one of the projects that I followed while RTI initiated the other five cases. However, I did seek diversity in the projects I followed within RTI. I followed one project initiated by the Research and Technology component of the organisation, one project initiated by the Strategic Growth Opportunities team and three projects initiated by the Innovation Hub team. The projects were weighted towards the Innovation Hub component of RTI because this is where I was based in the organisation and could access these projects more easily as part of my work. My research was bounded by the scope and time limits of a PhD project as well as my position in the organisation.

Linked to my position in the organisation, my own perceptions and biases is an important consideration in interpreting my research results. Each person brings his or her own past experiences and judgment in generating and making sense of the data they collect (Emerson et al., 2011, p. 198; Yanow et al., 2012, p. 343). There are many ways of 'seeing' data collected and this was influenced by my personal experiences as part of the research context (Ryan & Bernard, 2003, p. 103; Tietze, 2012, p. 54). Researchers engaged in at-home ethnography from within their own organisation in particular must demonstrate extreme reflexivity by constructing 'oneself in terms of integrity and inner-directness' and constantly striving to make themselves aware of personal biases that may influence their interpretations of their own and others' accounts (Alvesson, 2009, p. 170-172; Tietze, 2012, p. 56-59). Researchers in this position need to think carefully about how their involvement frames how they formulate, execute and write up their research (Tietze, 2012, p. 67). To reduce bias, I was cognisant of my position throughout the investigation. Regular meetings with my supervisor were conducted to detect any partialities presented in the research (Gioia et al., 2012, p. 19). I also used regular check-ins with my research sponsors and discussions with other research participants to validate my interpretations (Schwartz-Shea & Yanow, 2009, p. 62; Van de Ven & Johnson, 2006, p. 809). Identifying with a number of minority groups in the company and UK defence and technology sector at large, including being female, a non-British national, having no military background and representing a non-technical perspective and skillset, also helped me to maintain a marginal perspective throughout the study (Alvesson, 2009, p. 170). While I embraced several strategies to reduce my personal bias in the research process, my role as a full member of Thales UK RTI was a factor in shaping my research results.

Despite the limitations of my research approach, the benefits of my situated, in-depth, insider account enabled me to access detailed nuances of the process of organising for disruptive innovation in an incumbent organisation that far outweigh the drawbacks.

7.5 Future research

Further research could explore the different aspects of the process of organising for disruptive innovation in an incumbent organisation that I illuminated in my study in other contexts. My research results could also be expanded using other theoretical resources from organisation studies.

My research findings could be further investigated in other contexts including different types of innovation processes, over a longer period of time and from alternative perspectives in the field. One could explore whether other established organisations working to foster disruptive opportunities experience similar organisation-creation tensions, follow the same recurrent patterns of entrepreneuring activity and engage in similar entrepreneuring tactics in their disruptive innovation efforts. Whether different types of innovation processes in established organisations follow similar or different patterns of activity such as radical or sustaining innovation processes could also be compared. Future research could also explore whether these same dynamics feature in the development of disruptive opportunities emerging outside the constraints of incumbent organisations but in opposition to established institutional rather than organisational constraints. It would also be interesting to follow the potentially disruptive innovation processes over a longer period of time. All of the projects I followed for my research are still being taken forward in some capacity at Thales UK. One could explore whether the recurrent entrepreneuring practices and processes I identified in my study are similar or evolve over the course of further development and implementation. It would also be interesting to conduct further research from a different position in the organisation, such as from within a different component of RTI or a business unit. Further research would benefit from using a collaborative research approach to uncover in-depth insights of the process of organising for disruptive innovation in various settings. There are many opportunities to test and compare my research results in other contexts.

Other theoretical resources could also be used to enrich our understanding of organising for disruptive innovation in incumbent organisations. For instance,

paradox theory explores competing demands inherent in organisational systems, how they are dealt with and persist over time (Lewis, 2000, p. 761-763). Additional research could unpack the interdependent and entwined relationship between entrepreneurial and managerial forces in organisations through the lens of paradox theory. Linking with the ambidexterity literature that explores how organisations are able to engage in competing incremental and discontinuous innovation logics simultaneously (O'Reilly & Tushman, 2013, p. 324), further research could also investigate integration approaches to foster disruptive opportunities alongside core business operations in leading organisations. The notion of wayfinding from the strategy-as-practice literature (Chia & Holt, 2009, p. 159) would also be an interesting avenue to further explore disruptive innovation as an unowned process of strategic change. As a contextually sensitive approach to strategy development in organisations, a wayfinding lens could enhance our understanding of everyday micro-strategising for disruptive innovation by means of on-the-ground entrepreneuring processes in organisations. Furthermore, Bjørkeng, Clegg, and Pitsis' (2009, p. 149) becoming a practice framework could be used to explore how new ways of working for disruptive innovation come into being over time in organisations. There are several interesting literatures that could be drawn upon to enhance our understanding of the process of organising for disruptive innovation in an incumbent organisation.

In conclusion, my research highlights contextually situated nuances of the process of organising for disruptive innovation in an incumbent organisation. Using a processual, practice-based, engaged scholarship approach and drawing on an organisation-creation perspective, I convey everyday tensions, recurrent entrepreneuring practices and processes central to organising for disruptive innovation at Thales UK. I further illustrate how a leading company's efforts to organise for disruptive innovation can be supported as part of studying them in real-time. My research opens several interesting avenues to enhance our understanding of organising for disruptive innovation in the already organised context of a leading organisation.

References

Adams, T. E., Jones, S. H., & Ellis, C. (2015). *Autoethnography*. Oxford: Oxford University Press.

Adner, R. (2002). When are technologies disruptive? A demand-based view of the emergence of competition. *Strategic Management Journal*, 23(8), 667-688.

Afuah, A. (2000). How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, 21(3), 387-404.

Alvesson, M. (2009). At-home ethnography: Struggling with closeness and closure. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 156-174). London: Sage.

Amabile, T. M., Conti, R., Coon H., Lazenby, J., & Herron M. (1996). Assessing the work environment for creativity. *Academy of Management Journal*, 39(5), 1154-1184.

Amabile, T., & Pillemer, J. (2012). Perspectives on the social psychology of creativity. *The Journal of Creative Behavior*, 46(1), 3-15.

Amabile, T., & Pratt, M. (2016). The dynamic componential model of creativity and innovation in organizations: Making progress, making meaning. *Research in Organizational Behavior*, 36, 157-183.

Amo, B., & Kolvereid, L. (2005). Organizational strategy, individual personality and innovation behaviour. *Journal of Enterprising Culture*, 13(1), 7-19.

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40(5), 1297-1333.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016a). Special issue call for papers: Managing in the age of disruptions. *Journal of Management Studies*. Retrieved from http://www.socadms.org.uk/wp-content/uploads/JMS-Managing-in-the-Age-of-Disruption-Call-for-Papers.pdf.

Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016b). The disruptor's dilemma: TiVo and the U.S. television ecosystem. *Strategic Management Journal*, 37(9), 1829-1853.

Antoncic, B., & Hisrich, R. D. (2003). Clarifying the intrapreneurship concept. *Journal of Small Business and Enterprise Development*, 10(1), 7-24.

Ashton, T.S. (1948). *The industrial revolution 1760-1830.* Oxford: Oxford University Press.

Baer, M. (2012). Putting creativity to work: The implementation of creative ideas in organizations. *Academy of Management Journal*, 55(5), 1102-1119.

Balconi, M., Brusoni, S., & Orsenigo, L. (2010). In defence of the linear model: An essay. *Research Policy*, 39(1), 1-13.

Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, 47(8), 1323-1339.

Barlow, C. (2012). Interviews. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 496-499). Thousand Oaks: Sage.

Baughn, C., & Suciu, C. (2015). *The intersection of design thinking and 21st century approaches to innovation.* 10th European Conference on Innovation and Entrepreneurship, Genoa, Italy, January 2015, Academic Conferences and Publishing International Limited.

Beaulieu, M., Breton, M., & Brousselle, A. (2018). Conceptualizing 20 years of engaged scholarship: A scoping review. *PLoS ONE.* Retrieved from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0193201.

Bjørkeng, K., Clegg, S., & Pitsis, T. (2009). Becoming (a) practice. *Management Learning*, 40(2), 145-159.

Campbell, A., Birkinshaw, J., & Morrison, A. (2003). The future of corporate venturing. *MIT Sloan Management Review*, 45(1), 30-37.

Caracostas, P. (2007). The policy-shaper anxiety at the innovation kick: how far do innovation theories really help in the world of policy. In F. Malerba, & S. Brusoni (Eds.), *Perspectives on Innovation* (pp. 464-489). Cambridge: Cambridge University Press.

Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse? Incumbency, size, and radical product innovation. *Journal of Marketing*, 64(3), 1-17.

Chao, R. O., & Kavadias, S. (2007). A theoretical framework for managing the NPD portfolio: When and how to use strategic buckets. *Management Science*, 54(5), 907-921.

Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11(3), 529-555.

Chia, R. (1999). A 'rhizomic' model of organizational change and transformation: Perspective from a metaphysics of change. *British Journal of Management*, 10, 209-227.

Chia, R., C. H. & Holt, R. (2009). *Strategy without design*. Cambridge: Cambridge University Press.

Christensen, C. M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail*. Boston: Harvard Business School Press.

Christensen, C. M., & Bower, J. L. (1996). Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal*, 17(3), 197-218.

Christensen, C. M., & Overdorf, M. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, 78(2), 66-76.

Christensen, C. M., & Raynor, M. E. (2003). *The innovator's solution: Creating and sustaining successful growth.* Boston: Harvard Business School Press.

Clark, P. A. (1972). *Action research & organizational change*. London: Harper & Row.

Claude-Gaudillat, V., & Quélin, B. V. (2006). Innovation, new market and governance choices of entry: The internet brokerage market case. *Industry and Innovation*, 13(2), 173-187.

Cooperrider, D. L., & Srivastva, S. (1987). Appreciative inquiry in organizational life. *Research in Organizational Change and Development*, 1, 129-169.

Cooperrider, D. L., & Sekerka, L. E. (2006). Towards a theory of positive organizational change. In J. V. Gallos (Ed.), *Organization development* (pp. 223-238). San Francisco: Jossey-Bass.

Cozzolino, A., Verona, G., & Rothaermel, F. T. (2018). Unpacking the disruption process: New technology, business models, and incumbent adaptation. *Journal of Management Studies*, 55(7), 1166-1202.

Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47(6), 1154-1191.

Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic Management Journal*, 23(12), 1095-1121.

Danneels, E. (2003). Tight-loose coupling with customers: The enactment of customer orientation. *Strategic Management Journal*, 24(6), 559-576.

Danneels, E. (2004). Disruptive technology reconsidered: A critique and research agenda. *Journal of Product Innovation Management*, 21, 246-258.

de Certeau, M. (1984). *The practice of everyday life*. (S. Rendall, Trans.). Berkeley: University of California Press. (Original work published 1980).

Denning, S. (2005). Why the best and brightest approaches don't solve the innovation paradox. *Strategy & Leadership*, 33(1), 4-11.

Denning, S. (2012). The battle to counter disruptive competition: Continuous innovation vs. "good" management. *Strategy & Leadership*, 40(4), 4-11.

Di Domenico, M., & Phillips, N. (2012). Participant observation. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 653-655). Thousand Oaks: Sage.

Douglas, J. (1976). *Investigative social research*. Beverly Hills: Sage.

Drucker, P. F. (1985). *Innovation and entrepreneurship*. New York: Harper & Row.

Edgerton (2004). 'The linear model' did not exist: Reflections on the history and histography of science and research in industry in the twentieth century. In K. Grandin, & N. Wormbs (Eds.), *The Science–industry nexus: History, policy, implications* (pp. 1-36). New York: Watson.

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes* (2nd ed.). Chicago: University of Chicago Press.

Fayolle, A. (2003). Research and researchers at the heart of entrepreneurial situations In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 35-50). Cheltenham: Edward Elgar.

Feldman, M., & Orlikowski, W. (2011). Theorizing practice and practicing theory. *Organization Science*, 22(5), 1240-1253.

Flynn, J. (1998). Part I: 100 years of production management. *IIE (Institute of Industrial Engineers) Solutions*, 23-28.

Flyvbjerg, B. (2001). *Making social science matter: Why social inquiry fails and how it can succeed again*. Cambridge: Cambridge University Press.

Foucault, M. (1986). Of other spaces. (J. Miskowiec, Trans.). *Diacritics,* 16(1), 22–27. (Original work published 1984).

Garud, R., Gehman, J., & Tharchen, T. (2018). Performativity as ongoing journeys: Implications for strategy, entrepreneurship, and innovation. *Long Range Planning*, 51, 500-509.

Garud, R., Tuertscher, P., & Van de Ven, A. H. (2013). Perspectives on innovation processes. *The Academy of Management Annals*, 7(1), 775-819.

Giddens, A. (1984). *The constitution of society*. Berkeley: University of California Press.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15-31.

Glăveanu, V. P. (2010). Principles for a cultural psychology of creativity, *Culture & Psychology*, 16(2), 147-163.

Glăveanu, V. P., Gillespie, A., & Valsiner, J. (2015). *Rethinking creativity*. East Sussex: Routledge.

Godin, B. (2006). The linear model of innovation: The historical construction of an analytical framework. *Science, Technology and Human Values*, 31(6), 639-667.

Godin, B., & Vinck, D. (2017). *Critical studies of innovation: Alternative approaches to the pro-innovation bias*. Cheltenham: Edward Elgar.

Govindarajan, V., & Kopalle, P. R. (2006). The usefulness of measuring disruptiveness of innovations ex post in making ex ante predictions. *Journal of Product Innovation Management*, 23(1), 12-18.

Grachev, M., & Rakitsky, B. (2013). Historic horizons of Frederick Taylor's scientific management. *Journal of Management History*, 19(4), 512-527.

Henderson, R. (2006). The innovator's dilemma as a problem of organizational competence. *Journal of Product Innovation Management*, 23(1), 5-11.

Hernes, T. (2008). *Understanding organization as process: Theory for a tangled world*. London: Routledge.

Hernes, T. (2014). *A process theory of organization*. Oxford: Oxford University Press.

Hill, C. W., & Rothaermel, F. T. (2003). The performance of incumbent firms in the face of radical technological innovation. *Academy of Management Review*, 28(2), 257-274.

Hjorth, D. (2003). *Rewriting entrepreneurship – For a new perspective on organisational creativity*. Malmö: Liber.

Hjorth, D. (2004). Creating space for play/invention – Concepts of space and organizational entrepreneurship. *Entrepreneurship & Regional Development*, 16(5), 413-432.

Hjorth, D. (2005). Organizational entrepreneurship: With de Certeau on creating heterotopias (or spaces for play). *Journal of Management Inquiry*, 14(4), 386-398.

Hjorth, D. (2012). *Handbook on organisational entrepreneurship*. Cheltenham: Edward Elgar.

Hjorth, D. (2014). Entrepreneuring as organisation-creation. In R. Sternberg, & G. Krauss (Eds.), *Handbook of research on entrepreneurship and creativity* (pp. 97-121). Cheltenham: Edward Elgar.

Hjorth, D., & Gartner, W. B. (2012). Moving and being moved: Ideas, perspectives and 59 theses on entrepreneurial leadership. In D. Hjorth (Ed.), *Handbook on organisational entrepreneurship* (pp. 362-376). Cheltenham: Edward Elgar.

Hjorth, D., & Reay, T. (2018). Special issue call for papers: Organizational and institutional entrepreneuring: Processes and practices of creating in an organized world. *Organization Studies*. Retrieved from http://entrepreneuriat.com/wp-content/uploads/2018/11/SI-Entrepreneuring-Final-November-18.pdf.

HM Government (2015). *National security strategy and strategic defence and security review*. Retrieved from

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/555607/2015_Strategic_Defence_and_Security_Review.pdf.

Hoholm, T., & Araujo, L. (2011). Studying innovation processes in real-time: The promises and challenges of ethnography. *Industrial Marketing Management*, 40(6), 933-939.

Holmquist. C. (2003). Is the medium really the message? Moving perspective from the entrepreneurial actor to the entrepreneurial action. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 73-85). Cheltenham: Edward Elgar.

Ingold, T. (2014). That's enough about ethnography! *Journal of Ethnographic Theory*, 4(1), 383-395.

InnovationXchange UK Ltd. (2019). *How the rail industry is seizing innovation*. Retrieved from https://www.ixc-uk.com/How_the_Rail_Industry_is_Seizing_Innovation--post--68.html.

Jarzabkowski, P., Balogun, J., & Seidl, D. (2007). Strategizing: The challenges of a practice perspective. *Human Relations*, 60(1), 5-27.

Johannisson, B. (2011). Towards a practice theory of entrepreneuring. *Small Business Economics*, 36(2), 135-150.

Khanagha, S., Zadeh, M. T. R., Mihalache, O. R., & Volberda, H. W. (2018). Embracing bewilderment: Responding to technological disruption in heterogeneous market environments. *Journal of Management Studies*, 55(7), 1079-1121.

King, A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MIT Sloan Management Review,* 57(1), 77-90.

King, N. (2004). Using interviews in qualitative research. In C. Cassell, & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research* (pp. 11-22). London: Sage.

Kitchenham, A. D. (2012). Diaries and journals. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 300-301). Thousand Oaks: Sage.

Kumaraswamy, A., Garud, R., & Ansari, S. (2018). Perspectives on disruptive innovations. *Journal of Management Studies*, 55(7), 1025-1042.

Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691-710.

Langley, A. (2012). Temporal bracketing. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 919-921). Thousand Oaks: Sage.

Langley, A., Smallman, C., Tsoukas, H., & Van de Ven, A. H. (2013). Process studies of change in organization and management: Unveiling temporality, activity, and flow. *Academy of Management Journal*, 56(1), 1-13.

Langley, A., & Tsoukas, H. (2017). *The Sage handbook of process organization studies*. London: Sage.

Law, J. (2004). *After method: Mess in social science research*. New York: Routledge.

Leifer, R., O'Connor, G., & Rice, M. (2001). Implementing radical innovation in mature firms: The role of hubs. *Academy of Management Executive*, 15(3), 102-113.

Lepore, J. (2014). The disruption machine: What the gospel of innovation gets wrong. *The New Yorker,* May 23.

Lewis, M. W. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review*, 25(4), 760-776.

Lindgren, M., & Packendorff, J. (2003). A project-based view of entrepreneurship: Towards action-orientation, seriality and collectivity. In C. Steyaert, & D. Hjorth (Eds.), *New movements in entrepreneurship* (pp. 86-102). Cheltenham, UK: Edward Elgar.

Macher, J. T., & Richman, B. D. (2004). Organizational responses to discontinuous innovation: A case study approach. *International Journal of Innovation Management*, 8(1), 87-114.

MacKay, R. B., & Chia, R. (2013). Choice, chance, and unintended consequences in strategic change: A process understanding of the rise and fall of NorthCo Automotive. *Academy of Management Journal*, 56(1), 208-230.

Markides, C. (2006). Disruptive innovation: In need of a better theory. *Journal of Product Innovation Management*, 23(1), 19-25.

McCraw, T. K. (2007). *Prophet of innovation: Joseph Schumpeter and creative destruction*. Boston: Harvard Business School Press.

McLean, L. D. (2005). Organizational culture's influence on creativity and innovation: A review of the literature and implications for human resource development, *Advances in Developing Human Resources*, 7(2), 226-246.

Michael, S. (2005). The promise of appreciative inquiry as an interview tool for field research. *Development in Practice*, 15(2), 223-230.

Miettinen, R., Samra-Fredericks, & Yanow, D. (2009). Re-turn to practice: An introductory essay. *Organization Studies*, 30(12), 1309-1327.

Ministry of Defence (2020). *Procurement at MoD.* Retrieved from https://www.gov.uk/government/organisations/ministry-of-defence/about/procurement.

Morgan, G. (1983). *Beyond method: Strategies for social research*. London: Sage.

Nicolini, D. (2012). *Practice, theory, work, & organization*. Oxford: Oxford University Press.

Obal, M. (2013). Why do incumbents sometimes succeed? Investigating the role of interorganizational trust on the adoption of disruptive technology. *Industrial Marketing Management*, 42(6), 900-908.

Olson, M. (2012). Document analysis. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 319-320). Thousand Oaks: Sage.

O'Reilly, C. A., III, & Tushman, M. L. (2013). Organizational ambidexterity: Past, present, and future. *The Academy of Management Perspectives*, 27(4), 324-338.

Orlikowski, W. J., & Yates, J. (2002). It's about time: Temporal structuring in organizations. *Organization Science*, 13(6), 684-700.

Ozalp, H., Cennamo, C., & Gawer, A. (2018). Disruption in platform-based ecosystems. *Journal of Management Studies*, 55(7), 1203-1241.

Park, S. H., Kim, J-N., & Krishna, A. (2014). Bottom-up building of an innovative organization: Motivating employee intrapreneurship and scouting and their strategic value. *Management Communication Quarterly*, 28(4), 531-560.

Petzold, N., Landinez, L., & Baaken, T. (2019). Disruptive innovation from a process view: A systematic literature review. *Creativity and Innovation Management*, 28, 157-174.

Pielke, R., Jr. (2012). 'Basic research' as a political symbol. *Minerva*, 50(3), 339-361.

Pinchot, G., III. (1985). *Intrapreneuring: Why you don't have to leave the corporation to become an entrepreneur*. New York: Harper & Row.

Reinecke, J., & Ansari, S. (2017). Time, temporality, and process studies. In A. Langley, & H. Tsoukas (Eds.), *The Sage handbook of process organization studies* (pp. 402-416). London: Sage.

Rigtering, J. P. C., & Weitzel, U. (2013). Work context and employee behavior as antecedents for intrapreneurship. *International Entrepreneurship and Management Journal*, 9(3), 337-360.

Rosenbloom, R. S., & Christensen, C. M. (1994). Technological discontinuities, organizational capabilities, and strategic commitments. In G. Dosi, D. J. Teece, & J. Chytry (Eds.), *Technology, organization and competitiveness: Perspectives on industrial and corporate change* (pp. 655-685). Oxford: Oxford University Press.

Ryan, G. W., & Bernard, H. R. (2003). Techniques to identify themes. *Field Methods*, 15(1), 85-109.

Schroeder, R. G., Van de Ven, A. H., Scudder, G. D., & Polley, D. (1989). The development of innovative ideas. In A. Van de Ven, H. L. Angle, & M. S. Poole (Eds.), *Research on the management of innovation: The Minnesota studies* (pp. 107-134). New York: Harper & Row.

Schwartz-Shea, P., & Yanow, D. 2009. Reading and writing as method: In search of trustworthy texts. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 56-82). London: Sage.

Simba, A., & Ojong, N. (2017). Engaged scholarship: Encouraging interactionism in entrepreneurship and small-to-medium enterprise (SME) research. *Journal of Small Business and Enterprise Development*, 24(4), 1009-1027.

Slater, S. F., & Mohr, J. J. (2006). Successful development and commercialization of technological innovation: Insights based on strategy type. *Journal of Product Innovation Management*, 23(1), 26-33.

Snihur, Y., Thomas, L. D. W., & Burgelman, R. A. (2018). An ecosystem-level process model of business model disruption: The disruptor's gambit. *Journal of Management Studies*, 55(7), 1203-1241.

Sood, A., & Tellis, G. J. (2011). Demystifying disruption: A new model for understanding and predicting disruptive technologies. *Marketing Science*, 30(2), 339-354.

Steyaert, C. (2007). 'Entrepreneuring' as a conceptual attractor? A review of process theories in 20 years of entrepreneurship studies. *Entrepreneurship & Regional Development* 19(6), 453–477.

Symon, G. (2004). Qualitative research diaries. In C. Cassell, & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research* (pp. 98-113). London: Sage.

Teague, B., Tunstall, R., Champenois, C., & Gartner, W. B. (2018). Entrepreneurship as practice: Special issue call for papers from International Journal of Entrepreneurial Behavior & Research. *International Journal of Entrepreneurial Behaviour & Research*. Retrieved from https://www.emeraldgrouppublishing.com/archived/products/journals/call_for_papers.htm%3Fid%3D7510.

Tellis, G. J. (2006). Disruptive technology or visionary leadership? *Journal of Product Innovation,* 23(1), 34-38.

Thales Group (2013). *Ambition 10 communication pack*. Unpublished internal document. Thales Group.

Thales Group (2020a). *About us*. Retrieved from https://www.thalesgroup.com/en/global/about-us.

Thales Group (2020b). *Thales Group overview*. Retrieved from https://www.thalesgroup.com/sites/default/files/database/document/2020-01/Thales_Group_overview_EN_EX-02012019.pdf.

Thales Group (2020c). *About Thales in the UK*. Retrieved from https://www.thalesgroup.com/en/countries/europe/united-kingdom.

Thales Group (2020d). *UK management board*. Retrieved from https://www.thalesgroup.com/en/countries/europe/united-kingdom/about-thales-uk/uk-management-board.

Thales Group (2020e). *History*. Retrieved from https://www.thalesgroup.com/en/global/group/history.

Thales Group (2020f). *The markets we operate in*. Retrieved from https://www.thalesgroup.com/en/countries/europe/united-kingdom/markets-we-operate.

Thales Group (2020g). *The innovation through years*. Retrieved from https://www.thalesgroup.com/en/global/innovation/innovation-through-years.

Thales Group (2020h). *Research and technology*. Retrieved from https://www.thalesgroup.com/en/global/innovation/research-and-technology.

Thales Group (2020i). *Innovation by Thales*. Retrieved from https://www.thalesgroup.com/en/global/innovation-thales#carousel-641482732.

Thales UK (2014a). *One team, one Thales in 2014*. Unpublished internal document. Thales UK.

Thales UK (2014b). *Innovation R&T and R&D in Thales UK*. Unpublished internal document. Thales UK.

Thales UK (2015a). *Organising for growth*. Unpublished internal video. Thales UK.

Thales UK (2015b). *Research, Technology and Innovation (RTI)*. Unpublished internal document. Thales UK.

Thompson, N. A., & Byrne, O. (2020). Advancing entrepreneurship as practice: Previous developments and future possibilities. In W. B. Gartner, & B. T. Teague (Eds.), *Research handbook on entrepreneurial behavior, practice and process* (pp. 30-55). Cheltenham: Edward Elgar.

Tietze, S. (2012). Researching your own organization. In G. Symon, & C. Cassell (Eds.), *Qualitative organizational research: core methods and current challenges* (pp. 53-71). London: Sage.

Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal*, 21, 1147-1161.

Tsoukas, H., & Chia, R. (2002). On organizational becoming: Rethinking organizational change. *Organizational Science*, 13(5), 567-582.

Tushman, M. L., & O'Reilly, C. A. (1996). Ambidextrous organizations: Managing evolutionary and revolutionary change. *California Management Review*, 38(4), 8-30.

Van de Ven, A. H., & Johnson, P. E. (2006). Knowledge for theory and practice. *Academy of Management Review*, 31(4), 802-821.

Van de Ven, A., Polley, D., Garud, R., & Venkataraman, S. (1999). *The innovation journey*. Oxford: Oxford University Press.

van Hulst, M., Ybema, S., & Yanow, D. (2017). Ethnography and organizational processes. In A. Langley, & H. Tsoukas (Eds.), *The Sage handbook of process organization studies* (pp. 223-236). London: Sage.

von Koskull, C., & Strandvik, T. (2014). Discovering the unfolding of service innovations. *Journal of Business & Industrial Marketing*, 29(2), 143-150.

Waddington, D. (2004). Participant observation. In C. Cassell, & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research* (pp. 154-164). London: Sage.

Wagner, M. (2016). Managing disruptive innovation with technology acquisitions: The informing case of software-based high-technology industries. *Technology Analysis & Strategic Management*, 28(8), 979-991.

Wan, F., Williamson, P. J., & Yin, E. (2015). Antecedents and implications of disruptive innovation: Evidence from China. T*echnovation*, 39-40, 94-104.

Weick, K. (1998). Introductory essay: Improvisation as a mindset for organizational analysis. *Organization Science*, 9(5), 543-555.

Weick, K. (2003). Theory and practice in the real world. In H. Tsoukas, & C. Knudsen (Eds.), *The oxford handbook of organization theory* (pp. 453-476). Oxford: Oxford University Press.

Weick, K., & Quinn, R. (1999). Organisational change and development. *Annual Review of Psychology*, 50, 361-386.

Wengenroth, U. (2000). *Science, technology, and industry in the 19th century*. Working paper, Munich Center for the History of Science and Technology.

West, G. P. (2007). Collective cognition: When entrepreneurial teams, not individuals, make decisions. *Entrepreneurship Theory and Practice*, 31(1), 77-102.

Wolfe, R. (1994). Organizational innovation: Review, critique and suggested research directions*, *Journal of Management Studies*, 31(3), 405-431.

Yanow, D., Ybema, S., & van Hulst, M. (2012). Practising organizational ethnography. In G. Symon, & C. Cassell (Eds.), *Qualitative organizational research: core methods and current challenges* (pp. 331-350). London: Sage.

Ybema, S., & Kamsteeg, F. (2009). Making the familiar strange: A case for disengaged organizational ethnography. In S. Ybema, D. Yanow, H. Wels, & F. Kamsteeg (Eds.), *Organizational ethnography* (pp. 101–119). London: Sage.

Yu, D., & Hang, C. C. (2010). A reflective review of disruptive innovation theory. *International Journal of Management Reviews*, 12(4), 435-452.

Zietsma, C., Ruebottom, T., & Slade Shantz, A. (2018). Unobtrusive maintenance: Temporal complexity, latent category control and the stalled emergence of the cleantech sector. *Journal of Management Studies*, 55(7), 1242-1277.

Appendices

Appendix A. Projects overview.

Table A-1. Project profiles.

Project name	Domain	Incumbent position	Emergent customer need/ market
Trust	Digital Security	Major European leader in cyber security, worldwide leader in data protection	Internet of Things, cyber threat, digitalisation, automation
Civil UAS	Air Traffic Management	#1 worldwide in air traffic management	Commercial use of unmanned aerial systems
Counter UAV	Defence Countermeasures	#1 in Europe for defence electronics	Control of unmanned aerial vehicle misuse
Mindful Journeys	Transport	#2 worldwide in signaling and supervision of rail networks	Intelligent mobility, smart cities, personalised data services
Bridgwater	Critical Infrastructure Protection	Leader in secure communications and information systems (#2 worldwide in military tactical communications)	Construction of new nuclear power stations
Training	Training and Simulation	Global leader in simulation solutions	Cost-effective training solutions for collective preparedness, generation z digital native learning preferences

UAS: Unmanned Aerial Systems; UAV: Unmanned Aerial Vehicle

Appendix B. Topic guides for data collected.

1. Senior Leaders (organisational members driving Organising for Growth changes)

   Personal Background/Role at Thales
   - How long have you been working at Thales?
   - What makes Thales a good place to work?
   - What do you like best about your job?

   Organisation
   - Can you tell me about Thales? How would you describe the organisation?
   - What first attracted you to work here?
   - Can you describe the work that Thales does? (As a whole? In your business area?)
   - Has it always been like this? (Why/Why not?)
   - What part of your work are you most proud of?
   - What's your best experience of innovation at Thales?
   - If you had an innovative idea that you wanted to take forward what would you do, who would you speak to about it?

   Context
   - What do you think attracts your customers to Thales?/What part of your work do you think your customers value most?
   - What makes Thales special or different from other organisations that you know?
   - What do you think is at the heart of Thales' success? (As a whole? In your business area?)
   - How do you know when you've done a good job?

   Latest Changes (Organising for Growth)
   - Why the latest changes in the organisation?
   - What is the aim of these changes?
   - How will these changes benefit the organisation?
   - How will the changes benefit you/your work/your department?

   Implementation
   - How are the changes being implemented?
   - What is your experience of those changes?
   - What is your expectation of the changes? What will they achieve?

   Future
   - If I came back to visit you in five years, what do you think Thales would look like?
   - What strengths and resources will best help you to achieve these goals?
   - How could RTI help achieve these goals?
   - If another person was just starting out at Thales and wanted to learn from your experience, what's the best piece of advice you could give them?

2. RTI Function (organisational members working on-the-ground in the newly formed Research, Technology and Innovation function)

Personal Background/Role at Thales
- How long have you been working at Thales?
- What makes Thales a good place to work?
- What do you like best about your job?

Organisation
- Can you tell me about Thales? How would you describe the organisation?
- What first attracted you to work here?
- Can you describe the work that Thales does? (As a whole? In your business area?)
- Has it always been like this? (Why/Why not?)
- What part of your work are you most proud of?
- What's your best experience of innovation at Thales?
- If you had an innovative idea that you wanted to take forward what would you do, who would you speak to about it?

Context
- What do you think attracts your customers to Thales?/What part of your work do you think your customers value most?
- What makes Thales special or different from other organisations that you know?
- What do you think is at the heart of Thales' success? (As a whole? In your business area?)
- How do you know when you've done a good job?

Latest Changes (Organising for Growth)
- Why the latest changes in the organisation?
- What is the aim of these changes?
- How will these changes benefit the organisation?
- How will the changes benefit you/your work/your department?

Implementation
- How are the changes being implemented?
- What is your experience of those changes?
- What is your expectation of the changes? What will they achieve?

RTI Function
- Can you tell me about the RTI function?
- What is the aim of it? What is your expectation of it?
- Can you describe the work that the RTI does?
- How do you think it benefits the organisation?

Future
- If I came back to visit you in five years, where would your innovation project be?
- What do you think Thales would look like?
- What strengths and resources will best help you to achieve these goals?
- If another person was just starting out at Thales and wanted to learn from your experience, what's the best piece of advice you could give them?

3. Businesses Unit Representatives (organisational members working in Thales UK business units)

Personal Background/Role at Thales
- How long have you been working at Thales?
- What makes Thales a good place to work?
- What do you like best about your job?

Organisation
- Can you tell me about Thales? How would you describe the organisation?
- What first attracted you to work here?
- Can you describe the work that Thales does? (As a whole? In your business area?)
- Has it always been like this? (Why/Why not?)
- What part of your work are you most proud of?
- What's your best experience of innovation at Thales?
- If you had an innovative idea that you wanted to take forward what would you do, who would you speak to about it?

Context
- What do you think attracts your customers to Thales?/What part of your work do you think your customers value most?
- What makes Thales special or different from other organisations that you know?
- What do you think is at the heart of Thales' success? (As a whole? In your business area?)
- How do you know when you've done a good job?

Latest Changes (Organising for Growth)
- Why the latest changes in the organisation?
- What is the aim of these changes?
- How will these changes benefit the organisation?
- How will the changes benefit you/your work/your department?

Implementation
- How are the changes being implemented?
- What is your experience of those changes?
- What is your expectation of the changes? What will they achieve?

RTI Function
- Have you had an opportunity to engage with the RTI service?
- Can you tell me about your experience of the service?
- What is your expectation of that project/initiative?
- Do you have any suggestions for how the project/overall service could be improved?

Future
- If I came back to visit you in five years, what do you think Thales would look like?
- What strengths and resources will best help you to achieve these goals?
- How could RTI help achieve these goals?
- If another person was just starting out at Thales and wanted to learn from your experience, what's the best piece of advice you could give them?

4. Project Actors (organisational members working on the focal innovation projects)

Diary Questions:
- What is your current innovation project?
- What is your expectations of the project?
- What have you been doing to progress your innovation project? (research, meetings (internal/external), etc.)
- What challenges have you experienced and how have you overcome them?

Interview Questions:
- Can you tell me about the [project name] you have been working on?
- What is the aim of the project/your activity?
- What have you been doing to progress the project? (meetings, research, etc.)
- How is your work being resourced?
- Do you have any routine practices you carry out? (daily/monthly)
- Have you experienced any challenges?
- How have you overcome them?
- How have you managed expectations of delivering value to the company?
- How have you managed uncertainty/ambiguity?
- How do you know what to do next?
- How do you know what is of value to your customer/end user?
- How are you making sense of your learning?
- What is your expectation of the project?
- Who will benefit from the project? How?
- How do you know what you are doing is working?
- How are your energy levels?
- What's next?

5. Customer Feedback on Projects (members and customers of Thales UK RTI involved in the projects)

- Can you tell me a little bit about your background/your role here at Thales?
- How long have you worked for Thales?
- Can you tell me about the [project name]?
- How did it start? How did you get involved?
- What has been your experience of the project?
- What has been the best part of the project/highlight for you?
- What could be improved/amplified?
- Can you tell me about the RTI service more generally?
- What has been your experience of interacting with the RTI function?
- What is good?
- What could be improved?
- What is your expectation of the RTI function?
- What is your expectation of [project name]?

Appendix C. Data corpus.

Table C-1. Overview of data corpus.

Source	Events attended	Interviews	Diaries	Documents	Videos	Pictures	Reporting back meetings
Across Thales UK	39	43	0	49	22	143	13
External	20	0	0	15	0	36	0
Projects	87	68	36	52	4	129	9
Personal accounts	0	0	162	0	0	0	0
Planned interventions	34	0	0	49	4	131	0
Total	180	98	198	165	30	439	22

Note: Some interviews capture more than one kind of information.

Table C-2. Transformation-related data.

Documents		Videos		Pictures		Events attended		Interviews	
Internal	39	Internal	22	Internal	143	Internal	39	Organising for Growth leaders	10
External	15			External	36	External	20	RTI leaders	6
Historical	10							RTI on-the-ground	17
								Business units	10
Total	64	Total	22	Total	179	Total	59	Total	43

Table C-3. Project data breakdown.

Project name	Total number of core business stakeholders involved	Total number of project level actors	Data corpus
Trust	33	18 (min. 1, max. 10 active at a given time)	52 events attended 26 interviews 23 diaries 24 documents 1 video 68 pictures
Civil UAS	16	9 (min 2, max. 7 active at a given time)	1 event attended 18 interviews 2 diaries 4 documents
Counter UAV	18	9 (min 2, max. 8 active at a given time)	7 events attended 15 interviews 18 diaries 10 documents 1 video 24 pictures
Mindful Journeys	15	12 (min 1, max. 6 active at a given time)	1 event attended 12 interviews 7 diaries 2 documents
Bridgwater	5	3 (min 2, max. 3 active at a given time)	1 event attended 4 interviews 2 videos
Training	21	8 (min 1, max. 3 active at a given time)	32 events attended 9 interviews 7 diaries 12 documents 41 pictures

Note: Some interviews, diaries, events and pictures cover more than one project.

Supplementary Context Materials

Documents (64)

Historical documents (10)
TRT Consultant Report (1)
Innovation Portal Presentation (1)
Background on Past Interventions (4)
TRT Innovation Report (1)
Climate for Creativity Conference Notes (1)
Co-company Assessment (1)
Dowling Report (1)

Innovation in Industry Documents (15)
Dowling Report (1)
Innovation in Defense (5)
Dstl Niteworks Presentation (1)
MD Niteworks Presentation (1)
Incubator Effectiveness Report (1)
Manchester University Research (1)
Innovate UK Funding Themes/Structure (1)
Grundfos Presentation (1)
Transport Catapult Presentation (1)
Transport Research (1)
Innovation at Niteworks (1)

RTI/Organisation Documents (39)
RTI Mission/Values (1)
RTI Communication Plan (1)
BRL Ops Model (1)
NEF Assessment (1)
VP RTI Leadership Gallery Presentation (1)
Leadership Conference Materials (1)
Open Innovation Plan (1)
Business Case Paper (1)
IH Operation (1)
IH Identity Workshop Output (1)
RTI Grapevine idea (1)
Employee Engagement Survey Results (1)
Intrapreneurship article on Intranet (1)
Open Day Speaker Presentations (8)
Scanning Paper from R&D Conference (1)
VP RTI Presentation to UKMB – RTI 2.0 (1)
Innovation Strategy Document (1)
Innovation Culture Report (1)
RTI Value Propositions (1)
Presentation about IH to TRT (1)
VP RTI Christmas Message (1)
POC/Digital Transformation Slides (1)
RTI Poster (Glasgow Event) (1)
IH Innovation Lead Presentation at Glasgow Open Day (1)
VP RTI Presentation at Glasgow Open Day (1)
YPI Background (1)
Knowledge Sharing Game (1)
RTI 2.0 Slides (1)
VP Strategy & Marketing Strategy/Customer focus slides (1)
Group Presentation from VP Strategy & Marketing (1)
Ambition Boost Communication Slides (1)
RTI Operations Director Update on Wiki (1)

Pictures (179)

Internal Innovation-related Pictures (143)
Organising for Growth Culture Workshop (6)
Crawley Open Day (16)
NEF Workshop Preparation – Aug 24 (5)
AVS Market Intelligence Working Group – Oct 28 (4)
NEF Feedback Session – VP RTI Business Readiness Level Draft (1)
Reflections with IH Innovation Lead on Intrapreneurship Process in Organisations (1)
Market Intelligence Workshop Follow-up – Dec 4 (1)
Open Day Planning – Feb 11 (1)
Creative Problem Solving Training Course (5)
Innovation Competencies Workshop (2)
Knowledge Sharing Sessions Agenda (1)
Make It Day Trophy (2)
Innovation Studio Wall Banners (1)
TRT/IH Working Practices De-brief (2)
Innovation Knowledge Sharing with Intrapreneur from Group (1)
Explaining Disruptive Innovation Argument to Colleague (1)
Article #1 Reflections with IH Innovation Lead (2)
Demonstration (1)
Make It Day Pictures – Dec 2016 (10)
Glasgow Innovation Open Day Pictures (20)
GTS Innovation Open Day Pictures (25)
Make It Day Pictures – June 2017 (28)
Make It Day Banner – June 2017 (1)
Incubator Process Workshop (6)

External Innovation-related Pictures (36)
Tedx Bristol (5)
EGOS 2016 (8)
STIM Meeting – June 2016 (3)
STIM Research Day – April 2017 (1)
STIM Network Meeting – June 2017 (2)
EGOS 2017 (5)
AoM 2017 (12)

Videos (22)

Internal Innovation-related Videos (22)
Organising for Growth Video (1)
Leadership Conference Innovation Video (1)
Sales the Thales Way Video (1)
Make It Day June 2015 Video (1)
GTS/LAS Joint Team Make It Day Submission – June 2016 (1)
High-eye Make It Day Submission – June 2016 (1)
SIX Team Prezi Make It Day Submission – June 2016 (1)
TRT Videos for Glasgow Open Day (3)
Glasgow Open Day Video (1)
Thales in the Digital Age Video (1)
CardEx Make It Day Submission – Dec 2016 (1)
Cyclicity Make It Day Submission – Dec 2016 (1)
AVS Team Oculus Rift Make It Day Presentation – Dec 2016 (1)
Curvacious (TeS Team) Make It Day Submission – Dec 2016 (1)
Armed Make It Day Submission – June 2017 (1)
Team Moose Make It Day Submission – June 2017 (1)
GTS Team Rail App Submission – June 2017 (1)
AVS Software License Presentation – June 2017 (1)
AR/VR Make It Day Presentation – June 2017 (1)
Apprentice Mavericks Presentation – June 2017 (1)

> 59 innovation-related events (Refer to Appendix H for list of events attended)

Figure C.1. List of supplementary context materials.

Supplementary Project Materials

Documents (52)

Phase 1: 35
- Training Project Scope (1)
- Training Presentation for Services Conference (1)
- Final Training Presentation (1)
- Live Foresighting Presentation (1)
- Training poster for Open Day (1)
- Civil UAS Commercial Brief (1)
- Trust Document from VP RTI (1)
- Trust Project Output Presentation (1)
- Trust Project Report (1)
- Trust Concept Demonstrator Project Scope (1)
- Trust Status Reports (6)
- Trust Concept Demonstrator Customer Experience (1)
- Trust Protocols Document (1)
- Trust Poster for Open Day (1)
- Counter UAV Presentation (1)
- Counter UAV Poster for Open Day (1)
- Counter UAV Update to Sprint Attendees (1)
- Civil UAS Architecture Programme Output (1)
- Trust Phase II Report (1)
- Trust User Case Posters (5)
- Trust Journey Poster (1)
- Digital Trust Detail Aid (1)
- Live Foresight MVP (1)
- Counter UAV Poster for Glasgow Open Day (1)
- Top Drone Flyer (1)
- Top Drone Update 2 (1)

Phase 2: 17
- Civil UAS/ProDrone Presentation in France (1)
- ProDrone Showcase Presentation (1)
- SIX Digital Trust Workshop Invite (1)
- Live Foresight Grad Team Infographics (5)
- Live Foresight Content List to OneLan (1)
- IfM Digital Trust Roadmapping Workshop Agenda and User Cases (2)
- Incubator Process Presentation (1)
- Co-Creation Presentation (1)
- IH Team Day Co-Creation Presentation (1)
- Co-Creation Leaflet (1)
- Stressfree Northern Journeys Bid (1)
- Stressfree Northern Journeys Infographic (1)

Events (87)

Phase 1: 74
- Workshop with Military customers for Training Project – June 2015 (Crawley) (1)
- Trust Sprint – August 2015 (London/Reading) (1)
- Trust Working Days – Phase 1 (8)
- Visit to Digital Catapult for Trust Project (1)
- Brize Norton Visit – October 2015 (Brize Norton) (1)
- AVS Away Day – November 2015 (Crawley) (1)
- Training Project Working Days (10)
- Training Project Sponsor/Internal Presentations (5)
- IH Team Reflections on 2015 Projects – December 2015 (Crawley) (1)
- Sit in on Trust/Counter UAV Meetings Bristol (1)
- Services Conference – February 2016 (Crawley) (1)
- Digitalisation GDPM Workshop – February 2016 (Crawley) (1)
- Steering Committee Meetings for Trust – Throughout 2016 (Weybridge) (6)
- Important TCD Meetings/Digital Wednesdays (27)
- Counter UAV Sprint – April 2016 (Reading) (1)
- Bletchley Park Team Off-site – May 2016 (Bletchley Park) (1)
- Training in the Information Age Lunch and Learn – June 2016 (Crawley) (2)
- Bridgewater Output event – June 2016 (Bridgewater College) (1)
- Mindful Journeys Brown Bag – July 2016 (Reading) (1)
- Graduate Challenge Kick-off (Sep 2016) (1)
- Trust Output Event – December 2016 (Crawley) (1)
- IH Team Reflections on 2016 Projects – December 2016 (Crawley) (1)
- Graduate Challenge Re-group – Dec 2016 (1)

Phase 2: 13
- Review Digitalisation GDPM – Jan 2017 (Crawley) (1)
- ProDrone Showcase Event – June 2017 (Crawley) (1)
- IH Introduction to Incubator Process – Jul 4 (1)
- IfM Digital Trust Roadmapping Workshop – September 2017 (Reading) (1)
- Project Update Meeting – September 2017 (1)
- One-Lan Demo – October 2017 (Reading) (1)
- Digital Signage Internal Meetings (7)

Pictures (129)

Phase 1: 122
- Trust Working Day – June 8 2015 (2)
- Training Workshop with Military Customers (5)
- HSM Workshop with Thales e-Security (8)
- Trust Working Day – July 20 (12)
- Trust Sprint – August (3)
- Training Project Working Day – Oct 28 (1)
- Training Project Working Day – Nov 16 (7)
- Training Project Working Day – Nov 26 (3)
- Training Project Working Day – Nov 30 (1)
- Training Project Working Day – Dec 2 (1)
- Training Project Working Day – Dec 7 (1)
- Civil UAS meeting – Jan 13 (1)
- Training Project Sharing Findings with IH Innovation Lead – Jan 18 (1)
- Services Presentation Preparation – Jan 25 (5)
- Digital Transformation Roadmap Workshop – Feb 4 (6)
- Trust Customer Experience Kick-off – Feb 10 (3)
- Training Project Working Day – Feb 11 (3)
- Training Project Working Day – Feb 18 (5)
- Trust Working Day (share about knowledge transfer) – June 29 (9)
- Reflection/Lessons Learnt on Innovation Projects – Mar 16 (2)
- Civil UAS Next Steps – May 4 (1)
- Counter UAV Sprint (20)
- Trust Working Day (2)
- Digital Trust Detail Aid Outline (1)
- Digital Trust KOLs Brainstorm (2)
- Live Foresight Headlines (1)
- Digital Trust Complex Scenario Brainstorm (3)
- Digital Trust Detail Aid Content (3)
- Trust Output Event Pictures (10)

Phase 2: 7
- 8 D's Image Update (1)
- Digital Transformation Detail Aid/Live Foresight Next Steps (3)
- Grad Challenge Re-group (2)
- IfM Digital Trust Roadmapping Workshop (1)

Videos (4)

Phase 1: 3
- Counter UAV Sprint Video (1)
- Bridgewater Videos (2)

Phase 2: 1
- DIV Video (1)

Figure C.2. List of supplementary project materials.

<u>Planned Interventions</u>

Documents (49)

Employee Engagement Presentation (1)
Communication to Participants about Findings/ Planned Interventions (1)
Creating Fertile Ground for Innovation GDPM (1)
Creating Fertile Ground for Innovation Project Brief (1)
Creating Fertile Ground for Innovation Project Estimate (1)
At a Glance Overview of Activities (1)
Calendar of Events (1)
Status Report (1)
Critical Bid/Project Input Session Layout (1)
Creative Disruption Game Materials (1)
Creative Disruption Game Rules (1)
Creative Disruption Trials Presentation (1)
Creative Disruption Game Trials Consolidated Feedback (2)
STIM Reporting (4)
Creative Disruption Game Board (1)
Creative Disruption Placemat (1)
Creative Disruption Game Rules (1)
Early Careers Event Consolidated Feedback (1)
Letter to Staff from Thales UK CEO (1)
Leadership Rota (1)
Leadership Team Brief (1)
Post-event Communications (15)
Positive Core Pull-up Banners (1)
Strategy Posters (3)
Overview of Bid/Project Process (1)
Bid Lessons Learned Poster (1)
10 Golden Rules for Competitive Engineering (1)
Project Update Presentation (1)
Innovation Weekly Drop-in Consolidated Feedback (1)

Events (34)

Employee Engagement Network Meeting/Workshop – December 2016 (TT&C, Crawley) (1)
People Manager Programme Kick-off – March 2017 (Weybridge) (1)
Graduate Creative Disruption Trial – March 2017 (Crawley) (1)
FLP Creative Disruption Trials – May 2017 (Edinburgh) (3)
Advocate Network Kick-off (June 2017) (1)
LDP Creative Disruption Trial – June 2017 (Crawley) (1)
SGO/IH Creative Disruption Trial – June 2017 (Crawley) (1)
Trial Positive Core/Bingo Interventions in IH Team - Kick-off at July Team Meeting (1)
Trial Feedback at August IH Team Meeting (1)
Early Careers Event – August 2015 (Reading) (1)
Innovation Weekly Drop-in Events (Reading) (15)
People Manager Programme Re-Kick-off – October 2017 (Teleconference) (1)
Green Park Wiki Meetings (3)
Green Park Communications Meetings (3)

Pictures (131)

Employee Engagement Network Meeting/ Workshop (7)
Creating Fertile Ground for Innovation Game Design Meeting (3)
Creating Fertile Ground for Innovation GDPM Workshop – February 2017 (8)
Creative Disruption Graduate Trial Intrapreneur Cookies (1)
Creative Disruption Game Board and Materials (3)
Creative Disruption LSE Trial (3)
Creative Disruption FLP Trial (4)
SGO/IH Creative Disruption Trial (2)
Innovation Advocate Network Discussion (2)
Lunchtime Activities – Panel Discussion Topics Brainstorm (1)
Bids Lesson Learned Poster Changes (1)
Make It Day Banner Changes (1)
Overall Bid/Project Process Poster Changes (2)
Early Careers Event (30)
Creative Disruption Game Prototype Cards/ Materials (3)
Innovation Weekly Drop-in Events (60)

Videos (4)

Creative Disruption Game Instructions Video (1)
Thales Positive Core Video (1)
Digital Transformation Panel Discussion Video (1)
Early Careers Event Video (1)

Reporting Back Meetings (22)

Phase 1: 9
Sponsors (3)
IH Presentation (1)
Project Actors (5)

Phase 2: 13
Sponsors (4)
Project Actors (4)
Business (1)
Email to All Study Participants (2)
Employee Engagement Network (2)

Figure C.3. List of planned interventions materials.

Table C-4. Sample data.

Trust Working Day, Reading – June 2015

Workshop with Military Customers for Training Project, Crawley – June 2015

Services Conference Training Project Findings Presentation Preparation – January 2016
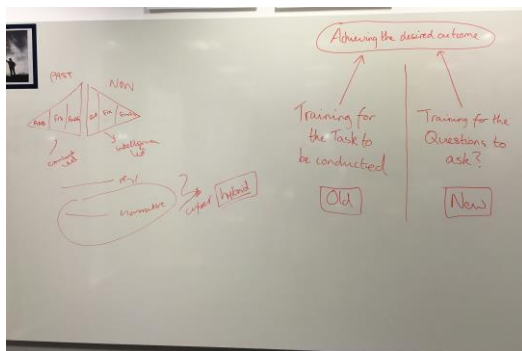
Catch up with Project Actors on Next Steps for Counter UAV Project – January 2016
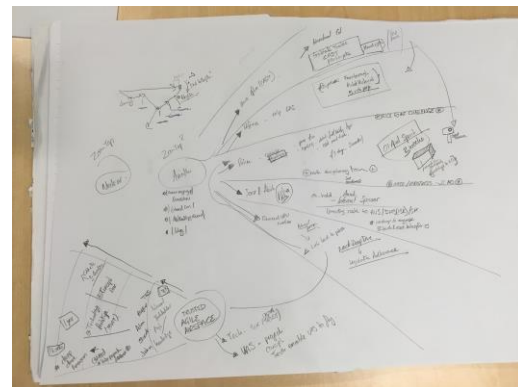
Crawley Innovation Open Day – March 2016

Counter UAV Sprint – April 2016

Digital Trust Detail Aid – December 2016

Creative Disruption Educational Toolkit Prototype Trial with Future Leaders Programme in Edinburgh – May 2017

Creative Disruption Educational Toolkit Board – August 2017

Early Careers Event – August 2017

Thales Positive Core Pull-up Banners – September 2017

Cambridge University Institute for Manufacturing Digital Trust Roadmapping Workshop – September 2017

Appendix D. Initial analysis data structure.

1st order concepts	**2nd order themes**	**Aggregate dimensions**

- Focus on the long-term
- Doing things differently
- Commit resources to innovation and change
- Working in new markets with new customers

→ Prioritising a New Future

- Focus on delivery and exploiting near-term opportunities
- Uncertainty avoidance and low appetite for risk taking
- Lack of commitment to innovation and change
- Maintain profitability for survival

→ Today's Known Deliverables

→ Resource Allocation and Perceived Incentives

- Customer and market oriented
- Situational and commercial awareness
- Collaborating across business and with external parties
- Externally present

→ Collaborative Market Focus

- Engineering high quality technology products
- Compliance with internal processes and governance
- Achievement of individual domain targets
- Operating within today's constraints

→ Narrow Internal Focus

→ Cognitive Structure

- Agile structure and processes to compete in fast-paced market
- Clear future vision and alignment of activities
- Dynamic and cohesive working environment
- High-performance organisation

→ Agile United Operations

- Inflexibility due to bureaucratic processes and project commitments
- Fragmented and complex matrix organisational structure
- Impersonal and divided workforce
- Static and predictable organisation

→ Rigid Fragmentation

→ Organisational Structure and Routines

- Expressed need and sponsorship
- Convince sponsor of approach
- Rough plan and process to appease business
- Headroom for divergent activity

→ **Creating Space for Imagination**

- Holistic approach to problem solving through wide research and divergent activities
- Worms eye view missions to learn, test and validate ideas externally
- Engage and collaborate with customers to understand their needs and develop value proposition
- Attend meetings and events to develop network
- Make sense of information, generate insights, ideate and determine next steps through activity and discussion with others
- Work in isolation from core business activities to form own view and avoid conflict

→ **Engaging with the Market**

- Beg, borrow and steal resources
- Identify and apply appropriate skills
- Use wits to improvise and re-direct projects in-line with business
- Move quickly to proactively seize opportunities
- Strategic prioritisation of effort based on feedback, momentum and urgency

→ **Making Do**

- Tailor story with relevant examples for audience when consolidating and communicating findings
- Follow paths of interest and support
- Influence key stakeholders by understanding their priorities and building personal relationships with them
- Capture and communicate value of activities
- Regular communication with business

→ **Creating Common Interests**

- Goal setting
- Self-reflexive belief in activities
- Sense of purpose and personal satisfaction
- Being comfortable with uncertainty and complexity of interconnected activities

→ **Working on the Self**

→ **Entrepreneuring Tactics**

- Personal development
- Engagement
- Identity construction
- Learning from experience

→ **Individual Impacts**

- New avenues for opportunities
- Customer influence and brand differentiation in new markets
- New practices and processes
- Influencing thinking and practices in business
- Increasing cross-company knowledge sharing and collaboration

→ **Contextual Impacts**

→ **Generative Outcomes**

Figure D.1. Initial analysis Gioia Tree.

Note: The following are excerpts from my codebook because the full codebook is too large to be included in this document.

Table D-1. Internal tensions codebook.

Global theme	Organising theme	Code	Description	Example
Prioritising a new future versus today's known deliverables	Imagined	Focus on the long-term	The company needs to take a long-term view when making investment decisions to prepare for the future. The company should be allocating effort to proactively engage with customers early to influence their thinking and create new opportunities for business.	"you have to take a longer term view, and you have to invest in that longer term view." – P17 "it will help us to grow along the lines that we want to, given the Ambition 10 aspirations. And it will help us, or it will put us in a better position in terms of protecting our future." – P6 "if we get a better understanding of what they want, they'll end up with a better solution at the end of it and everybody wins. And then they'll also open up a little bit more and you get that slightly more intimate relationship with the customer and they'll start letting you into their early stage thinking. Whereas if it's all done strictly on a formal requirement process type basis, you don't get that. You lose insight for innovation, for development. You've got to have early insight of those crazy ideas that the customer is having so that we can help to shape them in the direction that suits us really. That's the fun part." – P2
		Doing things differently	The company needs to focus on developing disruptive innovations to make quantum leaps in the	"In terms of the innovation piece, we can't rely on our current products for future success and we need to think about what will be the destructive products or service of the future. And so hopefully now we have geared up the RTI organisation to structure themselves

			way it does things rather than incrementally improving their existing products and processes. People in the company need to approach things differently, feel comfortable sharing their ideas and have freedom to try things that may fail.	to really think about the kind of innovative products that we can kind of work on for now." – P13 "it was recognised that we needed to be more innovative to keep up with our competitors. And bog standard engineering approaches weren't going to see us into the next decade of work. We have to become more flexible and do different things in different ways." – P20 "if you don't make a change, you know you maintain a certain trajectory, or there are only certain things you can do in the system in terms of attacking the cost space. Ultimately, you've got to go and find new markets, you've got to go and find new ways of doing new solutions for new customers to deliver that growth. You know, and a lot of that is around more non-linear thinking, its about working across the businesses, it's not necessarily just carrying on the status quo." – P15 "new things happen when you lead, when you take risk, when you try new stuff, where you sort of you know you take that big step" – P10
		Commit resources to innovation and change	The company needs to commit resources to growth and innovation and make innovation a higher priority across the organisation. Senior leaders need to be committed to change	"they need to be willing to put money behind innovation and that comes in the form of people's time, buying bits of kit and stuff to experiment with, even schmoozing new customers and creating a good image" – P1 "make sure we're devoting some of our thinking, some of our investment to something that is more medium and long-term, and something with innovation attached to it, so we do have products and services that differentiate themselves against the competitors." –

| | | | and support staff with the development of ideas. The company needs to commit to developing people in the company to fill the gaps in skills needed for where it wants to go in the future. | P42
"So you make these organisational changes but unless you have the behaviours being rolled down from the top, the organisation itself doesn't actually achieve it and I don't see the behaviours being rolled down from the top to cause change. I mean we've done organisational change, yes, but its actually more about making it happen, and that's what I would say is perhaps is the disappointment at the moment. And that brings me back to my thoughts on charismatic or lack of charismatic leaders who are inspiring and doing by example" – P3
"that's part of making sure that we stimulate and give opportunity to those people, whether they are ready or not for it. We just need to support them with the training, prior to when they are ready, or during, or a bit of both. So developing them when they are ready for their next move is too late. They need to be aware and anticipating their next move, but not ready for it or they won't learn anything from it. So, in actually thinking about the chess board of moves, of an organisation, to enable us to retain people, stretch people and drive people to be more effective and efficient and more receptive to learning new things, and not being the expert in everything." – P8 |
| | | Working in new markets with new customers | The company is trying to foster non-standard atypical growth beyond its | "if you listen to the recent interview with [Thales UK CEO], the sort of focus, as I said earlier, is particularly on growing into export markets, certainly from the sort of UK focus with our sort of traditional and existing |

| | | | current business activities. It is aiming to grow into global export markets, grow its civil presence, enter new markets and develop solutions for new customers. If the company is successful in achieving its growth ambition there may be a new Country Business Unit servicing a new market and new customers. | product base." – P4
"I think also our portfolio will start to rebalance a little bit between defense, moving into global homeland security markets and eventually I'd like to think that we will move into global transport markets out of the UK as well." – P27
"Well if it works, then we will have new markets with new businesses doing new things and hopefully we will secure a future beyond where our historic traditional markets actually are… So that's potentially very exciting, getting into new stuff and as a research place with a bit of a research brain on me, yeah that's interesting, looking at new things." – P28
"it might be that we stand up a new CBU [Country Business Unit] because there is a market opportunity to do something new. And therefore we create a new CBU [Country Business Unit] and we actually, that becomes a big change activity with all your functions of course still working into it. But you've got a new CBU [Country Business Unit], the opportunity is there because of the new market and the new customers that we can get some business from." – P9 |
| | Reality | Focus on delivery and exploiting near-term opportunities | People in the company are focused on short-term objectives and prioritise delivery tasks over other activities. The | "Thales has a very short-termist view of the world, so we have the multiyear budget, the two year view, this year, for next year, and a lot of people in the businesses, both in France and in the UK, take a two year view of the world. Ok, so they are saying, I hear what you say about the long-term investment, I hear what you say about long-term change, but actually I |

| | | | company is missing opportunities because it is wasting time reacting to bids rather than strategically shaping them. The company has been focused on shoring up business because it was losing money on a number of problem projects. In the process the company neglected strategic growth, paying attention to the marketplace and innovation and developed a culture of micromanagement. | am only interested in the next two years. And so that creates a certain perspective and approach to life." – P17

"the big challenge is firstly winning the time for people. You know, we are pretty overloaded, so winning some of this discretionary time that I'm sure would pay benefits, it's quite hard to do… You know, to put a priority there so it has an equal or higher priority than the things that are competing at that time." – P48

"A lot of our bidding effort often is chasing, not shaping. We don't necessarily spend enough money early on, investing time and effort to decide we're not going to bid something. What we do is we bid a lot of stuff and we lose a lot of stuff. So we waste either way, but it is better to waste it early as you waste less. If you're wasting it to work out what you are not going to bid, just as much as you are wasting it to work out what you are going to bid, if that makes sense." – P9

"we probably went through three or four years where we had a number of problem projects that we had to fix and that probably meant that we didn't pay quite as much attention to the marketplace and not just the marketplace but the innovation side and all the rest of it." – P27 |
| | | Uncertainty avoidance and low appetite for risk taking | Thales is a risk averse company stifled by backward old-fashioned thinking and doing. | "Feranti got taken over by BAE, and GEC, and then Thompson, which became Thales. So, I have seen over the years as we've become more of a bigger company, there is less of an appetite for taking risks. It's quite interesting though, because Thales, well in |

| | | | People in the company are more comfortable building on the company's existing capabilities and having processes in place to ensure people behave appropriately. | fact all of those companies, but Thales especially refers to themselves as an innovative company, that's the sort of message, but it's not quite as risk taking as Feranti used to be by a long long way." – P38
"we do some incredible things all around the world and the UK, but we are stifled by process, backwards thinking, old fashioned thinking and the thoughts of we've never done it that way before, so we can't do it that way in the future." – P20
"So success for me is that we could really look at many things but we do actually stick within sort of four key areas and we are good at it. Now we need to grow, but growing can be by taking a bigger market share in what we do. We have to be very careful about going into wholly new markets, because we don't have the pedigree. That doesn't mean you can't buy somebody to give you the pedigree, and that has happened in the past." – P19
"You can manage some risk as long as you've got the right processes in place. You know people go off and go crazy and try new things and new people, as long as they are following broad guidance. But you have to have those kind of checks in place to make sure it's under control to a degree" – P1 |
| | | Lack of commitment to innovation and change | The company gives the impression that it is innovative but it is actually dull and old-fashioned. There is a | "I think that we probably give an impression of a state of the art, innovative, engineering company, I think, from the outside. I don't think we reflect that necessarily internally, but from the outside I think we give that impression." – P36 |

				lack of trust in senior leadership among staff. There is poor senior sponsorship and willingness to invest in new ideas. The company lacks individuals who can take decisions and lead people to deliver on things. People often have to make compromises when implementing changes at Thales because it is a complex organisation and it prevents them from delivering on changes.	"one of the things that I am concerned about is the lack of funding to support some of those more innovative ideas. I think that there are some constraints over that and that's probably because of the financial performance of our part of the organisation has been exacerbated over the last few years." – P31 "we have to be very careful about that in this whole reorganising for growth, that we get people, that we do it to the extent that we can get people to buy in to the fact that something will change. I don't know if you are aware of it, but there is a bit of a view or a perception around the organisation that we are very good at talking about change but we are very poor at actually making it happen." – P6 "I do think it lacks leadership in individuals as well as in organisation. There are very few people and I don't know if it's cascaded down from the French culture, but there are very few people compared to when I was in BAE, where you see people who are willing to take on leadership roles and actually take decisions and make things happen. Um, sometimes in BAE, where you go do it and it doesn't work and you get moved around, but I just don't see it happening in Thales. There are very few I would call charismatic characters in Thales, which I think, is a shortcoming of the organisation." – P3 "There was an original design and we're not too far away from that original design, but we haven't implemented it exactly as was intended… we were supposed to be a centrally funded organisation with a

| | | | | single, or a maximum of two cost centres, and that was taking everyone out of the CBUs [Country Business Units] and managing it at a UK level because then you can actually implement the operating model in its fullest extent and you really can, it breaks you away from being tied to the individual drivers of the CBUs [Country Business Units], so they are looking at their own immediate needs and it lets you do the transversal stuff more effectively. And now it looks like we're not going to be entirely centrally funded so people will still remain funded by the CBUs [Country Business Units] to a degree."– P14 |
| | | Maintain profitability for survival | The company results have been flat over the past several years and it has been maintaining its profitability by cutting costs. It is likely that the company will need to sell some of the traditional defence business areas and moves into civil areas to survive. If the company doesn't change and grow it is at risk of not existing anymore. | "our turnover has not really grown in ten years. Our profitability has grown, so you can argue that we have cut costs and things like that… I would worry that we might not be expanding or growing in the areas we want to, because if you cut your cost base too much, you cut your ability to apply effort to grow." – P19 "if I talk about financial performance, you could question whether we are a success compared to our competitors." – P7 "Thales is going to have to divest parts of the business that aren't able to move as fast as other parts. So, this ten percent growth each year, you can do it either by reducing costs, that's the way we've been doing things to date, or expanding out, or of course generating income by selling off parts of the company and I think that there will be parts of Thales that will have to go. I suspect a lot of them, if you were to press me on which |

| | | | The company is successful in that it has survived challenging economic circumstances but it could be a lot more successful. | bits, a lot of them might be the classical defence markets and the new markets might be areas that Thales starts to move into." – P5
"if we don't change, we just stay completely flat. The problem with a flat business is that one day you wake up and it's not there anymore. Someone has gone and bought you, or you have crashed and burned, or whatever that might be. It sounds very tragic but it makes you very vulnerable if you are not growing." – P17 |

Table D-2. Entrepreneuring tactics codebook.

Organising theme	Code	Description	Example
Making do	Beg, borrow and steal resources	Leveraging special populations and development programmes to support project activities, drawing on local and international company network to overcome challenges, collaborating with external partners to develop opportunities, making use of informal innovation time at hackathons, mixture of shared funding from different internal sources/ sponsors,	"In parallel with this, I encouraged and supported a team of young researchers from TRT [Thales Research and Technology] to attend the GTS [Ground Transportation Systems]-organised Hackathon 'Hack Cheadle', which they won! Their winning innovation project, called Stressfree Journeys, was well received by GTS [Ground Transportation Systems] Innovation Manger and Technical Director, but they could see no way to immediately progress the innovation within Thales. Hence I encouraged the same team to build on their innovation project at an external Hackcelerator event. As a result they will present an enhanced version of their Stressfree Journeys innovation project at the Future Wireless Innovation Showcase in June –

		trying to secure external funding for activities	good exposure for TRT [Thales Research and Technology] and Thales, hopefully. Although not part of their team, I have been feeding them ideas, business opportunities and the like to ensure they progress their innovation project. In the future I would like to explore how the Stressfree Journeys and Mindful Journeys innovation projects might come together." – P11 "we've been able to secure resources in the form of leadership development teams… So we've been able to give kind of work packages to them to work on for us, which is great for their development, great in terms of getting collaborative teams of people to work on things" – P25 "the Trust demonstrator work for instance, that is sort of being funded out of bid funds, out of [Core Business Project] funds, out of self funded R&D work. So in addition to the [Core Business Project] Bids and Proposals work, I have a small amount of self funded R&D work to deliver specific demonstrators under the [Core Business Project] programme. So there's sort of like three or four separate threads there and every so often another meeting comes up that is another thread that may mature into something later on downstream." – P47
	Identify and apply appropriate skills	Using network to acquire skills needed for projects, recruiting people with skills needed, developing team	"We have also tried to allocate the work in accordance with people's skillsets and key interests and trying to coordinate the project as well as possible, bearing in mind that design thinking isn't necessarily a linear

		through training and on-the-job learning, allocating work based on skillset of people in the team, engaging multidisciplinary perspectives to generate insights, using existing skillset to inform next steps	activity." – P24 "We've got [colleague] here who's getting his virtual reality and simulation skills up to speed so that we can then start to go on how we can create some low fidelity, you know noddy demonstrations of our capabilities that can fit in a next generation training context" – P33 "we are going to be working with our intern, who's CV I have here, which looks like he's going to be a French intern. He's going to come across from France. Um, he seems like a good guy, who is going to help us build a sort of draft minimum viable product… [Colleague] has done a really good job. And he keeps pushing this along. He's always looking for interns. The intern we wanted initially went and did something else and [colleague]'s been on the lookout for somebody else that might be suitable and he's identified this guy and he's working with the grads and [colleagues] to get him on board and make sure they manage him to do this project, so it's really good." – P41
	Use wits to improvise and re-direct projects In-line with business	Aligning long-term objectives with short-term needs of the business, produce what business wants while also doing strategic work to support long-term objectives, mapping opportunities to current company competencies/ interests,	"there is a way of viewing the world. You can see it as a blocker or you can see the opportunities. I think I've explained I can see already some opportunities" – P11 "this stuff is hard work, I am not sure everyone is really up for it. It requires a lot of energy to do this and a lot of wrong moves to find the right path. This is a messy place to work and something that not everyone around me I think is really up for." – P26 "it's using your bloody wits and your ability to

		carrying out hidden activities to progress projects, waiting for right time to push ideas in the organisation, re-directing projects based on feedback/ company interests, taking different route than intended in short-term when hit roadblocks, letting project break into strands that may come together later, making wrong moves before finding right path, using wits to improve and adapt to overcome challenges, looking at positive rather than negative aspects of situation/ look at what can do with what have	improvise, adapt, overcome to find a way to achieve the objective." – P33 "we're talking about low cost high volume type solutions and that doesn't really align. But that's for us, you know we have to think cleverly around that in terms of if it doesn't align then we have to think like Open Innovation, for example, might be perfect! And that opens a new door you know because Thales is trying to push Open Innovation. So if you say, well it's not aligning with the traditional CBUs [Country Business Units], but it does to Open Innovation. Great, because Thales is also interested in that. We can push it that way. But yeah. As [colleague] says it's the most aligned but still it's, it is…challenging in terms of hitting against road blocks." – P41
	Move quickly to proactively seize market opportunities	Being proactive/ prepared and ready to go when opportunities arise rather than waiting to be told, looking for next opportunity when experience setbacks, leverage interest in activities before falls, put time constraints on activities to keep pace in work, use tools/	"just putting a date in the diary to go to the Growth Accelerator because a) we needed to do it for, um to get them rolling on things and b) we looked at the pace of the market change and thought if we don't get past this current stage of maturity, basically if we don't get a decision and get some people actually in the business doing stuff within a pretty short time frame, it'll be for naught anyway and the gap will just become bigger and bigger between what we should be doing and the limits of an SGO [Strategic Growth Opportunity] project

			technology platforms that enable agile/ flexible working	more or less." – P18 "we need to be ready to go when we get the chance. And if you and I sit back and wait for being said yes, we'll be behind the curve already… I see opportunities and what I've got to do is not let my frustration with the organisation stop me from making the contacts, because if we do get the opportunity we will be not ready to take it." – P26 "Most of my research and thinking has been on how we can leverage our strong current position before the internal interest inevitably falls – I can see this project delivering modest returns unless we use the learning to leapfrog to a bigger opportunity." – P41
		Strategic prioritisation of effort based on feedback, momentum and urgency	Delegation of tasks, stopping work with no prospect, prioritise next steps based on feedback from key stakeholders, continue to develop ideas with momentum, allocate effort to activities that align with long-term objectives, address urgent project needs, practicing work-life oscillation to manage difficult workload	"There's some prioritisation and by being confident and kind of putting down the concepts that don't have legs we are able to focus on the ones that are actually prospects." – P25 "feedback, presentations to [Head of Innovation Hub], presentations to [Head of Customer Innovation] to [Head of Strategic Growth Opportunities]. To all the people we've talked about has created these emergent requirements. And some of them people have actually asked for stuff and then other people have said no and it's allowed us to prioritise the key next steps. – P26 "today, for example, we've got someone in the business who will be driving forwards various virtual reality demonstrators. We set some direction with a kind of agile approach in terms of some sprints to drive an output such that we can appear at the [industry

| | | | event] in June in Paris with some sort of demonstration to support the [Customer]. We will, there are other activities in the business, which we will be looking to form a team to execute certain parts of those activities. But we'll set the direction and we'll put the context and put the why next week in place. And we'll worry about how those activities join up to the bigger picture." – P33 |
| | | | "is it the best use of our time to really push against the current there on that particular project? Maybe not. The value we'd be adding, maybe not huge. They probably do already know what they are talking about, what the customer wants, so it's probably best just to leave it go on that one. So we've kind of parked that one." – P41 |

Table D-3. Generative outcomes codebook.

Organising theme	Code	Description	Example
Individual impacts	Personal development	The project actors describe that they have developed personally as a result of their projects. The project actors have expanded their skillsets and learned to cope with high workloads and pressure.	"I think I'm a more rounded person, six months or a year later. I certainly got another feather to my bow or arrow to my bow, whatever the acronym or whatever the saying is, an extra sweet in my jar. Of things that I can do for Thales now. I feel comfortable talking about some of the methodologies that we have used. I feel fairly comfortable facilitating and running workshops or demonstrations on using those methodologies to other parts of the business. So, personally it's been a really good year for me. It's very different to what I have

			normally been doing. I do miss some of the technical stuff, but I have to change and adapt, like Thales does." – P20
			"you go through learning to cope with it. There's a peak of pressure and you start to, I don't know if the neurons are connect in the brain and your brain becomes better able to cope and you get to a stage where you are able to cope with it in a more relaxed manner. The pressures haven't changed, but you've just developed. So I think there's a lot of development going on personally and you're far better able now to cope with some of those challenges. And as we go into the next stage, we'll probably go through another period of great discomfort. And the way that I've rationalised that in my head now is that's personal development. That's why you step out of your comfort zone. That's why you put yourself in those situations. And you know you are developing when you learn to cope with it. " – P33
	Engagement	The project actors explain that their innovation activities are the type of work they want to be doing and are enthused by the learning they are gaining on their projects.	"It's good, from my perspective. This is the type of work that I want to be doing. So when people say I want more of this, I think it's fantastic because this is the type of stuff I want to be doing. That's very positive, from that perspective." – P41
	Identity construction	The project actors are constructing their identities as distinct from core organisational actors that carry out established projects	"Our job is to push boulders off the top of the hill, it's not to chase them all the way down. You check that it is going in the right direction, you avoid the village and then you give it the right touch and you don't take this job if you don't believe in the right kind of the innate

			power of that bit of the task, I think." – P18 "there's something about understanding the value of what we are here to do, and we are here to do is to do that early stage thinking. I think if we got too far carried away in whatever those words were, pushing the boulder down the hill. We would lose sight of what we are here to do. And that would have longer-term effects than us being able to placate our existence in the company anyway. If we got carried away doing things that we're not here to be doing, and personally I find there is something appealing about sort of being, maybe it's a British kind of thing, but being the unsung hero, the underdog that is consistently working behind the scenes to come up with the good ideas but gets none of the credit." – P25
	Learning from experience	The project actors are learning from the challenges they are experiencing on their projects and adjusting their activities based on their learning.	"From a learning perspective, it's clear to me that next time I will inquire or probably I will ask more questions around the stakeholder landscape before we conduct any activities, because as I since found out the stakeholder landscape was actually a little bit toxic in places and it would have been useful to know that in advance." – P24 "this year is just I've changed sort of the role I do a bit. This year I have just guided in kind of [colleague] on the Trust Project and [colleague] on the Counter UAV Project, but just to guide them in the right direction and I think that's helped, and I think that goal setting exercise on the Trust Project. I was reviewing it the other day and I thought, that's really useful. Actually, it

			really helps. " – P26 "It's a learning curve. So Eureka two dot zero, as we call it, is a lot better than Eureka one dot zero. But Eureka three dot zero will be ten times better than two dot zero. That's the process. We're comfortable with that." – P33

Table D-4. Thales positive core codebook.

Organising theme	Code	Description	Example
Trusted by customers to deliver high quality complicated things	Good reputation	Thales has a good reputation for delivering quality products and being friendly and flexible to work with. The company has a track record of mostly good delivery.	"The company has a reputation in some areas for very high standards of work. And in others it is identifiably the first or the second best provider in a particular market." – P12 "we have got a reputation of very high technology, very good quality, high quality technological deliveries." – P19 "generally we have a good reputation with customers and we have a sense of humility, that I value, with our customers. So when I go and speak to our customers… and talk to them about the services we provide, the feedback has been almost one hundred percent positive. If anything, the only thing that struck me is that some of our customers have said, we need to be a little more assertive about ourselves… whilst we don't want to espouse the arrogance that some of our competitors do, we need to be much more assertive and aggressive in the marketplace in a

			positive fashion that retains that." – P45
	Do complicated things well	Thales has pedigree in delivering large complex programmes that attracts customers to working with the company. Wherever you want something really complicated done, Thales does it. Thales is a super integrator that applies a specialist system of systems view. The company is better at understanding the complexities of the modern world than many other companies. The fact that the company is well networked and operates as a social democracy is good in a modern ambiguous operating environment.	"we have a huge amount of pedigree in delivering large, complex, prime programmes. And I think that's probably one of the largest attractions, and the fact that we employ lots of domain expertise as well, not just from the technical side but also from the kind of customer side… we've got guys that can talk their language, understand their space and then can translate that into you know tangible products and services that are of value to them." – P7 "our ability to deliver complex programmes is acknowledged. And there's been a number of instances across different market segments where competitors have tried to deliver and failed, and the customer has come to us and asked us to step in." – P14 "Um, I think that it's that we do complicated things well. Not that we do less complicated things profitably, if you see what I mean… it's sort of behind the together safer everywhere, it's wherever you want something really complicated done, Thales does it, sort of stuff that you see. I think there is some truth to that." – P35
	Collaborative and honest relationship with customers	Thales has a good relationship with its customers and is perceived as an honest supplier. Using a collaborative partnership approach Thales listens to and delivers to its customers	"we have a reputation with most of our customer groups of being friendly and flexible people to work with. We have a reputation for listening to customers, whereas some of our opposition, [competitor organisation] is kind of the king-sized example of it, would much rather dictate to a customer how he wants to behave…[competitor organisation] would turn

		real needs. Over time the company has developed good rapport with key customers and they value Thales' trustworthiness. Thales provides good support for its products to its customers. Customers do not feel threatened by Thales because the company makes things that go on their platforms so will not compete with them.	around and say that the system does this and you must use it the way we want, that we tell you to. We'll turn around and say "Mr. Customer, what is it that you want to do? Ok, we'll adjust our system to suit you." Rather than trying to impose our solution on them" – P2 "we are more likely, if there is an issue to take a hit and solve the customer's problem rather than say 'no it's not in the contract' and I think that we strive to be in a team or a partnering relationship with the customer rather than a simple customer supplier, like 'if it's not in the Ts&Cs we're not doing it' approach. So that comes back to the fundamentals of you know the people in Thales and the style of how the way we want to work with our customers." – P9 "I think that customers see Thales as transparent, as trustworthy, as producing very high end solutions, with you know a broad range of you know of technologies, that can bring a broad range of things to bear on a problem… We are a very sort of consultative and listening type of company… like a trusted advisor really." – P15
	Quality and excellence	Thales develops quality products and has high quality engineering. The company pushes the boundaries by striving to be as good as it can be and delivering to the best of its capability. The	"No matter how difficult or perhaps incorrectly we took on the challenges of the requirements… we always do deliver a very good quality product. – P8 "If a customer asks for something in a detailed specification, Thales will deliver it, however hard it is, however long it takes, it will do it and it will be brilliant... that is the quality and the trust that brings customers

		company has a high degree of professionalism that enables it to deliver quality products.	back to Thales." – P37 "in our business area it has been about the security and doing it properly and doing it well rather than sort of cutting corners to do it more cheaply perhaps or do it more quickly. We've always been proud of doing it correctly and well, even if that's a bit slower or a bit more expensive or a bit later. And I think a lot of our customers like that in the security industry. You know it's got to be secure. That's the most important thing, whether it's got a whizzy user interface or whether it's cost effective or that sort of thing, it's secondary, it's got to do it's job of securing their business" – P44

Appendix E. Projects visual mapping.

Note: Three project examples are included to illustrate my analysis.
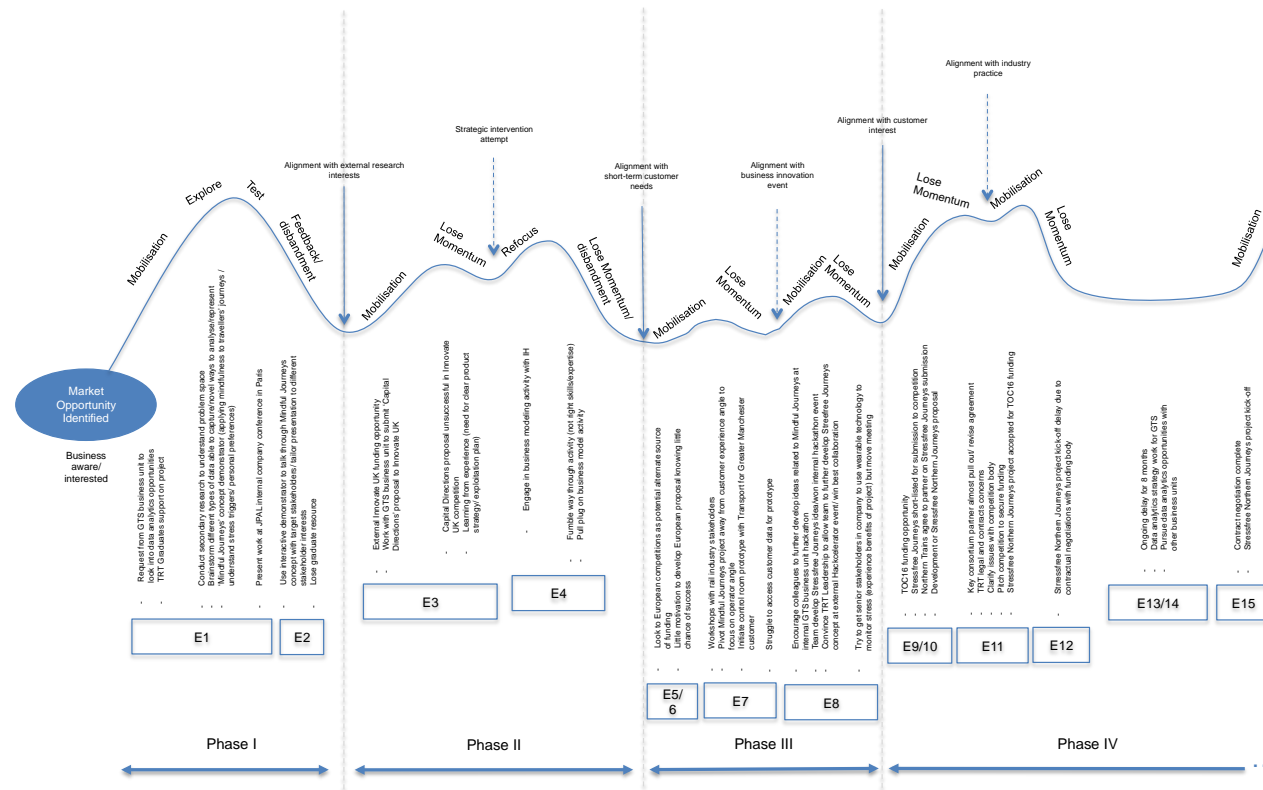
Figure E.1. Mindful Journeys Project trajectory.
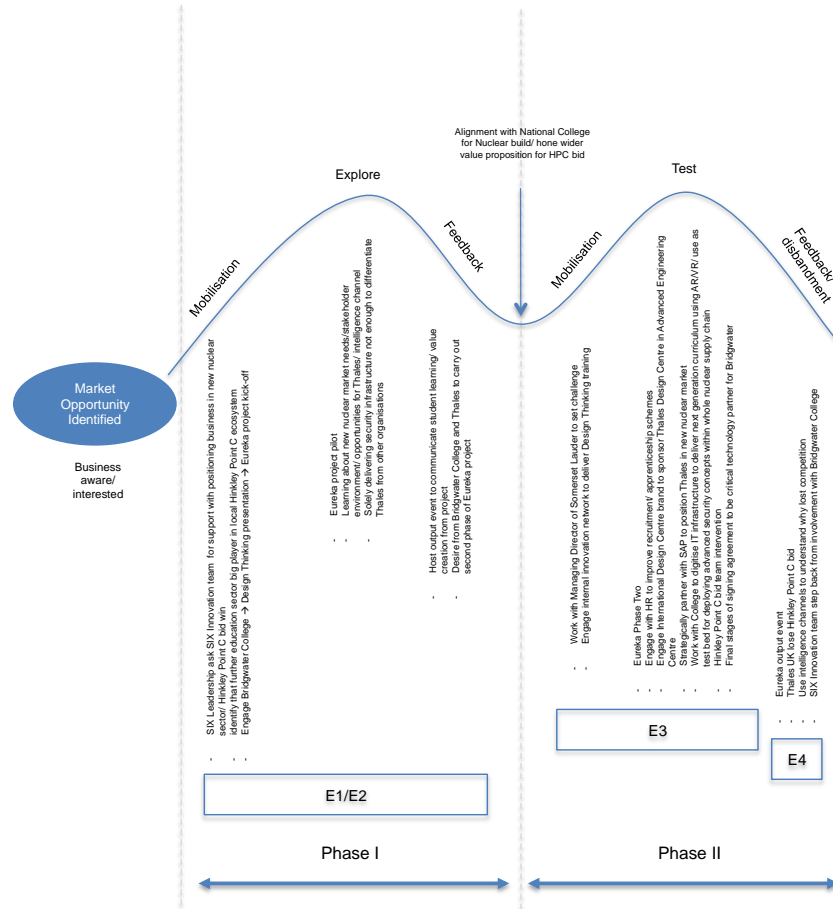
Figure E.2. Bridgwater Project trajectory.
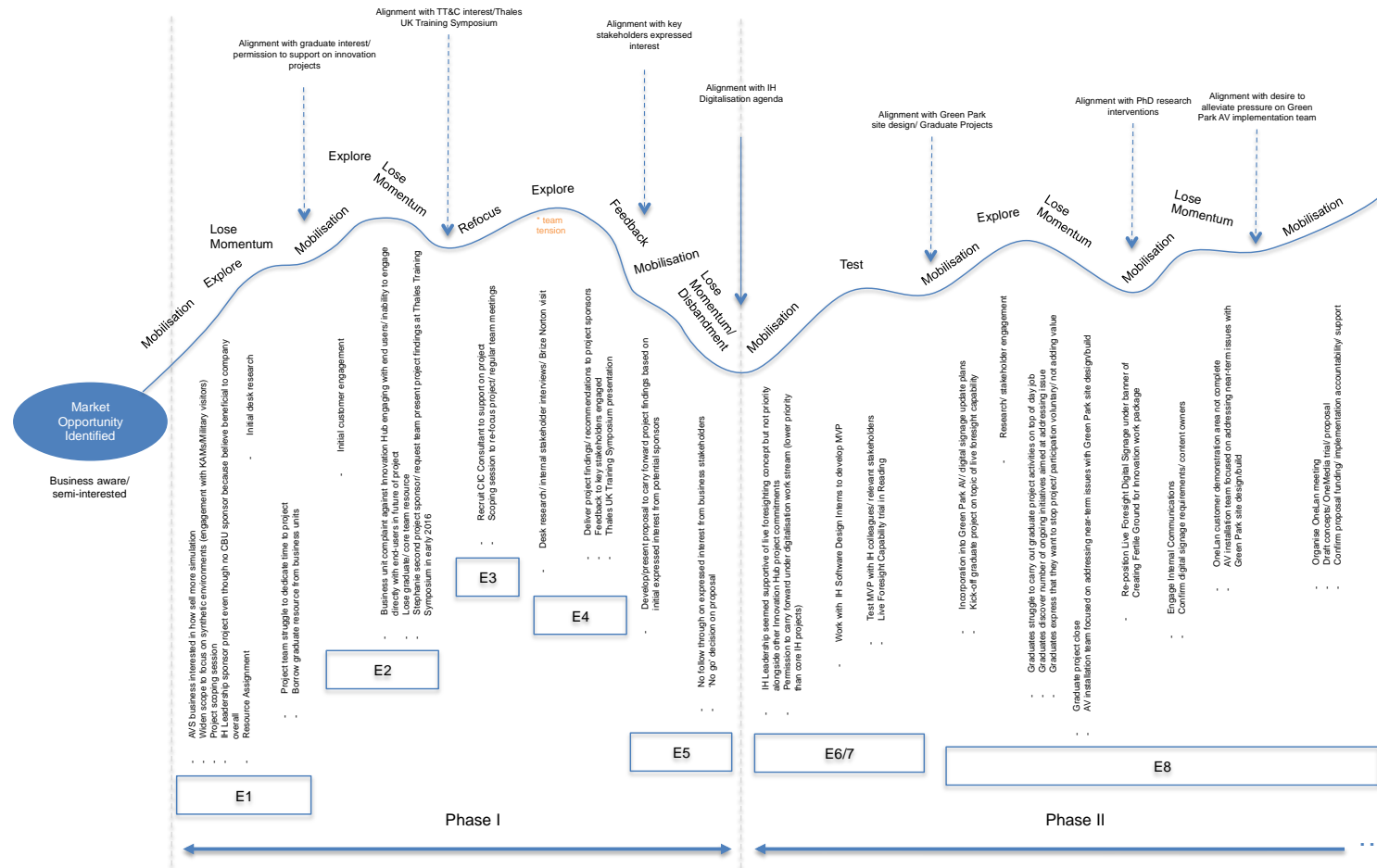
Figure E.3. Training Project trajectory.

Appendix F. Projects process analysis.

Note: Three project examples are included to illustrate my analysis.

Table F-1. Micro-dynamics of heterotopian spaces for play.

Project	Phase	Disbanding managerial forces	Sustaining entrepreneurial forces	Re-alignment/pivot
Mindful Journeys	I	*Prioritising today's known deliverables* • Lack of proper investment in project (Subject Matter Expert with graduate support) • Graduates focused on delivery • Challenge getting business to buy into Mindful Journeys concept/ secure funding for further development	*Prioritising a new future* • Push graduates to push boundaries/ develop something new and different	• Alignment of project development needs with interests of external funding bodies
		Technical and domain proficiency • GTS business unit request to look into data analytics opportunities • Challenge of gaining access to end user needs/ problems	*Collaborative market proficiency* • Design Thinking approach using secondary customer experience data to understand problem space • Use interactive demonstrator to talk through concept with target stakeholders/ solicit feedback • Present work at JPAL international company knowledge sharing conference in Paris	
		Rigid fragmentation • Not in TRT UK nature to advocate work at internal company conferences • Thales Group Design Thinking 'guru' criticise team that did not	*Agile united operations* • Proud of work team had done despite criticisms	

		apply methodology properly (need for multidisciplinary team/ face-to-face engagement with end users to develop empathy)		
	II	*Prioritising today's known deliverables* • Pressure to move beyond exploratory activity to develop product for business • Senior stakeholders not have time to engage with new ideas • Business stakeholders not taking Capital Directions proposal writing seriously • Lack of constructive feedback from business impact motivation • Risk of business losing interest in intelligent mobility if no traction • Pull plug on business model activity because not deliver value	*Prioritising a new future* • Apply for external funds to further develop Mindful Journeys concept • Pursue business model activity to define offer revenue generation	• Alignment with short-term customer needs/ attendance at internal GTS UK hackathon event
		Technical and domain proficiency • Other more dominant players in company research ecosystem take work • Not right skills/ expertise dedicated to business model activity (fumble way through)	*Collaborative market proficiency* • Apply to external Innovate UK funding opportunity in collaboration with GTS business unit	
		Rigid fragmentation • Lose graduate resource (graduate rotation) • Challenge of overcoming business perceptions of researchers (not	*Agile united operations* • Secure resource support from Innovation Hub (customer-focused skillset) to kick-off business modeling activity	

		able to talk to customers) • Inflexible bid process • Lack of clear product strategy for intelligent mobility cause negative scores on exploitation aspects of Capital Directions proposal	• Learn from Capital Directions proposal feedback that need for clear product strategy/ exploitation plan to secure external funding	
	III	*Prioritising today's known deliverables* • Company not properly investing in Smart Cities project (inexperienced graduate resource/ senior stakeholders not involved) • Company lack intelligent mobility strategy/ not take new product development seriously • Company divert unsuccessful Capital Directions proposal funds to working with customer on near-term opportunities • Senior stakeholder move meeting to discuss stress monitoring • Risk that company stop investing in efforts to progress project because no return on investment	*Prioritising a new future* • Continue search for resources to progress Mindful Journeys project/ explore European competitions • Encourage colleagues to further develop ideas related to Mindful Journeys at internal GTS business unit hackathon • Try to get senior stakeholders at company to trial wearable technology to monitor stress	• Alignment with GTS UK TOC-16 funding
		Technical and domain proficiency • Company lack market-focused competency for strategic marketing of new products • Need to sub-contract European contract from TRT France/ TRT France take majority of work • Company still perceives self as systems provider rather than key	*Collaborative market proficiency* • Network and build relationships for competition consortium • Link into industry groups through GTS joint team/ keep up-to-date with Innovate UK calls • Workshops with rail industry stakeholders/ focus on operator angle of interest to customers	

		player in digital economy		
		Rigid fragmentation	*Agile united operations*	
		• Customer slow to change/ adopt new technologies • SGO team not incorporate learning from Mindful Journeys project on Smart Cities project/ not joined up • Struggle to access customer data for control room prototype • Difficult to justify activities to business (not justifiable in traditional business sense)	• Convince TRT Leadership to allow team to further develop Stressfree Journeys concept at external Hackcelerator event	
	IV	*Prioritising today's known deliverables*	*Prioritising a new future*	
		• Business invest in TOC16 submission relatively low/ skepticism about return on investment from project • Business main motivation for project to engage with customer/ innovative perception as opposed to thinking strategically about new capability development • GTS business unit cutting R&D investment/ uncertainty whether able to continue work/ business unit struggling to deliver core projects/ behind on sales figures • Risk that assigned Project Manager (also Research Group Lead) not have enough time to dedicate to project	• Put Stressfree Journeys concept forward for TOC16 industry funded competition • Emphasise long-term potential of Stressfree Journeys concept/ align with existing capabilities/ potential to scale into other countries to convince internal evaluating committee • Keep up momentum on TOC16 project during commercial negotiations by having regular call with consortium members • Focus efforts on other data analytics opportunities while commercial negotiations take place/ arrange workshop with business stakeholders to plan how	

		• No business stakeholders show up to R&D planning workshop • Lack of resource commitment to project in GTS business unit/ still working on delivery of core business work at start of Streefree Northern Journeys project	to spend little R&D budget	
		Technical and domain proficiency	*Collaborative market proficiency*	
		• Company focus on internal governance over market dynamics • Risk that company only implement project contractually instead of use as opportunity to develop customer intimacy/ route to market • Lack of skills in business to deliver exploitation plan (use junior employee from Strategy & Marketing with oversight from Sales Manager) • Company not know how to develop service offerings • SME partners much more savvy at using project as opportunity to build customer relationship	• Float short-listed ideas for TOC16 submission with Train Operating Companies • Partner with North Trains customer on TOC16 submission • Hone proposal through series of workshop events with customer • Meetings with colleagues working on similar projects around Thales Group/ embrace cross-company support with exploitation plan • Use advisory panel to foster customer intimacy/ develop value proposition with customer • 'Day in the Life' field trip to understand end-user experience/ pain points	
		Rigid fragmentation	*Agile united operations*	
		• Wellbeing Specialist Consultancy put mark-up on cost (not allowed for grant funding) • Company legal and contracts representative not happy with agreement terms in gate review	• Quick turnaround of further information about idea secure project support • Research Centre lead consortium to reduce pressure on business unit responsibility for project	

		process/ concerns raised very late in gate review process/ inflexible • 8 month delay in project kick-off due to contract negotiations/ unable to start work at risk • No clear documentation on exploitation best practice at company	• Reduce scope of work of Wellbeing Specialist Consultancy/ change status of involvement in project to contractor • Use network to quickly clarify issues with competition body • Secure Human Factors Graduate in GTS to lead trials and exploitation work package in GTS	
Bridgwater	I	*Prioritising today's known deliverables* • Focus on near-term Hinkley Point C nuclear security opportunity • Pressure from sponsors to exploit activities/ risk of project being stopped if not delivering perceived value • Pressure from line management to justify value of work/ focus on near-term tactical activities • Lack of resources to achieve objectives	*Prioritising a new future* • Focus on wider Hinkley Point C ecosystem/ relationship development with Bridgwater College	• Alignment with National College for Nuclear build/ hone wider value proposition for HPC bid
		Technical and domain proficiency • Company focused on selling existing security products/ wait for customer to release ITT rather than shaping customer thinking • Struggle to get internal stakeholders to buy into customer engagement activities	*Collaborative market proficiency* • Engagement with market stakeholders in emerging UK new nuclear market • Learn that solely delivering security infrastructure not enough to differentiate Thales/ need to develop wider value proposition	
		Rigid fragmentation • Lack of support from internal	*Agile united operations* • Work with customer partner/	

		communications function/ rigid operating processes at company • Lack of clear business strategy	Group communications to quickly develop and disseminate high quality communications	
	II	*Prioritising today's known deliverables*	*Prioritising a new future*	
		• Sponsors struggle to finance growing strands of activity • Sponsors ask project team to support with critical business challenges • Company not interested in further investing in work when lost Hinkley Point C bid	• Focus on positioning Thales in new nuclear/ education sector	
		Technical and domain proficiency	*Collaborative market proficiency*	
		• Challenge of finding right people to support with scale up of project/ operational way of working (functional thinking/ adherence to company processes) • Business stakeholders not embrace team input to Hinkley Point C bid/ focus on selling existing security solutions	• Work with market stakeholders in new nuclear supply chain to set challenge/ arrange missions to understand customer needs/ test ideas with industry stakeholders • Strategically partner with SAP to position Thales in the new nuclear sector • Work with HR to improve recruitment/ apprenticeship schemes	
		Rigid fragmentation	*Agile united operations*	
		• Challenge navigating rigid operating processes in carrying out project activities • Customer feedback that company commercially difficult to deal with	• Engage internal innovation network at company to deliver Design Thinking training to students • Engage international Design Centre brand to sponsor Thales	

				Design Centre in Advanced Engineering Centre	
Training	I	*Prioritising today's known deliverables*		*Prioritising a new future*	• Alignment with RTI Innovation Hub digitalisation agenda
		• AVS business interested in increasing near-term simulation sales • RTI Leadership uncertain about project/ slow to approve project start • Project team struggle to dedicate time to project alongside other priorities/ lose a project team member to deliver core business programme • Some stakeholders uncomfortable with project findings • No business sponsorship to continue work/ no-go decision on continuing work		• Scoping session to refocus project/ regular face-to-face meetings to align team members and keep up momentum • Project team pursue 'different thinking' on project despite negative reactions from some people • Team deliver difficult project findings that challenge company's raison d'etre/ key source of profit generation in AVS domain	
		Technical and domain proficiency		*Collaborative market proficiency*	
		• AVS business focus on selling technical simulation product • Business unit complaint about customer interaction/ should go through sales people • Project team member difficult about new ideas that depart from traditional training approaches		• Engage with KAMs to understand real customer challenges/ widen scope to use design thinking methodology to focus on synthetic environments for collective training • Desk research/ key business stakeholder/ customer engagement/ site visit/ check-ins with other sectors • Increased internal engagement of customer-facing stakeholders to mitigate challenge of not being	

317

			able to engage with market	
		Rigid fragmentation	*Agile united operations*	
		- Multiple project scope changes/ project team turnover - Difficult stakeholder landscape/ decision delays impact on stakeholder relationship management - No training strategy at company	- Borrow graduate resource from AVS business/ CIC consultant support - Project insights input to UK-wide training strategy	
	II	*Prioritising today's known deliverables*	*Prioritising a new future*	
		- Trial to demonstrate business case for live foresighting capability - Graduates not prioritise project over core business work/ graduate team choose to stop work - Live Foresighting capability development not priority for site design/ communications team	- Carry forward project under digitalisation key strategic theme/ graduate project topic - Incorporate live foresighting capability development into Green Park Digital Signage design/ Creating Fertile Ground for Innovation	
		Technical and domain proficiency	*Collaborative market proficiency*	
		Raspberry pi not robust enough to run live foresighting capability/ align with existing OneLan supplier to pursue live foresighting capability development	Engage relevant stakeholders across RTI and wider company to implement live foresighting capability	
		Rigid fragmentation	*Agile united operations*	
		- Difficult to overcome internal communication and IT rigidities in implementing live foresighting capability - Challenge of securing screens to carry out live foresighting trial/	- Work with interns to develop MVP of live foresighting capability - Quick purchase of raspberry pis to run MVP trial - OneMedia meeting with relevant stakeholders/ mock-up/ funding	

		• health and safety requirements • Graduate team struggle to progress project dispersed across different sites/ business areas • Challenges around responsibility/ ownership of live foresighting capability • Green Park site building delays	proposal approved	

Table F-2. Emerging impacts of heterotopian spaces for play.

Project	Phase	Individual impacts *PD = personal development* *EN = Engagement* *IC = Identity construction* *LE = Learning from experience*	Contextual impacts *NA = New avenues for opportunities* *CI = Customer influence and brand differentiation* *NP = New practices and processes* *IT = Influencing thinking and practices in business* *KS = Cross-company knowledge sharing and collaboration*
Mindful Journeys	I	• Research note capture project learning (LE)	• 'Mindful Journeys' concept (applying mindfulness to travellers' journeys/ understand stress triggers/ personal preferences) (NA) • Mindful Journeys demonstrator (NA) • Articulation about work in international company forum (KS)
	II	• Learning from experience (need for clear product strategy/ exploitation plan) (LE)	• Business unit actors improve understanding of putting together proposals from previous work on Capital Directions proposal (IT)
	III	• Awareness of changes to Innovate UK funding structure (LE) • Team engagement/ Jim (GTS Innovation Manager) engagement (EN)	• Consortium relationships (NA) • Initiate control room prototype with Transport for Greater Manchester customer (NA/CI) • Team develop Stressfree Journeys idea/ won

		• Brian learn from experience of participating in JPAL events how to influence French stakeholders (LE)	internal hackathon event (NA) • Justification to organise similar events in future (IT) • Stressfree Journeys team won award for best collaboration at external Hackcelerator event (CI) • Positive results spark interest of senior stakeholders to try and take project forward (IT)
	IV	• Brian learn that never would have got Wellbeing Specialist Consultancy on board if not for misunderstanding (LE) • Brain learn importance of customer pull/ involvement in pursuing R&D activities (post-it note on computer) (LE) • Brian learn that speculative activities requires socialising in customer community (LE) • Brian reflect that could have handled pitch situation better with SME CEO (LE/PD) • Kyle (young researcher support with proposal) develop personally from involvement in project (PD) • Brian recognise importance of sponsorship in business to pull through ideas/ connect with customers' needs (Clive integral to success of Stressfree Northern Journeys project) (LE) • Brian learn that detailed project plan actually working well to provide clear objectives yet flexibility for project work (LE) • Brian reflect that Stressfree Northern Journeys project would not have happened if Leo (GTS Innovation Partner) was single point of contact with GTS business unit because initially did not see value of idea (LE)	• Stressfree Journeys project put forward for TOC16 competition/ selected for presentation to potential customer partners (NA) • Stressfree Journeys project selected from list of 18 ideas GTS compiled for TOC16 competition (NA) • Northern Trains want to collaborate on Stressfree Northern Journeys proposal for submission to TOC16 (CI/NA) • Northern Trains ask Clive (Mainline Rail Key Account Manager) to be on innovation board (opportunity to influence how customer funding allocated) (CI/NA) • Stressfree Northern Journeys project accepted for TOC16 funding (NA) • Thinking from Mindful Journeys concept incorporated into company's architecture from presentation of work in JPAL forum (IT) • Develop network for potential collaborations (NA) • International collaboration opportunities opening up as result of project (NA/KS) • Press release good exposure for company/ demonstrate innovative work company leading (CI) • Stressfree Northern Journeys project opportunity for GTS business to develop future services in passenger experience (NA)

			• Stressfree Northern Journeys project as opportunity to develop data science research stream (NA)
Bridgwater	I	• From delivering talk Caleb and Jaxon learn that need to do more than provide industry funding/ something radically different to College to position Thales in new nuclear sector (LE) • Caleb and Jaxon learn that new nuclear market operate differently to SIX business' traditional sectors (LE) • Caleb and Jaxon recognise that solely delivering security infrastructure not enough to differentiate Thales from other organisations in new nuclear market (LE) • Caleb and Jaxon develop personally from engaging in activities (PD) • Gaining valuable learning how core business stakeholders respond to work to enable business to operate differently (LE) • Bridgwater College students want to work for Thales as a result of involvement in Eureka project (EN) • Caleb and Jaxon heartened by company's willingness to engage in improving company's recruitment processes (EN) • Caleb and Jaxon develop own capability through project activities (PD) • Caleb and Jaxon learning about educational sector and nuclear market/ how Eureka can be improved (LE)	• Caleb asked to deliver talk about Design Thinking as result of engagement with Bridgwater College/ capture imagination of Bridgwater College leadership stakeholders (NA/CI) • Deliver Eureka pilot in collaboration with Bridgwater College (NP) • Desire from both Bridgwater College and Thales to carry out second phase of project (NA/CI/IT) • Bridgwater College interested in working with Thales to support objectives for National College for Nuclear/ open opportunity to strategically position Sebastian on board to negotiate deals (NA/CI) • Bridgwater College invest in growing Design Thinking capability/ adopt communication and information management tool (CI/NP) • Outcomes indicate that raising profile of Thales in new nuclear sector (CI) • Eureka project having wider social impact on skills gap between education and industry (NA) • Numerous opportunities to pursue where deliver value to HPC construction (NA) • Creating opportunities for company to exploit to position in future (NA) • Create intelligence channels (CI/NP)
	II	• Caleb and Jaxon perceive selves as organisational leaders distinct from way of	• Using intelligence gathered through industry interactions to feedback to company to inform HPC

		working of core business personnel (IC) • Freedom to dictate own way of working enjoyable for Caleb and Jaxon (EN)	bid/ overall business value proposition (IT) • Final stages of signing agreement to be critical technology partner for Bridgwater College's Advanced Engineering Centre (CI/NP/NA) • Working with College to digitise IT infrastructure to deliver next generation curriculum using AR/VR/ use as test bed for deploying advanced security concepts within whole nuclear supply chain (CI/NP/NA) • Bridgwater College planning to implement design facility in Advanced Engineering Centre/ brand presence secure Sebastian position on Nuclear Council (CI/NP/NA) • Learning inform next generation of apprenticeship programmes for Thales with Bridgwater College (CI/IT/NP) • Caleb and Jaxon develop influence in organisation through project activities/ earn trust of sponsors (IT) • Interest in Eureka project from education sector/ nothing like it in market (NA)
Training	I	• Patrick learn that value in widening scope of Training Project to focus on synthetic environments, particularly in collective training contexts and that it is a cross-sector problem (LE) • IH team gain useful contextually specific insights about training problem space from interacting with military stakeholders (LE) • Meredith learn that no official training strategy at company/ biggest value add for project to deliver (LE)	• Simon sponsor Training Project even though no CBU sponsor/ resources assigned (IT) • Ryan and Theo temporary resources secured from business (IT) • Stephanie second project sponsor/ request team present project findings at Thales Training Symposium in early 2016 (IT) • Simon receptive to team's findings/ recommendations/ interested in core business stakeholders reactions to content (IT) • Stephanie incorporate project recommendations

322

	• Lauren learn that divergent interests and activities across company on topic of training (LE) • Meredith enthused that project recommendations may be able to add real value to organisation (EN) • Lauren feel motivated by interest/ identify other opportunities to carry forward findings if unsuccessful in defence domain (EN) • Email from AVS Engineer expressing that presentation really resonated with him (demonstration that some people in audience 'got' what Lauren was trying to say/ motivating for her) (EN) • Simon impressed that Lauren not afraid to stand up in front of senior stakeholders and deliver difficult message/ Lauren happy to impress Simon and develop personally from experience (PD) • Lauren enthusiastic that Simon seemed supportive of live foresighting capability idea but not priority alongside other Innovation Hub project commitments (EN) • While core project unlikely to continue Meredith gained valuable learning from project (try to better anticipate challenges of project turmoil/ stakeholder landscape based on learning from experience) (LE)	into strategic training work (IT) • Training Board Symposium presentation stimulate interest in RTI function and Innovation Hub activities/ potential applications in HR domain (IT/NA) • Knowledge sharing across organisation about training challenges/ recommendations (KS) • Stephanie express interest in IH team providing further support with development of UK-wide training strategy (IT/NA) • AVS Technical Directorate express interest in IH team support with strategic work doing for AVS GBU (IT/NA)
	II	• Lauren concerned about Meredith's changing attitude towards work/ feel that important quality of the Innovation Hub team members is willingness to challenge the status quo (IC)	• IH colleagues impressed by speed of MVP development/ find content interesting and useful/ learning about things happening in other areas of Thales UK, Thales Group and externally that would

| | | | • Frank impressed by novelty and simplicity of concept/ potential to impact on people engagement at company (EN)
• Lauren learn that MVP useful for demonstrating concept/ engaging target stakeholders actual platform needs to be more robust to prevent breakdown/ reliance on IH team for technical support (LE)
• Frank enthusiastic about live foresighting capability being implemented at Green Park/ energised by fact that it was being talked about within the Comms team as something real (EN)
• Graduate team learn that problem with sharing and assimilation of knowledge across organisation through internal stakeholder engagements/ several ongoing initiatives in organisation to address issue (LE)
• Lauren learn that cannot infuse motivation on topic of live foresight in graduate team/ implications for RTI function design/ project management of IH innovation projects (LE)
• Lauren get to know Carrie personally/ feel more optimistic about working with them to achieve goals (EN)
• Lauren learn that Cameron amenable when align/ support what he is trying to achieve with overall digital signage update (LE) | otherwise be unaware of (IT)
• Cameron perceived live foresighting capability as something to support breakdown of silos at organisation/ foster greater cross-fertilisation of knowledge and collaboration at company/ like to see link to phones/ computers in future (NA)
• Comms and IT representatives appreciate more value to be reaped from OneLan capability/ agree on need to be co-owned (IT/KS)
• OneLan digital signage re-vamp proposal approved/ ownership agreed (NA) |

Appendix G. Projects practice analysis.

Note: Three project examples are included to illustrate my analysis.

Table G-1. Situated practices of heterotopian spaces for play.

Entrepreneuring tactic/ Managerial strategy consumed	Mobilisation	Exploration and testing	Convergence
Mindful Journeys Project Phase I			
Creating space for imagination	• Request from GTS business unit to look into data analytics opportunities • Align project with company interest in Design Thinking		
Managerial strategy	• GTS business agenda • Group Design Thinking network		
Structuring		• Brainstorm different types of data able to capture/ novel ways to analyse/ represent • 'Mindful Journeys' concept demonstrator (applying mindfulness to travellers' journeys/ understand stress triggers/ personal preferences)	
Managerial strategy		• Agreed project aim	
Engaging with the market	• TRT graduate support on project	• Conduct secondary research to understand problem space	
Managerial strategy	• Graduate rotation programme	• Company network/ customer relationship	
Making do	• Project Lead specialist		

			knowledge in algorithms
Managerial strategy	• Team skills		
Creating common interests		• Push graduates to push boundaries/ develop something new and different	• Present work at JPAL international company conference in Paris (know organiser) • Use interactive demonstrator to talk through Mindful Journeys concept with target stakeholders/ tailor presentation to different stakeholder interests • Focus on gaps/ re-frame ideas to align with different stakeholder interests
Managerial strategy		• RTI/ business interest in innovation	• JPAL event/ exploit learning • Business interests/ priorities
Working on the self			• Proud of work team had done/ put forward despite criticism at JPAL conference
Managerial strategy			• Knowledge of traditional ways of doing things in company in relation to external world
Mindful Journeys Project Phase II			
Creating space for imagination			
Managerial strategy			
Structuring			
Managerial strategy			
Engaging with the market	• External Innovate UK funding opportunity		
Managerial strategy	• Company network		

Making do	• Secure resource support from Innovation Hub (customer-focused skillset) to kick-off business modeling activity • Continue search for resources/ other options to take Mindful Journeys project forward • Focus on opportunities rather than blockers	• Work with GTS business unit to submit 'Capital Directions' proposal to Innovate UK • Engage in business modeling activity with IH support	
Managerial strategy	• Wider company network for skills/ resources	• Wider company network for skills needed • External funding	
Creating common interests	• Align with related SGO Smart Cities project kick-off to validate work		
Managerial strategy	• RTI interests/ priorities		
Working on the self		• Learning from experience (need for clear product strategy/ exploitation plan) • Comfortable with uncertainty of not knowing what doing from one week to the next	
Managerial strategy		• Individual knowledge and experience	
Mindful Journeys Project Phase III			
Creating space for imagination	• Agree to develop control room prototype with Transport for Greater Manchester customer • Convince TRT Leadership to allow team to further develop Stressfree Journeys concept at		

	external Hackcelerator event (good exposure/ innovative company perception)		
Managerial strategy	• Customer/ GTS business strategic interests • TRT strategic interests		
Structuring			
Managerial strategy			
Engaging with the market	• European competitions potential alternate source of funding • Network and build relationship for consortium (interesting potential combination of capabilities with contacts developed) • Links into industry groups through GTS joint team • Keep up-to-date with Innovate UK calls	• Workshops with rail industry stakeholders with customer-focused business stakeholders to define control room prototype requirements	
Managerial strategy	• Company network/ partnerships	• Customer relationship	
Making do	• Pivot surplus resources from Capital Directional proposal away from customer experience angle to focus on operator angle • Encourage colleagues to further develop ideas related to Mindful Journeys at internal GTS business unit hackathon • Constant search for ways to carry forward project/ react to day-to-day opportunities/ open to	• Initiate control room prototype with Transport for Greater Manchester customer • Team develop Stressfree Journeys idea/ win internal GTS hackathon event • Team further develop Stressfree Journeys concept at external Hackcelerator • Team win best collaboration	

	moving in different directions/ morph over time		
Managerial strategy	• Company resources • GTS business hackathon	• Customer funding • GTS business hackathon • External hackcelerator event	
Creating common interests	• Continue to work with GTS business unit to identify/ respond to relevant Innovate UK calls	• GTS Innovation Manager encourage team to stick with idea (knowledge about topic of interest for rail customers) • Try to get senior stakeholders in company to use wearable technology to monitor stress (experience benefits of project) • Continue to present about Mindful Journeys concept in JPAL forum	
Managerial strategy	• RTI/ business interests	• Customer/ business interests and priorities • JPAL events/ exploit learning	
Working on the self	• Apply learning from past experience working with international groups at company on collaborative research projects • Team uncertain about viability of hackathon idea	• Apply learning from experience that French prefer learning about work in different areas of the business in formal company forums	
Managerial strategy	• Individual knowledge and experience • Knowledge of traditional ways of doing things in company in relation to external world	• Individual knowledge and experience	
Mindful Journeys Project Phase IV			

Creating space for imagination	• Stressfree Northern Journeys selected by GTS business for TOC16 funding application	• Northern Trains agree to partner on Stressfree Northern Journeys submission for TOC16 competition • Align with project existing capabilities/ identify that can scale well to other countries	
Managerial strategy	• Business interest to foster customer intimacy/ innovative perception	• Customer/ business strategic interests	
Structuring	• Research Centre lead consortium to reduce pressure on business unit to be responsible for project/ relatively low investment • Development of Stressfree Northern Journeys proposal • Try to amend project plan to create flexibility • Stressfree Northern Journeys project kick-off Oct 2017 • Choose device that allow flexibility to develop own app	• Matrix filter to prioritise ideas • Divide up work to complete competition application • Technology landscaping/ create functional architectural diagram • Detailed project plan actually working well to provide clear objectives for team but allow flexibility in how done • Work with identified Strategy and Marketing representative to divide up work package activities based on skills/ knowledge • Regular call with team in GTS to ensure on same page/ meeting milestones • Conduct thinking around project to reduce technical uncertainty	
Managerial strategy	• Risk mitigation • Business planning/ process • Contractual obligations	• Agreed aim/ scope • Business planning/ process • Risk mitigation	
Engaging with the	• Northern Trains interested in	• Throughout proposal email TOC16	

market	Gamification of Training in Rail and Stressfree Journeys concepts • Quickly reach out to consortium partners/ competition body with queries	competition for clarification about submission guidelines • Float short-listed ideas with Train Operating Companies (strategically targeted customers likely to get funding) • Hone proposal through series of workshop events with Northern Trains customer • Use network to identify right people/ organisations to join consortium • Use network to clarify issues with competition body/ submit proposal • Set up advisory panel of senior industry stakeholders to foster customer intimacy/ develop value proposition/ test exploitation plan • Project team members do 'Day in the Life' exercise (travel on train lines where trials taking place)/ understand customers' pain points/ challenges that would not have exposure to otherwise	
Managerial strategy	• Company network/ partnerships	• Customer relationship • Company network/ partnerships	
Making do	• Put Stress-free Journeys concept forward for TOC16 industry funded competition (possible submission ideas gathered from across company) • Use work done for internal gate	• Test quality of application with others in TRT • Meetings with colleagues working in similar areas in Thales Canada/ Thales Portugal • Plan to use junior employee from	

	review to quickly deliver project plan to funding body • Articulate Stressfree Journeys concept to Northern Trains customer using presentation materials developed at hackathon events • Can see other opportunities to pursue if successful/ opportunity to do technical work in areas of expertise	Strategy & Marketing team to carry out exploitation plan work package with oversight from Mainline Rail Key Account Manager • GTS Innovation Manager convince Human Factors engineering graduate to lead on project in response to expressed interest in getting involved in innovation work/ rail expertise on project • Identify Project Manager to lead project within TRT/ adapt project management practices to satisfy requirements of funding body • Re-focus effort away from control room prototype to strands of activity with momentum • Respond to internal customer needs in interim (Transforming Transport project/ data analytics strategy work for GTS GBU/ other data analytics opportunities during commercial negotiations • Host workshop with business to define how spend little R&D funds • Young researchers quickly getting on with project/ continuing to work in agile hackathon work style • Embrace support from people from other areas of company with required skills/ expertise that are	

		keen to support on project (IH Consultant/ AVS Commercial)	
		• Collaborate with Train Operating Company as partner on project	
Managerial strategy	• Company resources • Customer funding • Leverage previous project outputs	• RTI/ wider company network for feedback/ needed skills/ expertise/ support • Team skills • Business resources	
Creating common interests	• Give stakeholders 'just enough' information to prevent locking into particular solution • Emphasise long-term potential of Stress-free Journeys concept to spark interest of internal evaluating committee/ turn around requested further information in 2 days (versus 2 weeks for Gamification of Training in Rail idea) • Reduce scope of work Wellbeing Specialist Consultancy required to do on project/ change status of involvement to contractor (even though not espouse 'true collaboration')/ propose submitting proposal with note that want to negotiate terms of agreement if proposal selected • Work with other consortium partners to prepare concise pitch presentation to funding body/	• Write press release about pending Stressfree Northern Journeys project/ demonstrate innovative work at company • Plan to make Stressfree Northern Journeys project visible at Green Park • Listen to different stakeholders' ideas/ open to incorporating ideas • Try to purchase wearable technology that would entice people to participate in trial • GTS team try to apply Human Factors experience to influence project where possible • SGO team's Smart Cities project findings validate work pursuing on Mindful Journeys • TRT research lead focus on using project as opportunity to further research and development activities	

	• successful pitch presentation/ presence of customer representatives help to overcome business case challenge • Respond to queries from other consortium members/ advise not to do any work before kick-off because know cannot be funded • Continuously ask legal and contracts team for updates/ aware that past negotiation for similar project took a long time/ optimistic that Stressfree Northern Journeys project has fewer consortium partners with distinct capabilities	• Keep up momentum on project by scheduling regular heartbeat update with consortium members • Work with Mainline Rail Key Account Manager to try to increase tempo of contractual negotiations activity	
Managerial strategy	• Customer/ business/ consortium interests and priorities	• Exploit thought leadership/ company positioning • Customer/ business/ consortium/ RTI interests and priorities	
Working on the self	• Optimistic that can secure TOC16 funding with support of customer stakeholders if wrote good proposal/ hopeful to secure external funding with customer sponsorship carry out project/ not much competition • Not want to give up submitting proposal (team worked hard/ do not want to let down young researcher)	• Draw on past experience of working on collaborative research projects • Deal with high uncertainty of when project would finally kick-off/ frustration that not able to implement plans that worked so hard on • Comfortable with uncertainty of not knowing how many participants will sign up for trial	

	• Hopeful that might still be opportunity for collaborative work to take forward ideas together • Hopeful for quick contractual agreement between Thales and funding body/ kick-off in early Spring 2017 • Belief in merit of project/ potential to build new capability in data analytics in TRT/ intelligence service for rail customers	• Consider procurement team may be difficult to deal with to order devices but actually helpful • Belief that passenger experience growth areas in rail industry and optimistic that Stressfree Northern Journeys project enable GTS to expand operations and develop future passenger services • Believe Thales has advantage of customer intimacy with Train Operating Companies to actually address problems	
Managerial strategy	• Knowledge of traditional ways of doing things in company in relation to external world • Individual knowledge and experience		
Bridgwater Project Phase I			
Creating space for imagination	• SIX Leadership ask SIX Innovation Lead for support with positioning business in new nuclear sector/ Hinkley Point C bid win	• Meet regularly with sponsors to define vision of activities/ update on progress • Keep close to sponsors to understand and influence their interests/ priorities	• Maintain close relationship with sponsors to prevent surprises in perceived value of work • Carefully manage sponsor expectations/ not threaten them with success of work
Managerial strategy	• SIX strategic interest in winning Hinkley Point C bid	• SIX business sponsor interests/ priorities	• SIX business sponsor interests/ priorities
Structuring	• Identify that further education sector big player in local Hinkley Point C ecosystem/ build relationship	• Identify opportunity to get VP SIX UK on National College for Nuclear Council (position in market to chase down deals) • Avoid engaging with core business stakeholders as much as possible	

335

		to avoid conflict	
Managerial strategy	• Clear aim	• Agreed project aim • Business planning/ process	
Engaging with the market	• Engage Bridgwater College/ Design Thinking presentation/ Eureka project kick-off	• Learning about new nuclear market needs/ stakeholder environment/ opportunities for Thales/ intelligence channel • Realisation that solely delivering security infrastructure not enough to differentiate Thales from other organisations/ new nuclear sector operate through back door agreements • Use external network to overcome resource/ capability challenges (Bridgwater College communications support) • Proactively engage with target stakeholders in new nuclear market to understand needs/ create new opportunities for growth by building relationships with key stakeholders/ spending time with and communicating openly with them	
Managerial strategy	• Company network	• Company network • Partner skills/ resource	
Making do	• Appropriate resource added to project team (strategic innovation/ organisational skills)	• Eureka project pilot • Carry out different activities/ bend rules/ improvise to achieve aims • Do best to keep up different	

		strands of activity	
		• Reading/ preparation for sessions with students	
		• Balance time between engaging in preparation/ other demands	
Managerial strategy	• Business resource planning • Team skills	• Finite project resources	
Creating common interests		• Careful not to upset people/ focus on external effect of work • Plan stakeholder engagement carefully/ adapt in response to actions and desires of others	• Host output event to communicate student learning/ value creation from project
Managerial strategy		• Business stakeholders interests and priorities	• Business/ partner/ customer interests and priorities
Working on the self		• Go on journey to determine what SIX business want to be about/ clarify offer in new nuclear market • Belief that work generating value for organisation/ benefit organisation in long-term/ 'right thing to do'/ sense of purpose motivating • Constantly question which activities contribute to overall objective • Constantly reflect/ re-prioritise because overall objective moving based on learning accumulating • Decide what to do next based on learning accumulated/ feedback from market	• Consider possible scenarios of project outcome/ practical about project expectations • Open to possibility of greater potential/ motivated to continue for own personal learning

337

		• Learn to deal with uncertain way of working coming from operational background	
Managerial strategy		• Knowledge of traditional ways of doing things in company in relation to external world • Individual knowledge and experience	• Knowledge of traditional ways of doing things in company in relation to external world
Bridgwater Project Phase II			
Creating space for imagination	• Desire from Bridgwater College and Thales to carry out second phase of Eureka project in line with National Nuclear College build/ hone wider value proposition for HPC bid		• Align activities with strategic goals of organisation to justify request for additional resources • Take French stakeholders on journey to understand project
Managerial strategy	• Customer/ business interests and priorities		• SIX UK/ GBU strategic interests
Structuring	• Work with Managing Director of Somerset Lauder to set Eureka challenge • Aim to use project to break company's traditional behaviour	• Constraints to keep up pace/ achieve project objectives	
Managerial strategy	• Clear aim/ approach	• Agreed project aim	
Engaging with the market	• Bridgwater College desire for support with National Nuclear College build/ Design Centre in Advanced Engineering Centre • Work with Managing Director of Somerset Lauder to set Eureka challenge	• Market engagement missions • Ideation/ test ideas with key industry stakeholders • Cultivate strategic partnership with SAP to position Thales in new nuclear market • Work with College to digitise IT infrastructure to deliver next	• Final stages of signing agreement to be critical technology partner for Bridgwater College • Leverage Eureka project to develop strategic relationship with SAP/ demo low fidelity VR demonstration at output event

338

		generation curriculum using AR/VR • Craft clarity of SIX business unit value proposition through industry engagements/ iterative development based on learning	• Use intelligence channels to understand why lost competition
Managerial strategy	• Customer relationship/ network	• Company network/ partnerships	• External partnerships
Making do	• Agile working practices/ use chosen technology platforms to communicate • Try to identify people in business comfortable working in uncertain environments • Engage internal innovation network to deliver Design Thinking training • Engage international Design Centre brand to sponsor Thales Design Centre in Advanced Engineering Centre	• Do best to use resources wisely/ work together to act on priority at hand to deliver Eureka phase two • Use AR/VR next generation curriculum as test bed for deploying advanced security concepts within whole new nuclear supply chain	• Aim to secure funding support from external industry/ government sources
Managerial strategy	• IT • Wider company network for skills/ resource • Thales Group Design Centre	• Finite project resources • Customer resources	• External funding sources
Creating common interests	• Engage with HR to improve recruitment/ apprenticeship schemes • HR team willingness to engage/ improve practices motivating for SIX Innovation team • Only involve necessary	• Try to gain interest through Group value proposition design methodology • Draw on strategies put in place to prevent increased involvement in HPC bid/ Hinkley Point C bid team intervention	• Eureka output event • Use output event to capture value/ influence key stakeholders • Begin to think about how Eureka project could be exploited more widely in education sector/ instigator for transformational

	stakeholders to enable initiative to move quickly/ achieve targets • Proactively work with stakeholder environment to prevent having to get too involved in HPC bid activities	• Tailor articulation of ideas/ activities depending on who talking to (carve up activities into smaller chunks for people to easily understand/ engage in project)	change at company
Managerial strategy	• Customer/ business interests and priorities	• Customer/ business interests and priorities	• Customer/ business interests and priorities
Working on the self		• Belief in need to be market-focused • Belief that complexity positive because potential to drive innovation out of problem space • Learning as go/ improve practices based on learning/ continuous state of learning • Question whether company solely engineering company anymore • Belief not 'right thing' to compromise strategic activity • Need to be resilient/ bounce back when feel burnt out from hitting barriers • Focus on change generating to keep going	
Managerial strategy		• Knowledge of traditional ways of doing things in company in relation to external world • Individual knowledge and experience	

Training Project Phase I			
Creating space for imagination	• AVS business interested in how sell more simulation • Present project proposal to Simon/ IH Lead sponsor project even though no CBU sponsor because believe beneficial to company overall	• Head of Thales Training and Consulting (TT&C) second project sponsor/ request team present project findings at Thales Training Symposium in early 2016	• Simon recognise need for AVS business to adapt/ change/ interested in upcoming stakeholder reactions to project recommendations • Stephanie intrigued but uncertain about project findings/ recommendations • Simon attend event/ help field questions during breakout after presentation
Managerial strategy	• Business/ RTI strategic priorities and interests	• TT&C strategic priorities	• Business/ TT&C/ RTI strategic priorities
Structuring	• Project scoping session	• Project Lead identify that biggest value add for project to develop UK-wide training strategy for company • Scoping session to re-focus project/ regular team meetings • Regular meetings to share learning from research and interactions with key stakeholders/ discuss ideas • Team push on to develop target deliverables	• Develop/ present proposal to carry forward project findings based on initial expressed interest from business stakeholders
Managerial strategy	• Clear aim/ scope • Business planning/ process	• Agreed aim • Deliverable requirement	• Deliverable requirement
Engaging with the market	• Widen scope to focus on synthetic environments (engagement with KAMs/ Military	• Initial desk research/ customer engagement • Team identify additional people to	

341

	visitors)	speak to through cross-company engagements	
		• Desk research/ stakeholder interviews	
		• Visit to Brize Norton (re-invigorate project/ first-hand experience of training delivery)	
Managerial strategy	• Customer relationship	• Company network	
Making do	• IH team mobilised	• Borrow graduate resource from business units (expressed interested in innovation/ support from Line Managers)	• Draw on different perspectives of stakeholders engaged/ test ideas with IH team members when pulling together project findings
		• Engage relevant stakeholders across organisation to understand current training capabilities	• Utilise team skillset in recommendations
		• Recruit CIC Consultant to support on project (background experience in training domain)	• Patrick and Meredith help Lauren to craft Training Symposium presentation using appropriate language to articulate difficult message (discussion meetings/ brainstorming on whiteboards)
		• IH Innovation Lead ask other IH team member to focus available effort on project	• Further work on project compete with other Innovation Hub initiatives
Managerial strategy	• RTI resources	• Wider business network for resource/ expertise	• Wider business network for knowledge/ validation of findings
		• Team skills	• Team skills
			• Finite RTI/ IH resources
Creating common interests		• Project Lead try to remedy challenge of not being able to engage with end-users through intensive internal stakeholder	• Test project findings/ articulation with key stakeholders engaged throughout project development
			• Feedback to key stakeholders

342

		engagement (business complaint)/ clarification of project aim/ check-ins with other sectors • Lauren put together slides to share with team thoughts/ ideas on project based on reading (challenge Liz's thinking) • Meredith raise issue with Lauren/ Patrick to identify how situation could be resolved and avoided in the future • Lauren inquire into Liz's perspective to better understand issues/ improve communication of work	engaged/ gauge whether on right track by evaluating engaged stakeholders' reactions to content/ upskill core business stakeholders as part of interaction • Thales UK Training Symposium presentation • Project Lead follow-up with key stakeholders to understand opportunities to carry forward team's findings/ recommendations (Lauren not attend meetings to encourage honest feedback from stakeholders) • Stephanie express interest in IH team support with development of UK-wide training strategy • AVS Technical Directorate express interest in IH team support with strategic work doing for AVS GBU • Meet with Eli to reflect on why message not completely resonating with core business stakeholders/ refine articulation of ideas
Managerial strategy		• Business/ team members interests and priorities	• Business/ TC&C interests and priorities • Training Symposium • Business value

Working on the self		• Lauren apply learning from academic experience/ reading	• Lauren agree to deliver presentation on behalf of team with support from Patrick/ believe in recommendations
			• Lauren still uneasy that stakeholders somewhat unsettled by project findings
			• Lauren question self/ impact of own voice on traditional stakeholder perceptions of message delivered in formal context (young, female, non-military/ technical background)
			• While mixed reaction Meredith express that important thing was team had demonstrated findings/ belief in recommendations going forward
			• Lauren and Meredith feel pursuing project findings/ recommendations right thing to do for future of organisation yet concerned that will be difficult to implement
			• Patrick believe thinking right on project but disappointed Meredith and Lauren unable to identify internal sponsor for work
			• Patrick draw past experience of working on dementia project to justify critical need for sponsorship to enable different

			thinking and doing
			• Patrick question team's ability to effectively articulate findings/ compare and contrast successfulness with other IH innovation projects
Managerial strategy		• Individual knowledge and experience	• Knowledge of traditional ways of doing things in company in relation to external world • Individual knowledge and experience
Training Project Phase II			
Creating space for imagination	• Permission to carry forward Live Foresighting concept under digitalisation workstream (lower priority than other core IH projects) • Lauren identify that initiative would also help to improve RTI communication and knowledge sharing highlighted as challenge through recent Innovation Accreditation • Cameron and Frank work to incorporate into Green Park site design agenda/ draw on learning from Reading trial	• Frank impressed by novelty and simplicity of concept/ potential to impact on people engagement at company/ suggest that concept could be implemented at company's new Green Park Head Office location • Re-position Live Foresighting Digital Signage under banner of Creating Fertile Ground for Innovation work package • Align project scope/ additional costs with existing Green Park installation activities	• Carrie agree to pay for digital signage proposal/ personally responsible for implementation
Managerial strategy	• IH digitalisation agenda • Innovation accreditation recommendations • Green Park new site build	• Corporate communications strategic priorities • Creating Fertile Ground for Innovation project resource • Green Park new site build	• Corporate communications strategic prioirities

Structuring	• Patrick ask Meredith to scope graduate project based on Training project insights/ recommendations as another way to carry forward project findings (commence September 2016)/ Patrick and Lauren decide not to show graduates live foresight MVP because want to encourage divergent thinking • Lauren prepare background information on project/ Design Thinking methodology to help structure graduate team way of working • Lauren anticipate challenges of remote team working/ encourage graduate team to set up electronic group chat/ shared location for files	• Meredith and Lauren agree scope of work/ requirements of MVP with Cody/ dedicate time around core project work • Aim to generate interest through trial at Reading site/ reason for senior stakeholders to want to act on Twitter policy change • Kick-off graduate project on topic of Foresighting Capability in business/ Lauren facilitate graduate team to scope project/ identify relevant internal and external stakeholders to speak to/ identify actions and schedule follow-up meeting • Agree on OneLan supplier solution through discussion with team/ align with current business practices • Lauren schedule in-person meeting with all graduate team members to re-focus project/ discuss learning/ define next steps/ show graduate team Live Foresight Digital Signage for inspiration • Lauren work with Emily to define user digital signage requirements/ Cameron work with IT and OneLan on hardware/ technical solution	• Confirm digital signage requirements/ content owners

346

		• Agree next steps (Lauren Emily and Justine work on display design/ Cameron and Brock review project scope and cost in relation to Green Park activities/ Gary audit equipment/ Lauren trial OneLan OneMedia platform)	
Managerial strategy	• Graduate projects aim/ scope/ approach	• Agreed aim • Business planning/ process	• Business planning/ process
Engaging with the market		• Team research other options for how content management could be outsourced to overcome challenged experienced in trial/ foreseeable challenges of roll-out on site digital signage • Graduate research/ stakeholder engagement	
Managerial strategy		• Company partnerships • Company network	
Making do	• Team just focus on lower risk opportunity of getting live foresight capability content on display screens/ external content to circumvent security challenges/ avoid challenge of engaging complex internal stakeholder mix/ move quickly • Frank draw on wider communications network for advice on implementing change/ understand organisational climate for change	• Work with other IH Software Design Interns to develop MVP • Share information with Cody to enhance MVP/ engage Zack to improve visual aesthetics • Cameron purchase raspberry pi computers from Innovation Hub budget/ Software Design Interns set up in periphery of day job • Patrick ask Lauren to coach live foresight graduate team because Meredith on sick leave	• Confirm proposal funding/ implementation accountability/ support • Lauren give Carrie Adam's contact information for OneMedia support if required

		• Approach Simon about purchasing screen from IH budget for trial • Simon suggest that Lauren talk to Cameron about using one of screens from Catalyst for trial on Crawley site • Lauren lead organisation of OneLan meeting	
Managerial strategy	• IH resource (interns) • Team skills • Wider network for feedback/ sponsorship	• IH budget/ team skills • Graduate projects resource • Existing equipment in company	• Corporate communications budget
Creating common interests		• Test MVP with IH colleagues/ relevant stakeholders • Meredith and Lauren identify that Marshall (Head of Open Innovation) and Lou (Horizon Scanning Technologist) relevant first stakeholders to contribute content (supportive of initiative/ provide key links to integrate) • Request to carry out trial of concept to justify business case for implementation at Green Park • Trial Live Foresighting concept in Reading/ use trial as opportunity to test concept more widely in organisation/ improve in addition to meet requirements for demonstration of value • Lauren engage relevant stakeholders at TRT to discuss	

		- running trial - Lauren approach Frank to see if can get content on display on digital signage at company/ highlight value in improving innovation capability at organisation/ platform to raise awareness among employees about what RTI function activities - Lauren approach Health and Safety about screen positioning - Lauren submit request to unblock Twitter through IT online portal/ need senior advocate to effect policy change - Engage Engagement/ Internal Communications teams to progress concept implementation - Follow-up meeting with Carrie, Emily and Cameron to incorporate concept into Green Park site communication plan - Lauren follow-up with Cameron to schedule meeting with OneLan - Lauren offer to help Cameron to organise meeting (reduce burden)/ re-approach when near-term challenges have passed/ wider organisational support secured - Lauren work with Cameron to identify key stakeholders required to expedite process	

349

| Managerial strategy		• Business stakeholder interests and priorities • Business case	
Working on the self	• Cameron believe that addressing organisational issues important to success of project/ wider operation of site digital signage • Cameron believe that RTI function needs to be willing to challenge existing ways of doing things in company/ break down organisational barriers preventing people from doing things differently • Cameron reflect that company missed opportunity when designing Crawley site/ not think strategically about purpose of site digital signage/ optimistic that company able to get greater value out of Green Park AV system because thinking about it early/ holistically	• Lauren persevere despite demotivation by foreseeable challenges because believe initiative addressing important company challenge • Lauren concerned that Cameron may be difficult to deal with/ preoccupied with near-term issues but amenable • Lauren learn that MVP useful for demonstrating concept/ engaging target stakeholders actual platform needs to be more robust to prevent breakdown/ reliance on IH team for technical support	
Managerial strategy	• Knowledge of traditional ways of doing things in company in relation to external world • Individual knowledge and experience	• Knowledge of traditional ways of doing things in company in relation to external world • Individual knowledge and experience	

350

Appendix H. Overview of research activities.
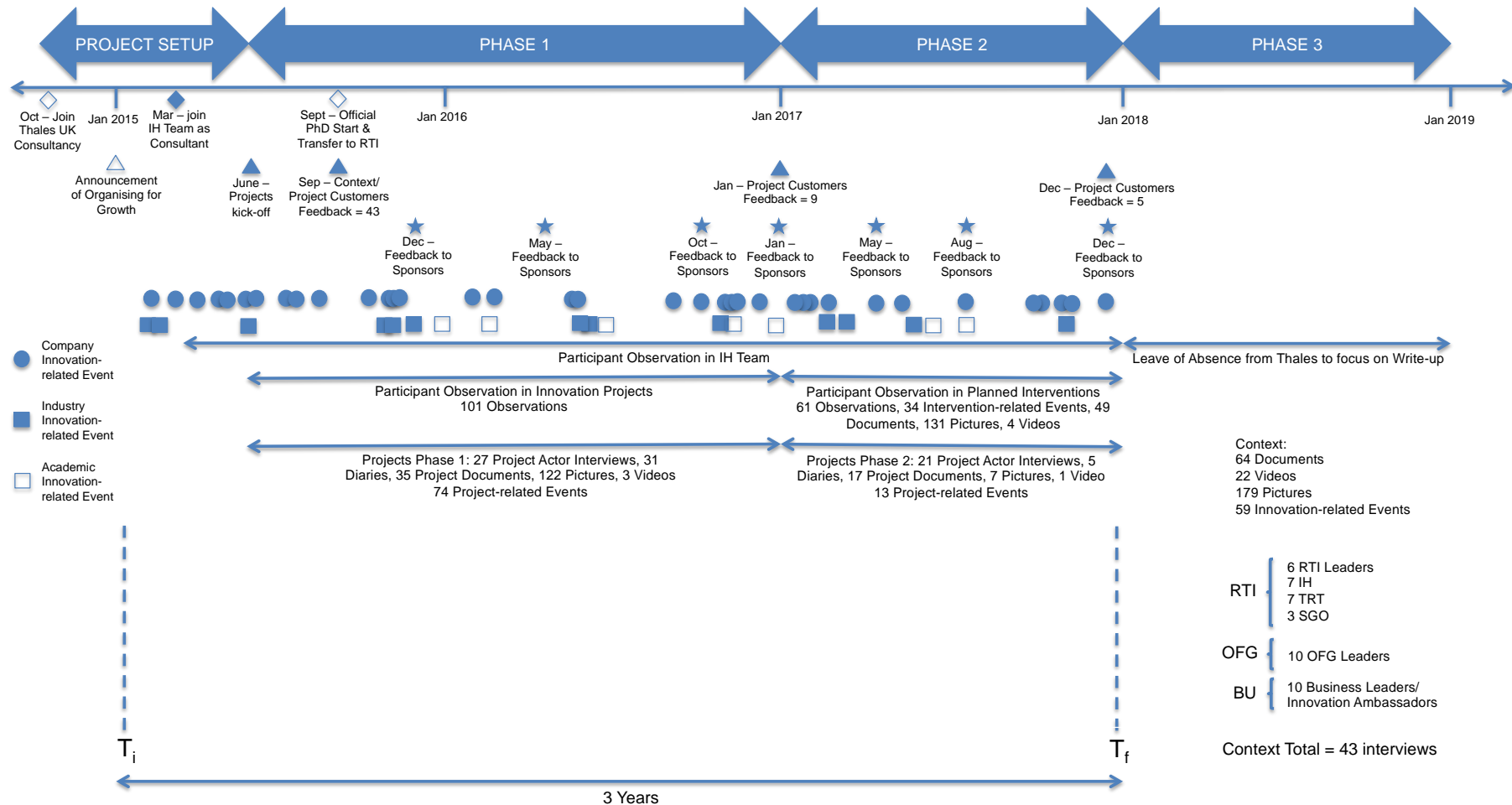
Figure H.1. Timeline of research activities.

Company innovation-related events

1 – Feb 10 2015 – Leadership Conference (Marlow)
2 – Mar 10 & 11 2015 – 2015 JPAL Paris/visit Jouey Design Centre
3 – Apr 13 2015 – Native Meeting (Reading Design Centre)
4 – May 7 2015 – SIX Leadership Conference (Williams)
5 – May 13 & 14 2015 – Leading Organisations Through Change Training Course (Basingstoke)
6 – June 4 2015 – Thales e-Security Make It Day (Cambridge)
7 – June 15 2015 – RTI Communications Planning Meeting (Weybridge)
8 – July 9 2015 – Organising for Growth Roadshow (Basingstoke)
9 – July 14 2015 – Organising for Growth Go To Market Functions Culture Workshop (OFG Leaders, Weybridge)
10 – Aug 19 2015 – NEF Explore and Inform (RTI Management Team, Reading)
11 – Oct 12 2015 – NEF Validation Visit (Weybridge)
12 – Oct 26 2015 – Visit Glasgow Innovation Team (Glasgow)
13 – Nov 4 2015 – ESRC and Thales (Reading)
14 – Nov 6 2015 – NEF Feedback Session (Weybridge)
15 – Nov 19 2015 – IH Identity Workshop (Crawley)
16 – Nov 24 & 25 2015 – Best Practice for Innovation Course Pilot (Reading)
17 – Feb 24, 25 & 26 2016 – Creative Problem Solving Facilitation Training (TT&C, Crawley)
18 – Mar 23 2016 – Innovation Open Day (Crawley)
19 – June 14 2016 – SGO Competence Framework (Reading)
20 – June 23 & 24 2016 – Make It Day (Crawley)
21 – Sep 15 2016 – Employee Engagement Network Meeting (Crawley)
22 – Oct 17 2016 – TRT Lunch and Learn (Reading)
23 – Nov 1 & 2 2016 – Make It Day (Crawley)
24 – Nov 7 2016 – Glasgow Open Day (Glasgow)
25 – RTI Intelligence Plaza Workshop (Reading)
26 – Nov 18 2016 – Innovation Best Practice Sharing (Crawley)
27 – Jan 30 2016 – GTS Innovation Event (London)
28 – Feb 15 2017 APM Challenge Speed Networking Event (Crawley)
29 – Feb 22 2017 – UKMB Breakfast (Crawley)
30 – Feb 28 2017 – Supply Chain Q&A (Crawley)
31 – Mar 20 2017 – UK People Survey Results Employee Engagement Network (Crawley)
32 – May 2017 – RTI 2.0 Launch (Reading)
33 – June 15-16 2017 Make It Day (Crawley)
34 – Oct 12 2017 – Innovation Hub Team Day (London)
35 – Oct 25 2017 – Graduate Projects Kick-off (Reading)
36 – Oct 26 -2017 – GTS Innovation Research Interview (London)
37 – Nov 2 2017 – RTI All Staff Briefing (Reading)
38 – Nov 23 2017 – IH 2.0 Team Meeting (Reading)
39 – Dec 7 2017 – IH Team Meeting at Digital Catapult (London)

Industry innovation-related events

1 – Feb 23 – Servitisation Seminar (Birmingham – sponsored by BAE)
2 – Feb 24 2015 – Knowledge Management and Organisation Learning Conference @ MoD Main Building
3 – June 11 2015 – Aging in the City Innovation Workshop (ARUP, London)
4 – November 9 & 10 2015 – Innovate 2015 (Innovate UK, London)
5 – Nov 11 2015 – Tedx Bristol (Bristol)
6 – Dec 3 2015 – NEF Annual Innovation Conference
7 – June 1 & 2 2016 – STIM Network Meeting (IfM, Cambridge)
8 – June 14 2016 – Leadership Gallery Event (London)
9 – Nov 16 & 17 2016 – STIM Network Meeting (IfM, Cambridge)
10 – March 16 2017 – Meeting with Managing Director of Niteworks
11 – April 4 2017 – STIM Creative Disruption Educational Toolkit Research Workshop (IfM, Cambridge)
12 – June 6-7 2017 – STIM Network Meeting (IfM, Cambridge)
13 – Nov 21-22 2017 – STIM Network Meeting (IfM, Cambridge)

Academic innovation-related events

1 – Jan 2016 –PS428 Presentation (LSE)
2 – Mar 2016 – PhD Seminar Presentation (LSE)
3 – July 7, 8 & 9 2016 – EGOS 2016 – Power of Creativity Sub-theme (Naples, Italy)
4 – Nov 2016 –PhD Seminar Presentation (LSE)
5 – Jan 2017 –PS428 Presentation/Creative Disruption Educational Toolkit Trial with Students (LSE)
6 – July 6, 7 & 8 2017 – EGOS 2017 – Organisational Ethnography Sub-theme (Copenhagen, Denmark)
7 – August 4, 5, 6, 7 & 8 2017– Academy of Management – Entrepreneurship Division (Atlanta, Georgia, USA)

Appendix I. Reflexive analysis data structure.

Table I-1. Engagements with our research context Gioia Tree.

Aggregate dimensions	*2nd order themes*	*1st order concepts*	
Engagement with research context	**Activity array**	**Observation/intervention outcomes**	
In	Appreciative interviews	Intervention	• Stimulate enaction of new possibilities for organisation • Foster implementation instrumentality among participants working on potentially disruptive innovation projects
		Observation	• Detailed data capture of participants' experiences of disruptive innovation efforts
	Participant observation in innovation projects	Intervention	• Application of academic theory in practice to inform practices/ decisions on potentially disruptive innovation projects
		Observation	• Ethnographic/ autoethnographic learning through empathy and shared experiences
	Feedback to participants	Intervention	• Greater reflexivity/ self-awareness of organisational context and working practices • Best practice sharing
		Observation	• Validate interpretations with participants • Richer understanding of disruptive innovation efforts by observing participants make sense of and apply findings
Out	Attend and present at company, industry & academic events & conferences	Intervention	• Best practice sharing • Bridge knowledge between academic and practical forums
		Observation	• International and public sphere context for micro-level processes being observed • Corroborate findings with actors in other organisational contexts
	Feedback to sponsors	Intervention	• Awareness of customer and employee perspectives • Greater self-reflexivity/ self-awareness of organisational context and working practices • Best practice/ academic insights
		Observation	• Validate interpretations with sponsors • Richer understanding of disruptive innovation efforts by observing sponsors make sense of and apply findings
	Organisation-wide interventions	Intervention	• Events, communication, educational material to foster fertile ground for innovation at organisation
		Observation	• Autoethnographic experience of implementing planned interventions at organisation

Table I-2. Impacts of our multi-dimensional and responsive research engagements Gioia Tree.

Aggregate dimensions	*2ⁿᵈ order themes*	*1ˢᵗ order concepts*
Multi-level research engagement	**Sub-culture research engagement**	**Research impacts**
Organisational level	Thales UK	• Input to innovation/ leadership development training in company • Input to Communications/ People Manager Programme • Collaboration with new partners • Innovation events
	Cross-company participants	• Relate positive aspirations to practical actions • Develop coalition for change • Advice on research methods/ input to initiatives • Clarify change communications
Functional level	RTI	• Findings input to RTI 2.0 design • IH/TRT/SGO integration
	Research sponsors	• Stimulate collaboration between HR and RTI • Apply findings to current work • Planned interventions based on research insights
Project level	Project participants	• Sensemaking/ discussion of ways of working • Knowledge sharing/ validation of activities • Identity construction • Generate new ideas/ paths of action
	Projects	• Input to support success of projects
Individual level	Self	• Personal development/ learning

Table I-3. Collaborative research tensions Gioia Tree.

Aggregate dimensions	*2nd order themes*	*1st order concepts*	
Collaborative research tensions	**Activity array**	**Conflicting interests and demands**	
Lucid tensions	Participant observation	Engaged practitioner	• Live/ breathe data • Intriguing happenings • Relevant research
		Reflective academic	• Head space/ conceptualisation • PhD requirements • Rigorous research
Elusive tensions	Conflicting goals	Engaged practitioner	• Meaningful and impactful work • Ownership/ responsibility to fix organisational problems • Companies willing to listen/ collaborate/ want to learn • Need to develop business expertise
		Reflective academic	• Obsession with publishing/ theoretical contribution • Passionate aptitude for research • Strategic level advocacy for impact but institutional constraints • No hybrid career paths
	Conflicting competencies	Engaged practitioner	• Set timeline/ pressure to deliver • Implementing partially formed ideas
		Reflective academic	• Creative process • Test ideas at conferences
	Conflicting materiality	Engaged practitioner	• Slides 'too wooly' • Business acumen
		Reflective academic	• Slides 'too pretty' • Philosophical debate