Morphogenetic Service Ecosystems:
An emergentist analysis of the mechanisms of service ecosystem transformation

By

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Abstract

The service ecosystem concept is becoming an influential unit of analysis and set of assumptions describing a systemic, processual and institutional view of service and exchange. This thesis critiques this set of assumptions and the resulting construction of service ecosystems. The critique forms the first of a three-stage approach to metatheorising underpinning this thesis. At the core of this critique is the issue of conflation, which is aligned with the sociological frameworks and underlying assumptions informing this literature. Conflation collapses the multi-levelled and dimensional complexity of the structure of service ecosystems and leaves it devoid of its cumulative organising and effects played out across time.

Following the critique, the thesis pursues two objectives. Firstly, a conceptualisation is developed which offers an overarching lens, connecting a critical realist and emergentist social ontology to an analytical framework and a process of theorising built on reconceptualising the constitution of service ecosystems. Secondly, the thesis undertakes an empirical study to actualise this lens, aiming to develop new theoretical insight and sources of explanation of how service ecosystems' experience change and stability in developing through time. The thesis undertakes an embedded case study of ICT and digital reform in the New Zealand public sector and the enterprise services market, representing government agencies and service providers as a service ecosystem. The intensive case study provides an exploratory and illustrative setting in which to apply the metatheoretical and analytical framework and offers empirically informed mechanisms as theoretical propositions regarding the changing nature of the service ecosystem.

The findings reveal four key mechanisms; compression, modes of alignment, ecotonal coupling and refraction. These mechanisms provide insight into the changing composition of the structure of the service ecosystem, the relationships of compatibility, tensions and complementarity between structures, the generative nature of emerging boundaries, and the role of history and layered organisation in shaping the trajectory of the service ecosystem. These mechanisms, informed by the overarching lens, contribute to overcoming conflation by establishing emergent relationality and a processual intertwining of being and becoming. These become the basis of multi-levelled, multi-dimensional complexity and cumulative organising. These foundations then allow the reconceptualising of change, coevolution and boundaries as important structural features. Finally, the under-theorised roles of stability and change, history, process, time and space are informed by these findings. Subsequently, this thesis contributes to: the need for further interconnected metatheoretical and midrange theoretical work investigating how service ecosystems adapt and evolve; the call to strengthen the metatheoretical and critical orientations and foundations of theories in marketing and service research; the critique of sociological frameworks and their theory-laden answers to the constitution of the social world and the terms on which it is to be researched and explained.

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'It is our failure to become our perceived ideal that ultimately defines us and makes us unique'

(O'Brien, 2011).

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Chapter 1: Introduction

This introductory chapter sets out the positioning of the thesis and its topic of interest. It describes the motivation and objectives of the research and the accompanying guiding research questions. The research methodology that is used to address these research questions is outlined. An overview of the implications of this research, including theoretical and practical considerations, is then offered. Finally, an outline of the structure of the thesis is provided.

1.1 Positioning

Converging socio-economic and business trends – including dematerialisation, networking, servitisation and rapidly changing customer demands– have driven a shift in the focus of academics and managers concerned with organisations and their dyadic relationships to the dynamics of the systems in which they are embedded (Barile et al., 2016). Driven largely by digital technologies and massively increased connectivity, increasingly networks of interacting customers, businesses, citizens, and governments replace mainly 'self-contained' business and towards ever-denser and richer networks of connection, collaboration, and interdependence. These changes and the interactional, strategic and operational shifts they enable and demand requires understanding coevolving groups of diverse actors who interact in increasingly complex models of collaboration and competition, deeply influenced by the social, institutional and knowledge environments in which they arise. Planning and command and control is replaced with emergent learning and adaption to these, often opaque, linkages and the ability to think both vertically and horizontally in terms of their socio-technical embeddedness.

Businesses, governments, and researchers seek new tools and understandings for complex, dynamic environments that characterise modern, deeply interconnected business, and social organisations. In response, both service and marketing research has undergone significant shifts in academic conceptualisations moving away from the focus on autonomous actors and punctuated dyadic exchanges to seeing interdependent actors and the importance of context in dynamic value-creating structures (Ng & Vargo, 2018). Service-Dominant Logic (SD-Logic), a progressively prevalent arm of service research, is increasingly developing an interdisciplinary focus, moving from service as a type of output to service research as a focus

on how, where, when, and in what way various actors, activities, and systems serve individuals, organisations, and/or society (Gustafsson et al., 2016).

SD-Logic has undergone continued development to propose a processual, institutional and systemic view of the dynamics of value co-creation structures. This view has sought to overcome traditional biases in marketing and service research including a static, linear and output focus grounded in isolating micro-level economic actors (Giesler & Fischer, 2017; Vargo et al., 2017). Instead, a more dynamic and holistic perspective of exchange is predicated on continuous, interactive resource integrations among a wider configuration of actors, enabled and constrained by organising conditions (Vargo & Lusch, 2016). Subsequently, the interconnectedness and different levels of aggregation these premises entail have led to the explicit consideration of a systems perspective through the concept of service ecosystems. Vargo and Lusch (2014, pp. 240-241) argue, the 'service ecosystem – a relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange – rather than individuals (e.g., the firm) or dyadic actors (e.g., firm-customer) is the appropriate unit of analysis for understanding value creation'.

Adopting this 'ecosystem perspective', service research has joined a host of academic disciplines, popular business press and the vocabulary of technology, financial services, manufacturing and healthcare sectors in broadening their level of analysis and emphasising interdependence (Adner, 2017; Deloitte, 2015; Jacobides, Cennamo, & Gawer, 2018). At the centre of these concepts is a desire from executives, industry groups and other actors, for a framework which enables them to see beyond their own boundaries of command and control and perceive multiple tiers of stakeholders, activities and social structures which impact on their interactions. The ecosystems outlook and the language of service ecosystems are built on trying to understand the connectivity between people and their social-technical organisation and build a horizontal body of knowledge, language, and sets of interpretation schemes supporting the understanding and governance of the complex dynamics observed.

By refocusing the logic of exchange and emphasising a systems perspective, SD-Logic has joined an interdisciplinary focus on the structuring influence of a complex web of social, economic, cultural, material and institutional forces as well as the position, power and capabilities of the individuals who find themselves constituting these systems (Layton, 2008;

Löbler, 2016; Vargo et al., 2017; Vargo & Lusch, 2017). These objects and questions sit beyond the traditional scope of marketing research and bring into focus the diversity of forms that surround us and the challenge of unpacking their complexity to explain the world (Ostrom & Basurto, 2011). Subsequently, scholars have turned to sociological, organisational and economic literature to derive approaches to conceptualise and advance our understanding of these complex actor-exchange systems. Institutional theory, structuration theory and practice-based approaches have been utilised and advocated as central frameworks (Siltaloppi & Wieland, 2018; Vargo & Lusch, 2016). These frameworks exist as theory-laden answers and approaches to understand how agency (the actions and use of resources which define the role of an actor in marketing systems) is exercised within, and influenced by, the sociocultural, actual material and ideational structure of these systems.

While there has been little debate amongst SD-Logic scholars (Aarikka-Stenroos & Ritala, 2017; Hietanen, Andéhn, & Bradshaw, 2018; Leroy, Cova, & Salle, 2013), in the disciplines from which these frameworks are drawn, they are subject to division and debate regarding their answers to the constitution of the social world, and therefore, the terms on which it is to be researched and explained (Depelteau & Powell, 2013; Edwards, 2016; Schmidt, 2018). While the future of SD-Logic has been premised on a call for further interconnected metatheoretical and midrange theoretical work (Vargo & Lusch, 2017), the lack of debate reflects a larger call in the marketing discipline for scholars to strengthen the philosophical, metatheoretical and critical orientations and foundations of their theories (Peters, Vanharanta, Pressey, & Johnston, 2012; Tadajewski, 2004, 2008).

Advocates argue that SD-Logic is developing in the direction of a "unifying paradigm that can provide the foundations for a general theory of the market and value cocreation" (Brodie, Löbler, & Fehrer, 2019; Lusch & Vargo, 2014c). Vargo (2018, p. 735) proposes that scholars have "suggested that they felt that the current SD-Logic narrative is beginning to move the status of SD-logic from an orientation and perspective toward a theory". However, the limited debate or critical reflection on the central underpinnings which provide the fundamental set of ideas about how phenomena should be thought about and researched, poses a real challenge to SD-Logic's ambitions to develop a unifying paradigm, or indeed, a general theory for the marketing and service disciplines. The intention is to build theory that explains how things are or why they are as they are (Vargo & Lusch, 2017), rather than a strict reliance on prediction (Gregor, 2006). However, such explanation of how things are or why they are is inherently

driven by the assumptions about what the world must be like. Consequently, while the service ecosystems approach has helped by "zooming out and broadening the perspective and allowing the language of service ecosystems to empower investigations beyond what is commonly studied in service research" (Ng & Wakenshaw, 2018, p. 196), in doing so it has connected research to the extent of diversity of many forms that surrounds us and come up against a more realistic subject of complexity. In moving beyond a narrow view of service, SD-Logic has become vulnerable to the epistemic fallacy of focussing on 'how can we know about the world' over asking 'what must the world be like' (Bhaskar, 2008), through borrowing theory and limiting its own critical and reflective debate on these foundations (Brodie, Löbler, & Fehrer, 2019). The question must be asked what exactly is SD-Logic unifying and explaining.

This thesis takes these connections as its premise, considering the advancing service ecosystem[1] perspective and unit of analysis as an area of problematisation and critique. The presence of complexity and controversies that underlie what is now the explanatory setting of service research suggests the need to critique and explore different vocabularies, conceptual tools and sensitivities attached to research approaches. Moreover, emerging fundamental questions are directly related to understanding how the social world is ordered and formed - its structure, and how can this be influenced and changed through action, understood as the exertion of agency. How do service ecosystems adapt and evolve? (Banoun, Dufour, & Andiappan, 2016; Vargo & Lusch, 2017). How are service ecosystems structured and what are the means of their emergence and evolutionary dynamics? (Barile et al., 2016; Kleinaltenkamp, Corsaro, & Sebastiani, 2018; Reynoso, Barile, Saviano, & Spohrer, 2018). How do actors shape and influence these systems? (Holmqvist & Diaz Ruiz, 2017; Koskela-Huotari et al., 2016a; Mele et al., 2018a).

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[1] This thesis centres on service ecosystems, which is as the forefront of systems and service theory, as both a concept and a research area to critique and develop theory. This delineation does not preclude recognition of the multiple overlapping notions in services research, marketing and management that scholars have developed to examine the issues of exchange, interaction and value creation. As Holmqvist and Diaz Ruiz (2017) note, these examples include; service ecosystems vs service systems; markets vs market systems and business networks vs business relationships. However, with a focus on service ecosystems, there is a need to limit the scope of these topics. Taking the lead from Holmqvist and Diaz Ruiz (2017), while the focus is on the service ecosystem concept, the thesis expands into the concepts of markets and business networks, given the complementary nature and co-presence of these domains in the literature and what will be suggested as a common basis of critique.

1.2 Research Motivation and Objectives

This thesis is predicated on the fundamental position that 'the way we think the world is influences: what we think can be known about it; how we think it can be investigated; the kind of theories we think can be constructed about it; and the stances we are prepared to take' (Fleetwood, 2005, p. 197). This stance requires awareness of the metatheoretical assumptions research employs, both explicitly and implicitly. Subsequently, given that the service ecosystem concept is emerging as both a unit of analysis and a set of assumptions describing the world and how it may be explained, its metatheoretical foundations are open to critical examination. This is even more salient given the foundations that underlie the explanatory approaches are drawn from outside the discipline, and there exists a lack of consensus of the standings of these foundations in their home disciplines. Therefore, this thesis is motivated by the task of metatheorising – the critical exploration of the theoretical frameworks or lenses that provide direction to research, as well as the theory that has arisen from research in a particular field of study (Paterson, Thorne, Canam, & Jillings, 2001). At the centre of this critique is the issue of conflationary theorising, built on collapsing the complexity of these systems, their form and effects played out through time. In undertaking this critical approach, it is necessary to rectify issues in competing claims, opposing assumptions and theoretical orientations and offer an integrative overarching lens which can then be used to create new theoretical insight and sources of explanation. This leads to the core objectives of this thesis:

1) To offer an overarching lens grounded in connecting social ontology to an analytical framework and the process of theorising

2) To actualise this lens by developing new theoretical insight and sources of explanation regarding how service ecosystems develop through time, experience change and stability and produce different outcomes for actors.

In pursuing these objectives this thesis draws on the tradition of Critical Realism. Critical Realism is centrally concerned with questions of ontology and the task of critically and reflexively developing, organising and defending the fundamental theoretical structures underpinning more substantive research (Archer, Bhaskar, Collier, Lawson, & Norrie, 1998). This is not in a claim of pre-eminence, but rather a view of research directed towards constant

efforts to fallibly improve the conceptual tools, sensitivities and corrective assumptions that ground explanatory approaches. Critical Realism is not a ready-made 'tool kit' of concepts to be applied in subject domains (Cruickshank, 2003). Rather, using the conceptual tools of Critical Realism, this thesis aims to build an overarching lens that addresses the problems it identifies through critique which can then be used to build new insights and explanatory theory. In doing so, a critical realist informed emergentist social ontology is proposed, using this grounding to advance an analytical framework and a process of theorising built on the postulation of mechanisms. The aim is to theorise the nature of the multiple determination of events which constitute, reproduce and transform service ecosystems providing means to 'see' empirical evidence of the nature, and particular 'ways of acting', of structures within the service ecosystem (Bhaskar, 1998, p. 38).

Critical Realism offers an outlook which reflects the intentions of the service ecosystem concept – to move past the restrictive artificial boundaries of frameworks that exist across disciplines and to realise the connectivity between actors and their interactions in a social matrix. Critical Realism works towards a necessary explicit metatheoretical unity and theoretical pluralism which provides both fundamental compatibility to, and a maximally inclusive stance towards, the powers, essences and forces posited by frameworks that exist across disciplines and paradigms and the causally relevant micro, meso and macro levels of research (Bhaskar, Danermark, & Price, 2018; Bhaskar, Esbjörn-Hargens, Hedlund, & Hartwig, 2016; Bhaskar, Frank, Hoyer, Naess, & Parker, 2010b). This ingrained integrative outlook reflects the aspiration of the service ecosystem concept to enrich service research as a trans-disciplinary field of study which addresses problems by integrating the knowledge of disciplines and frameworks into a novel, coherent, and holistic theoretical understanding that is applicable between, across, and beyond the involved disciplines (Gustafsson et al., 2016; Reynoso et al., 2018).

Subsequently, this thesis brings together the service ecosystem approach and the tools of Critical Realism, in order to critique and extend an alternative foundation and approach to service ecosystems. In doing so, the thesis responds directly to the call for continued metatheoretical and connected midrange theory regarding SD-Logic and service ecosystems (Aarikka-Stenroos & Ritala, 2017; Löbler, 2011; Vargo & Lusch, 2017) and, more broadly, to the call for metatheoretical reflection in the marketing discipline (Easton, 2010; Möller, Pels, & Saren, 2009; Peters et al., 2012; Tadajewski, 2008, 2014).

1.3   Research Questions

Both phases of theory development motivate this thesis: the context of discovery - the generation of and synthesis of ideas - and the context of justification - addressing the adequacy of these ideas through analytical and empirical efforts (Yadav, 2010). These tasks reflect the need for stronger conceptual research and empirically informed theorising in the marketing and service fields. Therefore the research objectives and the set of research questions are built on Sandberg and Alvesson's (2011) suggestion that research move away from developing research questions through repetitive 'gap spotting' and toward problematisation – that is questioning the assumptions underlying existing theory in some significant ways (Alvesson & Sandberg, 2013). The objective of the research is grounded in developing an overarching lens and using this lens to develop new insights into service ecosystems. Subsequently, the offered research questions reflect the value of this lens; the insights developed into how service ecosystems develop through time and contributing empirically informed theorising to areas of research that are afflicted by current research frameworks. The research questions that will organise the contribution of this thesis are:

- RQ1: How does a critical realist emergentist metatheory contribute to an understanding of service ecosystems as complex multi-level systems?

- RQ2: What mechanisms can be identified, and how do these illustrate structural features and tendencies within service ecosystems?

- RQ3: How does the use of the analytical framework and the identification of mechanisms contribute to addressing those omissions and under-researched features generated through conflation?

1.4   Research Approach

This thesis uses the developed conceptualisation to undertake an embedded case study in an exploratory and illustrative way to address a real-world situation and confront the research questions. This approach allows this thesis to test the adequacy of its ideas while undertaking a substantive investigation of a service ecosystem developing through time, experiencing change and manifesting dynamic outcomes for the embedded actors.

A single service ecosystem (single case) is utilised for this research with multiple embedded subcases. The single embedded case provides the opportunity to develop an in-depth, coherent and flexible understanding of complex phenomena over time. The embedded case design allows the research to address the multi-level nature of the system from different actors' perspectives within the case. The case selected for this research centres on the ongoing digital transformation of the New Zealand Central Public-sector, bringing together government agencies and private sector service providers in an environment of technological progress and shortages of resources and capabilities. A set of in-depth interviews with a range of actors in the service ecosystem and an extensive document analysis are used to investigate the case. The case is particularly organised across the period of 2010 to 2017, during which time, major government reform programmes were undertaken and significant changes occurred in the technological market.

The nature of this case is particularly relevant for exploring the service ecosystem concept and the developed conceptualisation as well as the complex practical reality they aim to understand and explain. The dynamic context of major government reform programmes, both holistically and specifically within ICT and digital services, and the maturation of technological developments and business models for service delivery make the case setting a rich environment that projects changes and transformations which reflect increasingly complex social and business configurations. Government and public-sector services are continually making strides to respond to socio-technical transformation and find ways to deliver improved citizen centric and efficient services and operations management (Pedersen, 2018; Weerakkody, Omar, El-Haddadeh, & Al-Busaidy, 2016). Public organisations are expected to deliver digitally enabled transformation in a joined-up manner, coordinating their actions across departmental, organisational boundaries and within networks of public, private and civil stakeholders (Klievink, Bharosa, & Tan, 2016). Subsequently, digital transformation is fundamentally complex, driven not only by the specifics of the technology but the large number of collaborators required for value creation and their role in innovation and transformation requiring interaction between differing socio-organisational components of knowledge, logics, competences, power and goals. The nature of the case specifically reflects those trends of dematerialisation, networking, servitisation and rapidly changing demands and expectations, which have driven the ecosystem concept (Barile et al., 2016). Moreover, the service research domain demands further research into the role of rapidly advancing IT as a dominant driver of change, and more specifically the role of IT in the transformation of public services within the

service ecology to better understand the changing context of service within networks of interacting businesses, citizens, and governments.

The analysis of the case involved four core steps; the resolution of the research setting into event components; the redescription of the constitution and the patterns of events in an explanatory meaningful way; the postulations of the mechanisms that explain these events; the corroboration and justification of the explanatory power of these mechanisms. These steps relied on the use of a case database, the software tools Decision Explorer and ETHNO and a bricolage of strategies developed for case and process-based studies for theorising which support the discovery process.

1.5 Theoretical and Practical Implications

This thesis situates its central contribution in the development of an overarching metatheoretical lens which offers a set of propositions for the constitution of service ecosystems and, therefore, the terms and conditions on which these complex systems may be researched and explained. In doing so, a social ontology is connected to an analytical framework and means of theorising. This contribution is built on a critique of conflationary theorising in the frameworks and approaches in marketing and service literature and continues the emphasis on the recognition that the complexity of service ecosystems requires input from disciplines and expertise outside the traditional service research arena (Ostrom et al., 2015, p. 135).

The social ontology embraced in this thesis draws on a critical realist emergentist position. Central to this perspective is the reconceptualisation of structure - what gives form to and organises service ecosystems. In doing so, a set of metatheoretical propositions give rise to explanatory conditions which help derive an analytical framework for the study of service ecosystems. Together the metatheory and framework support a mode of mechanismic theorising which requires the analytic separation of the different features of the socio-organisational world and then their subsequent re-assembly to understand the "ways of acting" of structures within the service ecosystem (Bhaskar, 1998, p. 38). Applying this conceptualisation to an empirical study the findings bring forward four mechanisms that explain the development, change and stability and subsequent outcomes of the service ecosystem under study. These four mechanisms – compression, modes of alignment, ecotonal coupling and

refraction provide new insight and means of explanation for understanding service ecosystems. The theoretical implications are as follows:

- Service ecosystems are grounded in two conditions, emergent relationality and processual being and becoming. These conditions overcome the problem of conflation by establishing the irreducible causal efficacy of multi-levelled and multi-dimensional structures and relations while recognising their cumulative development. Together, these conditions subscribe to a strong understanding of synchronic and diachronic emergence.
- These conditions allow change and stability to exist in mutually constituting processes. Similarly, these conditions set the foundation for history playing differentiated and multi-dimensional roles in the forms and effects of service ecosystems. Finally, time and space can be seen as structural properties and therefore multiple, causally efficacious and implicated in the shaping of each other and other structures and the experiences of actors.
- A perspective of change and coevolution is offered which is situated in multi-rhythmics - the coalescing of multiple causal trajectories creating emergent causal processes - and the dynamic relationships of compatibility, contradiction and complementarity that different structures establish with each other mutual shaping their trajectories.
- Boundaries are considered generative structural features of service ecosystems which both reinforce separations between actors and structures and act as intersections that enable diverse connections. Boundaries are multi-dimensional in terms of being material, temporal, symbolic and social and they are both enacted and constructed.

These theoretical implications provide insight into, and justification for, the overarching lens and offer new theoretical insight and sources of explanation regarding how service ecosystems develop through time.

1.5.1 *Practitioner Value of the Research*

Practically, the research extends insight into the ecosystem view, requiring actors to see beyond their organisations and perceive multiple tiers of direct and indirect dependence and interdependence. Creating a better understanding of the trajectories of service ecosystems and pointing to particular structural configurations characterised by mechanisms and events may improve actors' abilities to identify windows of opportunity and plan for particular pathways and consequences following different interventions. The focus on identifying these mechanisms

helps to improve the understanding of the complex and interacting nature of a systems perspective, in which the focus moves away from dyadic, business-to-consumer interactions to dynamic wholes. In doing so, this thesis contributes to the extension of the narrow view of service that has developed over time, enabling actors to reflect on a more relevant view of complex business and government configurations. Subsequently, the critical realist emergentist position advanced, provides for the consideration and inclusion of different facets of market and societal phenomena that contribute to the practical and empirical exploration of a holistic view of ecosystems within which actors operate. As well as assisting actors in better navigating and managing these complex and dynamic environments, the collaborative and interactive challenges they face and their agency in relation to temporal and structural characteristics and their emergence and evolution. The practical implications resulting from this research include:

- The need to understand timing and rhythmic processes in service ecosystems to develop effective transformation and interventions
- The proposed refractive tendencies of service ecosystems should encourage decisions makers to look back in time to search for possible causal dynamics that may be shaping present trajectories as well as pinpointing lessons from similar structural changes
- The complexity of shifting modes of alignment, the dynamic structural order and multilateral interdependencies require adaptable, distributed and integrative leadership.
- With the continued convergence of technology, 'service ecotones' play an increasingly important role in the future of enhancing the management and coevolution of service ecosystems. Ecotones provide opportunities for entrepreneurs and organisations to explore business models built on mediating roles between fields that have tensions.

1.6 Structure of the Thesis

This thesis is structured in eight remaining chapters following this introductory chapter. Chapter two summarises the approach to metatheorising and critique utilised in this thesis. Chapter three introduces the core axioms of SD-Logic and the service ecosystem conceptualisation. Chapter four undertakes successive layers of critique of the frameworks, assumptions and their theoretical foundations within the study of service ecosystems and the related study of networks and markets. Chapter five develops the overarching lens, connecting a social ontology, the analytical framework and subsequent theorising, as a response to the critique in Chapter four. Chapter six explains the research process and the case study undertaken in the empirical section

of the thesis. Chapter seven discusses the findings from this research, focussing on the identification of four underlying mechanisms. Chapter eight then discusses these findings in light of the research questions. This thesis concludes with Chapter nine which offers an outline of the theoretical and practical implications emerging from this undertaking.

Given the importance of developing a new approach to service ecosystems and the exploration of different principles, vocabularies and sensitivities, Table 1 below provides a glossary of key terms and their adopted meaning used throughout this thesis. Furthermore, this thesis reflects a series of iterative developments built on refining the research objectives and the central role of problematisation. During this iterative process, five papers were developed and published which played an important role in drawing together the research problem, contributions and outcomes. Appendix A provides a brief synopsis of these papers' focus and connection to the thesis

Table 1 Glossary of Terms

Term	Definition	Reference
Adaptation	The process of response to change in a system or entities environing conditions.	(Byrne, 2013)
Actor	Any individual and formal or informal organisations such as firms, consumers, communities, families, that has the knowledge, skills, motivation, and intentions to integrate resources.	(Edvardsson, Kleinaltenkamp, Tronvoll, McHugh, & Windahl, 2014).
Agency	The ability of self-reflexive actors to act with choice and intervene meaningfully in their lived experiences.	(Archer, 2000)
Diachronic	The development (cumulative organisation) of properties and of entities across time.	(Archer, 1995; Hedaa & Törnroos, 2008)
Emergence	A relationship between two properties/entities such that one synchronically (and diachronically) arises out of the other but is capable of reacting back on the first and is in any event causally and taxonomically irreducible to it.	(Bhaskar, 2008)
Emergent powers	Powers or liabilities that can have a causal impact on the world, which cannot be reduced to those of its constituent lower-level parts, but always occur as the effects of their particular configuration.	(Sayer, 2010)

Entity	Any persistent whole formed from a set of parts, being significantly structured by the relations between these parts.	(Elder-Vass, 2005)
Epistemic fallacy	The analysis or definition of statements about being in terms of statements about our knowledge (of being).	(Bhaskar, 1989)
Exchange	The transfer of both tangible and intangible entities/resources, economic and social, market and non-market.	(Bagozzi, 1975; Shaw & Dixon, 1980)
Equilibrium	A condition of stability when all acting influences are cancelled by others and actors have no incentive to change, resulting in a stable, unchanging system.	(Meyer, Gaba, & Colwell, 2005)
Social Cube	Defined by the planes of (a) material transactions with nature, (b) intersubjective relations (c) social relations sui generis, emergent levels of organisation, e.g. social institutions, and (d) the stratification of the personality.	(Bhaskar, 2008)
Gödelian dialectic	A logic of critique predicated on identifying problematic inconsistencies, caused by a relevant conceptual or empirical gaps, preventing the move to further completeness. Rectified by filling the absence and addressing the inconsistencies.	(Bhaskar, 2008)
Higher-level/Lower-level entity	Wholes are higher-level entities than their parts or components, and part or components are lower-level entities to the wholes they form (relative). In this way, they are interrelated but ontologically separate through the characteristic of emergence.	(Elder-Vass, 2005, 2010)
Institutions	Humanly devised rules, norms, meanings, symbols and beliefs which enable and constrain actions and the evaluation of experiences	(Scott, 2005, 2008)
Mechanism	A mechanism can be regarded as the process, or state of affairs involved in, or responsible for, social phenomenon. This research addresses systems mechanisms and therefore considers the processes of systems which describe the trajectory of their states of being.	(Bunge, 2004b; Pickel, 2006; Wight, 2015)
Mediation	If A achieves C via B, then B may be said to mediate their relation.	(Bhaskar, 2008)
Micro, Meso, Macro	Descriptive terms, analytically relative to each other, designating a level of analysis, determined not as an issue of just scale but rather complexity. "Micro" and "Macro" are from interactional and local to systemic.	(Archer, 1995; Jepperson & Meyer, 2011)
Modality	A particular mode in which something exists or is experienced or expressed.	(Bhaskar, 2008)

Morphogenesis	The processes of change that result from the interplay of structure and agency that form and reform social systems	(Archer, 1982, 1995)
Morphostasis	Those processes in complex systems that preserve or maintain a systems given form, organisation or state.	(Archer, 1982, 1995)
Non-linearity	Causes and effects cannot be mapped linearly. Similar causes can have different effects and different causes similar effects; small changes of causes can have large effects whereas large changes can also only result in small effects	(Arshinov & Fuchs, 2003; Hinchman & Hinchman, 1997)
Ontic	Having relation to what exists; the existential aspect of something.	(Fleetwood, 2008a, 2009)
Power	A capacity to produce a certain kind of outcome in the presence of appropriate antecedent conditions	(Bhaskar, 2014; Little, 1998)
Relation	A "relation" is form, which has no inherent material or ideational properties, rather it is the quality of being in relation through which entities are brought into existence, and through which these properties such as means, values, rules and directionality come to be. Relations are both internal and external creating the nature of unity and difference.	(Donati, 2010, 2011, 2014)
Resource Integration	Resource integration represents a continuous process of activities performed by an actor including; accessing, mobilising, internalising, adapting, transforming and applying resources.	(Laud, Karpen, Mulye, & Rahman, 2015)
Rhythmics	Causal processes defined by the coalescing of multiple mechanisms in emergent spatio-temporalities	(Bhaskar, 2008)
Service	The application of resources through actions, processes and performances for the benefit of another entity or the entity itself	(Lusch & Vargo, 2014b)
Strata	Layers or levels of a domain, system or reality (also stratum)	(Bhaskar, 1978; Lusch & Vargo, 2014b)
Stratification	The multi-layered nature of reality recognising that entities and properties can have their own level of being and may exist within a higher level system.	(Bhaskar, 1978, 2008; Mingers, 2014)
Structure	The latticework or pattern of internal relations between entities and the positions they occupy.	(Fleetwood, 2008b; Porpora, 1989, 2015)
Supervenience	Supervenience refers to a relation between two levels of analysis. Emergent higher-level properties depend on the structure and interaction of lower-level components.	(Fleetwood, 2008b; Porpora, 1989, 2015; Sawyer, 2005)

Synchronic	A property, entity or process as it exists (organised) at a single point in time.	(Lawson, 2012)
Tendency	A force that, metaphorically speaking, drives, propels, pushes, thrusts, asserts pressure. Tendency - 'does not always bring about certain effects, but it always tends to'.	(Fleetwood, 2014a)
Theorising	A process of activities such as relating, explaining, abstracting, synthesising and idealising, progressing and giving direction.	(Brodie, 2014; Weick, 1995b)
Totality	Totalities are systems of internal relations which operate via holistic causality. The form of the combination causally codetermines the elements; and the elements causally codetermine each other, and so causally codetermine the whole.	(Bhaskar, 2008)
(System) Trajectory	The account of the actual pattern of development of a system.	(Byrne, 2005)
Voluntarism	An oversubscription to the freedom of individuals to choose goals and means	(Archer, 1995)

Chapter 2: Direction of the thesis

This chapter sets out the structure of the three stages of metatheorising this thesis employs. This structure helps guide the thesis, draws attention to the means of critique and positions this thesis and its contribution within the academic literature.

2.1   Metatheory as an object of Critique

Service and marketing research contributes to the understanding of complex social and economic systems (Gustafsson et al., 2016). This complexity comes from both the true nature that underlies research settings and the theory-laden answers regarding the social world's constitution and how it is to be researched and explained (Overton, 2007; Reed, 2003). All research and theory, whether consciously and explicitly or unconsciously and implicitly, must deal with these questions of metatheory (Hesketh & Fleetwood, 2006). Metatheory is grounded in the assumptions about the nature of reality (ontology), how reality can be known (epistemology) and what are the most appropriate methods to use to acquire that knowledge (methodology), which have significant consequences for the questions we ask, the explanations we derive and, subsequently, the efficacy of our knowledge production (Holland, 2014).

Questions of metatheory are particularly relevant in developing the concept and set of explanatory assumptions structured under service ecosystems. The systems orientation, broadly recognised as the basis for the next era of marketing and service research (Barile et al., 2016; El-Ansary, Shaw, & Lazer, 2017; Tronvoll, Barile, & Caputo, 2018; Vargo et al., 2017), increasingly requires research to explain broader and more complex phenomenon, necessitating the critical and reflexive investigation of the philosophical and sociological assumptions on which it is based (Bunge, 2000; Johannessen & Olaisen, 2005a, 2005b). Moreover, there is an underlying call in the discipline for scholars to strengthen the metatheoretical foundations of their research approaches and look to alternative theoretical assumptions in building theory (Easton, 2002, 2010; Gustafsson et al., 2016; Peters et al., 2012; Yadav, 2010). Lastly, the explanatory and structuring foundations being drawn on in the service ecosystem perspective bring underlying theoretical commitments and assumptions which are fundamentally contested and remain objects of critique.

2.2 Metatheorising as a basis of critique and contribution

In response to this framing, this thesis pursues a project of metatheorising, targeting the service ecosystem concept as both a unit of analysis and a set of assumptions describing the world and how it may be explained. The task of metatheorising is a critical exploration of the theoretical frameworks or lenses that provide direction to research, as well as the theory that has arisen from research in a particular field of study (Paterson et al., 2001). Effort is directed towards the description, investigation, analysis or criticism of the assumptions behind theoretical, empirical and practical work (Hjørland, 1998). Metatheorising prioritises the task of conceptualising over the instrumentality of operationalisation and aims to develop conceptual synthesis and more adequate forms of explanation. While calls to better operationalise service ecosystem research remain prominent (Vargo & Lusch, 2017), this thesis suggests there is a continued need for metatheoretical work which sets a foundation that is cautious of theory borrowing and underdeveloped or uncritical heuristic devices.

Metatheorising risks being so abstract to render it divorced from the practice of research or so narrow to leave it short of its aims and contribution. Subsequently, guidance is drawn from Edwards (2014) and Ritzer (1990, 2007, 1992) to organise the aims and contributions of this pursuit. In table 2, three different kinds of metatheorising as described by Ritzer (2007), are considered with the intention that this thesis utilises each in order to provide a systematic and holistic undertaking.

Table 2 Metatheorising types and aims

Type	Aim	Contributions
Metatheorising for understanding	Reviewing existing theory	- Find differences and connections between theories in use - Identify underlying assumptions - Identify gaps in current theorising
Metatheorising for an overarching theory	Conceptualising overarching lens	- Include new perspectives - Develop new concepts and means of explanation - Build integrative models
Preparing new middle-range theory	Developing and offering new theory	- Create new theoretical insight - Provide new sources of explanation - Generates new theories in use

(Adapted from Edwards, 2014)

Table 2 indicates the tasks of metatheorising as a process of systematic and critical analysis of the contributions and flaws of conceptual systems and the underlying lenses' that constitute frameworks.

2.3 Metatheorising in this thesis

This thesis addresses the incorporation and reliance on institutional theory, structuration theory and practice and network approaches within the service ecosystem concept, and the service and marketing literature more broadly. Understanding is drawn from reviewing extant literature so that convergences and divergences between these theories can be identified, particularly in the implications of their theoretical orientations (Paterson et al., 2001, p. 92). Emphasis is placed on the standing of these theories and approaches in the disciplines they are being drawn from. This outward view recognises that work cited to substantiate claims comes from outside the discipline and is often translated into the pragmatism of marketing's applied focus (Gustafsson et al., 2016; Hunt, 1994). These different frameworks make competing claims arguing for reductions, criticise opposing assumptions, or operate at various levels of analysis and often present impoverished theoretical and philosophical orientations (Beckert, 2010; Edwards, 2016).

Subsequently, the thesis turns to the second type of metatheorising as an effort to rectify these issues. This thesis will build integrative metatheory, exploring different conceptual tools, sensitivities and corrective assumptions grounded in a critical realist emergentist metatheory. In doing so, the thesis contributes a unique and integrative set of metatheoretical propositions and conditions that contribute to offering an analytical framework for the study of service ecosystems. Together this task will connect social ontology, analytical methodology and subsequent theorising.

Lastly, metatheory paves the way for developing substantive theory and empirical research drawing on theory, frameworks and models informed by overarching metatheoretical conclusions (Sousa, 2010). The structuring lens developed in the analytical framework will be used to conduct an illustrative case study and in turn develop new sources of explanation and contribute empirically informed theoretical insight. This approach allows both phases of theory development: the context of discovery (the generation of and synthesis

of ideas) and the context of justification - addressing the adequacy of these ideas through analytical and empirical efforts (Yadav, 2010).

2.4   The Structure of Critique to Guide the Thesis

The structure of the metatheorising process utilises Bhaskar's notion of the Gödelian dialectic as a logic of critique (Bhaskar, 2008). The dialectic suggests that in order to reach greater completeness we must overcome the inconsistencies in thinking, recognising that these inconsistencies are symptomatic of deeper absences which must be negated to be resolved. Critique in this manner involves establishing the terms of a system of thought, addressing the inconsistencies or issues, identifying the generative absences which produce these and establishing why and how these are sustained. Critique is then predicated on the effort to rectify these issues in a more comprehensive account. Figure 1 sets out the scheme for this critique addressing the deepening levels of critique that the Gödelian dialectic presupposes. Service ecosystems represent the pursuit of a more complete understanding of processual, systemic exchange. However, this thesis asserts that the completeness of this understanding is prevented by omissions in core features which are generated by the problematic conflationary assumptions built into current explanatory frameworks being used. Finally, these conflationary assumptions are sustained and reproduced by deeper metatheoretical issues that ground the process and approach to research. This thesis will move through these levels of critique before offering a conceptualisation that aims to rectify these generative problems and provide a more comprehensive account by which to pursue the concept of service ecosystems.

2.5   Chapter Summary

This chapter has set out the means of critique and the three-stage process of metatheorising guiding this thesis. The service ecosystem concept is the object of critique and the issue of conflation serves as the central point of contention. In order to frame the service ecosystem concept, the next chapter introduces SD-Logic and its central axioms which provide the grounding for and necessitate the service ecosystem perspective.

Figure 1 Features of Critique and basis for rectification

Service Ecosystems as a more complete approach to exchange/change processes

Omissions and Underdeveloped Features

- Agency and Structure
- Stability and Change
- Process and History
- Multileveled
- Multi-dimensionality
- Time and Space

Prevents progress towards

Generates inconsistencies

Sustain, reproduces and justifies

Structure defined within institutional, structurationist and network approaches

Conflationary Theorising

Constructivism

Reductionism

Pragmatism

Chapter 3: Literature Framing

This chapter reviews the literature pertaining to the foundations of SD-Logic and introduces the SD-Logic framework as a basis for thinking about exchange, interactions, resource integration relationships and economic and social actors. The axioms of the SD-Logic framework provide the means to move beyond the traditional dyadic exchange between firms and customers and toward a more complex and contextual view of interconnected systemic actors which lays the foundation for the service ecosystem concept.

SD-Logic has variously been described as a "perspective," "logic," "lens" or "mindset" from which to examine collaborative market structures encompassing social and economic actors. While advocates suggest that SD-Logic could indeed become a general theory of markets and marketing (Vargo and Lusch 2017, p. 46), there is recognition that it is not a theory in the general sense that it would allow researchers to advance testable propositions and law-like generalisations. Instead, SD-Logic provides a narrative and a vocabulary captured within stages of development marked by a set of foundational premises consolidated into a smaller set of core axioms. The development of SD-Logic and its subsequent trajectory traces shifts in the academic conceptualisation of marketing and markets (Vargo & Lusch, 2008a). The central thrust of this shift is a focus on dynamic and value-cocreative constellations, interdependent with the dynamic context within which they are situated. This perspective has, more recently, produced a focus on systems and processual approaches and the conceptual and analytical lens of service ecosystems (Lusch, Vargo, & Gustafsson, 2016; Vargo & Lusch, 2016). However, this thesis will argue that while SD-Logic provides a framework for social and economic interaction and value creation, there are fundamental issues that need to be debated and alternative conceptualisation developed in order to reflect the noted ambition of a paradigm that could provide a foundation for building theory and describing and explaining the dynamic structures and interactions of social and economic actors.

3.1 Service-Dominant Logic

At the core of marketing is exchange, and the core of exchange is value creation (Bagozzi, 1975; Lusch & Vargo, 2014a). Traditional marketing thought has most often considered value in terms of customers' perceived value or returns to the firm; therefore, addressing value

creation activities as either firm processes or the consumption activities of customers (Vargo & Lusch, 2004, 2008a). Different streams of marketing research have, however, recognised value creation as a process including greater complexity than contained in linear, dyadic and punctuated exchange of rational self-interested firms and consumers (Hult, Mena, Ferrell, & Ferrell, 2011; Järvensivu & Möller, 2009; Lusch & Webster, 2011; Möller et al., 2009). Vargo and Lusch (2004, 2008b) argue that underlying this broader focus is a shift away from marketing's neoclassical economic inheritance and the excessively narrow focus of the producer-consumer dyad.

Vargo and Lusch (2008a) recognise that sub-disciplines of marketing (e.g. market orientation, services marketing, relationship marketing, business network and resource advantage theory) have alternatives in the way markets and marketing are understood. They use these as the foundations for SD-Logic and the means to reconceptualise and better understand value creation and the relationships between those who create it (Brodie, Saren, & Pels, 2011). SD-Logic has, subsequently, emerged as a lens through which to look at social and economic exchange phenomena, free from the restrictions of product or output-centric conventionalism (Vargo, Maglio, & Akaka, 2008).

The starting point of SD-Logic is that service - as 'the application of resources for the benefit of another' - is exchanged for service to cocreate value (Vargo & Lusch, 2008a). Value creation is a process unfolding within the resource integrating efforts and exchange of service of social-economic actors (Vargo & Lusch, 2008a). Utilising the term 'actors', SD-Logic focuses on resource integrating actors, their resources, and the contexts of their interactions. Actors refer to individuals and formal or informal organisations, which have the knowledge and intention to integrate resources to realise value. Consequently, research is not tied to the firm-customer and unidirectional producer-consumer linearity of mainstream marketing literature. Rather, broader, dynamic and interconnected processes of resource exchange become the focus of complex social-economic activity (Vargo & Lusch, 2011).

SD-Logic, therefore, suggests that freeing the outlook from micro-managerial scholarship redresses the tendency to decontextualise the use of resources and the social context in which value must emerge. At the centre of this move is establishing the collaborative and socially and culturally embedded nature of interaction and exchange (Akaka et al., 2012; Vargo & Akaka, 2012; Vargo & Lusch, 2012). This perspective positions marketing as a process in both society

and organisational networks that facilitate exchange and the creation of reciprocal value through the provision and application of complementary resources in collaborative relationships (Vargo & Lusch, 2008a). Consequently, value creation must be seen as both preceding and incorporating a combination of the dyadic exchanges traditionally studied (Vargo & Lusch, 2012).

SD-Logic has advanced this position under a developing set of foundational premises (Vargo & Lusch, 2004, 2008a, 2016), which have been proposed as five axioms delineating the SD-Logic framework (Vargo & Lusch, 2016, p. 18):

- Service [the integration and application of operant resources] is the fundamental basis of exchange.
- All social and economic actors are resource integrators.
- Value is co-created by multiple actors always including the beneficiary.
- Value is always uniquely and phenomenologically determined by the beneficiary.
- Value co-creation is coordinated through actor-generated institutions and institutional arrangements.

SD-Logic provides this thesis with a theoretical lens to address social and economic value creation in markets and marketing. The following sections elaborate on these axioms to understand this framework.

3.1.1 *Service is the Fundamental Basis of Exchange*

The first axiom draws attention to SD-Logic's focus on the application of resources as service rather than a form of output and consumption (Vargo & Lusch, 2008a). The distinction is made between "service" (a process) as the basis of exchange, and "services", as units of output. Resources are considered to be all tangible and intangible entities actors own or have access to, which are used to create value (Edvardsson et al., 2014). As Gummesson (1993, p. 250) argues, actors do not buy goods or services - "they buy offerings which render service which create value… activities render service; things render service." Resources are simultaneously available from private sources, market-facing sources, or public sources (Lusch & Vargo, 2014c). SD-Logic particularly emphasises the importance of operant resources, these are typically intangible, such as market and technology competencies and relationships, and

produce effects by acting on operand resources, for example, raw materials or physical products, and other operant resources (Vargo & Lusch, 2004).

3.1.2 *Resource Integration*

The second axiom of SD-Logic highlights actors as resource integrators. Resource integration describes a collaborative process in which actors access, combine, adapt and modify theirs, and the resources of other actors, in efforts to create value (Akaka et al., 2012; Laud et al., 2015). Integration relies on the compatibility of resources, processes, and activities which deliver value-creating resource bundles (Mele & Della Corte, 2013). Resources, however, do not have inherent value, rather, they acquire value and the status of 'resource' when the context and their use is aligned "contributing to the improvement or viability" of an actor (Akaka et al., 2012). Therefore, value is necessarily considered value-in-context, where context is reliant on changing social, cultural, physical, temporal, and spatial dimensions (Grönroos & Voima, 2013). Subsequently, the contextual nature of value drives the fourth axiom - value is phenomenologically determined by each actor in a social context (Edvardsson, Tronvoll, & Gruber, 2011). Part of any context is the availability of other complementary and inhibiting potential resources, including the actor's ability to integrate these resources (Lusch & Vargo, 2014a). As Moran and Ghoshal (1999, p. 409) recognise, "it is not resources per se, but the ability to access, deploy, exchange, and combine them that lies at the heart of value creation".

Resource integration, consequently, represents a continuous process of cooperative and collaborative combining of resources and activities by actors (Edvardsson et al., 2014; Kleinaltenkamp et al., 2012; Peters et al., 2014). The processual nature highlights the shift in focus from service exchange events as dyadic and discrete to service and resource integration as a continuous process drawing resources from a mix of personal, private, market-facing, and public sources (McColl-Kennedy, Vargo, Dagger, Sweeney, & van Kasteren, 2012). Subsequently, the importance of interaction, relationships, and networks surrounding service exchange and their development is central. Value creation comes through the systemic matching of actors, activities, and resources, comprising parallel, iterative and non-linear aspects and activities (Gummesson & Mele, 2010).

3.1.3 *Value is Co-Created by Multiple Actors*

SD-Logic's third axiom recognises the networked and process-orientated view of interaction and value creation involving multiple actors (Akaka et al., 2012). No individual has all the resources needed to create value. Therefore, resource integration is inherently relational and collaborative, relying on networks of actors to provide compatible resources, resulting in the interdependence of actors in the creation of value (Akaka et al., 2012). SD-Logic's emphasis on multiple interdependent actors contrasts with traditional marketing research which has focussed on the firm and the consumer as, initially, a unidirectional channel of value delivery, and then as a dyadic relationship. This micro-managerial level of analysis has served to constrain research - removing interaction, value creation and resource provision from both the context and the broader networks in which it is embedded (Mele, Pels, & Storbacka, 2015). This outlook resonates across sub-disciplines; the Industrial Marketing and Purchasing Group (IMP), the business network approach, 'many-to-many marketing' of the Nordic services marketing, stakeholder marketing, resource dependency and macro-marketing literature. These approaches recognise that relationships, activities and resources are crucial aspects of interdependency where the actions within one relationship may affect others, directly and indirectly (Ford & Mouzas, 2013; Mittelstaedt, Kilbourne, & Mittelstaedt, 2006; Zaefarian, Henneberg, & Naudé, 2011; Zaheer, Gözübüyük, & Milanov, 2010).

These foundations have sought a more holistic and dynamic view of value creation among a more extensive configuration of actors brought together into networks (Vargo & Lusch, 2016). Subsequently, reinvigoration has been given to the broader features of exchange relationships drawing in the conscious intentions and unconscious reproductions and psychological constraints of actors and an environment of situational events, physical features, social relationships, cultural and normative elements. This has led scholars in SD-Logic to adopt an actor-to-actor (A2A) orientation moving away from pre-designated roles (e.g., 'producers' vs. 'consumers') to a more complex view of actors, roles and interrelationships among different types of actors, layers of context and levels of aggregation (Vargo & Lusch, 2011, 2016; Wieland, Polese, Vargo, & Lusch, 2012). More substantially, this greater attention to the complexity of interdependence between actors and their inherent dynamism resulting from their intertwined interactions has resulted in a significant turn toward a systems orientation (Barile et al., 2016). As Vargo and Lusch (2011, p. 5) propose, "as much as the idea of resource networks contributes to the understanding of value creation and context, its consideration

sometimes lacks a critical characteristic of systems, which are dynamic and potentially self-adjusting and thus simultaneously functioning and reconfiguring themselves." Subsequently, SD-Logic scholars have aimed to draw from a broader understanding of social and exchange systems (Wieland et al., 2012).

3.2 Systems Orientation

SD-Logic literature has explicitly emphasised a systems orientation over a more traditional network perspective, citing a reliance on presenting networks as static relationships and flows as detrimental to the dynamic nature of actors and the environment in which they are embedded (Chandler & Vargo, 2011; Laud et al., 2015; Lusch & Vargo, 2014b; Vargo et al., 2017; Vargo & Lusch, 2011, 2016; Wieland et al., 2012). A systems' orientation extends the SD-Logic framework, introducing interdependence and dynamism within and across different levels driven by an 'oscillating foci' between levels of aggregation (Chandler & Vargo, 2011; Vargo et al., 2017; Vargo & Lusch, 2016). In doing so, SD-Logic joins an increasing number of social science disciplines and particularly the academic business and management community in advocating systems thinking and a systemic perspective (Vargo et al., 2017).

Systems' perspectives on marketing and markets are both increasingly gaining attention in the marketing literature, while also reflecting the earlier intellectual history of the discipline (Aarikka-Stenroos & Ritala, 2017; Barile et al., 2016; Domegan et al., 2016; El-Ansary et al., 2017; Giesler & Fischer, 2017; Holmqvist & Diaz Ruiz, 2017; Layton, 2007; Prenkert, 2017; Shaw, 2014). Alderson is considered an early proponent of a systems approach and the study of 'organised behaviour systems' (Alderson, 1965; Alderson & Cox, 1948). This perspective was subsumed under a focus on marketing-as-management and the search for prescriptive theory for the problems of profit-maximisation and consumer satisfaction. However, macromarketing scholars, particularly within the work of Layton and his 'marketing systems' theory, have carried this legacy (Dixon, 1984; Layton, 2007, 2008, 2011b, 2015; Mittelstaedt et al., 2006; Shaw & Dixon, 1980; Walle, 2006a). Similarly, market system dynamics has emerged from consumer research aiming to address markets as complex social systems and overcome static and micro-level biases in research (Giesler, 2003; Giesler & Fischer, 2017). Within these perspectives, emphasis has been placed on the forces that shape the decisions, experiences and action of market actors across time and space, lifting the level of analysis beyond micro-economic management (Giesler & Fischer, 2017; Vargo et al., 2017).

3.2.1 *Service Ecosystems and Institutions*

Scholars in SD-Logic have adopted the idea of the service ecosystem to capture this systemic view (Akaka et al., 2012; Holmqvist & Diaz Ruiz, 2017; Lusch et al., 2016; Vargo et al., 2017; Wieland, Vargo, & Akaka, 2016). In doing so, SD-Logic has joined other disciplines, such as strategic management and innovation and technology management, in drawing on and offering an ecosystem metaphor/model/concept (e.g. business ecosystem, innovation ecosystem, entrepreneurial ecosystem, platform ecosystem and industrial ecosystem) (Gawer & Cusumano, 2014; Iansiti & Levien, 2004; Korhonen, 2001; Valkokari, 2015). Subsequently, although there are commonalities within the ecosystem approach, particularly a diverse set of actors organising resources, interactions and innovation activities as part of a broad and interdependent systems environment (Aarikka-Stenroos & Ritala, 2017; Valkokari, 2015), the issue of conceptual ambiguity is problematic requiring a conceptually and analytically useful concept (Aarikka-Stenroos & Ritala, 2017; Adner, 2017; Oh, Phillips, Park, & Lee, 2016).

A service ecosystem is defined as 'a relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange' (Vargo & Lusch, 2016, pp. 10-11). The crux of the ecosystem view is the issue of interdependence and the move away from self-contained market actors to that of components of complex systems. This has necessitated a perspective that considers the means of enabling and constraining varying levels of cooperation and coordination (Vargo & Lusch, 2016). As the definition acknowledges, institutions, institutional arrangements and institutional theory, the basis of Axiom 5 of SD-Logic, discussed further below, provide the conceptual apparatus for these purposes. Subsequently, the system is defined by actors fulfilling roles in the process of service exchange and resource integration, joined by mutual value co-creation efforts, and held together by institutional arrangements which serve to constrain, enable and coordinate actors in these processes (Lusch et al., 2016).

The service ecosystem concept encourages the 'zooming out' from micro-contexts of exchange, to consider meso and macro levels of aggregation, examining both the dynamic interactions of actors and the influence of the social-economic context (Vargo & Lusch, 2016; Wieland et al., 2012). This has been a distinguishing feature of the ecosystem approach, pursuing a broader range of relevant actors when compared to the direct and indirect ties between actors of a

business network, and recognising actors, technologies, and institutions that are interdependent within broader boundaries (Frow et al., 2014; Holmqvist & Diaz Ruiz, 2017). Institutional arrangements and resource integrating and transferring relations serve to create system stabilities characterised by shared, cooperative and coordinated activities and understandings. These stabilities coordinate and produce cooperation across increasingly complex direct and indirect service exchange and value co-creation activities while remaining open and permeable to the influences of their external environment (Barile, Saviano, Polese, & Di Nauta, 2012). The SD-Logic ecosystem concept appreciates that these are open systems which dynamically exchange resources with other systems while being exposed to the influences of their external environment (including suprasystems, e.g. markets and social systems) (Barile & Polese, 2010). The dynamic nature of these systems means these systems operate far from equilibrium, constantly adapting, therefore SD-Logic literature is increasingly referring to the adaptive processes and evolutionary development of social-economic systems (Barile et al., 2016).

Consequently, the challenge for research is to theorise how change and stability occur in the structure of service ecosystems, the nature of the dynamics involved and to understand the changing context of interaction and resource integration (Chandler & Vargo, 2011). Medlin and Ellegaard (2015) argue the conceptualisation of context is often relatively narrow in marketing studies, and therefore devoid of a systemic perspective. However, SD-Logic scholars have joined disciplines, including sociological, organisational and economic literature, in highlighting the multiplicity of institutions that make up the social world for understanding the facilitating context of interaction, as well as the changing social landscape (Brito, 2001; Hodgson, 2006; Nielsen, 2001; Thornton, Ocasio, & Lounsbury, 2012; Vargo & Lusch, 2016). Institutional theory has provided an alternative to decontextualised accounts that rest on assumptions of 'rational' action on the part of organisations and individuals, drawing attention to how the demands of the context shape and enable the responses of socially embedded actors (Mutch, 2019).

3.2.2 *Institutional Structure*

Institutions are part of the facilitating infrastructure of social and economic systems which govern interactions between actors by providing frames to coordinate exchange (Koskela-Huotari & Vargo, 2016; Vargo & Lusch, 2016). As defined by Institutional theory, 'institutions' refer to the humanly devised rules, norms, and meanings which enable and constrain actions

and the evaluation of experiences (Scott, 2005, 2013). Within the service ecosystem concept, Institutional Theory has been used to help conceptualise contexts of action, interaction and resource integration (Koskela-Huotari & Vargo, 2016). As the fifth axiom of SD-Logic, institutions provide the building blocks of cooperation and coordination within broader social contexts, defined by actor roles, social rules, and norms allowing complex and interconnected exchange and resource integration (Vargo & Lusch, 2016). Although institutions are often seen to constrain action, they are also resources, allowing cohesive interaction, orientating actors to map and navigate their social environments and to shape the meaning and purpose of their interactions (Scott, 2013). Koskela-Huotari and Vargo (2016) propose institutional arrangements as unique sets of practices, symbols and organising principles, serving to construct the value of resources, generating new resources and transforming possible resources into realised resources (value-in-context) (Vargo, Wieland, & Akaka, 2015).

Service ecosystems bring together many actors to create 'inter-institutional systems' in which multiple interrelated sets of institutions co-exist (Siltaloppi & Wieland, 2018). This complexity creates conflicting contexts in which actors must reconcile their prescriptions for behaviour and their evaluation of potential resources to cohesively create value (Koskela-Huotari & Vargo, 2016). In collective contexts of social-economic interaction, multiple beneficiaries may have different expectations of resources, perform diverging activities and determine different value based on their own institutional logics, producing systems with explicit tension (Edvardsson et al., 2014; Mele et al., 2018a). Inter-institutional complexity suggests the issues of competing, negotiating, conflict and coordination but also provides actors with opportunities to find new ways of interacting. Institutions, therefore, are not static as actors can act "otherwise, thus either sustaining or modifying institutions through their actions" (Jarzabkowski, 2008; Thornton et al., 2012).

Institutional theory is by no means a cohesive body of theoretical propositions or work (Delbridge & Edwards, 2013; Edwards, 2016; Thornton et al., 2012). Rather institutions, institutionalisation, institutional logics, institutional entrepreneurship and institutional work direct various attempts by different research streams to organise and interpret complex contexts of actions, meanings, and experiences (Thornton et al., 2012; Zilber, 2013). SD-Logic literature has introduced these perspectives into their conceptualisations (Edvardsson et al., 2014; Jaakkola, Aarikka-Stenroos, & Ritala, 2019; Koskela-Huotari et al., 2016a). However, underlying the different foci are recurring theoretical debates about the nature of stability and

change and the problematic interplay between structure and agency (Heugens & Lander, 2009; Thornton et al., 2012; Zilber, 2013). Institutional scholars concerned with this issue have referred to the 'paradox of embedded agency'- if actors are embedded in an institutionalised system, how are they able to imagine and enact alternatives to the current institutional order if they identify with binding regulations, norms, beliefs and taken-for-granted assumptions? (Friedland & Alford, 1991; Seo & Creed, 2002). More broadly, the question addresses how social factors influence behaviour and what exactly are these features of the social world - its *structure* - and how do actors intentionally and reflexively act or interact with the social world, their *agency* (Elder-Vass, 2010; Heugens & Lander, 2009). Generally, how is the social world ordered and formed and how can this be influenced and change?

While this debate in sociology has a storied history (including the towering figures of Marx, Simmel, Parsons, Weber and Durkheim), it continues, engendering questions including the understanding and causal efficacy of dichotomies, such as objective-subjective, voluntarist-determinist, agency-structure, micro-macro phenomena. A number of institutional theorists have sought to overcome these issues and answer these problematic relationships drawing from Gidden's (1984) Structuration Theory (Barley & Tolbert, 1997; Fuenfschilling & Truffer, 2014; Hinings, Tolbert, Greenwood, & Oliver, 2008; Mutch, 2007, 2014; Pozzebon, 2004). SD-Logic literature has followed suit, utilising or advocating Structuration to guide theorising (Edvardsson, Skålén, & Tronvoll, 2012; Siltaloppi & Wieland, 2018; Vargo & Akaka, 2012; Vargo & Lusch, 2016). Structuration Theory offers a conceptual scheme that allows an understanding of how actors both create and are influenced by social structure, challenging mutual exclusivity of the dualisms of the dichotomies above. Principally, institutionalists draw on the recursivity of Giddens' proposed duality of structure (structure and agency are interdependent and no longer separate or opposed), to assert institutions as both the medium and outcome of social action, providing a social theory with which to address how institutions are created, altered, and reproduced (Barley & Tolbert, 1997; Siltaloppi & Wieland, 2018). Moreover, for SD-Logic scholars, a structurationist-institutional perspective provides the means to connect their work with the importation and application of practice theory approaches to the study of markets and marketing (Araujo, Kjellberg, & Spencer, 2008; Kjellberg & Helgesson, 2007; Vargo & Lusch, 2016).

3.2.3 *Structuration Theory*

Giddens' structuration theory seeks to explain and integrate agency and structure, not as two separate phenomena, but as an inseparable duality where the two are mutually constitutive, and structures are both the means and outcome of action (Giddens, 1984). Giddens (1979) conceptualises social structure as rules and resources which constrain and enable behaviour. Rules are generalisable procedures applied in the enactment/reproduction of social practices and resources are allocative or authoritative sources of power resulting in the dominion of some actors over others (Giddens, 1984). "According to the notion of the duality of structure, rules and resources are both medium, and outcome of the practices they recursively organise" (Giddens, 1984, p. 25). In transcending the separation of structure and agency, Giddens affords primacy to *practices* as the unit of analysis. Giddens (1984, p. 2) argues that "through their practices individuals create both their consciousness and the structural conditions that make their activities possible". Structure, therefore, exists "only as the knowledgeability of human agents and its instantiation in social practices...Social systems only have structural properties – institutional fixity across time and space – insofar as agents knowledgeably reproduce pre-existing modes of behaviour" (Giddens, 1985, p. 170). Giddens describes institutions as "those practices that have the greatest time-space extension" (1984, p. 17). This approach to the primacy of practices has connected the work and legacy of Giddens to the subsequent development of practice theory and central scholars nominate Giddens as a leading practice theorist (Nicolini, 2012; Reckwitz, 2002; Schatzki, 2001, 2010; Schatzki, Knorr-Cetina, & Savigny, 2001)

3.3 Chapter Conclusion

SD-Logic has articulated a transcending resource and service-based ecosystem as a framework for social-economic value creation aiming to produce a processual, systemic, and institutional theoretical and analytical orientation. This focus has highlighted a processual conceptualisation of resource integration which unfolds among multiple actors within dynamic systems characterised by service-for-service exchanges. Institutional theory has provided a basis for understanding the coordination of actors and the structural features enabling and constraining interaction within these systems. Insight from Structuration Theory considers the structuring process this entails and to address the complexity of agency exercised within sociocultural, material and ideational contexts of these systems.

This chapter has provided an overview of SD-Logic and the central concept of the service ecosystem that sits as the object of critique in this thesis. Institutional Theory and Structuration Theory have been introduced as frameworks which offer theory-laden answers and approaches to understand how agency (the actions and use of resources which define the role of an actor in marketing systems) is exercised within, and influenced by, the sociocultural, material and ideational structure of these systems. The following chapter will begin the process of critique. The chapter advances the metatheorising process through the description, analysis and criticism of the assumptions behind these frameworks.

Chapter 4: Structure and Organising– A critique

The following chapter problematises the understanding of structure in the service ecosystem literature, which draws on structuration theory and institutional theory. The central critique, to be outlined, is the issue of conflation. This section is then expanded by applying the critique more broadly to similar streams of literature in networks and markets. The issues of conflationary theorising will then be argued to be generative of omissions and under theorised aspects of the service and marketing literature. The final sections of the chapter will critique metatheoretical issues which sustain conflationary approaches. Finally, the thesis research opportunity and framing for conceptualising an alternative overarching lens will be established.

4.1 Structure

In drawing on institutional theory and structuration theory, the literature argues for an understanding of structure. Structure, as noted in the previous section, refers broadly to the understanding of how the social world is ordered and formed. More usefully, under a systems orientation and within the service ecosystem concept, structure provides an understanding of organisation and the process of organising. One very broad understanding of structure is that " 'structure' is to be understood … to mean pattern or arrangement – as opposed to that which is random or chaotic" (López & Scott, 2000, p. 3). It is this structure as organisation that distinguishes a system (Bunge, 2004a). Structure, however, is not a straightforward issue, as suggested by the lack of agreement in institutional theory literature and the reference to the ongoing debate of the structure-agency problem. Table 3 considers different conceptualisations of structure and aligns these with research frames which assume these ideal[2] types of structures, drawing from the overviews of Elder-Vass (2008), Porpora (1989, 2015) and Scott (2001).

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[2] The qualification of ideal types recognises that these descriptions are broad generalisations and reflect the fact that there are many different approaches, for example, to institutional theory (Zilber, 2013), network studies (Araujo & Easton, 1996) and practice approaches (Nicolini, 2017), which particularly emerges from their idiosyncratic application.

Table 3 Concepts of Structure

Structure	Description	Frame of Reference
Patterns of stable aggregate behaviour	Social structure is simply a summation of people's repeated behaviour in particular places, using particular objects, and symbolic expressions	Individualist and interactionist perspectives
Collective rules and resources that structure behaviour	Structures as rules and resources exist in time-space only as moments instantiated in the reproduction of social systems.	Structuration theory
Institutional structure	The cultural and normative expectations that guide interactions and relationships between actors.	Institutional theory
Network structure	The relationships between roles and between individuals. These relationships are built on interaction and transactions.	Network-theory approaches
Embodied structure	Patterns of relations and institutions result from the actions of individuals that emerge from dispositions, habits and skills.	Practice-based approaches

(Elder-Vass (2008), Porpora (2015) and Scott (2001))

Structure raises difficult questions about the nature of, and the link between, "human activity and its social contexts" (Layder, 1994, p. 5). Reed (2000, p. 21) argues that the researcher's decision "irrevocably defines the constitution of the subject matter and the analytical and methodological terms on which it is to be researched and explained." This issue is of particular relevance to this discussion as it determines the nature and properties of the systems we study and how stability and change may be theorised in the interplay between structure and agency. The concepts of structure presented in Table 3 suggest different basis' for understanding the organising and structuring of action, causality, change and stability. Moreover, they recognise explanatory tension, competing accounts and criticisms. By criticising the notion of structure underlying service ecosystems, this thesis is engaging in the critique of the core of the systemic orientation (Bhaskar, 2008).

4.2 Criticism of Institutional and Structuration Approaches

Acknowledging the current direction in the service ecosystem literature which intertwines institutional theory and structuration theory (Edvardsson et al., 2012; Siltaloppi & Wieland, 2018; Vargo & Akaka, 2012; Vargo & Lusch, 2016), criticisms in the literature reveal two issues which suggest the need for an alternative framework to better conceptualise service ecosystems. The first issue is the deconstruction or collapse of complexity. The second issue is the diachronic problem, which recognises the importance of an explicit analytical focus on the processes of systems over time.

4.2.1 *Deconstruction or Collapse of Complexity*

The central point of criticism is built on the account of agency and structure in these frameworks, which is charged with the reduction of one to the other and the conflation of both. The issue being the collapsing of the diverse properties of social systems and the agency of actors (Archer, 1995, 2013; Leca & Naccache, 2006). Downward conflation refers to the problem of reducing action to structure (where actions exist as instantiations of social norms and are determined by macro forces) and upward conflation, reducing structure to action (where the forces and power of groups are nothing more than aggregated micro individual action). However, central conflation (merging structure and agency, depriving each of the causal efficacy upon the other) is most salient as it has been at the heart of the criticism of structuration theory since its inception (Archer, 1982, 1995; Held & Thompson, 1989; Thompson, 1989). While approaches in this vein have helped free the role of agency from determinism, structuration theory is criticised for collapsing the irreducible properties of culture, social structure, and agency, into a conflated, flat level of practice (Archer, 1995; Lawson, 2003; Porpora, 2013; Reed, 2000).

Critics observe that theorising downplays the fact that these properties consist not merely of localised actors and their activities, but also the relations between actors and the broader social and material contexts in which they are embedded (Beckert, 2010; Callinicos, 1985; Callinicos, 2004; Donati, 2015; Layder, 1987). Therefore, the powers of structure are reduced to a virtual existence instantiated by the activities of actors (re)producing social systems (Porpora, 2013). Consequently, these systems and relations which constitute them become nothing more than patterns, inert collections of individuals acting in particular micro-situations, reproducing

particular behaviours using particular objects and symbolic expressions (Cohen, 1990; Craib, 2015; Porpora, 2015).

Several scholars argue that attempting to transcend the agency/structure divide results in privileging local action with the theoretical and analytical focus on individuals and situated practice, obscuring the forms and effects of the broader context (Archer, 1982, 1995; Healy, 1998; Marsh, 2010; Mouzelis, 2000). An overly voluntarist, and often linear approach is produced that creates accounts of actors able to pick and choose between paths of action and the structures they wish to change, dis-embedding themselves and others (de Leeuw & Gössling, 2016; Fligstein, 2013; Leca & Naccache, 2006; Mutch, 2014; Reed, 2003, 2005; Reed, 2000). As Stones (2005, p. 58) puts it, the 'external structural moment' is 'badly under-developed' in Giddens' ontology. Structures disappear into the activities, and artefacts of the setting and the stratification of the social world is removed in favour of understanding the situated (inter-)actions in particular time/space locations. These missing features and properties in theorising remove the complexity and the broader contingency of the embedding contexts of social interaction (Donati, 2015; Reed, 2000). Consequently, as Reed (2000, p. 38) notes, we are left with theoretical approaches that are ill-equipped to move beyond immediate social situations and everyday interactional orders.

Whittington (2015) notes that it is often evident in structurationist-inspired research, that social structural context is neglected. Similarly, an increasing number of scholars addressing institutional theory acknowledge that micro-level theorising rejects the construction of the present context through the past actions of any number of actors and the broader institutional pressures and context through which interactions unfold (Delbridge & Edwards, 2007, 2008, 2013; Herepath, 2014; Mutch, Delbridge, & Ventresca, 2006; Suddaby, 2010; Suddaby, Elsbach, Greenwood, Meyer, & Zilber, 2010). Hinings, Logue, and Zietsma (2017) note that as institutional theory has increasingly emphasised changes in, and contestation over, institutional logics within the practice and structurationist view, other infrastructural elements of fields – that may enable or constrain change such as formal governance, field-configuring events, status differentiators and organisational models or templates, have been neglected.

Critics also note that organisational fields, under these approaches, are often presented as overly homogeneous backgrounds, ignoring issues of power and position embedded in the complexity of these systems and failing to account for the non-uniform impact across different kinds of

actors and forms of agency (Geels, 2014; Sotarauta, 2016). This leads back to a central critique of Giddens' perspective of agency - as a capability to have acted differently in every situation (either to resist or reproduce structure) (Archer, 1995; Baber, 1991; Jones & Karsten, 2008; Thompson, 1989). As (Archer) insists, an underlying focus on choice, power and capability does not account for asymmetries of agency or the levels of embedded privilege that are defined by degrees of freedom and inflexibility of constraint that may affect exercising 'the choice to do otherwise' (Archer, 1982, 1995; Archer, 2000; Archer, 2003).

Finally, this conflation has the effect of reducing the analytical clarity and empirical sensitivity of theorising and research. For example, the term 'institution' has gathered such conceptual ambiguity and overreach that everything can be an institution, and so the term now becomes a 'catch-all' seeming to be everything and nothing (Alvesson & Spicer, 2018; Fleetwood, 2008a). Similarly, the study of practices become diverging lists of numerous actions related to institutional work or lose any distinction as an activity that would somehow differentiate these from other activities (Alvesson & Spicer, 2018; Nenonen, Gummerus, & Sklyar, 2018). As Suddaby (2010, p. 15) notes, management journals are full of empirical examinations of institutional agency, where "any change, however slight, is now 'institutional' and any change agent is an "institutional entrepreneur."

The reduction of the separate properties of the systems in which actors are embedded is a major limitation for understanding systems, and particularly how they change at multiple levels (Furnari, 2018; Zietsma, Groenewegen, Logue, & Hinings, 2017). Subsequently, there has been continued recognition of the problem of integrating micro and macro theories and levels of analysis and a "tension that has often driven oscillating waves of sociological theorising (Chia & MacKay, 2007; Delbridge & Edwards, 2013; Hinings et al., 2008, p. 473; Martin, Currie, Weaver, Finn, & McDonald, 2017; Zilber, 2013).

4.2.2 *The Diachronic Problem*

Critiques of conflation suggest that the processes of time are equally problematic in structurationist models. The fusing of agency and structure into an analytical whole removes the recognition of two very different time frames - that of unfolding situated activity and the emerging frames of social and economic systems (Archer, 1995; Bates, 2006). Different features of the social world, are blurred into a recursive model of practice in the here and now,

obscuring forms and effects played out over and in time (Baert & da Silva, 2010; Cruickshank, 2003; Layder, 1998; Peters et al., 2012). Therefore, as several authors have noted, little attention is given to the interrelated sequencing of events, path dependence and the diachronic development of actors and systems (Peters et al., 2012; Porpora, 2013).

Path dependency refers to the recognition that events occurring at an earlier point in time will affect events occurring at a later point in time; past actions and decisions impact contemporary behaviour (Djelic & Quack, 2007). Peters et al. (2012, p. 19) argue that Giddens suggests history "cannot pull or direct events in the present to influence outcomes in the future." This implicit view is particularly problematic, recognising that time is central to any discussion of stability and change (Marsh, 2010). Moreover, history has different ways of impacting on the present and providing the contexts in which action and interaction take place (Mutch, 2019; Suddaby & Foster, 2017). Historical conditioning is significant as it produces contingent "pathways of actor interaction…and an understanding of action is partial without recognition of it" (Archer, 1995; Delbridge & Edwards, 2013, p. 9). The implications of this manifests, for example, in the limited development of theoretical and empirical insight into the enabling conditions for agency and institutional change (Bakir & Gunduz, 2017). Similarly, critics of a focus on local practice criticise the lack of attention to the larger historicity of social and institutional contexts, creating an illusion in which actors position themselves external to the flow of time and creating voluntarism by reducing social context to the effect of contemporary individual behaviour (Archer, 1995; Elder-Vass, 2007a; Purser & Petranker, 2005).

The inability to account for the problems of process manifest in other ways related to the collapse of complexity. For example de Leeuw and Gössling (2016) and Leca, Battilana, and Boxenbaum (2008) note that one reason for the lack of multi-level research, taking into account the individual, network and organisational field levels of analysis, is the limited attention to the relevant temporal and spatial dimensions for studying variation in institutions and individual actions. Similarly, path dependence and diachronic development is essential to understanding the development, change and effect of institutions (Aoki, 2001; Thornton et al., 2012), interactions and context (Hedström & Bearman, 2009), and relationships, sources of power and resources (Halinen, Medlin, & Törnroos, 2012; Medlin, 2004; Valorinta, Schildt, & Lamberg, 2011).

The problem can be summed up in the words of Mayhew (1980, p. 339), "if one assumes the structure of society in order to examine its impact on the immediate acts, thoughts, and feelings of individuals, one has assumed most of what has to be explained in order to study a small part of human activity and experience." Conflation has left many theories devoid of the stratification and strong conception of structure that allows analysis to separate and understand the interplay between action and structure, process and outcome across multiple dynamic levels of analysis (Archer, 1982, 1995; Fleetwood, 2005; Jepperson & Meyer, 2011; Lazega, 2016).

4.3   Extending the critique

Having begun to identify the issues of conflationary theorising associated with current perspectives on Service Ecosystems, it is useful to extend the scope of this critique to address the broader research domain. The move away from atomistic and management-orientated analysis towards a more complex and systemic understanding of the ongoing interactions, events and changing organisation of actors, practices, infrastructure, artefacts, meanings and rules has driven theoretical interest in sociological theory and frameworks. These frameworks provide a basis for understanding the problems of organisation, interactional dynamics and structuring as a function of how agency is exercised within and influenced by, the sociocultural, actual material and ideational context of these systems.

4.3.1   *Sociological Frameworks in Marketing Studies*

Researchers across the study of service ecosystems, markets, market systems and business networks continually draw from institutional theory (Chaney & Slimane, 2014; Dolbec & Fischer, 2015; Gonçalves, da Silva, & Teixeira, 2018; Humphreys, 2010; Michel, Saucède, Pardo, & Fenneteau, 2018; Pop, Leroi-Werelds, Roijakkers, & Andreassen, 2018; Scaraboto & Fischer, 2013; Yang & Su, 2014); practice and performative perspectives (Araujo et al., 2008; Frow, McColl-Kennedy, & Payne, 2016; Hargreaves, 2011; Hietanen & Rokka, 2015; Kjellberg & Helgesson, 2006, 2007; Kohtamäki & Rajala, 2016; Martin & Schouten, 2013); structurationist approaches (Edvardsson et al., 2012; Edvardsson et al., 2011; Humphreys, 2014; Nicholson, Brennan, & Midgley, 2014; Ozanne et al., 2017) and network structures (Ahuja, Soda, & Zaheer, 2012; Baraldi, Gregori, & Perna, 2011; Charterina, Basterretxea, & Landeta, 2016; Dagnino, Levanti, & Destri, 2016; Eklinder-Frick, Eriksson, & Hallén, 2011;

Noordhoff, Kyriakopoulos, Moorman, Pauwels, & Dellaert, 2011; Shiri, Sauvée, & Abdirahman, 2015).

Institutionalists focus on the existence and role of institutions, as routinised rules, norms, and beliefs that enable and constrain action. These behavioural and normative 'building blocks' are drawn on as an organising principle, allowing actors to map and navigate their social environments and coordinate the purpose of their interactions. Institutions build coordination through regulative, normative, and cultural cognitive legitimacy (Vargo & Lusch, 2016). Subsequently, these features provide a means to speak of stable reproduction, while also describing changing social organisation.

The network approach focuses on relationships linking individuals and entities as the material of social structure. The network has a structure of nodes and ties where power, transactions and exchanges flow from positions within the network. Network theory uses these relational patterns as structures which impact both agency-level and network-level outcomes (Laud et al., 2015). Network approaches have focussed on individuals, groups or entities as directly or indirectly linked through sequential or shared participation in exchange transactions. These relationships then influence how actors are dependent on such links to create and access resources which facilitate the required means of value creation and produce power differentials (Akaka et al., 2012).

The performative-practice approach focusses on the 'sets of organised doings/sayings, tasks and projects', through which individuals both reproduce and modify their experiences and the conditions, rules and resources, which constrain and enable behaviour (Schatzki, 1996). A fundamental driver of this approach has been an emphasis on moving actors from unreflexive carriers of institutions (Smets, Aristidou, & Whittington, 2017). Practices as linked and implicit ways of understanding and as nexus of behaviours that include practical activities, performances and representations or talk (Schau, Muñiz Jr, & Arnould, 2009). Kjellberg and Helgesson (2006, 2007) describe markets as composed of interlinked practices: 1) exchange practices, involving individual transactions; 2) normalising practices, referring to the formulation of the rules and norms of market behaviour; and 3) representational practices, which depict and present understanding of markets and how they work.

All three approaches consider socially constructed structures and address the 'social arenas' of interaction as profoundly built on the connectedness of actors (Fligstein & Dauter, 2007). However, each produces different theoretical and empirical attempts at understanding the origins, operations and dynamics of these structures. This separateness creates problems in which authors find incommensurability and talk past each other, or it obscures the degree to which research and their theoretical views are complementary or contradictory (Fligstein & Dauter, 2007; Kilduff & Brass, 2010). This problem has more recently been recognised in marketing and service research - between networks, markets and service ecosystems (Holmqvist & Diaz Ruiz, 2017). More substantially, however, conflict arises between 'competing accounts' due to the differently attributed emphasis and powers ascribed to individuals, their choices and activities and the role of forces which structure and organise these. This results in only partial explanation of the dynamics of these structures as a social form, and the actors who inhabit them, changing the way interaction, context, change and stability are conceptualised. These divisions are present in criticisms of institutional, network and practice-based theories and approaches to the study of social and economic organisation. The issues associated with these different approaches are summarised in Table 4.

Table 4 An Overview of the Criticisms of Frameworks

Framework	Structuring/ Organising principles	Problems/ Criticisms	Conflationary tendency	Examples of critics
Network approaches	Focus on the relationships or ties between roles and between individuals built on interaction and transactions.	- Actors are stripped of their ideals, interests, and commitments and substituted with lifeless nodes whose position is determinant - Symbols, schemata and social practices are sacrificed to the analysis of the particular linkages and flows through which they become visible - The study of cultural, economic, and social capital is sacrificed to the analysis of the particular linkages and flows through which they become visible. - Produces static accounts based on establishing objective structures and means for measuring relationships - Theoretical depth and sensitivity is often sacrificed for methodological amenability	Downward conflation	(Azarian, 2010; Beckert, 2010; Bourdieu & Wacquant, 1992; Donati, 2014; Erikson, 2013; Faria, 2005; Fuhse, 2009, 2015; Gulati & Srivastava, 2014; Knox, Savage, & Harvey, 2006; Laud et al., 2015; Mische, 2011; Mohr, 2013; Pachucki & Breiger, 2010; Vaisey & Lizardo, 2010; Vincent, 2008)

Framework	Structuring/ Organising principles	Problems/ Criticisms	Conflationary tendency	Examples of critics
Institutional approaches	Focus on the prescriptions and behavioural and normative structures that actors use to organise forms of social life	- Definitional ambiguity and different 'schools' have led to the term 'institution' becoming a catch-all term referring to everything and therefore nothing. - Institutional theory often presents irreconcilable tensions in integrating micro (interest-driven, ideational) and macro (materialist and normative) theories and applications. - Explanations often privilege regularity and deterministic accounts which adopt assumptions of linearity and equilibrium. - The deterministic functionalism of these approaches underestimates the role of individuals and the necessity that any system reproduction or transformation exists in contingent social actions - Macro-institutionalists have been criticised for inattention to micro-dynamics, practices and individuals. - New studies replace actors without interest and agency with actors who seem to have prescient views about the new possible world and the power to pull it off - Micro-institutionalists have focussed on sensemaking and have been criticised for overlooking the role of larger social, historical or cultural contexts in explaining cognition. - A focus on situated practice provides an analytical restriction on moving beyond immediate social situations and everyday interactional orders. - The spatial and relational structure are often disregarded as determining forces	Downward conflation Upward conflation	(Beckert, 2010; de Leeuw & Gössling, 2016; Delbridge & Edwards, 2013; Edwards, 2016; Fleetwood, 2008a; Fligstein, 2013; Geels, 2014; Hallett & Ventresca, 2006; Hayden, 2016; Hinings et al., 2008; Leca et al., 2008; Leibel, Hallett, & Bechky, 2018; Micelotta, Lounsbury, & Greenwood, 2017; Mutch, 2018, 2019; Schmidt, 2010, 2012; Zietsma et al., 2017)

Framework	Structuring/ Organising principles	Problems/ Criticisms	Conflationary tendency	Examples of critics
Practice and Structurationist theorists	Researchers focus on sets of organised doings/sayings, tasks and projects' (representative, normative, and exchange practices) which coalesce and form collective identities out of local spaces of action	- Practice perspectives are criticised for collapsing the world into a flat, non-differentiated, ontology of subject-less practices or discourses as actors create both their experiences and the structural conditions that make their activities possible. - The diverse properties of social systems, networks and the agency of actors are conflated depriving the social world of the complexity characterised by the causal powers of the different entities, structures and systems. - Researchers downplay the relations between actors and the broader social, cultural and material contexts to focus on localised actors and their activities. - The systems that actors constitute, and the structures that influence them, disappear into the activities and artefacts of the setting. - Intention and agency is privileged by focussing on the linear outcomes of instantiated action – free from the recognition that although we make choices, we do not do so under conditions that we have chosen for ourselves. - Overly voluntarist accounts of agency emerge from a focus on the local and immediate contexts of interaction and their effects. - The creation of context by the history of past interactions, interconnections, external forces and events is lost	Central conflation	(Archer, 1982, 1995; Bates, 2006; Bryant & Jary, 2001; Callinicos, 1985; Coad, Jack, & Kholeif, 2015; Craib, 2015; Elder-Vass, 2010; Elder-Vass, 2008; Gregory, 1989; Jessop, 2005; Leca et al., 2008; Porpora, 1989, 2015; Reed, 2000; Schmidt, 2018; Thompson, 1989; Turner, 1994; Urry, 2000; Whittington, 2015)

Table 4 recognises that different fields of study, collapse, subsume or ignore a variety of social properties, contextual or embedding features and the capacities of individuals (Beckert, 2010; Fligstein & Dauter, 2007; Fourcade, 2007; Portes, 2006; Portes, 2010) For example, Fuhse (2009) and Mizruchi (2007) argue that network-based research pays little attention to schemata and cultural practices. Beckert (2009)and Djelic and Sahlin-Andersson (2006) argue that institutionalists and actor-centred studies often ignore the role of network structures, and sometimes the very existence of a spatial field and relational patterns. Similarly, the critique of the practice/structurationist approach already presented is mirrored more broadly here.

The table of problems is also tied back to the issue of conflation (as defined in Section *4.2.1*). Downward conflation is notable in both macro-institutionalist and network approaches where the contingent nature of social interaction and the efficacy of individuals disappears, leaving a deterministic or functionalist perspective. Upward conflation, recognisable in micro-institutionalist approaches, is equally problematic because we lose focus on actions and goals as constrained, enabled and conditioned, and explanations of unintended consequences become incommensurable, resulting in un-restrained voluntarism. As noted the central conflation associated with the amalgam of practice, in practice and structurationist approaches, provides little insight into either actors or structures as it oscillates between determinism and voluntarism, depending on the intention of the analysis.

4.3.2 *Omissions Generated through Conflation*

Fundamentally, it is the decisions made regarding the concept of structure, and therefore, the assumptions regarding how these social arenas are ordered and evolve which are problematic. The problem of understanding how the actions, interactions, positions and capabilities of actors intertwine with the structuring influence of social, economic, cultural, material and institutional forces points to other important problems, underdeveloped areas and criticised aspects of marketing and service theory. This thesis argues that theoretical and empirical gaps (set out below) are at least partly determined or generated by conflationary theorising and the lens and frameworks which articulate this. These interrelated areas are fundamental to the study of service ecosystems and the understanding of how they develop through time, experience change and stability and produce different outcomes for actors.

4.3.2.1 Stability and Change

The study of stability and change is central to understanding how shifts in structure, function and outcomes happen in service ecosystems (Banoun et al., 2016; Nenonen et al., 2014). Literature recognises the under-researched nature of both change as a heterogeneous feature which is infrequent, discontinuous and intentional while also ongoing and evolving (Buttriss & Wilkinson, 2014; Giesler & Fischer, 2017; Kjellberg, Azimont, & Reid, 2015; Mele et al., 2015; Nenonen et al., 2014; Storbacka & Nenonen, 2015; Sutton-Brady, 2008; Tronvoll et al., 2018). Similarly, stability and change are seen as antithetical, rather than intertwined or as often constitutive (Buttriss & Wilkinson, 2014; Farjoun, 2010; Kjellberg et al., 2015; Nenonen et al., 2014; Sutton-Brady, 2008). The reliance on a narrow focus of strategic action or generic deterministic stage-model approaches has been criticised for restricting the understanding of the complexity associated with interactions and contingencies within multiple actors and their direct and indirect relations across multiple systems (Ford & Håkansson, 2006; Mele et al., 2015).

4.3.2.2 Process and History

Relatedly, literature asserts that continuous change, fluidity, and processes over time are under-examined in marketing (Buttriss & Wilkinson, 2014; Fonfara, Ratajczak-Mrozek, & Leszczyński, 2016). This domain includes both a recognition of shifting focus from a static background to 'a seething mass of events and processes' and the constancy of flows of activity continually reconstituting apparently stable phenomena (Buttriss & Wilkinson, 2014; Lowe & Rod, 2018; Nenonen et al., 2014). Moreover, process is directly related to the recognition that "context is created by the history of past interactions, interconnections and events", which is obscured in the literature by either a static 'snapshot focus' or an decontextualized micro-level or singular perspective (Askegaard & Linnet, 2011; Bizzi & Langley, 2012; Giesler & Fischer, 2017; Halinen et al., 2012; Nenonen et al., 2014; Peters, Pressey, Vanharanta, & Johnston, 2013; Peters et al., 2012; Wilkinson & Young, 2013, p. 394).

4.3.2.3 Multiple Levels of Analysis and Multileveled Phenomena

The broadening perspective of process - addressing dynamic interactions of actors and the influence of the social-economic context - recognises that activity can only be adequately understood by also viewing it from other levels of aggregation (Wieland et al., 2012).

Understanding different levels of analysis and phenomena as multileveled has assumed an important place in the literature but remains both under-researched and conceptually underdeveloped. However, emphasis has been placed on individuals, dyads, networks and social systems and how encounters, interactions rules, norms, meanings, symbols, practices may exist in relation to these different levels (Chandler & Vargo, 2011; Ekman, Raggio, & Thompson, 2016; Giesler & Fischer, 2017; Kjellberg & Helgesson, 2006; Vargo et al., 2015; Wieland et al., 2016).

4.3.2.4   Multi-dimensionality

The complexity associated with a range of 'levels' and interactions brings to the fore the multi-dimensionality of the diversity of forms that surround us and the challenge of unpacking their complexity. These forms reflect the range of different actors, their roles, dependency and reciprocity, cooperation and competition and communication which rely on technology, institutions, finance and ownership sustained by cultural and social systems. Networks, institutions and practices engender dimensions such as culture, society, materiality, identities, objects and artefacts, subjects, interactions, narratives and discourses (Askegaard & Linnet, 2011; Koskela-Huotari & Vargo, 2016; Layton, 2007; Layton & Grossbart, 2006; Löbler, 2015, 2016). Subsequently, these different features suggest subjectivity, inter-subjectivity, materiality and symbolic aspects which are both present and interact (Akaka et al., 2014; Geiger, Kjellberg, & Spencer, 2012; Löbler, 2011; Venkatesh, Penaloza, & Firat, 2006). The ability to account for this complexity and adequately address these dimensions and the features that exist within them is underdeveloped in the literature (Aarikka-Stenroos & Ritala, 2017; Layton, 2011a, 2015; Mele, Sebastiani, & Corsaro, 2018b). Moreover, as a critique of conflationary assumptions suggests, it is not just a simple task of subsuming the differences (Layder, 2006).

4.3.2.5   Time and Space

Multi-dimensionality and broadening levels of aggregation also reveal the need for addressing complexities of time and space within research setting and theory. Marketing and service researchers have recognised the reductionist and unnatural, acontextual bounding of time and space, which foregoes the nature of whole events and processes (Aaboen, Dubois, & Lind, 2012; Castilhos & Dolbec, 2017; Castilhos, Dolbec, & Veresiu, 2017; Halinen et al., 2012;

Lowe & Rod, 2018; Medlin, 2004; Peters et al., 2012; Quintens & Matthyssens, 2010; Scaraboto & Fischer, 2013; Tidström & Hagberg-Andersson, 2012; Törnroos, Halinen, & Medlin, 2017). Subsequently, greater attention to both time and space is needed rather than treating them as 'context' or background variables, pursuing their complexities and investigating how temporal and spatial structures are both shaping and being shaped by ongoing human action (Castilhos et al., 2017; Lowe & Rod, 2018; Palmer, Medway, & Warnaby, 2017).

4.3.3 *Summary of the Critique of Structure and Organising*

This section has offered a critique of key frameworks and 'lenses' in use in the service ecosystem concept, centring on the problem of conflation. The collapse or deconstruction of complexity and the diachronic problem have been emphasised as critical underlying inconsistencies. In order to further examine and position the problem of conflation, the critique has been extended to the use of sociological frameworks in marketing and service research which approaches similar theorising and analytical domains (Holmqvist & Diaz Ruiz, 2017). Moreover, a set of problems, underdeveloped areas and criticised aspects of research have been tied to the underlying issue of conflation, recognising that their presence suggests the incompleteness of the service ecosystem approach. While the explanatory forms of conflation come in different modalities, their presence points to metatheoretical tendencies which underlie their reproduction. The examination of these tendencies forms the basis of the next section. Returning to the structure of the critique (Chapter 2), the next section deepens the critique in order to address the metatheoretical issues which sustain, reproduce and justify conflationary theorising.

4.4 Failure of Emergence/Constructivism/ Pragmatism

This section aims to critique the basis of conflationary theorising, arguing that there are core inadequacies in the metatheoretical assumptions that sustain and reproduce the different problematic modalities. This sets out the deepest level of critique and moves to the underlying assumptions and groundings of service ecosystem research which sustain the splitting, conflation and reductionism which is suggested to defeat the service ecosystem conceptualisation. Three underlying inadequacies are identified which are often causally intertwined in the conceptualisation and operationalisation of research. These issues are the inability to sustain a theory of emergence, a commitment to an epistemic fallacy embodied in

constructivist positions and impoverished pragmatism. These critiques address the nature of systems, the epistemic commitments of researchers and the issue of empiricism and theory borrowing, respectively.

4.4.1 *Inability to Sustain a Theory of Emergence*

Impoverished assumptions regarding structure present inherent reductionisms. The service ecosystem approach (and the discipline more broadly), advocates a systems 'turn' and orientation. Central to understanding systems are the components and the relations among them, and it is this structure that determines how a system comes to be, and therefore, how it may function and change (Byrne & Callaghan, 2013). Therefore, when the organising and structuring principles are deficient, it becomes easy to collapse and deny the reality, and subsequent causal efficacy, of the system. The issue here is the collapse or the ill-treatment of the relation, the sets of which constitute structure. A central principle of a system is the concept of emergence which recognises the constitutive nature of the relations between components of a system that give rise to and sustain systems (emergence is, therefore, the basis for talking about systems) (Bunge, 1996, 2000, 2003; Elder-Vass, 2005). Because the frameworks in use do not give adequate treatment to relations, these approaches are unable to sustain a theory of emergence. Principally, these positions downplay the necessary complexity of the synchronic composition of complex multi-level systems and the processual nature of diachronic emergence which together provide for form and causality. Synchronic emergence is defeated by not capturing the complexity of relations that cause the events to be explained and diachronic emergence falls with inadequate attention to the cumulative development process that brings each type of entity into existence (Elder-Vass, 2007b).

Reflecting on the explanatory frameworks, it is suggested that the ontic necessity and causal efficacy of 'the relation' is:

- collapsed into the relata (e.g. dissolving the relations);
- claimed to hang between them (e.g. the relation is analytical or a mere manifestation of interaction or transaction), or;
- given inadequate attention as reciprocally co-determinative between the parts and whole of the system, resulting in conflationary assumptions.

Firstly the collapse of various relations - that is the structuring principles, for example - the institutional structure, the field of practices or relationships - into the relata, whether it be an

actor, a practice or an action, is a common feature of the micro-institutionalists, the structurationists and the practice theorists. The structuring of systems is understood as behaviour subjectively elaborated with meaning based on conformity to others (Donati, 2014) Subsequently, the focus too often returns to localised actors and their activities and the systems and relations that actors constitute become nothing more than inert collections of individuals acting in particular micro-situations. The concepts of system and order are reducible to forms of 'organising' in the enactment of 'practices' promoting individualism, subjectivism and voluntarism.

Secondly, the claim that relations simply hang between relata, is a common basis of some network approaches. The problem here is that relations cannot simply be a void between concrete entities existing as a mere manifestation of interaction or transactions or as a deterministic static stage upon which these take place (Donati, 2010, 2014, 2017). Network approaches have, therefore, often been seen as atheoretical and a reductive methodological framework. While the approaches are useful for identifying patterns in relational data, they provide an inadequate account of relations, ignoring the complexities that bring relations into being, that sustain them and that result from their tangled presence (Azarian, 2010; Donati, 2017). Often this leads to determinism in which these relationship structures are the 'efficient' causes of ephemeral cultural imprints, individual motivations, and institutional frameworks and are therefore reducible to positions and ties.

Finally, the third iteration of problematic views of relations, is the inadequate attention given to reciprocally co-determinative relations between the parts and whole of a system. Both the preceding points can be subsumed under this criticism. However, it also broadens the critique to reflect on familiar dualisms (subjectivism/objectivism, agency/structure, individualism/collectivism, and atomism/holism) and captures the problem of conflation. Archer (1995) recognises that conflation leads to one-dimensional theorising. The complex relationality of the world is collapsed as research pragmatically reifies an idealised notion of structure that fits the particular theory we wish to make claims with. For example, institutionalists may focus on the relation between the actor and a certain institution and the constraining and enabling nature of this relation, yet this will eschew attention to how this institution exists, its relation to other institutions and how this may influence the relation with the actor or even how the actor's relation to other actors may mediate the nature of this institution. Subsequently, without maintaining the complex relationality of the social world,

each approach represents a reduction without the means for reassembling different powers, properties and temporality. Rather than inquire into the complex and multi-dimensional entities, the systems studied are fragmented and the relations that make up their combined effect are removed.

These reductionist features are evident in the way that service ecosystem researchers discuss the micro, meso and macro-levels of service ecosystems (Vargo & Akaka, 2012; Vargo & Lusch, 2017; Wieland et al., 2012). In the focus on institutions in governing interactions of actors, these same institutions are also composed of human actions and interactions at the micro-level (structuration). Therefore, meso- and macro-level systems and structures are formed and reformed through individual actions and the reproduction of relationships and shared meanings, seemingly as patterns (Akaka et al., 2012). While the complexity of these systems is indeed the consequence of interactions, it is not only a matter of micro-emergence, but "interactions of parts of the system with each other; interactions of parts of the system with the system as a whole; and interactions of the system with other systems with which it intersects, within which it is nested, and with which it may share interpenetrating components" (Byrne & Callaghan, 2013, p. 173). Vargo (2018), recently sums up the current position of SD-Logic, recognising that emergence challenges the traditional reductionist perspective in which all causality can be explained in terms of 'lower-level' phenomena. He goes on to note that while multi-level causality is unresolved in the emergence literature, SD-Logic subscribes to a flat world view, all casualty is a single-level phenomenon. The micro-emergence prescription reflects Giddens' seeming opposition to emergence as a move to reify structure (Beekman, 2005; Giddens, 1979, 1984). It is this view that helps sustain and justify the conflationary issues associated with the collaspse or deconstruction of complexity.

In focussing on a merely analytical rhetoric of emergence (Vargo (2018) speaks of the levels of service ecosystems as such), a position of supervenience governed by the 'exhaustion principle' (Kincaid, 1994) emerges. The 'exhaustion principle' points to a type of methodological individualist ontology in which 'individuals determine the social world in the sense that once all the relevant facts ... about individuals are set, then so too are all the facts about social entities, events, etc.' (Kincaid, 1994, p. 499). This is problematic as Archer argues, because without a notion of *real* emergent properties, structures are activity-dependent in the present tense, '[a] leap is made from the truistic statement, "no people: no society, to the fallacy, "[T]his society because of these people here present" and its necessary by-product, a sociology

of, the present tense' (Archer, 1990, p. 86). Consequently, the conflationary issues associated with the diachronic problem are reproduced and reductionism, voluntarism and subjectivism spring forth. This is problematic because, as Andersson, Aspenberg, and Kjellberg (2008) suggest, an interest in market practice draws attention to the micro-level, to how individual practices interlink to produce markets, focussing on unfolding interactions and a conception of the world as 'a world of events'. Schatzki, a noted practice theorist, acknowledges that his ontology "…contends that all social orders and formations arise from…local phenomena" (Schatzki, 2005, p. 479). This produces a scepticism towards enduring causes of action, structures and deeper power relations. Subsequently, we are left with what Emirbayer and Johnson (2008) call the 'interactionist fallacy. These authors critique organisational scholars whose focus on interactions leads to the elimination of the structure of the field which provides the conditions which orient the struggles aiming to conserve or transform it (Emirbayer & Johnson, 2008). Kilminster (1998) poses a similar critique of Giddens, arguing that he tries "to deal with interdependence in the language of interaction" (1998, p. 133).

This critique provides the platform for the next issue as authors adopting a more constructivist position often refuse to acknowledge the existence of social levels, the phenomenon of emergence and the dualism between agency and structure it entails (Vandenberghe, 2018). Similarly, the Giddenian notion of mutual constitution is among the most influential social theories underlying the constructivist project (Wight, 2006).

4.4.2 *Constructivist Position*

While strong assertions of metatheoretical or paradigmatic positions are rare in marketing and service research, Edvardsson et al. (2011) and Löbler (2011) have contributed the social constructivist underpinning of SD-Logic. Market-practice studies have produced a similar postmodern vision of the market in which markets as nets of interlinked practices see social reality as an ongoing process of creation within the translation of ideas into practices (Kjellberg & Helgesson, 2006, 2007). In this grounding, we find the idea that reality (to the extent that we can speak of reality as an independent state) only comes into practical existence insofar as it is encoded in representations of social actors (Palmer, Biggart, & Dick, 2008). Leading to the view that social phenomena are as people perceive them to be or as constituted and institutionalised by discourse and social convention (Hartwig, 2007). Subsequently, the objects of study become representations of reality (and the relationships among them), rather than

reality itself (and the relationship of representations to it). Thus primacy is given to epistemology. This position is evidenced through Gherardi's (2016, p. 5) recognition that the practice perspective is seen as epistemology - " it is through the epistemic practices that researchers construct both the objects of knowledge – ontology – and the methods for producing knowledge, that is, epistemology".

Subsequently, drawing from Bhaskar, the 'epistemic fallacy' is committed - where ontological questions are reduced to 'our ways of knowing' and 'our knowledge of it', that is, questions of epistemology (Bhaskar, 1989). The epistemic fallacy is built on the emphasis placed on how we know determines (or at least, crucially shapes, or delimits) what exists. The tendency, therefore, is to derive conclusions about reality from our representations of it, based on the social constructivist and postmodern position that all the reality we can get at is the reality that is internal to our system of representation. Subsequently, research is privileging the question of 'how can we know about the world?' over asking 'what must the world be like?' (Bhaskar, 2008). This leads researchers to project their categories, theories, and conceptual frameworks, substituting these for the real entities, mechanisms, structures, and relations that make up the social world (Bhaskar, 1989; Cashell, 2009).

The fundamental problem is that we collapse the appearance/reality dichotomy, therefore failing to refine our search for, or capture, the structures and generative mechanisms underlying and producing the surface and empirical reality (Bhaskar, 1989). This posture reflects von Glasersfeld's (1991) constructivist position that 'whatever ontic reality might be like, it makes no sense to think of it as anything that we could recognise as structure'. The result of this is that the reality of social objects (the intransitive dimension) is collapsed into our organised or structured understanding of them (transitive objects of knowledge). As a result, marketing researchers effectively deny the reality of 'systems', instead reserving this concept for thinking about the world. Subsequently, although systems are discussed, research quickly collapses these and denies their reality and subsequent causal efficacy. This posture is emphasised in Schatzki's (2001, p. 3) position that "individuals, (inter)actions, language, signifying systems, the lifeworld, institutions/roles, structures, or systems… can only be analysed via the field of practices". This exacerbates the collapse of the complex relationality of phenomena even further, which is best evidenced through practice theorists' assertion of adhering to a flat ontology (Schatzki, 2001, 2012, 2016).

Two final intertwined points emerge from this. There is always the generation of an implicit ontology (Bhaskar, 1978, 2008). In this case, over-ridden by epistemology, it leads to categories based on the presumed characteristics of the objects of experience – creating a superficial realism, in which the categories of explanation are those most readily amenable to experience (Bhaskar, 1978, 2008). This superficial realism further leads to the issue of a logic of immediacy and a form of essentialism (Cruickshank, 2003). Practices and institutions become essential properties (the overreach of these concepts has been noted in *Section 4.2.1*), to which phenomena directly conform, capable of explaining all forms of phenomena. Subsequently, the taken-for-granted ontology is not only seen as correct, but as an exhaustive account of human behaviour, so any observed event verifies the ontology, and requires no further development of explanatory concepts. This supplants the need to provide a conception and understanding of which causal factors are to be taken under consideration and which ones are not (Wan, 2011). This supersession leads critics to suggest that while constructivism envisions a multilayered reality, its metatheoretical basis resists it. As Fiaz (2014) and Murphy (2007) argue, there is no easy and clear way to simultaneously incorporate the ideational, material and agential into constructivist analyses and the tendency to bracket or suspend multi-causality leads to decontextualised abstractions. Subsequently, we are left with approaches that either attempt to 'turn towards' these missing elements (e.g. bringing materiality or linguistic features into institutional theory (e.g. Jones, Meyer, Jancsary, & Höllerer, 2017; Zilber, 2017)), or conflationary efforts to downplay their significance.

4.4.3 *Pragmatic Empiricism*

The final issue resonates with the deficiencies presumed by a superficial realism. Pragmatic empiricism refers to the issue of theory borrowing and the usual accompanying tendency to sidestep questions of ontology and metatheoretical issues relating to explanation.

Researchers produce reductive explanations based on the empirical position they are working within. For example, a network theorist may reduce the service ecosystem to nodes and ties and a practice theorist may 'uncover' practices that produce markets but both have the effect of collapsing the phenomena to be explained into the means of its explanation. This problem is influenced by the preceding issues critiqued, but also the overriding teleological structure of research within marketing and service research as applied and pragmatic scholarship, where academics see themselves as producing a how-to-do-it area of study (Walle, 2006b). This can

be evidenced by Holmqvist and Diaz Ruiz's (2017) broad review of markets, business networks and service ecosystems literature, in which each presupposes a focus on drawing attention to how firms shape the structure of their business environment. This focus on searching for prescriptive assertions overshadows critical examination and illustrates instrumentalism, which is grounded in affording primacy in inquiry to act effectively rather than represent reality accurately (Hartwig, 2007). This leads to notable problems: 1) a tendency to create, adopt and overuse labels, isolating research streams (Ballantyne, Frow, Varey, & Payne, 2011; Holmqvist & Diaz Ruiz, 2017); 2) a failure to go beyond the immediate situations and theories in use, presumed by a piece of research, leading to seeing too much too closely and in isolation and therefore according to each thing too great of an importance; 3) a failure to recognise that theories are not neutral constructs that can simply be adopted and applied —they come with serious, if implicit, assumptions and intellectual commitments (Schmidt, 2018). For the study of service ecosystems this negates efforts to represent the complex reality, outside of the artificial boundaries or constructions of particular frameworks and to realise the connectivity between actors and their interactions in a social matrix.

4.5   Opportunity and Areas of Contribution

The preceding sections have set a layered critique of the current literature informing the service ecosystems concept. The task of metatheorising for understanding has included finding differences and connections between the frameworks and taking a critical stance towards their underlying assumptions. This chapter has argued that conflationary theorising, driven by the understanding of structure offered by the different frameworks and assumptions being used by marketing and service scholars, is deficient. The issue of conflation has also been connected to core areas which are under-theorised gaps in the literature which are deemed central to the service ecosystem concept as an understanding of processual, systemic exchange including: understanding stability and change; accounting for process and the influence of history; theorising multilevel phenomena; maintaining the multi-dimensionality of phenomena; giving weight to the complexity of the roles of time and space within context. Finally, a trinity of metatheoretical issues - Failure of Emergence, Constructivism, Pragmatism - which build a problematic irrealism, have been critiqued as sustaining, reproducing and justifying conflationary approaches.

The layered nature of the critique and the omissions and underdeveloped areas it exposes, offer substantive areas in which to develop a theoretical conceptualisation. The pivotal link is the issue of conflationary theorising sustained by the conception of the organising and structural understanding of service ecosystems. This central piece connects the issue of a substantive metatheoretical position to the underdeveloped areas of theorising and analysis within the service ecosystem concept. This connection sets the foundation for the second stage of the metatheorising project of this thesis - an effort to rectify these issues by building an overarching lens that contributes to offering an analytical framework for the study of service ecosystems. Subsequently, the effort to overcome conflationary theorising and the accompanying problematics of the deconstruction of complexity and the diachronic problem becomes the target of a reconceptualisation of the approach to studying service ecosystems. As the critique suggests, overcoming conflation requires connecting a social ontology to the analytical framework and subsequent approach to theorising. From this point, new theoretical insight can be offered.

Although many theories and research approaches exist in the literature laid out so far in this critique, to borrow one of Nietzsche's ruminations, in our fragmentation "most of what exists it does not perceive at all, and the little it does see it sees much too close up and isolated; it cannot relate what it sees to anything else and it therefore accords…each thing too great importance" (1997, p. 74). As Smith (2010, p. 12) argues "the principle of parsimony must be balanced by the principle of 'sufficient complexity'. That means we ought to be willing to theorise with enough complexity to capture the important features of the real world that we are trying to understand." While this call and proposed opportunity result from a critique largely drawing from outside of the discipline, the interdisciplinary nature of the research context and theory being examined and drawn on, necessitates such an approach. Secondly, Vargo and Lusch (2017) suggest, in their review of the future of SD-Logic, there is a need for further interconnected metatheoretical and midrange theoretical work on the central question 'How do service ecosystems adapt and evolve?'. More broadly marketing and service researchers on the outside of SD-Logic call for extensions outside of the literature. Aarikka-Stenroos and Ritala (2017) call for researchers to extend their reading more broadly, beyond a reliance on the work of central SD-Logic figures, to incorporate different perspectives and research problems. Similarly, Leroy et al. (2013) recognise the risk of allowing the originators and champions of an approach to prescribe a convenient framework for researchers to conceptualise reality for the entire discipline. This notion reflects those who call for marketing and service scholars to

strengthen and extend the metatheoretical foundations of their research approaches and look to alternative theoretical assumptions in building theory (Easton, 2002, 2010; Gustafsson et al., 2016; Peters et al., 2012).

Together the critique undertaken thus far, and its alignment with more general calls in the literature offer the following objectives for this thesis;

1) To offer an overarching lens grounded in connecting social ontology to an analytical framework and the process of theorising

2) To actualise this lens by developing new theoretical insight and sources for explanation regarding how service ecosystems develop through time, experience change and stability and subsequently produce different outcomes for actors.

These objectives provide the opportunity for both phases of theory development: the context of discovery - the generation of and synthesis of ideas - and the context of justification - addressing the adequacy of these ideas through analytical and empirical efforts (Yadav, 2010). Moreover, going forward with these objectives provides both the opportunity to respond to the issues of metatheory and theoretical reflexivity but also contribute empirically grounded theorising to those omissions and under-theorised areas set out in Section 4.3.2. These areas are central to the phenomena targeted by the concept of service ecosystems as well as featuring continuously in calls within the marketing and service literature. Finally, by setting out to address social ontology- a theory of the constitution of the world and service ecosystems (Fleetwood, 2004) – and connecting this to an analytical framework and approach to theorising, this thesis can contribute to the means of researching service ecosystems. As Archer (1995) argues, ontology and methodology should be closely linked. "An ontology without a methodology is deaf and dumb; a methodology without an ontology is blind. Only if the two go hand in hand can we avoid a discipline in which the deaf and the blind lead in different directions, both of which end in cul de sacs." (Archer, 1995, p. 28). Moreover, the limited presence of holistic empirical studies of service ecosystems (Banoun et al., 2016; Vargo & Lusch, 2017), and the call for methodological improvements and creativity in the face of a more complex and systems orientation in service and marketing research (Aarikka-Stenroos & Ritala, 2017; Kohtamäki & Rajala, 2016; Vargo et al., 2017; Wilkinson & Young, 2013), support the opportunity to contribute methodologically to the literature.

4.6 Conclusion and Moving Forward

This chapter has offered the basis for rectifying and offering an alternative metatheoretical position and analytical framework, which forms the second stage of metatheorising. A critique of the frameworks in use and their assumptions in the study of service ecosystems has highlighted the core issue of conflation driven by the understanding of structure. It has then been argued that this conflationary stance is sustained by deficiencies in the metatheoretical positioning.

Subsequently, the proceeding chapter will be directed towards conceptualising an overarching integrative metatheory aiming to explore different conceptual tools, sensitivities and corrective assumptions. The issues of conflation and the metatheoretical problems of failing to address emergence adequately, the epistemic fallacy of conflation and impoverished pragmatism provide indicators for a more comprehensive and integrative position. These indicators include the need for;

- an understanding of structure which does not fall into conflationary assumptions

- an ontology that provides the basis for systems as real existing social objects.

- a necessary synchronic and diachronic theory of emergence in understanding form and causality in complex stratified systems;

- the rejection of conflationary tendencies, in favour of layered complexity and temporally and spatially dispersed features which constitute the processes of systems

- an alternative corrective metatheoretical structure for analysing and theorising, aiming to counter the recurrent tendencies towards oversimplification, reductionism and the collapse of totality.

The following chapter will develop the conceptualisation this thesis offers as an overarching lens. Within this chapter, the social ontology, analytical framework and process of theorising will be developed.

Chapter 5: Conceptualisation

In this chapter, the critical realist emergentist metatheory is developed to offer a different vocabulary, conceptual tools and consideration of emergence and causation built on connecting social ontology, the analytical framework and subsequent theorising. Critical Realism (CR) has been developed as a series of interventions into the philosophy of science, grounded in the effort to provide a coherent ontological and epistemological basis from which to build theories for practical research (Bhaskar, 1989, 1994, 2008). CR is drawn on for a number of reasons including; the primacy of, and explicit reflection on, an ontology which provides a view of reality as emergent, transformational, systemically open, becoming, processual and relational (Archer et al., 1998; Fleetwood, 2014a). Consequently, CR provides a potential corrective approach to the conceptual and theoretical problems identified, while also setting out a systemic orientation which aligns with the empirical phenomena targetted for explanation by the service ecosystem concept.

The thesis joins other scholars who have used critical realism to critique and offer alternative conceptualisations of their disciplines (Martinez Dy, Martin, & Marlow, 2014; Mingers, 2004; Naess & Price, 2016; Pinkstone, 2005; Price, 2017; Steinmetz, 1998). Therefore, the intention is to draw from central figures and positions in CR, recognising that CR is an under-labourer, a resource, rather than a prescriptive position or theory (Bhaskar et al., 2016; Hartwig, 2009, 2011). The following work is necessarily a bricolage of central authors who work within this tradition while sharing their own unique qualities, drawing appreciatively on this work, rather than as a theory to be overlaid. The conceptualisation offered draws on Bhaskar's (2008) dialectical critical realism, Archer's (1982, 1995, 2011) morphogenetic approach, the emergentist perspectives of Elder-Vass (2005, 2007a, 2010) and Wan (2011, 2012) and the relational thinking of Donati (2010, 2014, 2015). Concepts are not formed and do not exist on their own, they are part of a system, moulded from already existing ones. Therefore, it is necessary to move from a more general metatheory to construct a domain-specific approach drawing on the presented critique of existing perspectives and offering new terms of reference to overcome the problems noted (Benton & Craib, 2010; Cruickshank, 2003). Lastly, given a critique of theory borrowing and the sense of arbitrariness given to the commitments and assumptions of theoretical devices, there is a need to offer explicit metatheoretical propositions and accompanying analytic and explanatory conditions.

The following sections will firstly, consider the issue of conflation in the analytical framework, which connects social ontology to the process of theorising. Secondly, the metatheoretical propositions and conditions connecting the social ontology to this analytic component and means of theorising will be developed.

5.1 Non-conflationary Theorising and the Morphogenetic-static Approach

The argument has been made that reductive-conflationary analysis and theorising is inadequate, in all its forms, because it is an abstraction from the multi-layered complexity of social reality and from the irreducibility and causal efficacy of the constitutive features that make it up. Efforts to squeeze the objects and processes of analysis into uni-dimensional spaces constitute simplifying manoeuvres that should be combated. On the issue of conflationary theorising, Margaret Archer has been one of the greatest critics in social theory and has spent much time building an alternative framework by which to approach the agency and structure debate and, subsequently, overcome conflation. Archer set out to critique downward conflationists and the neglect of agency, upward conflationists and the collapse of structure into a product of contemporary actions, and particularly, the central conflation of Giddens (Archer, 1982, 1995, 1996). In response, she developed the morphogenetic-static approach to social analysis, aiming to connect theorising to an explanatory methodology that considered the dialectical interface between structure and actor interaction focussing on their mutual interplay across time and space in the reconstitution and elaboration/transformation of social systems (Archer, 1982, 1995).

Archer's framework is predicated on a set of key propositions. Structures, as the conditions of social systems, and agency, are two different kinds of entities making them discrete and separate, having their own emergent properties and powers (Archer, 1995). Structures are seen as relations among social positions and social constructs that bring forward rules, roles, resources, norms and power relationships. This perspective differs from those concepts of structure offered in Table 3 (See Chapter 4 Structure and Organising). Structures and actors are capable of independent variation, being out of phase with one another in time, while remaining interdependent (Fleetwood, 2014b). This position emphasises the importance of the temporal separation of these features - structures are assumed to pre-exist actions, creating the conditions

for those actions. Social structures pre-exist individuals as a necessary condition of their activity following Marx's dictum: "Men make their own history, but not spontaneously, under conditions they have chosen for themselves; rather on terms immediately existing, given and handed down to them" (Marx, [1852] 1983, p. 287). Actors are, therefore, confronted by social and cultural structures, experiencing these as a force evolved in the past, beyond their control in most of their doings (Archer, 1995; Lawson, 2003).

The consequence of Archer's position is that both actors and social structures have causal powers that are distinct from each other, and that both interact to determine social events – even though actors are the parts of the social structures concerned (Archer, 2010). This assertion has two important implications for research. Firstly, actors act from a position in relation to structure which provides "prior distribution of resources, of life chances, of vested interests and of bargaining power" and, subsequently, enablers and containments for certain routes of action, associated with their specific types of opportunity costs (Archer, 1995, p. 327). Subsequently, in acting and interacting, actors traverse objective (e.g. material), intersubjective (e.g. shared meaning and institutions) and subjective properties of the environment they inhabit, resulting in both intended and unintended effects for themselves and the system (Archer, 2014; Maccarini, 2013). Secondly, processes within systems cannot be reduced to the properties (actions) of individual actors or collectives of organised actions as there must always be a complex of part-whole relations (Byrne & Callaghan, 2013; Sawyer, 2002, 2005). Research, therefore, does not set out to explain processes as the result of particular actions or practices, or through the effects of specific institutions or network relationships, as other theoretical positions do. Rather, it builds an explanation around the powers and properties that interplay over a period of time.

Subsequently, the morphogenetic-static approach advocates an analytical framework built on breaking the social world down into possible morphostatic and morphogenetic cycles[3], characterised by the respective reproduction or transformation of structures and actors as a

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[3] Archer also emphasizes — in response to possible misinterpretation — that morphostatic and morphogenetic cycles are not 'pure' in the sense that each is defined by the absence of characteristics of the other (Archer, 2015).

result of interaction. Figure 2 provides Archer's representation of the morphogenetic-static approach as a process broken into four points of analysis.

Figure 2 Morphogenetic-static cycle

Structural conditioning

T1

T2   Social interaction

T3

Structural elaboration/reproduction

T4
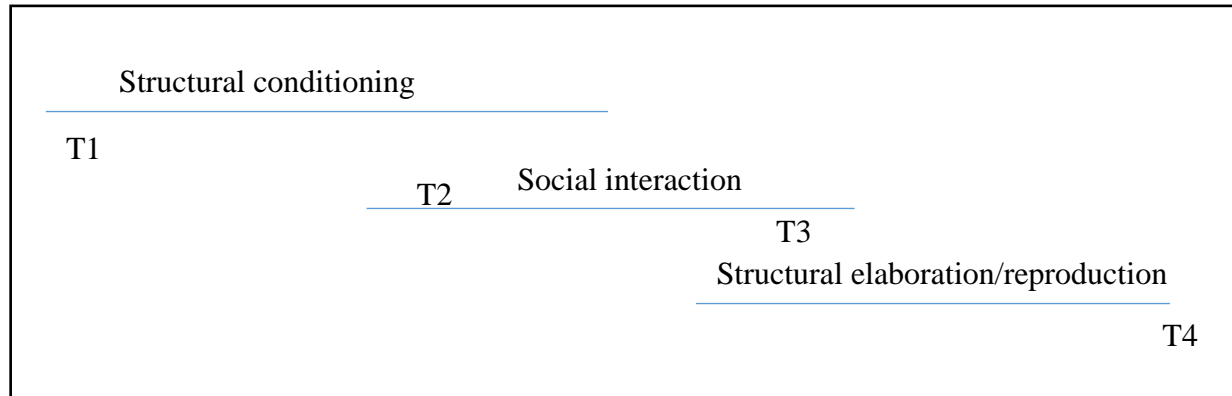
T1 represents structural conditioning; this refers to the formation of structure, becoming the constraints and enablements of a given situation of (inter)action (T2). Social structure is understood as pre-existing, exerting its own emergent causal influence through its structural relation to human activity (Lawson, 2013). Consequently, research should account for the immediate social context and the wider sociohistorical context, from which structure and its properties emerge. Social actors then interact within these structures, where their interactions are conditioned by their embeddedness, between T2 and T3. This interaction features as a relational arrangement of action and interaction forming events. Finally, T4 represents the outcome of this process, characterised as structural elaboration/reproduction, describing the resulting influence on the state of the structure of the system, and the respective change and stability within. This outcome, in turn, forms the context for the next cycle.

This analytical position overcomes the issues of conflation by arguing that structure and agency are indeed separate and their intelligibility as part of the processes within social systems are necessarily reliant on recognition and explanation of their interplay and constitution. The attribution of power to both agency and structures is necessary as it overcomes criticisms of functionalist, deterministic and individualistic explanations attributed to other approaches. Importantly, the morphogenetic-static approach is not a form of structural determinism, rather it suggests the conditioning of structure and a relationship (potentially asymmetric) of co-determination, not of conflation. The application of the morphogenetic approach allows research to account for a range of causal structures and their actualised powers arising over

time, rather than collapsing these to a single explanatory feature, often as a synchronic snapshot, as reductionist frameworks suggest.

The morphogenetic-static approach provides the analytical pivot point to address the issue of conflation, but it is the support given by the underlying metatheory which adds weight to the argument and provides the necessary ontology and understanding of emergence and causality that allows this thesis to develop an approach to service ecosystems. Archer is a dedicated critical realist and draws on Bhaskar's philosophy of CR, connecting the social ontology and informing explanatory framework, and practical theory, recognising that each should correspond. The following section will reflect on CR and develop a critical realist emergentist perspective that is open to a far greater range of concepts that address the multiplicity of structures, powers and mechanisms augmenting the development of our understanding and explanations by providing conceptual resources to ground research.

5.2 A Critical Realist Emergentist Perspective

In building the tenets of this critical realist emergentist perspective, the following section draws particularly from the dialectical critical realism of Bhaskar (Bhaskar, 2008). This section reflects on ontology - the study or theory of being (Fleetwood, 2004). Ontological investigations provide the grounding assumptions on which theories, explanatory frameworks and related explanatory practices are built on. Subsequently, the grounding metatheoretical structure embraces a theory of the constitution of the world (what exists and its common features, and how it comes to exist), before addressing the terms and conditions on which it is to be researched and explained.

5.2.1 'Being as Structured'

The first premise of this perspective is 'Being as Structured' – which refers to key premises of Bhaskar's revindication of ontology - the necessary stratification and differentiation of the world (Bhaskar, 2008). Bhaskar's (1989) first premise is built on a stratified view of reality into three distinct layers – the real, the actual and the empirical. The empirical refers to the levels of experience, the identification and sense-making of events. At the level of the actual, are the events themselves, whether they are perceived or not. Finally, at the level of the real, mechanisms generate these events as the 'way of acting' of structure.

This premise provides the basis of the primary ontological claim of CR - that there exists a causally efficacious reality which is stratified, differentiated, changing and constructed of open systems (Danermark, Ekstrom, Jakobsen, & Karlsson, 2002). This grounding provides two important propositions: 1) the world consists of structures, not just events or experiences; 2) although the causal level of structures and mechanisms may not be open to direct perception, it is real because it produces discernible effects.

Bhaskar advocates an emergentist position which sustains an ontology of structures in which the world exists as hierarchically composed of structures, representing a nexus of relations between entities, with these layers having their own irreducible mechanisms (Bhaskar, 2008; Collier, 1994). This perspective drives the premise that relations are a necessary fabric of being, and looking at structures as levels of organisation, existing as a set of constituent parts, the relations between them, and the emergent properties of the whole this organisation represents (Donati, 2010; Elder-Vass, 2007a). It is the structure of the synchronic organisation of relations which explains the emergent properties and causal powers of the entities concerned (Elder-Vass, 2010). Consequently, it is argued that all entities, from individuals to overarching societal totalities, can be understood in this manner. Subsequently, this position allows us to take on a view of the world as composed of interpenetrating complex systems, real irreducible wholes – emerging from the relations of their parts – which in turn exist as parts of larger wholes. For example, a firm itself is a complex system, emerging from the relations between the employees, shareholders and resources, each of which represent lower-level complex systems, while also being embedded within a network of other firms forming a higher-level system as a business network or industry.

This initial proposition suggests that the world consists of things, not just events (actions, interactions), as complex objects formed by entities and the relations through which entities are brought into existence (Bhaskar, 1978). This is a co-principle of substance and relation suggesting that it is by virtue of their organisation into a latticework that social entities and, consequently, phenomena occur (Elder-Vass, 2007a, 2010; Kaidesoja, 2013). Subsequently, these structures are endowed with causal powers that combine and interact to produce actual events, suggesting that causes are "seen as those things, forces, powers, mechanisms by virtue of their sets of relations that make things happen or 'trigger' events" (Elder-Vass, 2010; Kurki, 2008, p. 174; Lawson, 2013). Events, therefore, can be understood as synchronic complex

interchanges, in that they are "multiply-determined by a variety of interacting powers, possessed by entities at a variety of levels of composition" (Elder-Vass, 2010, p. 68). Ontology is therefore centred on 'relations' and 'systems' rather than events and actions.

The second proposition is grounded in this integrative and encompassing view of ontology and underscores the CR concept of causal criterion. This concept argues that we can ascribe existence to something even if we cannot observe it as long as its causal effects can be observed (Archer et al., 1998). This proposition, along with the emergentist position, provides the basis for thinking about the many things have causal efficacy or make a difference. As Fleetwood (2004) argues, entities are real in different ways or modes. Things like physical objects are materially real, discourse, language, symbols, beliefs and meanings are ideally real and organisations and communities are socially real. Thinking in this way, the multi-dimensionally within the levels of structure is evident.

5.2.2 *'Being as Process'*

This view of stratified emergent organisation provides the basis for being as process and change. Firstly, this proposition develops the continuous interplay and subsequent realisation / part realisation / or negation of powers and tendencies across different structures as they are brought into play by the operational mode of a system. For the service ecosystem, we may think of the resource integrations and exchange of service, driven by the need for change and/or attractions found in efforts to create value, as the operational mode that sustains a service ecosystem (Löbler, 2016). Reflecting the work of Archer (1995), these interchanges produce feedback that is either positive (deviation amplifying), creating morphogenesis, the processes which elaborate or change a system's given state or structure; or negative, generating morphostasis, which maintains or preserves the organisational state of relations, their subsequent properties or potential powers. These interactions are built on recognising that lower-levels can modify the relations of higher-order structures, and therefore their properties and powers, and higher-order structures change the state of possibilities and conditioning of lower levels (Bhaskar, 1989). This provides for multi-causality and contingency of actual events associated with upward and downward causation. By seeing the world as intersecting, closely intertwined complex systems, interpenetrations and overlaps and multi-directional emergent causality come forward.

Secondly, this proposition emphasises the diachronic process of change, in the formation and dissipation of layered structures. Diachronic emergence implies that structures are not simply things but have a history of development, and are always 'caught up' in this process of development (Elder-Vass, 2007b). That is, the world is not a ready-made system, structures do not exist outside of the processes, flows and relations that create, sustain or undermine them. Consequently, diachronic emergence, the process by which relations give rise to strata over time manifesting their properties and powers, becomes a central variable in explanatory work as it is crucial for understanding what powers are constituting the synchronic complex interchanges that give rise to events. Subsequently, being in process recognises the world as necessarily intertwined in both being (that it is structured, layered and differentiated) and becoming (that is tensed, existing through rhythmic flows). This allows us to overcome a static or fixed perspective, allowing an essentially processual nature, without collapsing into the 'here and now' and the denial of diachronic emergence with the privileging of surface experience, intentionality, contempocentrisism and the ahistorical fallacy.

5.2.3 *'Being as a Whole'*

Together, these two assertions lead to the third dimension of being – that is being as a whole which aligns the two preceding features. Here the world is seen in relations of dependency and interdependency - a complex of continuing interaction between parts and parts, parts and a whole, and whole and parts (Norrie, 2009). We must understand how the form of the whole layered structures characterising our systems causally codetermines the component structures, and how these structures causally mediate or condition each other and subsequently the form of the whole. Subsequently, the form of determination comes to be in the operation of powers at distinct, irreducible levels interacting in a totality. This view of emergence responds to Vargo's(2018) position regarding the unresolved nature of multi-level causality in the concept of emergence. Of particular issue is downward causation – the capability of an entity with causal powers to have a causal impact on its own parts (Elder-Vass, 2010). As Elder-Vass (2010) suggests, downward causation functions because the causal mechanism depends on the presence of the level of organisation, that is it is only when entities and their relations are

organised in the form of the 'whole' that this effect is present. This position is grounded in the compositional/configurational understanding of structure advocated in 'Being as Structured'[4].

"To grasp totality…is to see things existentially constituted and permeated, by their relations with others [and to see both their] existentially constitutive processes of formation, but also their existentially constitutive interactivity (internal relatedness)" (Bhaskar, 2008, p. 125). By necessity, we look to the intermeshing, multiplicity of causes that exist in a multi-dimensional and multi-levelled social world. Central to this position is the recognition of what Bhaskar terms the social cube (Bhaskar, 2008), which argues that every social happening or event involves the interaction of four dialectically interdependent planes; the plane of the objective material world, the plane of intersubjective relations – (e.g. shared meanings, communication and exchange in interactions between people); the interobjective plane of organisation (macro-social structures, industries and organisations), and the plane of the stratification of the embodied personality (recognising subjectivity and identity, of beliefs, emotions and values aspirations). Bhaskar, Frank, Hoyer, Naess, and Parker (2010a) argue that social life exists in this laminated whole in which being is 'a complex configuration of the physical embodiment, social and relational situatedness, cultural constructions and subjective identities'.

This holistic outlook interplays with the world as caught in a structured flow of being and becoming in which the totality of past (as caused and determinate), present (as a moment of becoming) and future (system trajectories, social attractors, goals etc. as modes of possibility) relations are implicated (Norrie, 2009). The world, therefore, is dialectically structured, via different modes of unity-in-difference whereby structures produce complementarities, tensions and historically accumulated splits. Systems are therefore not merely the progression of development or the interaction of vertical layers, but complex reflections of their history and emergent trajectories of their conjunctive multiplicity of causes and the multi-levelled interaction of multi-dimensional powers.

These assertions give rise to Bhaskar's notion of rhythmic, recognising causal processes as the coalescing of multiple powers in emergent spatio-temporalities (Bhaskar, 2008, p. 54). This

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[4] The principle at work in this point is; if we explain a causal power in terms of the parts of an entity and the relations between them through which they are organised into a particular form (a whole), this form has not been eliminated from explanation. Any explanation that draws on this configuration therefore is implicitly recognising the ontological position of the whole

idea recognises the emergent nature of the complex interchanges that come about from the coming together of interacting powers from different structures. This leads to stratification providing a basis for conceptualising time and space outside the limitations of the 'here and now'. Social reality and the possibilities of agency and change are determined not only by what is immediately present or absent within the spatiotemporal boundaries of a specific context but also by the causal efficacy of the 'massive presence of the past and the outside'. This point recognises the strung-out process of conditioning by the 'past' necessarily creating (non-determinative) path-dependencies (Archer, 1995). This is recognisable as the emergent properties of relations in the 'past', such as the formation of institutions, stretch into the 'present' upon activation, conditioning and influencing actors. Structural powers, such as institutions, are time-dependent constellations and while they are space time-dependent in their ability to influence human conduct at any given time and place (that is in their actualisation), their constitutive entities and relations (their causes of being and sustained organisation) extend beyond this synchronic instantiation.

Given the conceptualisation of multi-dimensional and multilevel emergent structures, space and time can be considered properties, manifest in a structure, which may be actualised as causal powers, giving causal efficacy to both as implicated in the state of possibilities rather than seeing these as simply a container for events. This resonates with a position traced back to Leibniz, that each entity exists in a 'situation', characterised by a network of relations, and it is within this network that space, time and activity take shape (Earman, 1989). Time can be seen as stratified along with structural levels of systems (Althusser & Balibar, 1970). Considering time as a property of relational organisation encompasses Ermarth's (2010) suggestion that time is a dimension of, rather than an envelope for, phenomena and provides a more multifaceted concept of time that is sensitive to assorted and differential experiences, accommodating the interweaving of multiple temporalities (Dawson, 2014). Consequently, we can account for the varying conceptions of time; objective, linear conceptualisation of natural time (Hassard, 1991), the subjective experience and cognitive tool of time (Heidegger, 1972), and what has been referred to as vertical time, the variations in social, organisational, and cultural perspectives of time (Lewis & Weigart, 1981). Similarly, space is multi-dimensional, stratified and implicated as causally efficacious. Space can have multiple and differentiated natures, including distance and proximity in physical, social and mental space (Lefebvre, 1991).

5.3   Integration of the Perspective

The presented position suggests the following propositions: 1) the ontological premise of being is reliant on relations; 2) the social world is constructed of stratified levels of organisation in which entities emerge along with their properties and powers by virtue of these relations; 3) these entities operate in complex and mutually modifying interrelations at multiply stratified levels; 4) stability and change result from the complex interplay of the causal powers of such temporally/spatially stratified relations. Together these features present an ontology intertwining the subjective, intersubjective, interobjective and objective planes of being as existing in a stratified structured/systemic world, in the continual process of becoming through the compatibilities, contradictions, and complementarities of the interchange of their powers.

A critical realist emergentist position describing form and causality offers the opportunity to establish an ontological grounding which reasserts the intransitive nature of systems. We are in a position to talk of service ecosystems as real, emergent and irreducible entities, whose levels are not simply perspectives but refer to differentiated and irreducible structures with causal powers/taxonomic qualities. This posture responds to the weak view of emergence offered under the current service ecosystem perspective, the epistemic fallacy of the constructivist and a strong opposition to pragmatic empiricism.

We look at the irreducible stratification of the system and ascribe causal efficacy, not to just a flat structure of relationships (the nature of ties and flows like a network structure), or to actions organised around shared practical understandings (practices), but to an interpenetrating layered structure that is multiply determined and open to the semi-autonomous rhythmics (causal processes and histories) of the different entities and structures. This outlook fills reality back up by re-establishing a multi-layered system that exerts irreducible powers and looks to actors as part of the actualisation of coalescing mechanisms across multiple levels and subsequently spaces and time. Subsequently, the critical realist emergentist position allows us to oppose the reductive assumptions that we start from with the transitive descriptions of networks, practices and institutions. Instead, the complexity of the service ecosystem as a multi-layered a diachronically emerging social object is primary. Therefore, we adopt a maximally inclusive starting point without the ontological priority of one structure or another but grounded in an integrative perspective of the nature of being, process and causality. This metatheoretical grounding changes how we describe, research and explain service ecosystems, and set a

foundation for doing away with the tendency to under-estimate or ignore the many-sided nature of social phenomena that is reflected in the complexity that drives the value and use of the service ecosystem concept.

By using the common underlying reference structure, this ontology offers, rather than suggesting the exhaustion of reality in the limits of our particular theory in use or empirical question, we can work towards a multi-levelled and multi-dimensional basis for theorising with service ecosystems as a concept and unit of analysis. This allows us to look at the frameworks in use as useful descriptions of structures and properties and powers, suggesting these are indicative of the causal efficacy and irreducibility of heterogeneous relations (simultaneously material, social, discursive, agential and institutional), rather than a means of explanatory immediacy. What is often represented by diverging frameworks is: 1) the influence or operation of the powers of a set of relations representing a structure at a level of organisation and/or 2) the outcomes of competing powers at distinct levels of organisation.

This outlook sets a foundation for overcoming conflationary theorising. By rectifying the metatheoretical issues argued to sustain, reproduce and justify conflation, this grounding provides the opportunity to develop a framework for analysis and theorising that does not collapse the complexity of service ecosystems or set the inability to capture forms and effects played out over time. The reconceptualisation of the constitution of service ecosystems by reframing structure in a necessary synchronic and diachronic theory of emergence in understanding form and causality rejects conflationary tendencies in favour of layered complexity and temporally and spatially dispersed features which constitute the processes of systems.

Table 5 considers the metatheoretical propositions, which illustrate the critical realist emergentist position discussed. These propositions are connected to analytical conditions and their subsequent orientating value towards these issues for research within service ecosystems. In connecting these propositions and conditions to their value for the study of service ecosystems, research can begin to redress some of the omissions and underdeveloped areas within the literature (See Section 4.3.2 *Omissions generated through conflation* (Stability and Change; Process and History; Multiple levels of analysis and multileveled phenomena; Multi-dimensionality; Time and Space)).

The next section will develop these propositions and conditions into an analytical framework connecting the two, before completing the overarching lens by connecting these to a means of theorising.

Table 5 Propositions, conditions and value for theorising

Metatheoretical Proposition	Epistemological Condition	Value for studying service ecosystems
All social phenomena, including social actors and their actions and service ecosystems, are constituted through relations.	Sets of relations are the premise of study. Frameworks and their discourses provide useful descriptions of structures and properties and powers, but claims and explanations should not be solely reduced to these devices.	• Theorisation and analysis have a common underlying reference structure, rather than suggesting the exhaustion of reality in the limits of our particular theory in use or empirical question • Service ecosystems can be addressed as subjectively, inter-subjectively and inter-objectively constituted.
The social world is constructed of stratified levels of organisation in which irreducible entities emerge along with their properties and powers by virtue of their relations.	Accounting for the relations at higher and lower-levels means acknowledging and identifying the powers of the entities inevitably invoked in explanation of the levels of organisation or phenomena they wish to theorise about.	• Emphasises the inclusion of the complexity arising from the interplay of the powers of individuals and the multiple structures/subsystems in which they are embedded.
Entities, constituted by relations operate in complex and mutually modifying interrelations through interdependent multiply stratified levels.	Given the emergent and stratified layers of organisation, accounts and frameworks need be multi-levelled, this does not preclude explanation of phenomena or outcomes at a single level. Instead, it recognises multi-causality, multiple realisability and contingency associated with upward and downward causation	• Recognises inter-level causality, allowing both changes in the individuals and the context, including recognition of exogenous and endogenous dynamics within each stratified level of organisation. • Individual, self-interested actors, as well as their systemic roles, tasks and norms and alignment within pre-existing structures all hold explanatory power.

Metatheoretical Proposition	Epistemological Condition	Value for studying service ecosystems
Stability and change in the social world is the result of this complex interplay of temporally/spatially stratified relations between entities involving the realisation/part realisation/blocking of the causal powers of such entities.	A causal account of change, stability or events, therefore must delineate the autonomous powers or properties that formed the complex interchanges that gave rise to the outcome. Explanation must transcend the 'here and now' - the historicity of the levels of organisation (their diachronic emergence) involved in theorising must form part of any explanation.	• Provides contingent and non-linear explanation. • The unique structures of the system are not collapsed or conflated, they are separate, constitutive and interplay. • Provides a basis of stability and change built on generative feedback that either stabilises particular sets of relations or produces contingent variability in relations.
Time and space exist as properties of stratified levels of organisation and are actualised as powers, relative to the structure, entity or relation it refers to.	Time and space are multi-dimensional and constituting properties which are causally efficacious in shaping service ecosystems.	• Analysis of service ecosystems is orientated towards the diachronic aspects of the system rather than a synchronic snapshot emphasising both time and its causal efficacy in the process. • Space can also be seen beyond local interaction orders and as a constitutive, historical and malleable rather than as a pre-existing container. • Research can look for the interweaving of multiple temporalities and remain sensitive to a more multifaceted concept of time and differential experiences.

5.4   Operationalising the Overarching Lens

To move from an overarching lens to the creation of new sources of explanation and substantive research, it is necessary to operationalise an analytical framework and a means of theorising. The basis of this operationalisation is the aim to develop new insight and sources for explanation regarding how service ecosystems develop through time, experience change and stability and subsequently produce different outcome for actors.

5.4.1   *A Framework for Analytical and Empirical Research*

To offer a framework for the study of service ecosystems these systems need to be seen as multi-level systems, with interpenetrating relations, structures and powers creating multi-directional emergent causality within levels of organisation looping back and around each other. As noted, this requires we acknowledge key features of emergence and mediation based on the stratified powers of multiple levels of organisation and address the process of becoming within a differentiated and emergently layered social world. Drawing on the propositions and conditions set out in Table 5, four conceptual principles which inform the analytical framework and the subsequent means of theorising are considered. These principles; multi-dimensionality, relationality, multileveled and processual are grounded in the social ontology and directed at overcoming conflation. Table 6 below summarises these principles which become the basis of the analytical framework. This framework, drawing from the Morphogenetic-static approach, is represented in Figure 3 and is offered for the analysis of service ecosystems.

Table 6 Conceptual principles
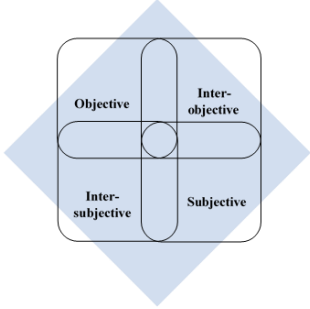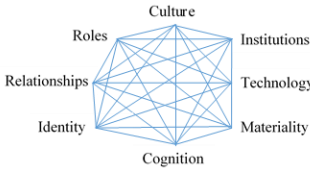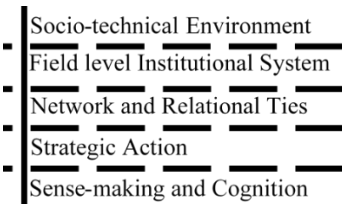
Principle	Description
Multi-dimensionality	The social world is multi-dimensional, existing in interdependent dimensions of the objective material, intersubjective relational, interobjective institutional and subjective sensemaking that are present in every social happening. Social life exists in this laminated whole as 'a complex configuration of the physical embodiment, social and relational situatedness, cultural constructions and subjective identities'.
Relationality	Relations exist between many different features of a multi-dimensional world. Relations and the structures they form are interdependent, and the social world is a systemic fabric of these relations. It is by virtue of their organisation into a latticework that social entities and their relations produce phenomena.
Multileveled	Relations form structures which emerge as irreducible levels of organisation. These levels of organisation exist with different properties and powers which necessarily rely on but also interact with the features of higher and lower levels of organisation.
Processual	Interactions, events and their outcomes are always in process. These processes reflect cycles of structural conditioning, social interaction, and structural elaboration and/or reproduction. Context is created in the history of past interactions, interconnections, and events; interaction is a complex interchange of powers and outcomes manifest non-deterministically from these phases.

Figure 3 Analytical Framework

Socio-technical and Cultural Environment

Field level Institutional System

History of past interactions, interconnections, events.

Context

The actualisation of a series of events through exchange-change processes

Compatibilities, contradictions, Complementarities

Intended and unintended new or reproduced sets of relations
(Resources and their distribution, norms and practices, roles and relationships and interdependencies and identities).

Network and Relational Ties

Strategic Action

Sense-making and Cognition

Structural conditioning

Social interaction

Structural elaboration/reproduction

Figure 3 as an analytical framework draws on viewing the service ecosystem as diachronically emergent and stratified built on the cycles of structural conditioning, social interaction and structural elaboration/ reproduction of the Morphogenetic-static approach. Analysis begins with identifying the conditioning of the service ecosystem context to be studied. This involves identifying the events, histories, and interaction patterns that have created this context. This stage provides a grasp of the extant structures, their powers, and properties which allow us to understand the setting (the state of possibilities) of the activity and interaction period we wish to study.

From this understanding of the manifest context, we can move to examine the dynamics of social interaction, in which actors, by partaking in service and resource-integrating practices, actualise the interplay of the powers at different levels of structure producing the complex interchanges that generate a series of events. Recognising that the offered perspective envisions a plurality of interpenetrating, closely intertwined structures and relations, it is difficult to separate them into distinct and persistent levels of organisation. Core problems identified in the issue of conflation and the metatheoretical assumptions which underpin its reproduction are the conceptual stretching and collapse of these stratified levels squeezing them into a one-dimensional structure. Instead, the perspective adopted in this conceptualisation and the analytical framework is to uphold the differences among organising structures, arguing that the view of emergence and multi-dimensionality provide for phenomena as unique structures with different characteristics, causes and consequences, requiring understanding the complex interplay and relationships among all these features. Turning to the literature, analytical joints can be cut by considering existing levels of analysis which can be said to offer levels which sustain structure and causal efficacy.

These levels represented in Figure 3 acknowledge identified causal efficacy across different levels of structure, for example: 1) the power of cognition and sense-making to shape relationships and networks (Henneberg et al., 2006); 2) the power of strategic action to shape the institutional environment (for example through entrepreneurship) (Koskela-Huotari et al., 2016a); 3) the power of network relationships to determine opportunities for individuals and to shape the perceptions of trust and commitment (a fundamental factor in alliances, supply chains and partnerships) (Ahuja, 2000); 4) the power of overarching institutions to shape relationships and determine self-perception and behaviour (the creation of wants and needs and social networks) (Greenwood, Oliver, Suddaby, & Sahlin-Andersson, 2008); 5) allow cultural and

social trends, fundamental shifts, to have a directional effect on the nature of entire exchange and service systems (the creation of new markets, industries and social groupings) (Barile et al., 2016).

Finally, the outcomes of this process are addressed, directing attention to the structural elaboration and/or reproduction, in which we uncover the new or reproduced relations that make up the structures, and consequently, their properties and powers manifest through the compatibilities, contradictions, complementarities of structural powers. New relations may be found in the emergence of new actors or identities, resources, power, interdependences or institutions and norms and values, roles, identity and types of actors and their relationships and market consolidation or expansion.

5.4.2 *Mechanismic Theorising*

The final step of the conceptualisation is to connect a means of theorising to the analytical framework and social ontology. Under the offered metatheory and framework, the means of theorising and subsequent explanation are built on offering mechanismic accounts. These accounts become conjectures, positing under a set of structural conditions, how through the actualisation of a set of multi-level causal powers, systems may experience change (morphogenesis) and or stability (morphostasis). The basis of this approach is the analytic separation of the different powers, properties and temporality of strata, which are then re-assembled to gain understanding and explanatory purchase and this is the basis of mechanismic[5] theorising.

While mechanism-based explanations have diverse and competing understanding (See Hedström and Ylikoski (2010); Mahoney (2001); Norkus (2005) for reviews), Hedström and Ylikoski (2010) identify four key characteristics, which are amenable to critical realist understanding. These characteristics are: (1) a mechanism is identified by the kind of effect or phenomenon it produces, (2) a mechanism is an irreducibly causal notion, (3) a mechanism has a structure, so mechanism based explanation entails showing how the entities that comprise the

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[5] As Bunge (1997) and Pickel (2006) suggest, this research uses the term mechanismic, rather than mechanistic, to refer to such explanations, to avoid evoking mechanical, linear, equilibrium generating, deterministic connotations which are

structure, together with their properties, activities, and relations, produce the effect of interest, and (4) mechanisms form a hierarchy.

The key difference from other current approaches is that rather than relying on building explanation from first principles— entities, actions and structures—"researchers can ask themselves by what mechanisms have the particular events that they are seeking to understand been brought to pass" (Mason, Easton, & Lenney, 2013, p. 354). As Bunge (1997) argues, mechanisms do not reside in people nor the contextual environment; rather they are the processes that unfold in or among systems (Bunge, 2004b), which explain systems emergence, persistence, and change over time (Pickel, 2007). The aim is to theorise the nature of the multiple determination of events, structures and totalities, and of the interactions which constitute, reproduce and transform them. This means theorising the particular "ways of acting" (Bhaskar, 1998, p. 38), and the tendencies of the structures (Smith, 2006) within the service ecosystem. At the centre of this approach is theorising which Woodiwiss (2001) refers to as an attempt to construct 'principles of visuality', that will allow us to 'grasp' or 'see' empirical evidence of the existence of social objects, and the manner of their functioning.

5.4.3   *Summary*

This section has connected a means of theorising in the form of mechanisms, to the analytical framework and the underlying social ontology. Together these features provide the basis of the second stage of metatheorising and set a conceptual response to the first of the thesis' objectives. The next stage is to take this overarching lens, constructed in the metatheoretical grounding, analytical framework and means of theorising, and actualise it in developing new theoretical insight and sources of explanation regarding how service ecosystems develop through time, experience change and stability and subsequently produce different outcomes. In order to do this, the next section will set the research questions that will provide for the second phase of theory development - the context of justification - addressing the adequacy of these ideas through analytical and empirical efforts (Yadav, 2010).

5.5 Research Questions to Guide the Application of the Conceptualisation.

This section sets out the research questions that will be addressed in the following chapters through the empirical application of the offered conceptualisation. The following research questions explore the application of the overarching lens and analytical framework to *develop new insight and sources for explanation regarding how service ecosystems develop through time, experience change and stability and subsequently produce different outcome for actors.*

The first research question confronts the metatheory itself with the context of justification. While it is paramount to undertake critical, reflexive investigations of the philosophical and sociological assumptions on which frameworks and concepts are based, the adequacy of these ideas and their value as corrective and more comprehensive accounts should be assessed through analytical and empirical efforts (Yadav, 2010). Subsequently, through utilising the conceptualisation developed in this thesis for empirical research, this thesis will respond to the following question:

- RQ1: *How does a critical realist emergentist metatheory contribute to an understanding of service ecosystems as complex multi-level systems?*

Given the objective to *develop new insight and sources for explanation regarding how service ecosystems develop through time,* the second research question reflects on how the identification of mechanisms, based on reconceptualising how service ecosystems are to be researched and explained, provides insight into structural features and tendencies of service ecosystems.

- RQ2: *What mechanisms can be identified and how do these illustrate structural features and tendencies within service ecosystems?*

The final research question reflects on the omissions and under-researched areas which were argued in Section 4.3.2 to be driven by conflationary theorising. Contribution to these interrelated areas is fundamental to the study of service ecosystems and understanding how they develop through time, experience change and stability and subsequently produce different

outcome for actors. Moreover, these areas feature continuously in calls within the marketing and service literature. Therefore the third research question is:

- RQ3: *How does the use of the analytical framework and the identification of mechanisms contribute to addressing those omissions and under-researched features generated through conflation?*

The next chapter sets out the research philosophy and methodology for undertaking the empirical research. This chapter will describe a critical realist informed case study which will offer an illustrative and exploratory forum to respond to the research questions and the objectives of this thesis.

Chapter 6: Research Philosophy and Methodology

This chapter presents the research philosophy and methodology guiding the empirical research. The chapter, firstly, aims to explain and justify the research aims and the philosophical stance. Secondly, to describe and explain the empirical research process, including data gathering, analysis, and interpretation. These two aims connect the metatheoretically informed research framework to an exploratory and illustrative case study.

This research is informed by a critical realist philosophy, this choice is grounded in the use of critical realism in the conceptual phase of the research and the underlying assumptions of critical realism that will be detailed and justified in this chapter. This approach to research philosophy is aligned with the intention to offer a different vocabulary, conceptual tools and consideration of emergence and causation built on connecting social ontology, analytical methodology and subsequent theorising. The following sections outline the critical realist assumptions underlying the research and details the case study methodology used to structure, collect and analyse the research.

6.1 A Critical Realist View

Critical realism (CR) grounded in the work of Roy Bhaskar, offers a robust philosophical and applied research perspective, embraced in the philosophy of science, economics, sociology, and business disciplines (Archer et al., 1998; Edwards, O'Mahoney, & Vincent, 2014; Mingers, 2015). CR as a basis for research methodologies offers a consistent and coherent set of assumptions to investigate complex phenomena in a holistic and systems-oriented manner (Mingers, 2015). CR's explicit assumptions (outlined in Figure 4), direct researchers to focus on connecting causal explanations of phenomena or events regarding both the actors' interpretations and the structures and mechanisms that interact to produce these (Wynn Jr & Williams, 2012). The assumptions underpinning CR will be explored and justified in the context of this thesis in the following sections.

Figure 4 Critical Realist Assumptions for the Research Process

Ontological Assumptions			
Independent Reality	Stratified Ontology	Emergence	Generative Causality

Epistemological Assumptions			
Mediated Knowledge	Explanation via Mechanisms	Stratification and mediation requires interpretation	Explanation rather than prediction

Methodological Assumptions			
Explication of events	Retroduction/ Abduction	Understanding of context and process	Empirical Corroboration

6.2 Ontological Assumptions

Critical realism has placed a strong emphasis on ontology and its subsequent distinction from epistemology. This emphasis stems from the recognition that "the way in which we define the world and how it works has profound implications for how we acquire knowledge about it" (Reed, 2009, p. 433). Ontology, must be given primacy as it is ultimately the nature of being that will dictate 'what it means to 'describe', 'understand', and 'explain' and subsequently, the efficacy of where researchers focus their attention, the questions they ask and the insights and ideas they generate' (Reed, 2009, p. 433). As proposed in Section 5.2.1, the primary ontological claim of CR is that there exists a causally efficacious reality which is stratified, differentiated, changing and constructed of open systems (Danermark et al., 2002). CR defends a depth realist ontology, in which reality is stratified into three distinct layers – the real, the actual and the empirical (Archer, 1995).

The real domain consists of the mechanisms, structures and entities and their causal powers that generate events, under certain conditions, which are, in varying degrees, independent of our experience and knowledge of them (Fleetwood, 2009). These include tendencies, countertendencies, capacities, affordances, liabilities and vulnerabilities. The domain where the events occur regardless of whether they are observed is the 'actual'. The actual comprises patterns of events or processes that result from the interaction of a plurality of mechanisms,

tendencies and counter-tendencies, in specific conditions. Lastly, the empirical domain denotes those events that are experienced (Outhwaite, 1983). The empirical concerns evidence about the actual, that is, those potentials that are actualised (observations concerning the actual and/or the real, lived experience, observations and measurements) (Bhaskar, 1989). Together the empirical and the actual provoke questions about the nature of the real. Figure 5 represents this stratified view.

Figure 5 Stratified Ontology
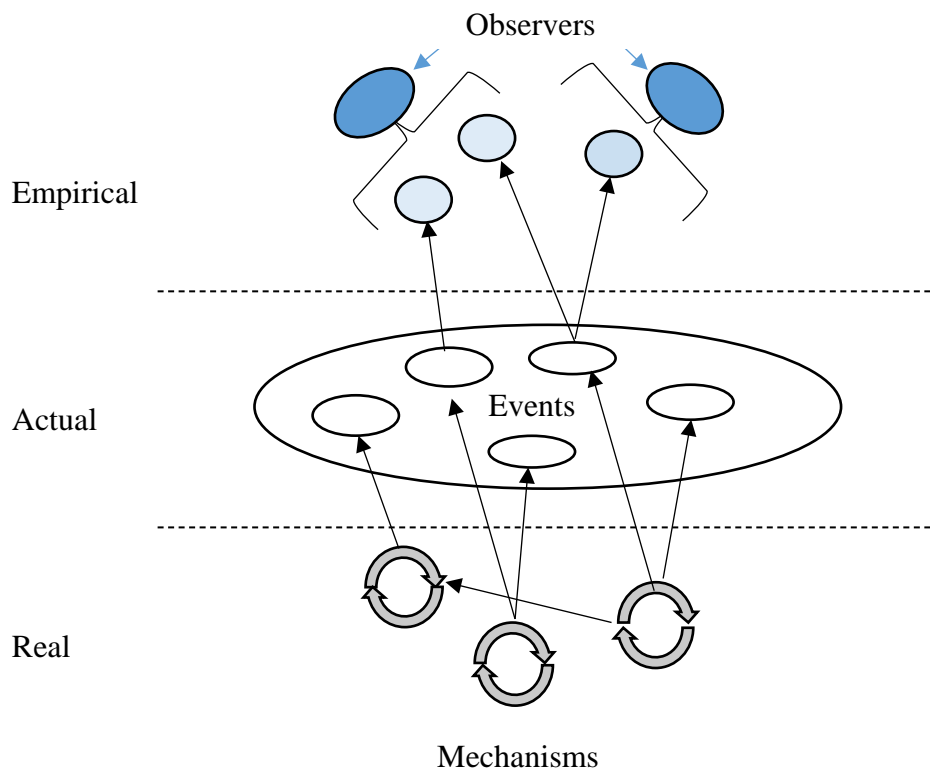
This ontological claim of stratification is contrasted against a positivist view that would reduce the world to that which can be empirically observed and measured, and the various forms of constructivism that would reduce the world to our human knowledge/experiences (construction) of it (Bhaskar, 1989). CR recognises that reality is both theory/concept and people dependent but is not exhausted by either of these (Danermark et al., 2002). The quality of emergence that drives structural stratification (as underpinning the conceptualisation of this research), recognises the nature and causality of these systems as causal circles between the whole and its parts entrenched in feedback reaching out into the environment and in time.

CR subscribes to a logic of generative causality suggesting it is particular arrangements of structures, powers and causal mechanisms that influence reality and the tendency to exhibit

particular behaviours and generate events that are experienced at the empirical level. Generative mechanisms are thus real and distinct from the events and patterns they generate and, in turn, events are real and distinct from human experiences by which they are cognised (Bhaskar, 2008). Observed events are the outcome of all the mechanisms operating simultaneously (Archer et al., 1998).

This view of ontology is intimately tied to the conceptualisation underpinning this thesis. Using a consistent philosophy of science for both conceptualising and conducting research ensures underlying assumptions remain explicit and are justified and the overall research process is coherent (Archer, 1995, 2011).

6.3 Epistemological Assumptions

The explicit ontological position has consequences for epistemology. Epistemologically, CR aims to explain the relationship between experiences, events and mechanisms. CR recognises that our access to reality is always mediated by our perceptual and theoretical lenses, due to the adherence to a stratified reality (Figure 5) (Bhaskar, 2014). In response CR advocates judgmental rationality, where the task of research is to utilise the theoretical and methodological tools available in order to discriminate among theories and knowledge (including the empirical experiences of social actors) regarding their ability to inform us about reality, while accepting that generative causality dictates that knowledge is always contextual (Al-Amoudi & Willmott, 2011).

CR asserts that knowledge advances — fallibly — via continuing confrontation between theoretical hypotheses about the nature of intransitive objects (structures and mechanisms) and socially produced evidential statements generated by transitive inquiry (the interaction between theoretical and methodological tools and empirical observations) (Jessop, 2016, p. 90). Knowledge production is, therefore, a circular process of conceptual, analytical and dialectical reasoning switching among concept building, empirical inquiries, retroductive moments and conceptual refinement (Bhaskar, 2008).

Subsequently, CR inquiry rests research on the argument – given how we experience the world, what must be the case in order to generate these experiences? (Bhaskar, 1989). The objective of theory and explanation is not built on the positivistic view of theory as tied to the search for

regularities among events built on the regularity or successionist theory of causation (associated with empiricism and the positivist mode of explanation) (Wan, 2011). Neither, does CR follow the presupposition of interpretive researchers who often leave explanation to understanding actors' views of their social world and their role in it, exploring and privileging subjective human viewpoints. In the view of CR and Bhaskar, these positions commit the epistemic fallacy in which the question 'how can we know about the world' is privileged over asking 'what must the world be like' (Bhaskar, 2008). The social world does not easily reduce to 'chunks' or variables and the complexity of the social world cannot be collapsed into our surface experiences of it (Bhaskar, 1989).

CR stresses that what matters in research is uncovering and understanding the real properties, structures, and generative mechanisms that underlie the actualisation of events and observations (Reed, 2009). Subsequently, the stratified social ontology combines with a logic of explanation built on identifying generative mechanisms, accommodating their contextually embedded and configurational nature in different domains and at different levels of analysis (Reed, 2009). A CR study aims to explain sets of events by describing the mechanism or set of mechanisms that will explain those events. The CR researcher attempts to answer the following question "What must reality be like in order for this event to have occurred?" (Wynn Jr & Williams, 2012). The aim of theory, therefore, is generating models that can be useful for describing the world, built on hypothesised possible generative mechanisms that could, if they existed, explain the manifestation of experiences and observations (Wynn Jr & Williams, 2012). This epistemological stance resonates with the means of theorising set forth within the overarching lens.

Theory does not aim at offering decontextualised generalisations or predicting outcomes, because systems are open, and interactions can bring about divergent outcomes. However, causal explanation is the focus built on a search for necessity in the form of causal mechanisms, regardless of whether the events they produce are unique or common (Sayer, 2000). Research may, however, generalise theoretically, within a scoped range by considering that similar configurations (relations, structures and interacting mechanisms) may occur, creating conditions, interactions and outcomes sufficiently similar to the system of interest. CR studies are, therefore, concerned with theoretical generalisation, not deriving validity from its representativeness, statistically generalising from samples to populations (Wynn Jr &

Williams, 2012). Subsequently, CR lends itself to a different logic of discovery than the traditional polarisation between inductive and deductive inquiry.

The logic of inference or discovery refers to different ways of arguing and drawing conclusions (Danermark et al., 2002). Deduction and induction are the most familiar. Deduction begins with a general idea or hypothesis and predicts outcomes and draws conclusions based on a theory. Induction draws broad generalisations and conclusions from specific data sets and observations (Danermark et al., 2002). CR see these means as insufficient, as deduction leaves us with no knowledge of reality beyond the initial premises and induction defines reality reducing it to particular and immediate occurrences (Bhaskar, 1989). Rather, the inferential means of abduction and retroduction are necessary in order to move to more developed or deeper conception of events and uncover the conditions and interactions connecting events (Ackroyd & Karlsson, 2014). Abduction operates via interpretation and recontextualisation of events through a conceptual framework operating as an interplay between observed phenomena and theoretical redescriptions of it, aiming to explain these through reference to underlying structures, internal relations and contexts (Danermark et al., 2002). Retroduction moves from these redescriptions to the postulation of mechanisms searching for a description of the conditions, causal configuration and generation of events that define and give necessity to the mechanism (Elder-Vass, 2010). The means to this end are combinations of conceptual abstraction and model building based on "historical, structural, and interpretive forms of analysis" (Reed, 2009, p. 473). This perspective resonates with the process of analysis set out in the analytical framework (Figure 3) as described in Section 5.4.1.

The critical realist perspective and the noted assumptions have implications for the choice of research design in conducting empirical research. Strata and emergent powers, mechanisms, open systems and holistic causality become central concerns in determining the view of design and method in critical realism. These assumptions are connected to the analytical framework and conceptualisation and, therefore, direct the methodology.

6.4 Methodology

Methodology examines the logic and rationale which underpins the use of particular methods of data gathering, analysis, and interpretation (Hughes & Sharrock, 2007). From a CR perspective, the fundamental methodological aim is to enable and give adequate explanation to

the question; how do we identify mechanisms? (Wynn Jr & Williams, 2012). Because these mechanisms arise from various layers and the relations among components and layers, understanding the conjunctive, multiplicity of their interactions is important (Bhaskar, 2010). Subsequently, CR research, and this thesis favour, an intensive research design which is used for investigating causal processes in one or just a few cases as compared with an extensive design which addresses a larger population and tries to find regularities[6](Danermark et al., 2002). Intensive empirical procedures draw on substantial qualitative data collection and analysis and provide the means to iteratively investigate mechanisms in a complex and contextualised situation, tracing a range of interconnected causal powers, across multiple interpenetrating levels of analysis (Danermark et al., 2002; Langley, 1999). Case study methodologies have been advocated as an appropriate strategy to explore the interaction of structure, events, actions, and context to identify and explicate causal mechanisms[7] (Ackroyd, 2010; Ackroyd & Karlsson, 2014; Easton, 2010; Vincent & Wapshott, 2014; Wynn Jr & Williams, 2012). As Harrison and Easton (2004, p. 195) note, 'the use of case studies allows a researcher to attempt to tease out ever-deepening layers of reality in the search for generative mechanisms and influential contingencies.' These factors provide an effective means to operationalise the analytical framework of this thesis.

Easton (2010, p. 119) defines a case study as a research approach that involves investigating one or a small number of social entities or situations about which data are collected using multiple sources and developing a holistic description through an iterative research process. This thesis utilises a case study approach given the intention to study service ecosystems through an overarching lens which necessitates analysis with histories and geographies, multiple and transient features, and characterised by change (Easton, 2010; Sayer, 1992). As Hunt and Ropo (2003) suggest, case studies emphasise the temporal interconnectedness,

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[6] Sayer (1992) and Danermark et al. (2002) argue against the traditional division of quantitative and qualitative, suggesting their delineation is usually based on an erroneous notions of the empirical and objective on one side, and the idealistic and subjective nature of reality on the other.

[7] Further to CR's advocacy for case study research, literature within the various research domains informing this research also support case study approaches. A consistent stream of papers in service and business network literature emphasise qualitative case studies in efforts to understand conditions of systemic interdependence and complexity, resource flows and the activities of actors with an emphasis on in-depth exploration and weight given to contextualisation of the phenomena and explanation (Baron, Warnaby, & Hunter-Jones, 2014; Buttriss & Wilkinson, 2006; Dubois & Gadde, 2002; Dubois & Gibbert, 2010; Gummesson, 2005, 2006; Halinen & Törnroos, 2005; Halinen, Törnroos, & Elo, 2013; Kohtamäki & Rajala, 2016; Piekkari, Plakoyiannaki, & Welch, 2010; Quintens & Matthyssens, 2010; Wilkinson & Young, 2013).

holistic, contextual embeddedness and process-orientated nature of the phenomena under study. Case studies are also seen as an effective means to build theory (Dubois & Gibbert, 2010; Eisenhardt & Graebner, 2007; Wilson, Bunn, & Savage, 2010), address how and why questions (Dobson, 2001; Easton, 2010; Wynn Jr & Williams, 2012), and develop orientations and tools of explanation (Thomas, 2011). Each of these features aligns well with the focus of this thesis, the intended object and framework of study and the intention to justify the theoretical position offered and develop theory from its actualisation.

6.4.1   *Case Approach*

A single service ecosystem (single case) is utilised for this research with multiple embedded subcases. The rationale behind a single case is the objective to study an ecosystem and a multitude of actors and perspectives involved within the system's development through time. This choice was encouraged by the CR approach, emphasising intensive designs and the search for mechanisms based on the logic of inference. The limitations of a single case setting are acknowledged (Miles & Huberman, 1994); however, single cases provide important advantages to the aims of this research. Firstly, a single case provides the opportunity to develop an in-depth, coherent and flexible understanding of complex phenomena from a variety of perspectives over time (Dubois & Gibbert, 2010; Easton, 2010; Graebner, Han, & Ozcan, 2017; Kohtamäki & Rajala, 2016). This scope and flexibility are important in addressing the nature of the research object analysed through the proposed framework, which recognises both multi-levelled/dimensional features and temporally and spatially stratified nature of the world. Secondly, the choice of a single case allows the selection of a case which represents a key example of a service ecosystem and is information-rich and illuminates particular features of the theorised object under study by virtue of its unique qualities (Bhaskar, 1989; Flyvbjerg, 2006; Patton, 1990; Thomas, 2011). Thirdly, the selection of a single case allows the research to take advantage of, and maximise, access to the research subject (Graebner et al., 2017).

The single case setting is augmented by an embedded approach utilising different levels of analysis (individual, inter-organisational, network and system levels) and 14 different organisations within the case (the service ecosystem) as sub-cases (Graebner et al., 2017). Embedded units of a case "add significant opportunities for extensive analysis, enhancing the insights into the single case" (Yin, 2009, p. 52). The embedded case design is powerful for addressing systems because it allows the multi-level nature of the system to be addressed

through analysing the subunits separately (within case analysis) and between the different subunits (cross-case analysis) as a representation of the larger system (Yin, 2003, 2009). As Bizzi and Langley (2012) argue, in the study of broad units of analysis, which defeat multiplying the sample, some form of comparison should be injected into the study both stimulating theoretical creativity and in arguing for generality. This can be done by looking for multiple implications of the theoretical ideas being investigated within a single case (Campbell, 1975), viewing the case as a set of diverse representations of theory and as units of analysis (Leong, 1985). This approach provides the opportunity to leverage the replication logic that is typical of multiple cases (Eisenhardt & Graebner, 2007; Graebner et al., 2017).

This approach resonates with a CR basis for generalisability set out in the epistemological assumptions. CR studies are concerned with theoretical generalisation, focussing on discovering and explaining causal mechanisms hypothesised to have generated the observed outcomes in a case, rather than statistically generalising from samples to populations (Wynn Jr & Williams, 2012). This view of theoretical generalisation grounds causal mechanisms as defensible causal explanations in one case, arguing that the constituents of that explanation provide a legitimate basis for theory development beyond that case, particularly where similar relations, structures and causal powers exist (Buttriss & Wilkinson, 2006; Danermark et al., 2002; Easton, 2002, 2010; Sayer, 2010).

6.4.2 *Research Subject (Case)*

As noted, the underlying principle in selecting appropriate cases is the preference for cases that are information-rich with respect to the topics under investigation; this aim justifies the use of purposive, theoretical sampling (Eisenhardt & Graebner, 2007; Patton, 2002; Stake, 1995). In selecting a case, it is necessary to build a meaningful configuration of events and structures, which is a complex but also a singular whole entity (Byrne, 2005; Ragin, 2004). The case selected for this research centres on the ongoing digital transformation of the New Zealand Central Public-sector, with technological progress, fast-moving international industry and shortages of resources and capabilities, forcing the need to closely collaborate with private sector companies to achieve these objectives. This setting represents a service ecosystem (the case) as a system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange'. A deeper case description is provided in *Section 6.5*.

This case was chosen as it provided significant opportunity to take advantage of the circumstances, events and opportunities present in a high profile, local and historically embedded system to collect data retrospectively over a coherent period of time. The research setting allowed temporal-spatial boundaries to be flexible in order to allow the features of the case to emerge as the research process developed (Bizzi & Langley, 2012; Dubois & Gadde, 2002). A noted focus of the research setting was the period of 2010 to 2017. Between these years major government reform programmes, both holistically and specifically within ICT and digital services, were implemented and significant changes occurred in the technological and digital market and in the activities and relationships between ICT service providers and the public sector. These features made the case setting a particularly informative and rich environment that projected key changes and transformations which sharpen the focus on insights and provide greater impetus to mechanisms operating and shifting structures and relations (Bhaskar, 1989; Bizzi & Langley, 2012). Public sector activities are, comparatively, well documented in general media and government reports and documentation. Similarly, the technology sector and market have a number of specialist media outlets, and active commentary which provide accessible retrospect and contemporary archival sources. Public sector organisation has also been noted as a particularly rich multi-level and multi-faceted phenomenon, requiring in-depth processual accounts (Kuipers et al., 2014).

Similarly, the choice of case has domain-specific relevance with service researchers calling for further research into the role of rapidly advancing IT as a dominant driver of change, and more specifically the role of IT in the transformation of public services within the service ecology (Barile et al., 2016; Gustafsson et al., 2016; Lusch & Spohrer, 2012; Ostrom et al., 2015; Reynoso et al., 2018; Vargo et al., 2017; Westrup, 2018). This context also represented similar conditions, histories, challenges, and choices being faced globally by large organisations in both the public and private sectors (Eggers & Bellman, 2015). Subsequently, the case is instrumental, playing a supportive role, facilitating understanding of the metatheoretical and analytical frame developed here, as well as having intrinsic value itself as a relevant subject of interest in need of further exploration (Stake, 1995).

6.4.3   *Data Collection Methods*

Data collection for the intensive case study followed a number of steps. Data collection decisions were progressive and subject to an active process shaped from the unfolding reality as it was construed through both participants and other sources of information (Dubois & Gibbert, 2010; Easton, 2002, 2010; Harvey, 2009). Table 7 provides an overview of data sources. The main sources of data were in-depth interviews with a range of participants representing organisations in the service ecosystem and extensive document analysis (Smith & Elger, 2014).

6.4.3.1   Interview Process and Document Analysis

1. An initial analysis of publicly available articles and data in industry media, newspapers, company documents, commentary and government documentation, was reviewed (George, 1979). Each document was summarised based on; the organisation, setting or context it focussed on or referenced; the date of the document and the time period it referred to; analysis offered or key assertions made; events identified and the source. This review provided an initial list of events and raised questions that could be posed within the interviews while pointing to organisations from which participants should be drawn.

2. Preliminary talks were held with two informants embedded in both the technology market in New Zealand and within a central public sector agency. These initial informal discussions helped begin to structure the process of defining the case, providing direction to key issues, organisations, time periods and existing documentation. These initial discussions also helped refine the list of interview candidates.

3. A first tranche of 12 semi-structured, in-depth interviews was conducted with individuals representing nine organisations from across the service ecosystem (Table 8 provides descriptions of the interview participants including those of the subsequent tranche). The organisations these participants represented came from different positions in the service ecosystem, providing insight into the different individual structural conditions each is embedded in, while together forming the overall system. All participants were purposively selected based on recommendations of the initial informants and subsequent interviewees, as well as searching LinkedIn for specific roles, and notes on their position or authorship in documentation or websites (Sayer, 2010). All interviewees held key positions within

their organisations, ensuring they were able to reflect on the trajectory of the system. These positions included Managing directors, Chief Technology Officers (CTOs), leads of identified key programmes or ownership of a relevant relationship (e.g. Director of an ICT supplier's relationship with Government). These roles were deemed to provide anticipated richness and relevance of information as well as a good understanding of both their environment and internally within the organisation (Yin, 2009).

A flexible semi-structured interviewing process was used for each interview. Some guidance around questions created momentum in the interview and allowed specific points to be covered across participants as well as ensuring the interviews were cumulative, referencing key issues or events raised in document analysis or within preceding interviews (Smith & Elger, 2014). However, the majority of the interview was kept open, allowing participants to provide their embedded experiences and expertise, which could be structured through the interviewer's responses and probing. The interviews aimed to collect three types of data (Wengraf, 2001):

- Descriptive data - descriptions of the organisations, the participants' role and related processes as well as identifying key events that were deemed important for the service ecosystems.
- Narrative data – intended to structure the descriptive data and indicate the sequence of events focussing on constructing the development of structure over time.
- Argumentation - lines of reasoning and arguments that describe causal linkages. Here the focus was on probing participants experiences of events and have them provide perceived connections and reasoning for events.

In probing participants' experiences, questions drew on the proposed analytical framework (Figure 3). Aiming to uncover the history of prior events, actions and their outcomes that set the trajectory for a specified event, decision or action; identifying relevant environmental or contextual conditions that may have shaped particular responses or actions or that affected the efficacy of an intended outcome or process; the beliefs and attitudes that stemmed from the participants and their organisation's relationships to others and their broader environment and their strategies and perceptions of what other organisations may do.

Interviews lasted between 40 minutes and two hours, were recorded with permission and were conducted at a location chosen by the participant. On agreeing to be interviewed, each participant was provided with the framing and intention of the research, an indication of the reasons their contribution was sought and a list of tailored broad questions to indicate the scope of the interview and enable the participant to prepare on their own terms. Participants were also encouraged to bring or refer to documentation to aid in their recall (Bacharach, Bamberger, & McKinney, 2000).

4. Following this initial tranche of interviews, it became important to make a sustained effort to structure data and begin an initial analysis given the large volumes being collected (Crowe et al., 2011). This initial analysis used truncated forms of the techniques outlined in the following section (Section 6.4.4) and helped assess and develop initial integration with the theoretical framework (Crowe et al., 2011). This process also helped to solidify intended target participants and to develop the document analysis. Interview participants were identified from both organisations that emerged as central figures in the narratives provided by participants and from missing sources of information, events or new questions raised through the initial analysis.

5. A second tranche of 10 semi-structured, in-depth interviews was conducted with different participants, including participants representing five additional organisations. The approach replicated the process noted above. Familiarity with the case and a range of existing perspectives could also be compared and contrasted during these interviews, allowing each to exist as a window onto reality from which a picture of the system could be triangulated (Carson, Gilmore, Perry, & Gronhaug, 2001). A focus after each interview was comparing notes to preceding interviews addressing commonalities or conjunctive processes that suggested structural conditions, causes, or sets of consequences that may sit behind the more explicit and individualised narratives given in the interviews (Pawson, 1996). Of particular importance in this second tranche of interviews was addressing argumentation, both in terms of the actions of the participants themselves but also other organisations in the service ecosystem. This focus allowed participants to express conditions, structures or dispositions that others may not consciously relate to their actions. Conducting the interviews in separate tranches also allowed for the development and revision of the initial analysis and explanations.

6. Throughout the process continued document analysis took place, resulting in a total of 442 documents published between 1995 and 2017. Documents were sought on the basis of participants' recommendations as well as searching archival public databases provided by Government webpages and within local media records. This process was used to help inform questioning of participants during interviews and well as providing other viewpoints and searching for connected and contextual issues which may have been aligned with issues raised during the interviews.

7. A final round of questioning was undertaken with three participants, who had already taken part in the in-depth interviews, following substantive data analysis. This process acted as a member check using synthesised analysed data (Harvey, 2015). These participants were selected based on their perceived ability to provide valuable responses, given their own roles, time spent in the case setting and the distinct position their organisation held in the service ecosystem. The participants represented diverse organisations - a multinational technology firm, a local service provider and a government agency programme lead. During this process analysed data from the whole case was presented as descriptions of the mechanisms and examples of the conditions, processes and outcomes generated with these (Bygstad, 2010). Diagrams and mapping were also used as illustrations of the logic at work in the analysis. It was important to present the findings and analysis in an accessible way, particularly given the strong focus on the vocabulary and conceptual tools orientating this research. Participants were encouraged to disagree with interpretations or offer alternative explanations. The process was valuable in two ways; 1) it served as a participative form of triangulation; 2) a number of examples and additional evidence was proposed by the participants in support of, or furthering, the hypothesised mechanisms.

6.4.3.2   *Ethics Approval for Data Collection*

Before data collection begun an application for approval was sought from, and approved by the Human Ethics Committee (HEC) of Victoria University of Wellington (HEC 0000023876). As part of this process, informed consent was sought from participants which included keeping the participant's names and their organisations confidential, as listed in Table 8. Similarly, information and quotes used in the case description and findings are attributed to a generic role that aligns to the participant while maintaining their confidentiality.

Table 7 Overview of Data Sources

Organisations	Number of organisations	Initial Discussion	Interviews	Member checks
Government Agency	4	1	8	1
State Owned Enterprise	1		1	
Multinational Service Provider	4		5	1
Local Service Provider	5	1	8	1
Total	14	2	22	3

Documents	Number
Industry and General Media	191
Reports from organisation and related entities	98
Web pages/ documents	93
Other (Cabinet Papers, Speeches, Presentations)	60
Total	442

Table 8 Descriptions of the interview participants

Organisations	Participant Position	Justification	Data collection
Organisation A (Local Service Provider)	- CEO - Director - Regional Manager	- Growth orientated cloud provider - Partnerships with major multinationals and key local networks - Involvement in multiple agencies projects	3 interviews 1 Member Check
Organisation B (Local Service Provider)	- Government business owner	- Key government service provider - High number of agencies as customers - Major partner with multinational providers	1 interview
Organisation C (Multinational Consultant)	- Managing Director (Regional)	- Central partner in government transformation - Large number of agency relationships - Global and Local market outlook	1 interview
Organisation D (Multinational Software Provider)	- Managing Director (Regional)	- Major multinational provider with a unique business model - Key relationships with local providers - Government servicing	1 interview
Organisation E (Multinational Service Provider)	- Project manager - Government account director	- Very high-volume supplier to the public sector - Major industry incumbent	2 interviews 1 Member Check
Organisation F (State-owned enterprise)	- CTO	- Peripheral position as a State-owned enterprise - Customer of service providers	1 interview
Organisation G (Government Agency)	- CTO - Relationship manager	- Central Agency - Significant Business transformation - Considerable engagement with the private sector	2 interviews

Organisation H (Government Agency)	- ICT External Relationship Manager - Business change director - Relationships Director	- Central Agency - Core agency in ICT and digital transformation - Extensive engagement with the private sector - Strong Procurement Function	3 interviews 1 Member Check
Organisation I (Government Agency)	- Procurement manager - Manager – integrated services	- Strong Procurement Function - Central Agency - Programme lead in external engagement	2 interviews
Organisation J (Government Agency)	- Programme Lead	- Central Public-Sector department - Role in performance and oversight - Programme Lead	1 interview
Organisation K (Local Service Provider)	- Business manager - IT architect	- Major National Incumbent - Key relationships with other providers - Central provider to government	2 interviews
Organisation L (Multinational Service Provider)	- Manager of Public Sector Relationship	- Central partner in government transformation - Large number of agency relationships - Global and Local market outlook - Major industry incumbent	1 interview
Organisation M (Local Service Provider)	- Director	- Key government service provider - High number of agencies as customers - Major partner with multinational providers - Substantial commentary	1 interview
Organisation N (Local Consultancy)	- Consultant and Industry Observer	- Industry consultant - Worked in both public and private sector consulting	1 interview

6.4.4   *Data Analysis Process*

As discussed, the primary objective of this empirical CR-informed research is to provide causal explanations at different levels by uncovering mechanisms and underlying structures, characterising the trajectory of empirical events within the service ecosystem. This section details the analytical phases undertaken to derive the mechanisms explaining the development, change, stability and subsequent outcomes for actors within the embedded case study.

It is often noted that there are no codified analytical procedures that uncover mechanisms and generate theory per se (Langley, 1999; Mingers, 2014; Pajunen, 2008; Wynn Jr & Williams, 2012). However, the commitments of CR provide a process for undertaking a retroductive methodology for applied research, as follows (Mingers, 2014);

- Resolution of complex phenomena into components
- Redescription in a meaningful explanatory way
- Retroduction of potential hypothetical explanatory mechanisms
- Elimination of alternative competing explanations
- Identification of causally efficacious mechanisms
- Correction of earlier findings/theories

Drawing from Wynn Jr and Williams (2012), Mingers (2014) and Bhaskar (2010, 2013) these steps were operationalised as outlined in Table 9 for the case study methodology pursued in this research. As noted in Section 4.5, holistic empirical studies of service ecosystems are limited and across the marketing and service literature, calls for methodological advances in the face of complex research setting and the use of a systems orientation continually appear. Consequently, the approach set out in analysing and interpreting the data, represents a unique process reflecting the metatheoretical efforts to reframe the constitution of service ecosystems and the means of researching and explaining them (the analytical framework and mechanismic theorising).

Table 9 Data Analysis Process

Analysis Step	Description	Analysis Task
Resolution	Resolve the complex phenomena into components. Identify the particular events of interest and the relevant structures to which they relate.	- A database of incidents is created using the data from the interviews and document analysis. - Visual maps were created using each interview and a master map of all data. - Incidents are reconciled into a list of chronological events
Redescription	An explanation of the constitution and the patterns of events in an explanatory meaningful way is built. This phase relies on causally linking events as complex sequences and branching paths of conditions, actions, and effects and organising these sequences within the stratified layered system proposed by the Analytical Framework.	- Chronological event list is entered into ETHNO - Each event is coded according to the coding scheme - The linking function using the available prompting questions is conducted in ETHNO - Sequences of linked events are bracketed as cycles. - Events in these cycles are redescribed abductively confronting the data with existing frameworks in use. - The redescriptions are organised using the structure of the research framework
Retroduction	Retroduction requires positing generative mechanisms which may be interacting or causing the events under study. Retroduction is based on 'thought trials' uncovering the generative nature of structures which might produce the effects at issue.	- Visual mapping was used to conjecture different patterns that explained series of events and indicated particular changes to structures and relations that were evident between events
Corroboration	This phase involves corroboration and justification. Further evidence and testing of competing alternative explanations is undertaken to solidify mechanisms. Proposed causal explanations are developed to clearly and accurately describe their role in the outcomes within the given context.	- Pattern conjectures were considered as alternative explanations - Patterns at different levels of structure and in different types of relations were aligned and consolidated. - The consolidated set of patterns were considered in light of metaphor and analogy - Four causally relevant and explanatory mechanisms were postulated - Member checks are undertaken with participants to further corroborate and validate findings.

In order to undertake these steps, guidance and a bricolage of approaches from process theorists were drawn on in order to maximise the range of perspectives from which data was organised, analysed and bracketed and to support the discovery process (Bizzi & Langley, 2012; Buttriss & Wilkinson, 2006; Grazman, 2000; Langley, 1999; Poole, Van de Ven, Dooley, & Holmes, 2000). In particular, strategies for theorising put forward by Langley (1999) were utilised. Langley's approaches are designed for data consisting of events, activities and choices ordered over time, existing across interpenetrating levels of analysis and with variable temporal and spatial embeddedness.

6.4.4.1 Step 1. Resolution

The first step of the process is to observe and empirically describe the research object through the concrete details of the specified case. This step was largely grounded in the data collection phase outlined in Section 6.4.3. To manage the large volumes of raw data being collected, efforts to systematically and comprehensively organise the data drew on a process of creating a database of incidents and the derivative effort to create conceptual maps. A database of incidents was created using Microsoft Excel to record and manage the data. This database used a similar format to the document analysis database, noting the date of occurrence; the organisations involved; a short description of the incident; the source (either a link to the document or reference to a timestamped interview); tagged with relevant levels of analysis (e.g. strategic action, inter-organisational relationships, ecosystem environment) and quotations from documents or participants (Grazman, 2000). This process helped produce a chronologically ordered list of empirical incidents. Accompanying this database, conceptual maps were created using the programme Decision Explorer. These maps were created using the incidents as concepts which could be linked, offering a sense-making strategy to begin developing rich and flexible representations (Langley, 1999; McDonald, Daniels, & Harris, 2004). Maps were created from each interview and then added to a master map that included those incidents identified in the document analysis (examples are provided in Figures 7 and 8 in Appendix B (11.2.1)). Maintaining both individual and master maps provided a point of comparison as well as a manageable set of data to look at events from different levels and perspectives.

Together this two-step process aided in organising the data into a chronological narrative and helped suggest sequences within and across levels. Most importantly this step of resolution aided in deriving events from the noted incidents. The information provided by different incidents was reconciled and organised into events by indicating some change in the state or properties of some entity and by defining the event within a structure of conditions, actions, and consequences. This process allowed the abstraction of events from participants triangulated experiences as well as their corroboration and development through the incidents identified in the document analysis. Events, therefore, become higher-level meaningful concepts that were connected to both the participant's experiences but also the whole of the system (Abbott, 1988, 1990; Wynn Jr & Williams, 2012). From the 312 incidents identified in the database, 170 were listed as events and were used as input to the event structure analysis used as part of *Step 2 Redescription*.

6.4.4.2   Step 2. Redescription

The redescription phase aimed to set the foundation for theorising the causal mechanisms behind the series of events by decomposing the relevant structures into constituent parts and moving from temporal ordering to uncovering causal codetermined sequences and branching paths of events (Elder-Vass, 2007b; Steinmetz, 1998). Event-structure analysis (ESA), and its associated computer program, ETHNO (Heise, 1988, 1989), was used to facilitate both a causal and interpretative method for unpacking events and analytically reconstructing them using two types of analysis suited to these aims (Barnes, 1993; Buttriss & Wilkinson, 2006; Corsaro & Heise, 1990; Griffin, 1993, 2007). These types of analysis are compositional analysis, which helps describe how events in a narrative associate people, things, and actions, and linking analysis, which helps identify the type of linkages between events. These processes were enabled by ETHNO's interface and data management functions (examples of the interface are presented in Figure 9 and 10 Appendix B (S.11.2.2)).

Using the developed chronology of events as input, ETHNO allowed coding event composition through a coding scheme and reformulating the chronology into a series of yes/no elicitation questions for each event-to-event connection determining whether the temporally preceding event is of causal relevance to a subsequent event (Griffin, 1993). This process of linking was

significantly aided by the ability to manipulate the constructed maps in Decision Explorer. Decision Explorer allows collapsing maps to view certain concepts (as events), certain chains of events, as well as conducting 'explanation' and 'consequence' analysis which offer insight into the combination of concepts that lead to a certain concept or a concepts role in the occurrence of concepts stemming from it. The elicitation questions and description of the coding frame are presented in Table 10 below. The coding scheme was aligned as a means for structuring the data in order to redescribe it through the research framework (presented in Figure 3 (*Section 5.4.1*)). For example, under the setting code features of the history and prior decisions were coded and under product, new or reproduced resources roles and relationships were coded.

Table 10 ETHNO Coding Scheme and Linking Questions

Compositional Coding Frame		Forms of Linking Questions
Element	**Definition**	
Actor	The actor/s who initiates/performs the action.	Prerequisite: Does __ require __ or a similar action?
Act	The specific activity undertaken	Implication: Does occurrence of __ imply __ or a similar action?
Object	The entity that is changed. People, relationships, technology, contracts etc	Historical Causation: Is __ or a similar action a cause of __ in the circumstances that existed?
Instrument	An entity used by the actor to causally advance the happening. This can include resources and cognitive frames.	Counterfactual: Suppose an action like __ does not occur. Can __ occur anyway?
Alignment	Causally relevant level of structure (e.g. organisational, network or ecosystem environment).	
Setting	A convergence of prior events, decisions and existing structures or relations which provide the context.	
Product	An entity that comes into existence as a result of an action(s) and that influences, enables or disables subsequent actions - e.g. the creation or access to new resources?	

The outcome of this process of analysis was an event structure diagram (cf. Figure 11 Appendix B (S.11.2.3)). This diagram could then be explored as the causal structure of events, listing each events prerequisites and consequences while simultaneously displaying the coded composition. This structuring of the data allowed chains of events and codetermined sequences to be bracketed as processes of conditions, interactions and outcomes. Subsequently, this output allowed the analysis to focus on logically connected relationships and critical or key turning points and outcomes in the multiple sequences of events. These constitute the trajectory of the service ecosystem overall as well as for different organisations and relationships. This brought clarity to the mass of events which represented a labyrinth of connected and intersecting processes. Bracketed series of events were then redescribed by overlaying the research framework, considering the different layers of structure and using the existing coded features to suggest causal powers at work.

During this process, an abductive approach was followed aiming to redescribe the events and their sequence drawing on the more abstracted descriptions of structures, properties and powers offered by research using the diverging frameworks considered in Chapters 3 and 4 (Ackroyd, 2010; Edwards, O'Mahoney, & Vincent, 2014). As noted in *Section 5.3* and as part of the analytical conditions generated by the metatheoretical propositions *(Table 5 Section 5.3),* research using these frameworks points to 1) the influence or operation of the powers of a set of relations representing a structure at a level of organisation, and/or; 2) the outcomes of competing powers at distinct levels of organisation. This approach allowed the use of alternative templates (Langley, 1999) as a means to use a priori theoretical premises to offer alternative interpretations of the events. Figure 12 and Table 15 in Appendix B (S.11.2.4) provides examples of the literature used as sensitising templates. Together the process of bracketing sequences of events and abductively redescribing these as more general abstract features provided a set of cycles of conditioning, interaction and outcomes that could then be addressed through retroduction.

6.4.4.3   Step 3. Retroduction

The retroduction and subsequent corroboration process were iterative, drawing on the higher-order coding and process mapping established through Redescription, tracing conjectures back to the

raw data organised in the resolution stage and using the experiences and trajectories of different actors and the bracketed sequences of events as separate embedded units. The central aim of this step was to answer, 'what is it about the structures which might produce the effects at issue?' (Sayer 1992, p. 95). Fundamentally, it is describing the characteristics of the structures that if they were to exist and act in the postulated way would account for the events in the system and the subsequent outcomes that stem from the trajectory they account for (Bhaskar, 1989). This process relied heavily on visual mapping (cf. Figure 13 Appendix B (S.11.2.5)), reconstructing the identified cycles and indicating a pattern that connected the events both in their sequences as well as in their composition. This was a creative rather than codified process, and as Wynn Jr and Williams (2012) consider, it is grounded in thought trials and pattern matching. The output of this process was a number of descriptive patterns that could be linked to series of events based on their constitutive nature as structures and relations. These postulations then formed the basis for the final stage of Corroboration. The logic that sat behind the process and connected retroduction to the corroboration stage can be found in Figure 6.

Figure 6 Example of the logic of retroduction
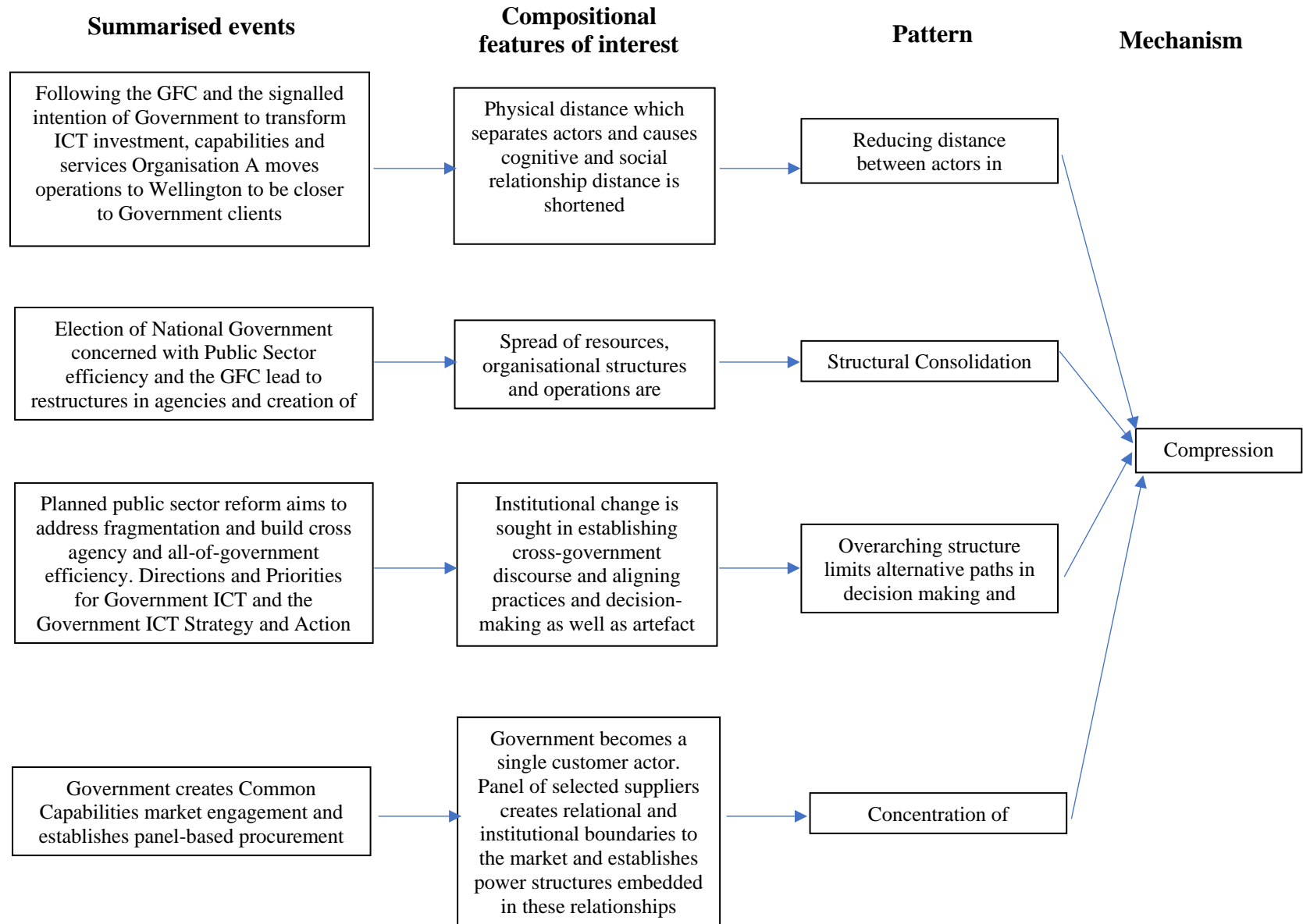
6.4.4.4   Step 4. Corroboration

The final stage of the analysis sought to move from descriptive patterns to uncovering a set of postulated mechanisms. This stage was particularly cyclical, asking how each pattern description works in a particular case and how this compares to other observable features and the participants' experiences. Central to this process was reconsidering the diverse events and complexities of constitutive features (for example actors, relationships, technology and institutions) as types and features of relations and structures as an underlying reality.

As the process developed, commonalities were found in the conjectured influence that the patterns described. This meant that different sequences of events could be described by a similar generative force, or description of the ways the structures were 'acting'. As suggested by critical realists (Archer et al., 1998; Lawson, 1999; Lewis, 1996), the move to conjecture mechanisms relied on a logic of metaphor and analogy, aiming to mould existing ideas to provide explanatory models to conceive of the mechanisms. The influence of this process can be found in the terms used to identify and describe the mechanisms. The final terms and descriptions of the mechanisms are considered in the Findings chapter.

During this process, strategies drawn from Maxwell (2004) for developing and assessing alternative explanations were relied on. Triangulation between a range of settings described in the data and a range of perspectives of these settings was important. Similarly, the process of 'member checks' was valuable. As mentioned previously, the postulated mechanisms and evidence of their efficacy in the system as the researcher's data and conclusions were taken to three interview participants and developed through this process of member checking.

6.4.4.5   Addressing Rigour and Quality

A number of attempts and debates exist in efforts to create, modify, and synthesise criteria for addressing rigor and quality in both qualitative and (critical) realist research (Creswell, 1998; Healy & Perry, 2000; Lincoln & Guba, 1985; Miles & Huberman, 1994; Riege, 2003; Wynn Jr & Williams, 2012). Given that there is no definitive set of criteria, this research draws on Miles, Huberman, and Saldana's (2014) suggestion to evaluate research based on confirmability, dependability, authenticity and transferability drawing on additional

methodological literature to fulfil these requirements (Dubois & Gadde, 2002; Dubois & Gibbert, 2010; Easton, 2010; Gibbert & Ruigrok, 2010; Gibbert, Ruigrok, & Wicki, 2008; Halinen et al., 2012; Maxwell, 2004; Patton, 1990; Riege, 2003; Yin, 2009).

Confirmability- refers to the auditability of the research process, reflecting the steps undertaken to make the case study transparent and replicable:

- The aid of the data management and analysis software allowed the maintenance of a case study database, including case study notes, case documents, and interviews collected during the study. This helped establish a clear chain of evidence.

- All raw data and interpretations were retained, offering the opportunity throughout and after for audit and re-analysis, which was particularly important for this research process as it was undertaken over the duration of the doctoral candidacy.

- The use of Decision Explorer and ETHNO provide both a structured way to manage and present data as well as providing insight into the interpretation and analysis stage of the research. The use of ETHNO in the data analysis is particularly useful for both presenting the reasoning of the researcher and providing a systematic, replicable series of analytical steps.

- The methodological and analytical procedures used, including how data was collected and sampled, and the use of analytical software have been explained in the current chapter.

Dependability- refers to the stability of the research processes used over time.

- The research theory, proposed framework, paradigm and methodology have been aligned and justified extensively within the thesis.

- The logic and justification of the case subject, research participants and events to observe have been outlined and justified.

- The same analysis process was used for all collected data, including outlining the means and tasks undertaken. ETHNO, for example, induces the researcher to answer a series of questions regarding a specific causal account, forcing consistent reasoning and allowing for the possibility of replication.

- While the analysis process used a bricolage of sensemaking processes, these processes were aligned under an established structure (RRREIC cf. Section 6.4.4) and drawing from established literature including Langley (1999).

Authenticity- refers to the credibility of the interpretation given of the phenomena:

- The research design used diverse sources of data and collection methods, including primary and secondary data, to triangulate perspective and accounts.
- Organisations and their representative participants were purposively selected, and this selection justified based on their roles, experiences and position in the ecosystem - maximising the access, relevance and depth of the data collected.
- The embedded case design means several informants were used representing both different actors as well as unique positions and vantage points within the service ecosystem, allowing the collection and triangulation of data from various perspectives to form a credible interpretation of the studied processes and the systems reality.
- The use of existing literature as a means of alternative templates in the process of analysis builds on existing knowledge and validated abstractions and mid-range theory.
- Member checks of the proposed explanations (generative mechanisms) were utilised to assess the validity of these interpretations.
- Collectively these approaches help to mitigate issues with the use of interviews and retrospective accounts. These accounts are subject to the limitations of recall, cognitive biases and retrospective rationalisation (Langley, 2009). Triangulation across multiple actors and using a range of secondary sources, that included contemporary accounts, helped to redress this problem.

Transferability- refers to the validity of the conclusions and their application to other settings. Generalisability in qualitative case studies is found in the elucidation of theory which can be useful in making sense of similar contexts, rather than conclusions about a specified population through statistical inference (Yin, 1984). Within the CR paradigm research focuses on building theory in the form of mechanisms. The intention is to provide an account at a suitable level of abstraction to allow transferability of the theory based on the entities studied. The use of purposive sampling aids in the process, allowing the research to gather as much detail about the context of the actors, mechanisms and systems that the theorising describes.

6.4.5 *Summary*

The preceding sections have detailed the empirical research process, including data gathering, analysis, and interpretation. The chapter holistically presents the research philosophy and methodology guiding the empirical research. The data collection process grounded in in-depth

interviews and documents analysis and the four-stage analysis process have been described, concluding with the criteria used to maintain a rigorous research process. The remaining sections of this chapter will provide a detailed description of the case, before the findings are introduced in Chapter seven.

6.5 Case Description

This section reports an overarching case description. An overview of the case setting helps to describe and contextualise the case and is useful to bring together the range of narratives of multiple actors and research sites (Shkedi, 2005). The report provides an account of the service ecosystem's trajectory over the period of analysis while providing necessary details of branching paths for the different actors and levels of analysis, which are further explored in the findings. This section opens with the description of the context and research setting while expanding to address key aspects of the service ecosystem, actors and informants to contextualise the findings (Shkedi, 2005). Table 11 below provides a glossary of commonly used terms in the case and analysis.

Table 11 Case Specific Glossary of Terms

Term	Case Understanding
Better Public Service programme	The Better Public Services initiative was launched in 2012 for the public service to focus on 10 significant problems over the next five years.
Cloud Computing	Cloud computing is a model network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.
Data centre	A facility that centralises an organisation's IT (Information Technology) operations and equipment and where it stores, manages and disseminates its data.
Government Chief Information Officer (GCIO)	The Government Chief Information Officer is also the chief executive of the Department of Internal Affairs. They are supported in their specialist role by the Government Chief Information Office, a business unit in the Department of Internal Affairs.

Hybrid Cloud	A network of servers operating as a cloud in a combination of On-Premise, Public and Private forms brought together to allow data and applications to be shared between them to meet an organisation's ICT (Information and Communications Technology) infrastructure requirements.
ICT Common Capability contracts	A government sourcing programme. Any business or ICT capability that can potentially be used by more than one agency, or across the whole of government, to support the delivery of business outcomes. Examples of government common capabilities include Infrastructure-as-a-Service and all-of-government ICT procurement contracts.
ICT Infrastructure	ICT infrastructure includes hardware (mainly physical servers), software, networks, data centres, facilities, and related equipment, which is used to develop, test, operate, monitor, manage, and support ICT services.
Infrastructure as a Service (IaaS)	Infrastructure as a service (IaaS) delivers cloud computing infrastructure—servers, storage, network, and operating systems—as an on-demand service. Rather than purchasing servers, data centre space, or network equipment, clients instead buy those resources as a fully outsourced on-demand service.
Private cloud	Infrastructure that emulates some of the cloud computing features, like virtualisation, but does so on a private network.
Public Cloud	Public cloud is infrastructure that consists of shared resources. A cloud model is 'public' when the services are rendered over a network owned by a third-party which is usually available to anyone who wants to use or purchase them. Public cloud services provide massive on-demand scalability and management but are problematic for companies and government agencies who must comply with particular security mandates and data governance regulations
Stack	A technology stack refers to the range and organisation of a set of technologies, software, and tools that are used in the development and deployment of digital products. Cloud is often delivered as a stack representing a broad range of services built on top of one another.
Software-as-a-service (SaaS)	A model for distributing software in which a provider hosts applications and makes these available to users over the Internet. A provider licenses a SaaS application to customers as an on-demand service, either through a subscription or through a pay-as-you-go model.
Software Framework Agreements (SFA)	Contracts developed between major service providers and the NZ government. The agreement treats Government as a single customer, aggregating demand and providing agencies with access to a suite of products and services under standardised terms.

6.5.1 *Description of the Case Service Ecosystem Trajectory*

The overall system examined in the case is contextualised by intertwining streams of social, technological and economic pressures, and increasingly connected inter-organisational networks and fields. The narrative can be further divided into the world of public sector service delivery and changing models of governing and the shifting landscape of technology service providers, and their business models and practices. While split for expositional convenience, the two are ultimately constituent of the case.

The case focuses on the ongoing digital transformation of the New Zealand Central Public-sector, with technological progress, fast-moving international industries and shortages of resources and capabilities, forcing the need to collaborate with private sector companies to achieve these objectives. Central to digital public services transformation is the efficiency provided by technology. Similarly, citizens expect to 'consume' public services in the same way, and to the same standard, as other interactions they have with the private sector, such as banking, internet retailers, media and entertainment services, requiring building and enhancing digital channels and new service models. In the face of economic volatility governments are aiming to deliver digital citizen-centric services and productivity under a mantra of 'doing more and better with less'. These social, technological and institutional changes are behind a series of movements in the New Zealand public sector following a change in government after nine years and the 2008 global financial crisis, which constrained government spending and reinforced the need to remove barriers to collaboration and consolidation in cross-agency processes and service delivery. The following sections describe the changing technology market and landscape before moving to the current trajectory of the public sector reform and its preceding history.

6.5.2 *Shifting Landscape of Technology*

A core shift in the technology landscape has been cloud services and the servitisation of the IT industry. These capabilities have reshaped expectations of customers and the business models of providers. Organisations, much like government, no longer wish to own and run software to automate and manage their business. They prefer, where possible, to use cloud services. This drives a shift in how organisations view their IT resources, conduct their business, and prepare for the future. The IT function is shifting from the control of routine system activities to

partnering with business units as a strategic driver. This change suggests structural realignment between business units, leadership, and desired changes and new affordances. These changes, therefore, affect IT skills and staffing models and have highlighted a growing skills shortage in New Zealand's IT industry and the broader economy.

Existing business models for service providers have been disrupted (large capital expenditure on hardware and software, licenses etc.) and are under pressure. For large vendors who have relied on direct sales forces, pricing models, and account-management practices these changes require business model, capability and cultural change. Competitive landscapes have also been opened up creating markets and opportunities for services across different levels of layers in the IT stack (from infrastructure to applications) and industry or regulation-specific services and development. The pace of service adoption has increased, and open source business models and standards have increased innovation exponentially. This has driven large organisations to focus on acquisitions that enable vertical integration and provide specific functions that represent weaknesses or strengthen product offerings in response to customer demand while protecting and extending investment. Developments that aimed at disrupting existing businesses through technology have fundamentally disrupted technology as a business.

These trends point to the more significant issue of technological convergence as well as convergence in usage as dominant forces in the competitive landscape. Amazon Web Services, springing from the needs of its parent organisation Amazon, has become the dominant competitor in the infrastructure as a service market. Similarly, technology organisations like Microsoft, are now seen as the dominant providers of telecommunications, for example, through Skype. In New Zealand, Spark (formerly Telecom), a traditional telecommunications and infrastructure provider, exemplifies the realignment of, and investment in, technology and business models focussing on covering every customer touchpoint as a digital service provider, acquiring a range of cloud, security and digital organisations.

The New Zealand market comes with a number of challenges through business and market scale and geographic isolation. For larger organisations, who have primarily had sales arms in these regions, the building of commodity infrastructure (for example by Amazon or Microsoft) has not been warranted or attractive, reducing capabilities here and demand for these services (particularly in government). These factors along with initially limited market pressures have

meant that New Zealand firms have been, on average, relatively slow adopters of the changing digital capabilities. While challenging, these factors have also created opportunities in the market. Partnership organisations in New Zealand have taken advantage of partner-lead delivery models from large providers acting as integrators, focusing on the best solution to meet individual size, demands and fluctuating capacity requirements. Developments in the cloud industry, convergence in offerings and a landscape in which competitors work together, and collaborators become competitors have also allowed organisations to be product and platform agnostic. Organisations have sought to capitalise on the lack of skills and shortage of talent by tapping into international talent pools and drawing on their partners globally. Local organisations have benefited from the lack of infrastructure from dominant global, investing in local infrastructure and providing in-country capability.

The relationship between the public sector and the private sector is crucial. A significant proportion of ICT expenditure in New Zealand comes from the public sector, and the government is central to investment and innovation in digital technologies and their applications (Ministry of Business Innovation and Employment, 2017). The public sector is facing the same disruption as the ICT sector in New Zealand as social, technological and economic trends cut across the way we do business and live within society. Exhibit 1 provides perspectives on the industry.

Exhibit 1 Perspective on the ICT and digital landscape

> - *The position of what we have traditionally thought of as IT market leaders are being shifted. Users have changed the way they consider the market, they are looking at platforms and hybrid solutions. So when you look at solutions rather than products, the definitions of the market, competition and offerings are completely different. External engagement, outsourcing agreements and business models change.' - DIGITAL SERVICES BUSINESS MANAGER*
>
> - *Our organisation has excelled at implementation and design. However, those skills are now being replaced by automation that organisations like Amazon. We now have to go and retrain our people and find areas of value. It almost impossible to cover off changes that are happening if you look at the different layers.' - CEO SERVICE PROVIDER*

- *'Restructuring will become more common across business without a doubt. We have organisations that are undertaking massive restructures across their IT sectors, the majority of IT roles are being disestablished, and the number and shape of those roles will be far removed. With cloud, AI and automation means you don't need a lot of the functions being managed internally' - REGIONAL MANAGEMENT SERVICE PROVIDER*

- *Vendors have changed their focus because the market is very competitive. There are a lot of new players because the capital to get into areas in service provision is not very high, the removal of the requirement for large asset. Cloud services are levelling the playing fields for organisations bases, and enable new services to be layered over the top of the core infrastructure.' OPERATING EXECUTIVE SERVICE PROVIDER*

- *'Cloud adoption in New Zealand has been held up by the fact that most providers are not local. So there has been real issues around perceptions, and the reality, of security, latency and holding data offshore. Also without restructuring, benefits and cost profiles are difficult to realise. That's technology use versus transformation'. - SERVICE PROVIDER RELATIONSHIP MANAGER*

6.5.3 *Public Sector Reform*

In 2010, the government adopted the directions and priorities for Government ICT Strategy, aiming to shift away from siloed agency-based structures by introducing new cross-government governance arrangements for the use, development, and purchasing of government ICT. This move reflected the rationalising of investment, procurement and delivery of ICT infrastructure and software, reducing duplication and consolidating and standardising while leveraging the operational scale of government to improve innovation and reduce costs. In 2012, this programme came under a broader transformation effort in government, 'The Better Public Service programme (BPS)', following the commissioning of an Advisory Group responding to central inefficiencies and dissatisfaction with public services and policy outcomes. The group's report recommended significant changes to 'the organisation and leadership of New Zealand's system of State services' particularly reconfiguring the system and sectors to mobilise around specified results significant to the public and public servants alike. Ten problems and a set of results (the desired outcomes and degree of change) were established as a driving force of reform to be achieved over five years.

The reforms focus on changing the decision-rights, rules, capabilities and incentives of the public management system. Core changes to the legislative and institutional architecture of the public sector aimed at re-orientating leadership and organisation and shifting the focus from the actions and activities of individual agencies as bureaucratic silos towards supporting agencies to work together and take a sector and system-wide view. Two of these results, Result 9 and Result 10, which aim to improve interactions with government for both individual citizens and businesses, focused, particularly, on the role of digital channels and system integration. However, it was clear that ICT-enabled service transformation was a driving force in delivering better public services in a more integrated way, and therefore, was central to the challenges of the BPS program.

Subsequently, in 2013, the Government ICT Strategy and Action Plan was adopted, building on the prior work, laying the foundation for the broader digital transformation of government service and systems and stakeholder interactions with government. Exhibit 2 provides a snapshot of the strategy. ICT was no longer seen as simply digitising and integrating services vertically for greater speed and efficiency. These technologies are increasingly being used to join up organisations, influence policy instruments - the tools that governments utilise to make change, such as taxes and benefits - and manage data. The strategy focused on a new operating model that provides system-wide coordination of investment, resources and capabilities. Working collaboratively with the private sector is key to developing 'as-a-service' products, reducing the need to own and operate commodity technology, and enhance management and technical capabilities to make more effective and efficient use of the changing information and technology landscape. This background set the trajectory for government transformation. Following on, the focus has been the adoption and utilisation of cloud services, major agency transformation programmes and greater partnership with the private sector, particularly changing the way government consumes, procures and invests in software and hardware.

Exhibit 2 Overview of Government ICT Strategy

Government ICT Strategy and Action Plan to 2017 (Department of Internal Affairs, 2013)	
Strategy objectives	**Implementation**
- create effective and efficient integrated service delivery; - realise new value from government information; - optimise the use of scarce resources and capabilities; - strengthen assurance systems to manage risk and quality; - deliver migration paths for ageing legacy systems; - leverage scale and efficiencies; - partner with the private sector and non-governmental organisations	- coordinating government's overall ICT investment, focusing on whole-of-life return on investment; - improving planning, decision-making, leadership, governance and assurance. - Reorganising capabilities so they are delivered by the best able and most appropriate providers in the system; - agency ICT units becoming capability 'brokers', focusing on sourcing and integrating capabilities; - rationalising and consolidating service channels, particularly call centres and counters; - establishing authoritative, secure information hubs to support the delivery of joined-up customer-centric services, and commercial and community re-use of valuable information assets; and - lifting government's capability to utilise new and emerging technologies.

A number of initiatives within this trajectory have fundamentally altered the state and functioning of the system, particularly in relation to previous models and structures. A core focus has been on moving away from the existing agency-based or vertical accountability structures and introducing new cross-government models, which include governance arrangements, capabilities and funding models that incentivise collaboration and prioritise integrated services. Changes to core legislative and institutional architecture of the public sector have been made in order to facilitate these changes.

Changes to the way the government procures ICT have been central to transformation, including common capabilities, shared services and all-of-government ICT procurement contracts. Common capabilities are built on the procurement of a solution, by a lead agency which can be used by multiple agencies, or across the whole of government, this allows agencies to adopt these products from a panel of approved suppliers without the need to undertake a full procurement process. A similar model exists across a number of services. The establishment of software-framework agreements (SFA) represents an evolution of this engagement, built on designing and negotiating a new commercial construct with a number of software and cloud services suppliers. These agreements with strategically important suppliers

represent a framework that covers anything that supplier wants to offer to government, removing the requirement for the supplier to negotiate individual deals with individual agencies and it removes the barrier for agencies to have to contract individually. Fundamentally, these changes are centred on the idea of 'government as a customer of one' and negotiating principles that there should be no barriers between individual agencies (licenses should be able to be transferred, underlying technology and data shared etc.). Exhibit 3 provides a perspective on this change.

Exhibit 3 The importance of changing ICT procurement

- *'Cloud services are increasing exponentially, the number of services available is huge, this in itself is beginning to challenge our view of system transformation. Agencies were stuck having a traditional view of ICT that was being driven into the ground by cost pressure. The government was in a potentially multi-billion dollar hole in terms of underinvestment in ICT with no mechanism to change. Shifting that focus from an agency to a supplier lens was a way of changing that problem. The procurement of those services needed to change. Some of the most radical change is the recognition that they need to play with each other and be part of the system. That changed the behaviour of those agencies away from thinking they were a monolith or siloed and not accountable to their neighbour.' SOFTWARE ACQUISITION STRATEGY LEAD*

- *In the past decade we've seen downward pressure on operating costs, which has translated directly into demands on the ICT organisation to reduce their costs. This, in my opinion, has driven the risk through the ceiling in a number of areas as CIO's and ICT staff are forced to retreat to spending money on core, critical services, while foregoing other services such as security, disaster recovery, less essential upgrades, and privacy. Across government, this downward pressure on cost has resulted in agencies "sweating" ICT infrastructure and software, in other words, putting off the day where they have to be replaced. Worse, in the data centre, critical legacy systems are sitting on aged infrastructure that will cost billions to replace in the coming years. INDUSTRY OBSERVER*

Additionally, the establishment of functional leadership as a pillar of the BPS programme has been pivotal to cross-agency engagement and system-wide perspectives. Functional leadership involves a Chief Executive leading key areas of expertise 'horizontally' across government to improve the effectiveness of services and secure efficiencies across departments for common business functions. The Chief Executive of DIA/Chief Government Information Officer (GCIO) is responsible for ICT functional leadership. The GCIO is mandated to integrate the technology plans of all agencies, to recommend collaboration and consolidation where advantageous, to direct departments to adopt all-of-government initiatives and provide oversight on agency strategic ICT investment intentions.

Other core developments centre on the capabilities and implementation of these strategies. Major agency transformation programmes have been initiated and progressed. These transformation programmes deliver components of the government's ICT ecosystem that exist to integrate services across agencies and partners and require the integration and implementation of policies and reforms, stakeholder management, people and capability management and procurement and technology shifts. In 2015 the GCIO set up a Partnership Framework, as a digital Government Leadership Group consisting of CE's from across agencies and government entities. The Partnership provides a system-wide perspective from key stakeholders and incorporates collective governance and responsibility arrangements for CEs. Additional efforts have been made to advance public/ private sector innovation and encourage risk-taking and agility in developing services through the rapid iterative development and the creation and testing of minimum viable products. Lab+ and the Service Innovation Lab offers cross-agency teams tools and coaching as an innovation incubator to develop cross-agency and cross-disciplinary service innovation. The R9 accelerator programme provides teams from the public and private sector 3-month in-residence programs. These accelerators bring together innovators with mentorship and educational components to offer innovative solutions focussed on creating market-validated solutions for business-government interactions.

6.5.4 *Public Sector History*

These features of the trajectory of government strategy, relations and operations represent significant departures from the past. Historically, agencies designed, built and operated their own individual technology solutions. This approach reflected standalone government agencies

as the primary delivery vehicle for services. This approach created increasingly complex systems of software, processes and hardware and inefficient government procurement practices. Infrastructure was duplicated, investment was not coordinated, and agencies did not re-use systems, opting for bespoke solutions ignoring or unaware of solutions available or already commissioned by another part of government. Technically this is hugely problematic, not only inefficient, creating an incompatibility of hardware and software, databases and data and information distribution channels creating barriers to cross-agency information sharing.

The emphasis on the adoption of joint capabilities and shared services, standards and the 'cloud-first' model moving, away from owning and operating commodity ICT, required new models of procurement and relationship between providers and government customers. Long-term, exclusive contracts impeded change and innovation and in-house capabilities were directed towards running IT, rather than focused on delivering innovation and value. Even where technology and solutions were provided by the same external supplier, systems were separately built and maintained, and integration was prevented by the use of bespoke, proprietary and closely-coupled technologies. The complexity of this approach meant procurement timescales were too long and very costly, often leaving only the largest legacy suppliers. Lock-in as a feature of the contracts, the priorities of pricing over the value of solutions, the capabilities within government and roles required by ICT units, inevitably lead to confinement to solutions that persisted, even in the face of more efficient alternatives. Similarly, collaboration was blocked by the individualised relationships between suppliers and agencies preventing the shared access and use of underlying technology. Exhibit 4 provides perspectives on this relationship.

Exhibit 4 Perspective on the Client (Government)-Supplier relationship.

> - *'Government should be in the business of government, not in the business of IT and IT should sit with those organisations that actually know how to do this. Those suppliers, vendors, multinationals and local NZ providers that get how to do IT. That's their business, that's why they get paid.'* GOVERNMENT PROCUREMENT ANALYST.
>
> - *'Suppliers' themselves weren't necessarily ready for the change in the government ICT model. So they've had to mature their thinking. They've had to recognise that their business models that often had a minimum commit and a term attached to it is*

something that is quite different in a cloud environment. Suppliers have had to change the way they act and react. They had to change their product set away from we want to lock you in for this term.' MANAGER OF SUPPLIER STRATEGY AND DELIVERY

- *We needed to change the relationship between government and large ICT suppliers…We've been upfront with suppliers that we are seeking for them to change their mode of operating…we got a lot of feedback from agencies saying that they didn't like the way they interact with suppliers'* SOFTWARE ACQUISITION STRATEGY LEAD

- *'We often had to work very hard to get [agencies] to adopt new services and follow areas that we know we should be investing in'. The Government struggles to embrace the model. The procurement models are not joined up, and there is no ability to take advantage of new technologies appearing in the market, and the business model is very 1990's'.* MULTINATIONAL TECH CORP EXECUTIVE.

- *The model to introduce innovation in government and scale services is very cumbersome. It slows them down from getting value, and then it slows us down from introducing or offering value, and we're not meeting our objectives.* SALES MANAGEMENT MULTINATIONAL TECH CORP.

This problematic state reflected a history of stop-go reform in the public sector including E-government initiatives, particularly in the period 2000 – 2006. As has been seen across a number of jurisdictions, the focus on building information portals, putting transactions on government websites and having a 'front-facing online web presence', have predominantly utilised technology as a cosmetic fix to make public services appear joined-up when in reality they remained fragmented across multiple administrative hierarchies, operational departments, and agencies (Andersen et al., 2010). There is a history of trying, and usually failing, to align the use of e-government applications across the multiple autonomous 'vertical silos' and expectations of 'transforming government' and the service delivery experience have not been realised. The 'clipping on' of internet technologies did little to change government ICT and its operating model, systems, processes and service delivery. This points to the need for extensive back-end integration, policies and technologies, and the realisation that transformation is not a

linear or technology-driven initiative but a complex systemic issue. This situation highlighted the critical importance of leadership, accountability structures, and enabling structural and regulatory change to put into effect transformation.

These problems had been highlighted in broader reforms such as the 'managing for outcomes' policy orientation emerging from the 2001 Review of the Centre. The fragmented state sector at these points, mirrored initiatives and reform in the 1980's and 90's. These reforms focused on structural devolution, disaggregation, and single-objective agencies and semi-autonomous organisations. Changes to legislation, the corresponding State Sector Act and the Public Finance Act, sort to afford CEs greater autonomy while creating accountability to ministers reflective of private sector managerial and financial practices. While this approach created efficiencies and effectiveness in single functions, it left few incentives through lines of accountability, reporting requirements, chief executive performance expectations or budget allocations to work across challenges and agency boundaries. Subsequently, barriers to prioritising and resourcing a whole-of-government perspective were created, activity was narrowed to the functional and predictable and conflicting organisational missions, priorities, cultures, lack of funding, and limited guidance on implementation models persisted.

6.5.5 *Summary*

The case description provides the context of the research setting and reflects on the changing technology environment, government ICT and broader reform. Together this framing provides a brief introduction to the nature of the service ecosystem under study and indicates the trajectory that will be explored through the findings. The next chapter discusses the findings from the case.

Chapter 7: Findings

This chapter presents the analysis and findings from the case study. The research set out to actualise the overarching lens through the use of the analytical framework and the process of theorising mechanisms to develop new theoretical insight and sources of explanation regarding how service ecosystems develop through time. Uncovering, conceptualising and describing mechanisms is built on theorising the nature of the multiple determination of events, structures and totalities, and the interactions which constitute, reproduce and transform them. At the centre of this approach is uncovering the particular "ways of acting" and the tendencies of the structures to postulate mechanisms which allow us to 'grasp' or 'see' empirical evidence of the existence of social objects, and the manner of their functioning (Bhaskar, 1998, p. 38; Cruickshank, 2003).

7.1 Overview of the Mechanisms

Four explanatory mechanisms have been identified that occur at multiple levels and instances in the case. These mechanisms provide the underlying structure to the trajectory of, and the interactions within, the system. An overview of these mechanisms: compression, modes of alignment, ecotonal coupling and refraction, is provided in Table 12.

The proceeding description of the finding facilitates: (1) identifying the mechanism by the kind of effect or phenomenon it produces; (2) establishing the structure of the mechanism, showing how the entities, properties, activities, and relations, produce the effect of interest; (3) set a basis for integrating mechanisms into the broader multiform reality. The mechanisms are set out thematically, allowing the description of the mechanisms to be clear and their presence and operation within the case to be paired with illustrative empirical evidence. While the mechanisms and their illustrations are separated, the distinctions made are analytic to facilitate clarity in investigation and explanation. Mechanisms are necessarily intertwined as a conjunctive multiplicity, recognising true outcomes as the intermeshing of multiple mechanisms across and within levels.

As Table 12 indicates, the uncovered mechanisms themselves relate to particular properties of relations and structures as ontic features. The mechanisms are related to the state of relations,

their interaction and co-presence, the emergent features of interaction and their broader processual relations through scales of time and structure. This provides a reference point for understanding their coalescing nature. Understanding the way the different mechanisms arise from the nature of structures provides the basis for understanding both how the mechanisms have their influence as well as how they may interact.

The remaining sections of the chapter will discuss the mechanisms and their associated empirical evidence which illustrates their operation and outcomes within the service ecosystem case. Throughout the description of the mechanisms exhibits will provide sketches highlighting particular findings, issues and viewpoints as "short descriptive pieces that crystallise an important aspect of a case" as suggested by Ely, Vinz, Downing, and Anzul (1997).

Table 12 Overview of the mechanisms

Mechanism	Description	Property
Compression	Compression represents the contraction of relations across the subjective (sensemaking), intersubjective (relational), interobjective (institutional) and objective (material) conditions of service ecosystems, creating changes in the possibilities of action, the flows of resources and the interaction between actors.	State/nature of relations and structures
Modes of Alignment	Alignment occurs in four modes: Hierarchy, Conflict, Cooperation/Synergy and Independence. The modes describe the nature of the relationship between structures and how they may adapt and develop their trajectories. Alignment drives coevolution by influencing the structural tendencies and the realisation of powers of different relations.	The co-presence and interaction of structures
Ecotonal coupling	Ecotones are emergent relational structures manifesting within interaction and tension between structures. Ecotones are a generative tendency which change the functioning and structure of ecosystems through creating a transitional and interactional zone between different subsystems and offer niches for unique roles, innovation and development in technology, new practices and interactions.	Emergent relations from structural interaction
Refraction	Refraction refers to the 'bending' of properties and trajectories such that their effect emerges as a distortion of what would have been their unmediated structural tendency. Refraction focuses on the diachronic emergence of structures and the interrelations between structures within and across time.	Broader scales of relations and structure within and through time.

7.2   Compression - Description of the mechanism

The event trajectories uncovered in the analysis indicated a particular tendency, referred to here as compression, in the state of relations of the system, which serves to explain actions, particular network relations and morphogenetic structural outcomes. Compression refers to the contraction or shortening of relation structures, such that the intensity of the operation of powers and the feedback of influence is accelerated and interactional structures are shifted. The subsequent effects of compression are an increase in the pace of change, different social-relational structures and different conditions of possibility in action and interaction. Compression occurs across the multi-dimensional nature of relations and is present at different structural levels.

Compression as a tendency in the development of the system emerges from the destabilisation of existing agential, institutional, and network relational structures. This destabilisation is caused by the exogenous events in the economic environment and the changing technology landscape surrounding the service ecosystems, and more endogenous change including changing business models and competition in the private sector and, recognition of inadequate capabilities in technologies, people and processes in government. These changes weaken the reproduction of structures, allowing the change in the state/nature of relations and structures, which characterises compression, to take place. For example, new technology provides affordances to procure capabilities as a service. Therefore, providers need the appropriate business models and product sets to facilitate this. Similarly, customers like government agencies need to change procurement practices and processes that remove fragmentation, free them from lock-in, and long-term product based supplier contracts. As the morphostatic causes, instantiated in the practices, decision-making, interactions and relationships of actors in the system, lose their resilience, change-inducing positive feedback can begin to emerge and direct the creation of new structures and relations. Compression emerges as a generative tendency and a directive force in the emergence of resulting structures.

The following section will explore the empirical evidence demonstrating compression, establishing the structure of the mechanism, showing how the entities, properties, activities, and relations, produce the effect of interest.

7.2.1   *Economic Destabilization*

The 2008-2009 Global Financial Crisis (GFC) had the destabilising effect of impacting available resources. For the government, it meant shifting from budget surplus to deficit and a need to tighten government expenditure (which was subsequently compounded in New Zealand by the Canterbury earthquakes). For the private sector service organisations, a significant decrease in work and new projects was experienced. Subsequently, this destabilisation manifests in the compression of available opportunities for action. The force of the shock of the GFC and the lack of access to resources compressed the possibilities for action and the perceived opportunities available to actors, particularly by destabilising the linearity of their sense-making and the continuity between past, present and future.

7.2.1.1   *Compression in the Government field*

The government was forced to choose between pursuing austerity measures or develop significant reforms to services at reduced cost. Some degrees of freedom were provided in the face of the compressive forces of destabilisation through the position the government inhabited, particularly the low debt position inherited from the previous government and the material distance from the epicentre of the crisis. The government initially sought reform through enacting and reproducing the compressive forces in the environment through the restructure of agencies in order to manage resources and consolidate functions. The Ministry of Primary industries was created from the Ministry of Fisheries, Ministry of Agriculture and Forestry and the Food Safety Authority mergers from 2010. Archives New Zealand and Libraries were integrated into the Department of Internal Affairs, having previously left in 2000. More substantially, the Ministry of Business Innovation and Employment (MBIE) emerged from this programme, integrating the Ministry of Economic Development, the Ministry of Science and Innovation, the Department of Labour, and the Department of Building and Housing. The creation of the ministry served to bring together business-facing service delivery functions and reduce duplication of effort and improve the Government's internal coordination including establishing shared corporate services. Recognising these actions were not scalable or a panacea, government ministers were compelled to appoint the Better Public Services Advisory Group to find alternate pathways of action, based on the need to develop significant reform focused on value for money, improving service provision and effective change management.

7.2.1.2   Compression influencing technology service providers

Compression, driven by economic conditions, pressured service organisations to adapt their revenue streams in response to shifting demand and, particularly for local organisations, de-risking their revenue stream by moving into public sector servicing (Exhibit 5). These service providers experienced their relational structure, the networks which provide resources, as contracts were discarded, and transactions were ended (Exhibit 5). Compression of resource availability can lead organisations to alter their missions to reduce uncertainty. In response to this compression service providers brought their operations to Wellington (the capital city), in order to build better relationships and presence with the public sector, compressing the material and social distance between themselves and government agencies and decision makers.

Exhibit 5 Compression influencing service providers

> -   *'When the GFC hit we were 80% project focussed, we were growing heaps with lots of contracts. Literally overnight all these projects we had going, and the purchase orders were torn up. We had clauses for termination to get some money but that was it. I was ringing every one saying we were happy to do a fire sale, and the response was we'd really love to, but our budgets have been slashed. If we had been more involved with Government at that stage, they had started increasing their spending to give the economy a boost. '* EXECUTIVE SERVICE PROVIDER
>
> -   *'That was part of the reasoning to expand our operation and commit to Wellington. We needed to de-risk the commercial space when the economy starts to decline'. Government is about relationships. You need to be there, relationships are personal. '* CEO SERVICE PROVIDER

7.2.1.3   Compression Coupling Government and Service Providers

The compression experienced as limiting the state of possibilities for these actors forces action as the limited projected opportunities for agency force a response. These actions establish directionality in the system, creating positive feedback for compression as the actors enact the structural change. ICT became central to Government's plans to reduce expenditure and find efficiencies in service provision increasing their dependence on the private sector. Similarly,

the size of government as a customer of the ICT market in New Zealand means that compression led to a much stronger coupling between these two fields, accompanied by increasing resource interdependence (Exhibit 6). This interdependency is a key driver of activity to change broader structures. Rather than efforts to keep structural relations and interactions at a distance, actors are compelled to address the multiplicity of the field and actor relations that define the different fields within the service ecosystem.

Exhibit 6 Compression coupling the government field and ICT

- *ICT is not the core expertise of government. Government has been working through an ICT strategy which says that we should be in the business of government, not in the business of IT and IT should sit with those organisations that actually know how to do this. Government had traditionally been its own IT shop. However around 2009/2010, it was quite clear that we needed to change the model fundamentally, we were at a tipping point, we did not have the money or the capability to address the billions of dollars required for creating our own security and industry standard infrastructure and reliability.'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

- *'Government is the single largest customer of ICT in NZ. So if you can win that customer, you're a long way forward to being successful'.* PROCUREMENT ANALYST

7.2.2 *Compression as a Driver of Government Reform*

Compression in the operating environment of government creates the necessary destabilisation to set the basis for developing an 'issue frame' which allows actors to perceive and identify issues and set a platform for mobilising support for transformation. The establishment of the 'Directions and Priorities for Government ICT' and subsequent integration of the 'Government ICT Strategy and Action Plan' created an institutional change and alignment of discourse and mobilisation for actors in government to coordinate management and investment in ICT. Practices, action and decision-making were to be aligned under the strategy, and cross-government products and services were to be adopted. The establishment of these narratives was broadened to every aspect of the public sector through the Better Public Service Programme. These overarching plans and strategy directives create an overarching field

structure as an organising narrative which serves to compress potential diverging paths for the separate government agencies and actors and subsequently set the stage for further compression in the multi-dimensional relations and structure of the system. Creating an overarching narrative serves to actualise the emergent and conditioning structure of the all-of-government or joined-up government approach. This structure produced properties such as institutional forces which dictate behaviour, intentions and dispositions, roles and relationships and other relational properties that provide the direction and power of change in the system. The results themselves represent the compression of the outlook and overview of a programme of reform. Compared to previous efforts in reform programmes (e.g. Managing for Outcomes in the early 2000s), the limited number, specificity and defined nature of the results and the problems created a more powerful and integrated structure, compressing the logics and paths of acceptable actions competing for the attention of ministers, executives and managers.

7.2.3 *Common Capabilities and Panels*

Both the 'Directions and Priorities for Government ICT' and the 'Government ICT Strategy and Action Plan' sought to align decision-making and coordinate management and investment in ICT through cross-government products and services. This approach manifests particularly through the creation of All-of-government and common capabilities contracts. Common capabilities established the supplier and common goods or services purchased across government. The power at work here was 'compression' of the competing logics available to agencies in making ICT decisions and subsequent actions.

The compression of available logics acts to centralise choices reducing fragmentation in the potential actions taken by agencies. The establishment of these contracts and oversight within central agencies makes the pressures of embeddedness in the system more salient and allows the coercive force of the strategy to pressure actors as there is less creative opportunity to work between competing logics or paths of action. The ability to sanction activities, particularly in this case inactivity in not adopting common capabilities, is enhanced as deviance from expected actions or decision-making becomes increasingly apparent. This shift in the institutional cues and signals available to agencies creates normative and mimetic pressures as agencies gravitate towards the most viable options in decision making.

7.2.3.1   Enacting Compression Influencing the Market

The creation of All-of-government and common capabilities contracts represented establishing the government as a single customer to a panel of suppliers, negotiating standard conditions. This relational change represented compression by integrating agencies' 'demand profile' into a single primary procurement process. Importantly, the social relational structure for negotiating was compressed from individual relationships between agencies and suppliers to a single point with the GCIO team. This has the effect of creating power within the GCIO role facilitating both power over the decision rights and options of agencies but also an important source of power over suppliers, in a mediational sense, by restricting access to agencies as customers.

The effect of panel-based procurement also narrows the market potential through the establishment of a set of suppliers. Choices of providers were limited for agencies in procuring services. Service providers, therefore, experienced a compression of their own opportunities, and panels served to remove the relations that allowed providers to compete (Exhibit 7). In the case of the IaaS, the failure of Organisation K to be appointed to this panel, compelled the acquisition of Organisation B, particularly given Organisation B's resulting central position in the technology stack of government, coverage across agencies and the enormous infrastructure modernisation undertaken by Organisation B in light of the contract.

Exhibit 7 Compression enacted through the creation of panels

> - *'After IaaS. They identified a whole lot of services they needed to procure. They created panels of providers that they wanted to engage with. Unless you get on a panel it makes it pretty hard to engage on projects over a certain amount. It changes the game, the whole commercial construct is bound by these panels so if you're not on it, it makes it very hard.'* RELATIONSHIP MANAGEMENT SERVICE PROVIDER
>
> - *It has created closed shops. If you're not on those panels then with the terms and the right of renewals as a supplier you are locked out for years.'* INDUSTRY OBSERVER.

The creation of a particular common capability (IaaS) and the demand portfolio it created for panel members stimulated increased investment (an initial $70 million across two suppliers), particularly in the construction of data centres (Exhibit 8). This outcome was important as it had the effect of reducing the material distance between the data centre capability and government. This had, up until this point, been problematic, as noted large multinationals had not seen the value in the market of building this infrastructure in New Zealand. Having to send and store data overseas created a host of perceived risks around security and data sovereignty which, particularly in the adoption phase of these new capabilities, acted as fundamental barriers. The compression of the market for these vendors compelled investments and allowed them to compress the material distance of infrastructure and in doing so compress the institutional and cognitive distance which drove risk perceptions. This presented a fundamental change in the institutional relations between government agencies and suppliers. These features created change and positive feedback by significantly reducing the procurement process, negotiation, risk aversion and resource constraints, allowing government agencies to adopt these services rapidly.

Similarly, market compression and the effects this had on agencies and suppliers generated reshaped structures. Following Inland Revenue's selection of a software provider for their business transformation, Inland Revenue was mandated to select one of the three panel members to provide IaaS. This was problematic as the supplier usually operated the entire technology stack. Subsequently, very specific requirements were dictated by the software provider in order to guarantee compliance. Organisation B, now with the resource backing of Organisation K, offered to build Inland Revenue their own dedicated private cloud, which mitigated a large perception of risk on behalf of Inland Revenue while being a long-term investment by Organisation B. Subsequently, it was compression in the decision-making of Inland Revenue and in the market leading to Organisation K's acquisition of Organisation B which enabled these organisations to win one of the largest contracts of the programme, without either organisation having previous engagements or investment in Inland Revenue like competitors for the contract.

Exhibit 8 Compression driving investment

- *Representing the government as a customer of one into the ICT market place meant that we got a different result. It meant that we could access the services government need at a price they could afford. It meant they invested in the infrastructure, built $100 million data centres, across New Zealand. They put the effort into creating technology we could use.'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

- *'We wanted agencies to start consuming infrastructure as a service, but there was no one in NZ who would invest in standing up infrastructure, so we went to market and procured that on behalf of all of government. Individual agencies wouldn't have been able to do that on their own, but the AoG scale allowed us to do that.'* SOFTWARE ACQUISITION STRATEGY LEAD.

7.2.4   *Compression Through Convergence*

The as-a-service model and the technology itself plays an important role. Cloud infrastructure and other commodity digital technologies are inherently flexible in terms of the functions they perform and the underlying digital infrastructures. This consolidation and reduction in capability specificity is a central affordance of this technology and reveals a key compression in material, practice and institutional heterogeneity. Cloud computing's core features driven by dynamic scalability of resources, virtualised physical resources, and architecture make it fundamentally accessible and usable across different contexts and for different purposes. As Exhibit 9 shows, this was central to changing the practices in the system and facilitating compression in the government-supplier relationship and perceived distances between the activities and actions of agencies. The bundles of practices, material components and the subsequent institutional distances between agencies are converged, while the relationships with service providers are more easily compressed into a single point of negotiation and procurement. This shifting structure facilitates the breaking down of institutional, material and interactional barriers that existed through asset specificity and material products and subsequent individualised and transactional relationships. The ability to share resources and integrate systems, platforms and data sharing is fundamental to changing the operation of the system.

Exhibit 9 Compression through cloud capabilities

> *'Agencies saw themselves as needing bespoke solutions, particularly not buying off the shelf products. It was important to not think that every single agency was unique. They all said they were, they all said my problems are my problems, 'we are not anything like my neighbours so come talk to me individually'. It just wasn't the case. Particularly for much of the commodity infrastructure, capabilities etc.'* SOFTWARE ACQUISITION STRATEGY LEAD

7.2.4.1   Convergence's Impact on Actor Capabilities

The emergent changes and opportunities coming from convergence also exposed the lack of digital skills and capabilities in the public sector and the New Zealand market generally. As the material, artefactual and cognitive relations contained and enacted within technology are compressed, the applicability of skills, their transferability and the value of their contribution is compressed (Exhibit 10 reflects on this). Subsequently, the ability to implement and realise the benefits from technology becomes a problematic situation. This means that while opportunities and potential paths of action emerge from compression in some of the structures aligned with technology, compression in others dampens the possibility of change. Subsequently, morphogenesis and morphostasis emerge from the same mechanisms based on compressions mediation through different relations and in relation to different structures.

Exhibit 10 Compression's impact on capabilities

> - *'There isn't a large talent pool local to run the kind of programmes at scale and be able to get everybody you need to get the work done. So one of the challenges is to find those quality people who are able to support digital transformation.'* DIRECTOR SERVICE PROVIDER
> - *"The people I have now managing my ICT environment on a day to day basis are not the people I need tomorrow. That's a problem I need to work out how I reskill these people and how do I support my transformed environment. The new state of technology requires a different skill set. It's not an ICT operations skill set but it's broader across vendor and contract and ICT service management skills".* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

- *'People are going to change. The kind of skills I'm going to need in the future are not going to be mainframe skills, or server skills software development skills, it's going to be about integration skills and managing services and managing outcomes. So that skill base is going to be a significant change.'* AGENCY CTO.

7.2.4.2 Convergence in Industries and Value Propositions

The compressive force of convergence in technology is felt across the ecosystem. Convergence of industries represents the compression associated with capabilities and the integration provided by technology. Amazon's emergence at the forefront in cloud offerings represents this process along with Organisation K's contraction to the NZ market and structural change in the business model and organisational identity from a traditional telecommunications provider to a digital solution provider. The joining together and integration afforded by technology rapidly bring together traditionally separate fields of practice and resource networks, increasing competition and the speed at which development must take place. Convergence appears across the material and artefactual elements of components and products and the practices of services, functions and processes, and the organising logics of value propositions. Exhibit 11 provides insight into the shift in business models, capacities and thinking in ICT and digital organisations.

Exhibit 11 Convergence impacting business models

- *"Traditionally, we've operated further down the stack in infrastructure particularly. However, we can now develop a portfolio of new on-demand services, overlaying management and self-service capabilities and we are using our partnerships with the big players to create wired in public cloud offerings.* SERVICE PROVIDER RELATIONSHIP MANAGER

- *We have to be constantly evolving and changing what we are doing. Our bread and butter is support contracts. These keep our lights on and staff paid and if the market goes quiet for a time we can ride it out because we have annuity revenue coming into the business. Cloud comes along and we've been really good at building systems with high*

> *availability and disaster recovery, implementation etc, however that skill has largely been replaced by Amazon's automation"* CEO SERVICE PROVIDER
>
>
> - *'We're now in a position where those traditional telco services providers are rapidly changing. There is an argument that the biggest telco are now organisations like Microsoft (Skype) which is replacing telecom services. We need to change and break away from the traditional ICT model to a new as a service model. For telecommunications that was difficult because they were used to be putting big systems into a building and running that into the ground across 10-12 years.'* SERVICE PROVIDER ANALYST

Convergence of computing, communications, content, and hardware has a prevailing influence on the ICT industry. The boundaries between industries and suppliers are increasingly blurring. The compressive force produces new emergent structures and interaction patterns which represent challenges for incumbents. Examples of these changes come from large players increasingly focusing on vertical integration and entering into other domains, particularly through acquisitions as a means of responding to a re-evaluation of their strategies and business models and the restructuring of the industry.

Compression influences actors differently as the structures they are embedded in create different paths and subsequent actions. Organisation K faced increased competition, cost challenges, capital expenditure needs in modernising core business infrastructure and a declining market for its core value proposition through the compression generated by convergence. Their understanding of the changing market they operate in driven, by convergence (moving from core telecommunications to the digital services market), has driven the organisation to contract the spread of their resources solely to the New Zealand market. Compression has driven rebranding efforts, acquisitions across a number of layers in the cloud market stack, millions of dollars of investment in datacentres and the creation of a range of digital services arms of the organisation. Multiple rounds of job cuts have also accompanied these broader changes, and role restructures as well as operations consolidation, including the rationalisation into simplified architecture of 11 different CRM systems, 19 order managers and seven different websites.

Organisation E had significant lock-in for its existing customers, including the largest companies and governments. These customers did not just buy software, they engaged in multi-year relationships, complete with licensing, support contracts, and audits. Given that a significant market have an existing relationship with Organisation E, the organisation focussed on integration and migration, for example from on-premise servers to cloud. Organisation E has used its strong position and significant resources to build and acquire the broadest offering across all technology layers. Organisation E has subsequently, taken advantage of the morphostatic features of the system that dampen change such as long-term contracts, sunk investments, existing relationships, and slow-moving technology infrastructure such as programming languages which change slower than their products. These material and institutional relations act as filters for the morphogenetic pressure to change driven by the tension between actors and their technological environment. Exhibit 8 reflects on this positioning.

Exhibit 12 Structural position's interaction with compression

Like all incumbents we didn't have to, Microsoft pretty much had to, so if you go back four or five years Microsoft was in trouble, the revenue stream was declining rapidly in core products and they didn't have a valuable alternative. We had a lot of software support spend. Until now, in some arenas we have been slow and in some services we are dragging the chain. When you've got big support contract and lots of rules around support contracts, terms and conditions, it can be difficult and we are not as agile. Amazon had no legacy to leverage and no legacy to hold them back, they didn't have an alternative model that they had to protect and they didn't have the credibility around large-scale applications and they had some deep pockets to invest.' SERVICE PROVIDER ACCOUNT DIRECTOR.

7.2.5 *Compression of Time and Agency*

The final illustrative example of compression comes from the relation of time to cognitive, social and institutional properties. Firstly, compression operated through the BPS program and the ICT SAP. Central to these programmes was the designation and public notification of targets tied to these programmes. These targets then became a core part of the performance reviews of agencies and their Chief Executives (CEs). These targets had the effect of

compressing time as experienced by the actors responsible for achieving these. The reporting and review processes compressed the relationship between the present state and the future timeframe and therefore the subsequent degrees of freedom for action. This compression had the effect of increasing the rate of change in agencies, driven by management responding to the pressure of accountability, performance assessment and six-monthly reporting of progress and media attention. Compression, therefore, influences important cognitive structures (priorities, problem agendas, beliefs, etc.) guiding actors behaviour. Exhibit 13 provides perspectives on the targets.

For powerful actors, compression also provides the opportunity to pursue change in actions built on inventing, orchestrating, and pursuing a desired path for the future by manipulating time structures that create a sense of urgency. However, for those in lesser positions, compression forces action in response to the pressure of emerging demands and ambiguities of the evolving present. The time-based pressure of the targets constructs momentum by establishing urgency through prioritisation of options and establishing symbolic and material signals of progress.

Exhibit 13 Compression through transformation targets

- *'Targets conveyed the level of government ambition and created a sense of urgency. As agencies made progress, often initially through small and simple changes, this built a sense of momentum that fuelled further working together. A key benefit of the measurement system was that agencies could see the consequences of their actions'*. BPS RESULTS PROGRAMME ANALYST

- *'The Better Public Services programme was a bold move, I don't think any other government in the world had stated targets that they were going to achieve with specific results, which some of them were going to be quite difficult to achieve, what a gutsy thing to do. The targets are all published, the progress is published every six months. So there is accountability and pressure and this is channelled through from ministers and the layers of management'*. MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

> - *'We have not only signed up for those results but we have signed up to the publication of them and the regular reporting of them in a way that no other Cabinet has ever done. It's quite a big step for politicians to voluntarily cut down their room for manoeuvre about what they are trying to achieve.'* BILL ENGLISH, SPEECH TO IPANZ.

Actors within service organisations and acting in IT roles also experience the compression of time in a number of ways. Particularly, with the changing affordances of technology, competition in converging markets and the changes to their organisation's role due to these compressed structures. Actors experience the duration of projects compress as they are under greater pressure to maintain pace with developments by competitors and markets. Similarly, there is an increase in the frequency of changes as they aim to respond to their networks and ensure they maintain their value creating role (Exhibit 14 provides perspectives on this). Subsequently, actors experience significantly compressed orientations between the past, present and future. The future, such as the next project or the next round of changes to network products, comes faster towards the present – compressing the cognitive distance between the two. The present is compressed into immediate activities that lose their repetition and sense of permanence or extension in time. Both these factors make actors more reactive and less deliberative, compressing choice in actions and decision-making. The past takes on a complex relation in which the separation between what or how something was done and what is now being done is increasingly distanced, yet with the increasing pace of events and actions, this distance is filled with more and more compressed moments of the present moving into the past. Actors' abilities to create desired trajectories is limited by the de-synchronisation of their timing norms with their environment, which makes it difficult to coordinate actions and create meaning in particular situations.

Exhibit 14 Compression creating pressure in networks

> - *'Customers will come to us and say "your costing us this much, and that's our most expensive workload, you need to do something about it", and we'll say yes but we have saved you X amount of millions of dollars over this time, and the response is "thanks, but what are you doing for me now that is going to save me money".* CEO SERVICE PROVIDER

> - *'When our partners change we change. It's almost impossible just to cover that off. The market is that they are going to constantly reduce the cost for using services, while offering more services. So that the customer will use more and more, you'll become sticky but your price point to what you do in the cloud compared to on-premise will be a whole lot cheaper. On that basis, we have to readjust where we are adding value.'* SERVICE PROVIDER RELATIONSHIP MANAGER
>
> - *'Historically, we would have customers lay out a plan for a year to roll their next project out, today that needs to look like three months. We are now moving at a different pace, driven by what is now possible for the business and even more importantly for our competitors.'* CEO SERVICE PROVIDER

7.2.6 *Summary of Compression*

Compression is generative of, and generates, change, creating feedback that is influential across structures and relations. These findings point to the influence of compression within different structures across levels and in different relations and properties. Compression is found in; the system environment, particularly economically and technologically; the coupling between actors in different fields (public and private sectors); the roles, business models and networks positions of organisations; as well as, the experience of actors in their roles and relation to timeframes. Compression is both experienced by actors and enacted as part of positive feedback, for example, the response to economic compression in government was to restructure and integrate agencies into single organisations. Similarly, in response to the GFC, service providers reduced the distance between themselves and government clients in order to facilitate relationships. Compression also demonstrates the complex compositional nature of different structures, for example, compression in technology, changing its materiality and affordances, drives changes in the relationships between customers and service providers. This example shows how structures are connected and influence each other in their changing composition.

7.3 Modes of Alignment - Description of the Mechanism

Following from the finding of compression, referring to the nature of relations and structures, the role of coevolution driven by interacting and mutually adjusting relations and structures is

evident in the system. Understanding a service ecosystem necessarily means recognising coevolution in the interactions and processes between actors, technologies and institutions. However, more particularly, given the stratified and relational conception of the theoretical conception of this study, coevolution in the system manifests as driven by the particular modes of alignment that structures and their relations establish with each other. Subsequently, the modes of alignment is a mechanism that determines how structures may adapt and develop their trajectories by describing the relationships between structures in four modes; Hierarchy, Tension/Conflict, Cooperation/Synergy and Independence.

- Hierarchy: A structure is given precedence over another, such that submission or adaptation is sought.
- Tension/Conflict: A structure tries to force another to adapt, this structure resists causing tension, or more generally diverging trajectories are pursued.
- Cooperation/Synergy: Two structures pursue mutual trajectories.
- Independence: A structure limits its interaction, pursuing its own trajectory. Isolation is sought to limit the pressure of relational mediation on the structure

The explanatory basis of this mechanism is that the nature of alignment is what lies behind the ability of a structure to pursue its directed unmediated trajectory. These modes provide a means for seeing relational interactions as producing the compatibilities, contradictions and complementarities that serve to reproduce or change the structures that define the nature, powers and properties of the different structures and layers of the service ecosystem. Their complementary or contradictory nature provide a means for understanding trajectories that are characterised by tensions and misalignments and controlling, enhancing and positive interrelations. Subsequently, patterns of morphogenesis and morphostasis come to rest particularly in the modes of alignment. In the following section examples of the presence of these features are provided.

7.3.1 *Hierarchy*

This section will address examples of Hierarchy as a mode of alignment in the case. Hierarchy reflects on coexisting positions in a system of structures, and the enactment of a set of power conferring relations which result in a structure acquiring uneven capacities to influence the

direction and nature of trajectories. In the case, hierarchy serves as a mechanism of change and structuring while also being generative of other modes of alignment, particularly tension.

7.3.1.1   Hierarchy of the reform structures

As noted the establishment of the "Directions and Priorities for Government ICT" the Better Public Service Programme (BPS) and the Government ICT Strategy and Action Plan (ICT SAP) served to create a powerful organising structure. The enactment of this structure represents a hierarchical structure serving to manifest the mandate to emphasise and give precedence to cross-government directions and priorities. Ministers set the expectation that CEs manage and contribute to the collective interest and system-wide performance improvements, whether in relation to the results under the BPS or directly to the management of ICT. CEs are also under the directive to adopt cross-government ICT products and services. The alignment of ICT strategy with public sector and service reform within this hierarchical structure also brings the need for change in IT systems and processes into a more central position. For many agencies, ICT and digitalisation have not served as a priority, however, by establishing the logic of their change alongside reform, the issues needing resolution are shifted from the peripheral framing of agencies considerations to a core feature for consideration. This represents the power of the hierarchical structure to direct the trajectory and attention of actors.

This is a significant change from previous models. Traditionally, opt-in approaches have been used for ICT program adoption. Similarly, shifting accountability and explicit directives to adopt new enabling behaviours has meant that the horizontal hierarchical structure of cross-government thinking is no longer misaligned with the priorities of CEs, their decision-making and the assessment of risks. The power of this hierarchical structure can be contrasted against previous efforts to create coordination developed in the Managing for Outcomes programme and the sectoral approach that evolved from it. In these efforts, sectors were never mandated or even strongly encouraged, and there was no real shift in alleviating the tensions in accountability and behavioural structures which are driven by the vertical nature of devolved, individualised structures while requiring horizontal interactions. Reports on progress for each silo based on their contribution to outcomes requiring collective impact and multiagency responsibility drove conservative and defensive planning, implementation and progress. Similarly, without the necessary structure in place, leadership support, infrastructure, ministers'

and stakeholders' buy-in, governance and accountability frameworks did not emerge as structures. Instead, governance groups and aspirational statements existed as emergent artefacts of multiple individual representations of a collective intentionality which lacked resiliency, resulting in their fading interest and support as agencies shifted focus to local initiatives that were easier to fund and control.

Fundamentally, by creating coordination of CEs and agencies through alignment with a hierarchical structure, there is a move away from loose collections that experience little power from a horizontal structure and relief of the tension experienced by agencies and CEs whose accountability and mandate was vertical and individualised trying to respond to horizontal and collective outcomes. Subsequently, coordination actually emerges from the force of a formal objective and mandate allowing the aligning of resources, planning and practices in decision-making. Therefore more formalised institutional relationships are created among existing networks of organisations.

7.3.1.2 Hierarchy in Roles

These processes affect some of the governance arrangements in the public sector, particularly setting the basis for over-riding the managerial independence of CEs with respect to purchasing and ownership responsibilities, funding arrangements and the development of investment and infrastructure. Subsequently, in actualising the horizontal cross-government structure, system leadership is strengthened through establishing new system-level leadership roles to drive changes and lift performance. Notably, the head of the State Services Commission became the Head of State Services, and leaders were established for each of the BPS results and functional leadership roles were developed.

While the GCIO role existed prior, it was under the BPS reform programme that the role was enhanced as designating the whole-of-government functional leader for ICT. The GCIO role focussed on the strategic direction, policy and standards for use of and investment in ICT across the public sector. Functional leadership aims to tackle the trade-offs between what each agency might choose to do if left to its own devices and what is best from a system perspective in order to cut costs and better support citizen-centric policies and service delivery. The GCIO role is given decision rights and a mandate that initially applied to 33 agencies and service

departments, which in 2014 was further extended to another 27 agencies. All these agencies are required to share their ICT investment strategies with the GCIO to ensure that they line up with the greater goals of the ICT SAP. These agencies are also required to work with the GCIO on ICT assurance matters, and they are required to adopt any ICT Common Capabilities that are mandatory. The role of GCIO, therefore, is given institutional power to affect decision-making and behaviour and the ability to control agencies range of actions. The hierarchical nature of the role is important as a source of power conferring relations which can disrupt the dispositions and sense-making within agencies, breaking inertia. Hierarchy allows the displacement of institutional practices rather than aiming to naturally evolve the institutionalised structures of practice and decision-making within agencies.

This structure was further strengthened by funding and resourcing for the GCIO, strengthening the material relations necessary to enact the role structure. Moreover, the role's institutionalisation was solidified by using the failure of implementing Novapay as an event to frame and highlight the need for hierarchical structures in overview of ICT plans, projects and risks and security standards and controls across the public sector. Exhibit 15 reflects the structural power of the GCIO role and its relation to hierarchy.

Exhibit 15 Hierarchy in the GCIO role

- *'There was that initial fear, uncertainty and doubt about the change happening. Therefore one of the things that was considered was how do we begin to force the change. The GCIO with cabinet started to put pressure on agencies. The government knew it needed to make some changes and drive agencies. In 2012-2013 the government introduced a series of cabinet mandates, including that central agencies had to use these services. This was instrumental in beginning to drive a change in behaviour.'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

- *'The most obvious manifestation is going to be the leadership function of the Government Chief Information Officer (GCIO). It's not just the funding but the mandate and the GCIO needs a strong mandate because frankly, the public service technology establishment has not responded positively or well to the changed environment.'* Bill English, Speech to IPANZ (New Zealand Government. 21 February 2013).

7.3.2 *Tension*

Tension as a mode of alignment describes the diverging nature of trajectories between structures and the resistance developed in response to the pressure for adaption. Tension creates both change inducing positive feedback but also inertia and change dampening or limiting negative feedback.

7.3.2.1 *Tension Between Agencies and Government Change*

Tension as generative of action is particularly evident in the changes to government strategy reacting to the tension experienced in alignment with the social, economic and technological environment. Action is stimulated by the realisation that practices of management and decision making, relationships between agencies and with suppliers and the current level of technology were not adequate to respond to a changing environment (Exhibit 16). It is the realisation of this tension in actor's sense-making that compels action. The trajectory of the environment demands certain relations and generative capabilities and affordances, yet the government was unable to respond to this. Similarly, at an agency level, particularly evident in Inland Revenue, there was the realisation that the role that was expected and demanded from the system of government was in tension with the capabilities of the business model, technology and infrastructure of the organisation, stimulating action (Exhibit 16). The trajectory of Inland Revenue's development and the layers of structure that emerged over this time, in response to shifting functions, created a trajectory significantly diverging from their required position.

Exhibit 16 Tension between Agency role and government trajectory demands

> - *'We started that in 2009/2010 when we began looking at key infrastructure problems for government. We didn't have an answer at that time as to what to do. We needed to invest in state of the art data centres to get people shifting their hardware out of basements and ill-suited areas. The government didn't have the money to invest in building data centres.'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY
>
> - *'The government was in a potentially multi-billion dollar hole in terms of underinvestment in ICT with no mechanism to change. Some of the most radical change*

> *is the recognition that they need to play with each other and be part of the system. The procurement of those services needed to change.'* GOVERNMENT RELATIONSHIP MANAGEMENT DIRECTOR
>
> - *Inland Revenue's role has shifted over a period of about 20 years. A core component of Inland Revenue has been delivering major initiatives through modified business processes and manual interventions, particularly when implementing social policies within a platform that was initially designed for tax administration. In doing so, layers of complexity and risk have been added to business processes and technology infrastructure. In initial reviews it became clear that Inland Revenue did not have the right operating model or capabilities required to deliver effective services in the future, which becomes more contrasted against the environment of the BPS program.'* CTO GOVERNMENT AGENCY.

7.3.2.2 Tension Driven by the Shifting Structures of Technology

As Exhibit 16 highlights, the changes to accountability, governance and roles are also interlocked with the tension underpinning changing technology. Firstly, the restructure that created MBIE caused significant issues in integrating the various ICT systems and capabilities that were brought together. Secondly, the as-a-service model requires that management fundamentally change how they run, manage, own and consume ICT as a resource. These changes bring with them significant tensions in the resources, roles, relationships and decision-making of actors.

The compressive capacity of cloud services and common capabilities created affordances to standardise services, resources alleviating a relational and artefactual tension. However, in doing so, the removal of the argument for bespoke solutions and individualised capability took the role and power away from traditional decision-makers creating a cognitive tension. Similarly, the pressure for agencies to align with the trajectory of higher level change created further tensions, particularly in initiating transitions and migration for infrastructure and technology. This pressure is driving agency staff and CEs towards undertaking a significant and risky project to change their operations. Consequently, the situation is difficult due to

competing tensions in the internal relations of the organisational structure and its alignment with changes in government systems which generates resistance.

7.3.2.3 *Tension Driven by Misaligned Narratives*

The reproduction of this tension across structural levels has dampened the move to cloud-based services for agencies, as existing business models and underlying security and risk management practices and procurement models do not align with the consumption model for cloud services. The tension between established practices in decision making and operations creates a problematic situation in which the process related costs imposed are disproportionate to the costs of the service and, therefore, do not make the change attractive or align with the narrative that the shift provides cost efficiencies. So the competing sense-making perspectives of agencies and the institutional narrative proposed by the ICT functional lead do not produce the same evaluation of the value proposition of use of these services, failing to catalyse desired adoption.

This generation of tension through the misalignment of narrative and seeming enactment was present in other forms. The relationship between guidance for adopting a cloud-first approach and the use of public cloud services, when appropriate, created conflicting cues with the initial prevention of using public cloud-based office productivity services (Exhibit 17 reflects on this tension). The restrictions on the use of office productivity is problematic as this would be the most obvious first implementation for agencies. However, by preventing this uptake, it sends a strong signal that these services are too risky and creates significant deterrents in the sense-making of senior management. This situation was problematic but is deepened by the subsequent signal and focus on the risks of public cloud services that these decisions established. The emphasis on risk is catalytic with institutionalised practices and norms which inhibit risk-taking in the context of adopting information and technology innovations. This interaction creates significant tensions with the perceived benefits of adoption and leads agencies to insist on and seek in-house IT. Subsequently, the institutional conflict, both creates delays in adoption and misaligns the sense-making perspectives of different levels of the system and turns the hierarchical structure of the GCIO mandate and the SAP into conflicting institutional relations, encouraging resistance from agencies.

Exhibit 17 Tension generated by conflicting narratives

> - *'Between DIA, the Government Communications Security Bureau (GCSB) and the Privacy Commissioner there was confusing messages regarding cloud usage. This creates a situation in which agencies have guidance, instruction, and direction which is contradictory. So you have business owners and security teams inside of agencies trying to figure that out and then the players in the market are trying to understand where they stand.'* INDUSTRY OBSERVER
>
> - *There was a government mandate to say that office productivity could not be consumed in public cloud. But when you talk with agencies the very first workload they would consider putting in public cloud is office productivity. Agencies saw this as government saying we don't want you to use public cloud. So we have removed that mandate, subject to risk assessment. We followed up by undertaking a security certification process with Microsoft for this Office 365 and their Azure products so we have developed 80% of the security risk assessment they would have to undertake.'* SOFTWARE ACQUISITION STRATEGY LEAD

The subsequent change to the mandate, not coming until July 2016, that allows agencies to use offshore-hosted office productivity services has driven demand for a range of services. However, the decision has not been a simple recognition of the tension between guidance and enactment. Instead, this tension has unveiled others that set in motion change in the system. Firstly, multinational providers have made clear that their services in the future will only be delivered from their Cloud, this creates a significant change in the ability to maintain current affordances. Secondly, greater recognition has been given to global providers as providing significantly more secure services than traditional IT systems. This change has been part of establishing a policy that issues of data sovereignty are now based on a set of criteria for risk assessment, rather than a blanket negative stance towards off-shore data storage. This has been a maturation of the perspectives of government leaders and has emerged from engagement with the market. Similarly, multinationals and their local partners have expanded their offerings and service capability. They are providing hybrid models of in-country cloud platforms and offshore cloud platforms and major organisations have increased their investment in datacentres in Australia, signifying their commitment to Australasia, as well as providing enhanced performance and geo-redundant back-up. So it has been changes in relations in the

maturity of agencies, cloud service providers' capabilities and a greater understanding of government requirements and efforts to accelerate cloud adoption that has changed this tension.

7.3.2.4 Tension Between Government and the ICT Market and Service Providers

Tension in available capabilities in the market and the willingness to adopt these offering also reveals a common tension between the ICT digital market and government as a customer. Evident tensions have emerged in the relationship between multinationals and government particularly organised around how the relationship is to play out. The core of this stems from developments in the way service providers are maturing their own business models in the changing landscape of service provision and government's risk focus, adoption models and efforts to control interventions in the market. Exhibit 18 provides perspectives on this tension.

Exhibit 18 Tension between the government and service providers

- *That's the tension in the government at the moment, we get asked to carry the investment without the commitment and that's a really tough business proposition. The assumption is that the world is moving to 'as-a-service' and yes that's true but that's in the cloud where you get scale and where you don't get people interfering. The government interference creates a massive conflict. A lot of people don't serve government directly because there is no money in it and you take on huge business risk.' EXECUTIVE SERVICE PROVIDER*

- *The procurement model underpinned the strategy. The problem with that is, a procurement model, it's not about the outcome. That's where the approach over the last 10 years has been to slice IT into horizontals. IaaS, software, IT management etc. The way the IT market has matured is as a vertical and as a platform where these things are all combined. So the horizontals have actually become a roadblock at a procurement level. ' EXECUITVE SERVICE PROVIDER*

What emerges in these perspectives is the recognition that there is conflict in the trajectories of service providers and government. A central driver of this is the components of the government operating model that are not able to meet the pace of the market in terms of change and the capabilities and affordances pursued by multinational service providers. Moreover, much of the emphasis in the transformation has been shifting the focus on change from an agency to a

supplier lens as a way of changing the problem and shifting 'government out of the business of doing IT'. This mindset has fundamentally altered the relationship between the two and has revealed the tensions of the social and cultural categories of different goals, working cultures, norms, rules and processes that now become entangled across the two. In the efforts to change the relationship between the two, both systems have been opened up to each other, and these interactions are now taking place while responding to the complexity of the changing technology environment. Consequently, change is being driven in government while also demanding change in the business models and relationships of providers. Tension, therefore, is multi-scaled within government, and within service providers, within their interactions and more broadly in relation to their environment.

7.3.2.5   *Intra and Inter-organisational Tensions Generated by Changing Technology*

The need for internal change in response to tension between technological affordances and institutionalised practices and organisational structures is particularly evident in the consensus that the skill sets and focus of IT roles and frameworks will significantly change. As mentioned, compression is a key driver of this shift. However, within government agencies, there is significant tension in managing the workforce, particularly in response to the ability of changing technology to provide efficiencies, automate processes and negate certain roles.   As Exhibit 19 shows, the tension exists in having roles established, aversion to restructure and the political scrutiny of issues surrounding job layoffs and cuts. Large transformation efforts particularly have drawn scrutiny for requiring restructures and the potential for job losses.

Exhibit 19 Tension generated by restructuring

> -   *'The idea of procuring a service is that all the service is provided. But in government all the people who were running the environment or managing infrastructure are still doing it today, so the productivity gain has been minimal and the role profile hasn't changed so you have this significant duplication of resources. It's got to the point where you have more people managing the risk then managing the project and more people managing the project then you have doing the work. Something has to change.'* EXECUTIVE SERVICE PROVIDER

- *'We have agencies who have 400 IT people. They're bigger than IT companies. How can that be true? IT companies look after hundreds of customers. I think it comes down to maturation and there is the need to come to terms with the protectionist approach to people. Government is very protectionist of its people on the ground, and there isn't the necessary skill base.'* INDUSTRY OBSERVER

- *'Government agencies can run their entire operation in cloud services. We can very quickly stand up a government entity as an agency as a service from the ground. That's the case with the new Ministry for vulnerable children. They have four people running their IT environment for 3500 staff using cloud services through a provider to deliver their infrastructure. Compare that to MSD who have 750 in their IT environment to deal with their 8000 staff. That's old world versus new world.'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

However, these tensions within the business models and the relationship governance it manifests are not only in the government as a customer but also in the service provider market. The movement to as-a-service models, the rise of competition in service management provision and specialised capabilities driven by emerging opportunities through the compression of converging technology has disrupted established business models. Subsequently, the emerging need for networks of organisations and interlinked capabilities to deliver solutions has caused tension in the market. As Exhibit 20 illustrates, established practices and institutionalised way of working come into tension when the values and activities of integrating actors are different, requiring actors to adapt their activities, resources and schemas to participate in the network effectively.

Exhibit 20 Tension between network members

'The sales behaviour and the reward structure of large organisations has always been a sticking point. We were disliked, as we always went in customer first. For example, we know licensing really well, and they're trying to sell you these ten things, we think you only need six, and we'll get a 50% discount because it's near the quarter's end and the sales people need it. So there's tension, but the customer is happy and they'll buy more. However, you have a sales person who has a number they need to hit.' EXECUTIVE SERVICE PROVIDER

Tension lies within the coopetitive relationship existing across partner and direct selling models. The role as both a channel partner and a service provider establishes two differing interaction logics, creating conflicting expectations. This can mean that the social relationship needed for the partnering role or the trust and value established in the service role are at risk. The actor faces institutional complexity in the roles and the possibility of losing legitimacy with one referent audience as expectations of another are met.

7.3.3   *Cooperation/Synergy*

Tension is a force that creates dissolution and unwanted constraints but is also generative of new relations, interactions and trajectories which are seen as enablements. Alignment that often emerges from tension results in structures that are cooperative and synergistic. A number of examples of this alignment are present in the case.

7.3.3.1   *Collaborative Results and Agencies*

In establishing the BPS results programme, government put forward the results and let agencies set the basis for collaboration, governance, prioritisation and action. A core part of this arrangement was the setting of result action plans, getting CEs to establish ways of working with other CEs and their agencies. Governance arrangements were set up for each result area, supported by a result team located in the lead agency. The Result Action Plans set out to determine the actions needed and the contributions and responsibilities of the different actors. These action plans, therefore, provided the intervention logic for achieving the result; including how progress would be measured, how agencies would be organised, key actions, related timeframes, sources of funding, utilisation and alignment of existing strengths and resources and outlaying the needs for future capabilities and resources. Action plans therefore existed as devices in order to bring commensurability and comparability to the outlooks and planning of agencies. These collective action plans, subsequently, became important sources of inclusion for department four year plans - which detailed how the workforce, funding, and key capital investments, critical contracts, and ICT systems would be managed to achieve strategic objectives.

In contrast to previous efforts to get sectors to work together, which was seen to lack a guiding purpose, the creation of relations built around governance, administration, organisation and mutuality, aligned the perspectives and interactions towards a common goal. This cooperation brings similarity to the representations which shape actions and determine change efforts helping to establish interdependency and mutuality (common vision, values and communication) creating the basis for commitment and dialogue. Aligning the results and the performance of agencies created a trajectory that meets both individual and collective goals. Coordination emerges from overarching institutions that serve to formulate decision-making based on joint objectives and complementarity emerges from the integration of resources, decision-making and practices.

7.3.3.2   Alignment of Structures across the Government System

Aligning the need for change in ICT utilisation, procurement and planning with broader service innovation and the BPS program served to create a cooperative narrative and structure framing action and providing a broader mandate to change. This broader alignment in intentions and the guidance of the institutional structure was a different approach than previously found in efforts such as the e-government strategy released in 2006. While that strategy was implemented in recognition of the 2001 SSC's Review of the Centre report (very similar to the BPS advisory group report) and efforts under the 'Managing for Outcomes' initiative, there was not the integration of these initiatives into an overarching structure to direct alignment in process and technology and relationships between government, individuals, and business. The failure to create integration in transformation previously failed to mobilise the generative forces of a cooperative structure needed for change.

7.3.3.3   Legislation and Accountability Alignment

Further to the creation of these cooperative structures, changes to legislation were delivered in order to remove structures which prevent cooperative relations and interactions. Amendments were made to the Privacy Act 1993 in order to better facilitate growing demand to share data across government. Similarly, joint funding tools and the means for agencies to more effectively pool a portion of their funding for collective use were enabled by the changes to the Public Finance Act. Additionally $20 million per annum was created as a BPS Seed Fund, to

enable business case development and design work for collaborative inter-agency initiatives. As noted changes to The State Sector Act introduced new responsibilities for department CEs and collective interest performance expectations. These responsibilities created a complementary relationship between the system outlook required by the BPS structure and the accountability and performance structures for CEs and their ministers. Iterative changes were made to evolve tensions in the relations underpinning the accountability structure to establish its cooperative nature. Appointing lead CEs for each group of related results responsible for influencing peers to achieve the target broke initial siloed responsibilities of CEs but resulted in weaker feelings of commitment by the other CEs. As CEs agency was distanced from the locus of control and action. Subsequently, CEs were then assessed based on their perceived contribution to collaborative efforts, but the asymmetry between behaviours and outcomes caused tensions. Finally, in 2016, collective responsibility evolved to focus on the collective performance of the interagency group as the basis for sanctioning or rewarding CEs. These changes reflect the restructuring of conditions that produced tensions in cooperative structures of cognitive, institutional and social relations in the sensemaking and relationships between CEs. Central to this change is allowing the enactment of structures of governance, management and monitoring for inter-agency interactions without the presence of antagonistic structures, such as legislation that dictates action or performance criteria that places the demands of a role in tension with collaborative outcomes.

7.3.3.4   *Partnership Framework and the GCIO Leadership Position*

Similarly, the presence of distributed agency between executives and their roles and perspectives underpinned a shift in the hierarchical structure of the GCIO role. In 2015 the Partnership Framework was established by the GCIO which bought together CEs and stakeholders from across government agencies to form a strategic leadership group for delivering the digital and ICT strategy for Government (Exhibit 21 provides perspectives on this). This group was supported by other tiers of executives and experts from across government in a set of working groups dedicated to technology, investment, service innovation and data/information. The partnership framework collaboratively developed the digital government strategy and created cross-agency groups focussed on providing support functions for agencies, maintaining overviews of progress, governance, organising and resourcing joint initiatives. Subsequently, the partnership framework created regular and structured

engagement with the GCIO and delivery of collaborative frameworks to coordinate the enactment of the digital strategy across and within government levels. The integration of cooperative relations with the role of the GCIO and the affordances for interaction, inclusion and the means for collaborative sense-making serves to moderate risk aversion, helping to build trust and providing different perspectives from across government.

The roles established within the partnership framework create complex role sets for individuals ensuring they bring both a diversity of perspective but also the ability to reconcile between conflicting institutions and consider opportunities for broader institutional changes and innovation. Similarly, drawing diverse actors into roles that share work and settings and therefore interests, privileges and responsibilities establishes a basis for developing shared perspectives. Enacting these roles provided time and space for socialisation, personal interaction and joint activities to develop separately from agencies' daily operations. These individuals, therefore, become advocates for change within their agencies. As the focus of the GCIO moved from a more narrow perspective of ICT to the digital transformation of government, this increasing complexity in the role required this collaborative structure in order to reduce the complexity differential between the role and the system it was aiming to transform. This structure also facilitates a form of distributed power to manage institutional complexity in the system between agency demands and government pressures. Representatives from different areas of government can address their local conditions focusing on the adaptability and coherence of practices while returning to common meanings and the centralising power of transformative efforts through the frames of reference developed within the partnership framework.

The role of the GCIO shifted from a position of mandate and hierarchy to a more open cooperative structure creating joint shaping of action, inclusive narratives and planning while providing a basis for materialising cooperation in planning documents, meetings, terms of reference and programs of work. The strengthening of relationships between agencies and the GCIO plays a significant role in reducing the cognitive distance established by institutional hierarchy, working towards reaching collaborative cognitive frames and understanding of the use and value of desired ICT changes.

Exhibit 21 The partnership framework

- *'The partnership framework acts as a board to discuss sector-wide issues and allows the GCIO to approach agencies as a sector rather than acting as the policeman, which is not something we want to do.'* SOFTWARE ACQUISITION STRATEGY LEAD

- *'The partnership framework - the GCIO brought a group of his fellow colleagues around him for the achievement of the ICT strategy – a coalition of the willing – a group of CE's meeting underpinned by four working groups technology, investment group, information group and the service innovation working group – all with the determination to work together in the achievement of digital transformation. This has allowed the shift from the ICT focus to the broader Digital Government frame and the customer-centric, service design way of doing government is becoming front and centre'.* GOVERNMENT RELATIONSHIP MANAGEMENT DIRECTOR

- *'The GCIO set up the partnership framework to move beyond the ICT branding and problems, the ICT issues are kind of the easy ones. The capabilities are rushing ahead of government's ability to adopt them. The problem now is the way we work, thinking in systems, thinking in sectors. Bringing together the CEs of agencies to look at what collaboration needs to look like, and meeting consistently is important.'* GOVERNMENT SERVICE INNOVATION MANAGEMENT

The collaborative relational structure incorporating the GCIO role and team has allowed greater efficacy in the role of guidance and cooperation over mandate and hierarchy (Exhibit 22). The focus has shifted to establishing working groups directed towards assurance, relationship management and system transformation. These groups are aligned with the core features of the ICT strategy and therefore align with the criteria by which agencies are evaluated for their contribution and execution of the strategy. The working groups have created frameworks for interaction, social relationships and material relations through resourcing, meetings and seminars. This has allowed the GCIO and team to deliver its role in advising on ICT investments and planning while allowing agencies to be involved in the development of capabilities and setting the direction of the ICT strategy. Agencies rely on the resourcing of the GCIO team to assist them to navigate the risks that arise from adoption, this facilitates alignment with institutionalised structures as well as removing tensions from the decision

making of IT staff and CEs, which remains a significant barrier for using these services. The actors within the GCIO team occupy unique network positions which create a collaborative tie in the network of agencies providing a basis to drive support for changes acting as a broker between many diverse actors and having access to a variety of information about the actors' interests and needs. This position allows the GCIO team to establish a cooperative relation between individual agencies and the networks they are part of.

Exhibit 22 Changing GCIO role

- *'Everything we do now is co-design. So if it's common capabilities, we sit agencies down with vendors so we know that we are representing their views. And we know they will accept the result.'* PROCUREMENT ANALYST

- *'The GCIO team's role is to influence, while we have a mandate in some areas, we don't lead with the mandate, it's all about being facilitative. We don't talk about compliance. We're helping people get into agencies and advising on when to meet and how to coordinate meetings. For smaller agencies who are having to meet with a lot of different groups it is hugely problematic for their resourcing and so we need to be a linchpin of that coordination and be a resource for them and coordinating those expectations'* GOVERNMENT RELATIONSHIP MANAGEMENT DIRECTOR

- *'I do commend the DIA's recent move into a guidance role, if you look at the guidance they have been releasing and the accompanying documentation. This is a big change from mandating agency solutions'.* INDUSTRY OBSERVER

7.3.3.5   Cooperative Capability Structures

Enacting the role of the GCIO and the partnership framework is significantly aided by the integration and standardisation of technology and digital infrastructure across agencies. Common Capabilities provide shared building blocks for ICT portfolios. IaaS, particularly, provides core infrastructure allowing a common foundation for services. Common Capabilities allow agencies to move to a shared set of standards and level of security. The shared nature of these relations grounded in artefacts, converges the institutional structures underpinning their use and the terms and conditions that govern the relationship with their suppliers. Subsequently,

discussion and interactions in their use are coordinated. The costs across government are reduced through economies of scale, as each agency does not need to go through primary procurement, own and maintain infrastructure or deal with maintaining many versions of similar technology across multiple agencies. For providers, a shared set of standards and terms and conditions creates routine social practices in working with agencies limiting the need to invest resources in developing structures of interactions for every exchange.

7.3.3.6   *From Products to Relationships – Software Framework Agreements*

The practices enabled by engaging with the ICT market for common capabilities provided a platform to evolve the construct and further cooperative relations, going beyond the single products of common capabilities to creating a service based relationship between government and suppliers (Exhibit 23 provides perspectives on this change). The Software framework agreements became a means to establish a strong relational tie and institutionalised means of interacting that goes beyond the procurement of a particular product and establishes government agencies as a customer of one for access to any services suppliers have available. The changing market and integration of government technology infrastructure drive an outlook that exposes the taken for granted rules of procurement and calls into question the perceived benefits of those rules. The creation of these cooperative relations moves the relationship beyond the linchpin of demand for products to focus on the long term relationship, a facilitative environment of contracting and procuring and cooperative decision making on both sides of the relationship.

Exhibit 23 Software Framework Agreements

> - *'The SFA is an evolution of the traditional way the GCIO has engaged with suppliers where for the last 8 or 9 years we've been engaging with suppliers using a mechanism called common capabilities. Common capabilities are market interventions, where the government sees a problem or opportunity that needs to be changed. The GCIO would step into the market on behalf of government and procure a solution. That's a specific product that we were buying. The SFA is a different approach, where we engage with a supplier and negotiate a construct where any of their products can be sold or bought by agencies under a consistent set of terms and conditions and pricing model. It's incredibly valuable to both suppliers and agencies because it removes the requirement for the*

> *supplier to negotiate individual deals with individual agencies and it removes the barrier for agencies to have to contract individually, we've done all that work for them.'* SOFTWARE ACQUISITION STRATEGY LEAD
>
>
> - *SFA is a much more involved discussion with the supplier because it's about developing a strategic relationship. It's relatively easy to go to market if you have a particular product you want to purchase and you can demonstrate a demand profile and revenue stream to suppliers. Going to market like that you get a lot of interest because suppliers can see the value. The SFA doesn't have an obvious demand profile, we don't buy on behalf of all of government. One of the first things suppliers ask is 'does this mean you are going to buy on behalf of government'. The strategic conversation we have with suppliers is about having a preferential relationship with government by removing all those barriers to procurement.* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

The creation of the cooperative structure of the SFAs was a generative mechanism of change beyond service provision between agencies and specific suppliers. Particularly, the initiation of the first of these agreements led to interest and subsequent engagement with more suppliers interested in establishing the arrangement (Exhibit 24 provides perspectives on this). Although these agreements required changes to operating models, terms and conditions and traditional means of engagement, the relationships were seen as valuable, particularly in that they provide a long-term and legitimised strategically significant' relationship with government.

Exhibit 24 Evolution of relationships with SFAs

> - *'The initial agreement in 2012 helped prove the model and got agencies to understand the value of being 'part of the club'. In terms of agency engagement, every agency that can consume under the pan-government agreement now does. Nobody chooses not to. That helped us when we said we wanted to broaden the model and bring other suppliers on board.' SOFTWARE ACQUISITION STRATEGY LEAD*

> - *'These organisations have a very well established and mature business model. We were very clear with them we didn't want to work that way anymore. The point of the framework agreement was to get them and agencies to change the way they worked together. It was a very long, involved process, it took 18 months for us to get the agreement. The agreement fundamentally changed the way they worked with government.'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY
>
> - *Conversations emerged early on around a single commercial agreement. The precedent of those existing agreements helped. Having got one big vendor under the belt there was an appetite within DIA to look for more ways to make it easier to transact with other big software vendors. The existing tensions and size of our relationship made us a target and a watershed point. The big impediment for the agreement was the lack of willingness to spend money on the government's side. There was resistance at the executive level questioning why we would change our T&Cs if money is not spent. There was a lot of unique elements in the contract, and concessions we wouldn't have usually conceded on but our future was to be easy to transact with.* SERVICE PROVIDER ACCOUNT DIRECTOR.

7.3.3.7   *SFAs as generative structures*

The SFAs as a cooperative generative relational structure also allowed suppliers to realise innovation in their own engagements with other jurisdictions. These organisations used both the relationship established under the agreement as well as the affordances of the institutionalised contract and terms of engagement to influence the decision-making of other actors by providing an exemplar. Exhibit 25 reveals how the restructuring of the relations enabled by the SFA became a catalyst for action and created a new model which they could use to approach and interact with other governments around the world.

Exhibit 25 SFAs influence on the market

- *'We are innovative and perceived globally as a leader in digital transformation. One of our suppliers is in negotiation with another jurisdiction, and we spoke with the jurisdiction 6 weeks ago and they wanted to gets a head up about what we did and how we did it. The supplier then contacted us and said can we share our executed contract with this other jurisdiction, because effectively we think that's the best way forward. The supplier is now actively promoting our agreement as a better way of working. We've worked it out and have a construct that works and the supplier is now using it out in the market. It amazing because these suppliers never want to share agreements but they're pretty open.'* SOFTWARE ACQUISITION STRATEGY LEAD

- *'Organisations have taken that same model to a number of other jurisdictions and signed agreements based on the agreements we did. That's what we tell them, we are innovating in NZ you've got to get on board with that. We can help you get on board with it but our experience is that you will embrace it and want to use it as your model for engaging with other governments. All of the suppliers that we've done all-of-government agreements with, it is there first and certainly the first agreement they've done on a non-supplier construct. So it's our paperwork, our contract. It's ground-breaking in that regard'.* SOFTWARE ACQUISITION STRATEGY LEAD

The structure of the SFA also shaped roles within these organisations. For example, Organisation E, introduced a relationship executive whose position aligned across all products and services of the organisation, moving away from the traditional functional focus on a single line of products. This represents a significant shift in the institutional expectations of the role, changing the accountability structure and expectations of the individual. This change was particularly evident in a move to a three-year accountability structure from traditional six to 12-month goals. Similarly, the social relationship between the provider and the supplier was changed, the goals of the client (in this case the BPS programme), became a key source of the role structure and terms of engagement. Moreover, the shift from institutional accountability and targets under sales of a particular product, allows the role and the motivation of the individual to be driven by a different conversation with customers. This adaption of an internal structure allows greater cooperation in the relationship between government agencies and the provider.

The cooperative structures also became a catalyst for capability and resource innovation. The alignment of value cocreation efforts under the requirements of government and the capabilities of providers created the necessary structure to stimulate product and practice innovation. By developing the cooperative structure under the common capabilities model and pushing business models and requirements in a shared trajectory, service providers have been able to create innovation in their services which are now being offered to businesses in the private sector. By setting the requirement for a service that delivers a catalogue of new capabilities, within the scale and complexity of an all-of-government capability and institutional requirements, these interactions allowed new services to emerge. Exhibit 26 reflects on this outcome in the market.

Exhibit 26 Innovation generated by SFAs

- *'The transformation in government is absolutely a catalyst for innovation in the NZ market. We've got a common capability, called TAAS, which was transformative in the manner in which it aggregated multiple services. One of the major suppliers has told us that the contract forced them to change their business model, they knew they needed to do it, they didn't know how to do it, but that contract forced them to do it and now they are using it in the private sector. That's an example of where our intervention has helped the sector transform.'* SOFTWARE ACQUISITION STRATEGY LEAD

- *'Government is not a telco so it needs a telco to stand up and deliver these services. It has changed the environment around telecommunications, so much so that the model we evolved around TAAS for government is now being replicated by providers for the private sector. Government has lead the change in the private sector and influenced the private sector.'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND DELIVERY

  'We took the model being developed with Government agencies under Telecommunications as a Service (TaaS) and looked at offering a suite of managed security services to businesses. Security is in real demand in the New Zealand market. The work and development provided under government's complexity has allowed us to pursue new approaches and extend what we are providing beyond what is available in the market.' SERVICE PROVIDER BUSINESS MANAGER

7.3.3.8   Collabroative Networks in Service Provision

The final illustrative example of cooperative alignment as a generative mechanism surrounds the Stack Alliance, a group of ICT companies cooperatively offering services and solutions at different layers in the ICT stack under a memorandum of understanding. The Stack Alliance is a group of 20 partners, built on a cross-government IaaS construct, offering multiple partner alliances with flexible capabilities (Exhibit 27). Agencies can blend a range of services and technology with their infrastructure providing flexibility with access and choice in the source of capabilities while avoiding lock-in with specific service suppliers. With the complexity of disparate applications and legacy systems across government requiring change, the range of specialist capabilities and capacity provides for these challenges. The scope, in both size and complexity, of the government contracts stimulates this solution based network architecture, allowing smaller specialist organisations to compete with larger multi-national generalists, align with institutional requirements based on risk and capacity demands and provide opportunities for local IT service providers who aren't currently participating in government procurement panels to stay engaged with government projects. Relational collaboration, therefore provides, the base to align capabilities with requirements and with institutional structures.

Exhibit 27 Collaborative networks

> - *'Our strength is sticking to our strengths, we stay in our lane. We've got the technical depth that others don't have. So that makes us a good partner. When we were competing with large generalists, they were going to agencies and offering the full stack even though their remit stops at infrastructure which was attractive from an accountability stand point. In response we set up the Stack Alliance we got as many providers to sign an MOU as possible who were competing against these providers. So now when I walk into an agency I can bring other partners in and offer a set of specialists. We can offer a modularised partnership and solution provision, if you didn't like the work the DBA was doing you swap them out'.* SERVICE PROVIDER GOVERNMENT MANAGER
>
> - *'For startups and smaller companies the only way to win work in government agencies is going through an intermediary. The contracts and conditions for large agencies are impossible for these companies.'* INDUSTRY OBSERVER.

The Stack Alliance builds on the relations established under the IaaS construct. The institutionalised structure established with the government under the contract and the social relationships established between the main organisation, government agencies and the GCIO team provide structural integrity to the cooperative structure. The organisations leverage these existing structures to enable consortium-based solutions and legitimise these flexible capability networks. With this in place, structural flexibility is facilitated by allowing the Stack alliance to promote different configurations of actors to adapt to different requirements. The base IaaS structure and the use of the Alliance MOU provides a platform that enables a range of service providers to be coordinated, integrated, and synchronised coherently. Subsequently, cooperative relations are generated between resources from different organisations. Partners are able to adapt their existing (or adopt new) business processes to cooperate with government institutional requirements and establish relations with agencies without needing to overcome or align with all the command and control structures of government contracts. Similarly, for all organisations operating within the alliance their access to the capabilities of partners is generative of both the value they can provide but also the power to compete with larger organisations.

7.3.4 *Independence*

Independence as a mode of alignment found in the service ecosystem centres on the creation of separation from structures and their powers and efforts to allow structures and relations to pursue trajectories unmediated by certain features. Independence exists at various levels within the system and is built on relations that generate separation. Independence is generative of structural relations that drive other forms of alignment and particular interactions.

A central feature of independence in the system is creating 'space' or distance from constraining features of the structures imposed on and conditioning courses of action and interaction. One participant described the need for "*companies to give teams the mandate and the space to go and innovate. You almost need to keep them isolated to a certain extent because there are antibodies in any organisation that kill anything that's different.*"

7.3.4.1 *Independence at the Intra-organisational Level*

At the level of individual agencies independence was created in order for actors to free themselves from their roles and inhabit a separated space to focus on developing service innovation for their departmental unit. Exhibit 28 provides an example. Actors were provided the opportunities to stand outside of their roles and the practices associated with those roles. This provides a reorientation for understanding the activities and relationships of the organisation and the environment. A separation from roles, practices and the institutionalised structures of traditional development activities within the agency provide independence from organisational structures that condition and mediate agency and sense-making. The absence of these constraints provides a means for new properties to emerge. It was also necessary for individuals to inhabit a different space, by being located in different offices the space does not instantiate the practices and normative and regulative relations. Independence in space, therefore, provides power to individuals by freeing them from constraints but also providing new roles to enact as 'innovators'.

Exhibit 28 Creating independence for individuals

> *'We worked with CreativeHQ on innovation, they provide incubators, boot camps etc. focussing on Lean Startup and Design Thinking. We actually had a number of our team move into their offices. The idea is that they are not distracted, they are undertaking that work. They took advantage of the coaching and resources provided by CreativeHQ. People had begun putting aside time to brainstorm, and they were running programs and meeting, but this is difficult when they are also focussing on completing their day-to-day tasks.'* AGENCY RELATIONSHIP MANAGEMENT

7.3.4.2   Independence at the Organisational level

Independence was expanded under the service innovation group of the GCIO partnership framework. Particularly, in the development of the service innovation team and the service innovation lab. The team and the lab were structured as roles and experimental spaces, providing open space to test novel solutions to problems and develop evidence for how products or services can be further developed (Exhibit 29). Central to this functioning was the shielding of these teams and spaces from institutional pressures of government and the strict requirement for formal consultation, governance and business case development. Independence of action from the authorising environment is important as these institutional pressures impeded on actor's sensemaking, discouraging risk-taking, failure and learning. Similarly, by providing a new space, resources and social network of actors from different agencies, actors are able to distance themselves from the status quo and break from rules and procedures and discuss alternative models. Separating actors from rules and procedures of their settings and roles allows them to suspend or create independence from the relations that create differences and cognitive distance between them, creating an interactional space that is built on social interaction rather than role or organisation affiliation.

Exhibit 29 Independence through decoupling

- *'The lab is a shared space and resources for workshops. It's important that it's a neutral space. Agencies break out of those barriers and silos that exist, and they can draw on the leadership and governance from the Service innovation team and actually look to joint ownership and commitment'.* PROCUREMENT ANALYST

- *'I have to play that game, its pointless breaking the rules, which means working with the authorising environment, writing the memos getting things signed off. I employ people specifically to play the government game. That allows me to innovate. It's done in a protected environment. If I didn't play the game it'd get shut down but if I just followed the rules I would still be writing the business case to get the programme off the ground. So it's a balance, and it requires the right people and to manage both sides. I've got people who work with a huge degree of autonomy. As a programme director that's a real risk for me professionally. Similarly, to surround yourself with excellence, means to create conditions in which they aren't always constrained.'* GOVERNMENT SERVICE INNOVATION MANAGEMENT

Exhibit 29 also points to the necessary maintenance of independence. Independence is reproduced by insulating actors from normative pressures, particularly through pursuing the symbolic appearance of compliance with external demands while pursuing different activities in practice. By performing the practices required to conform to the institutional system of government, this maintains legitimacy in the environment while providing an opportunity to implement more innovative practices promoted by a logic of experimentation. Actors draw on their capabilities and resources in order to play 'in two or more games at the same time', preventing conflicts between their activities and external institutional referents. This strategy allows the structure of the team or the lab to maintain its legitimacy while ensuring roles are given space to pursue supposedly incommensurable practices. The independence of the structures is also reproduced and strengthened by recruiting employees free from any institutional attachments and affording these actors autonomy allowing them to use their skills and the diversity of their frames. Central to this interaction and enactment is the recognition that administrative and institutional hierarchal structures persist. However, the creation of distance and mediation of these structural properties allows structural independence to be reproduced.

7.3.4.3 Independence at the Inter-organisational Level

Alignment as independence is generative at the inter-organisational level. Independence was evident even in acquisitions and the creation of subsidiaries. Central to this process is the organisational identity and its relation to the position and practices of the actors. Organisations retain or are given their independence in order to pursue practices that define their position in the system and leverage their resources and capabilities to maintain these trajectories. As Exhibit 30 suggests, independence allows practices that do not fit in the role or institutional arrangements of organisations and their positions to be pursued by those actors and organisations who are afforded independence from these structures. While material structures (infrastructure and resources) may be provided to these actors in order to enable certain actions, effort is made to reduce relational friction, and instead, allow these organisations to influence the success and direction of their own trajectories. Organisational identity is retained and a break is created between the pressures, expectations and demands of formalised integration, allowing the market position to be retained and the necessary practices which enable this to be enacted. Moreover, allowing organisations, particularly in the face of acquisition, to continue to enact their position within their network structure avoids destabilising or radically changing the network.

Exhibit 30 Independence for organisations

- *"What we learned through [these organisations] is that space needs to be given to these companies to generate their own culture, their own business plans and the like. [These organisations] have been successful and they will continue to do that, they now have the ability to collaborate with [us] when and where they need to. However, there is that autonomy and there's no need to mandate direction'* CONSULTANCY REGIONAL DIRECTOR

- *We've been brought into the fold, but we've pretty much been kept separate. We've been allowed to focus on what we do best and not worry about the investment in infrastructure. So we've benefitted hugely from that but we pursue the opportunities we have for significant pieces of work based on our capabilities.'* SERVICE PROVIDER GOVERNMENT MANAGER

> - *'When we were set up we were given a relatively free mandate. We are addressing different streams of revenue, new markets that aren't core business. That means you need different ways of doing things, different business models. Our development, market validation and testing is all aligned to lean start-up methodology, the business model is different from the core in most areas.'* SERVICE PROVIDER BUSINESS MANAGER

7.3.4.4 Independence at the Field Level

A final example of the reproduction of independence is provided by organisations using their network structure to create distance between themselves and the demand of an institutional field and relationships. As Exhibit 31 reveals, a network structure is used to create separation or distance from the properties of the government institutional field. The structures of the organisation maintain independence from adjustment or comprise to operate in perceived compatibility with government requirements. Rather social and network relations with partners are used as bridging ties to facilitate interactions, allowing these partners to adjust their own structures to facilitate interactions. The drive for independence necessitates these network structures but it is also generative of shifting structures. As Exhibit 31 notes in order to maintain interactions and be part of value creation, new network relations are needed to maintain independence. Subsequently, independence drives strategic actions to create new partners and facilitate relationships that allow mediated interaction.

Exhibit 31 Independence from field pressures

> *'We don't sit on a panel and we don't want to. We do everything through our partners and they are on the panels. Some of our competitors are of the panels and have struck panel agreements but that also means they have to change their global T&Cs to fit with government. It's better for us to have our partners do that. It is changing our partnerships, we have our traditional group of partners, and we have new partners, the reason being that government are setting up platforms and we've struck a partnership where we certify our products with the providers of these platforms'.* DIRECTOR SERVICE PROVIDER

7.3.5 *Summary of Modes of Alignment*

The findings of the mechanism of modes of alignment have illustrated the many different structures which interact and mutually shape each other. The modes are identifiable across different levels, as illustrated by tension between CEs and the GCIO and between the technology market and government as a whole. Similarly, the modes operate between different types of structures and features. For example, independence was generated physically by separating employees into new workspace, as well as, created by distancing organisations from the influence of a field by creating a network structure of intermediary partners. Each of the modes has provided insight into the influence that the relationship between different structures has on the trajectory of the system and the interaction and action of actors. For example, the hierarchical structure of the reform programme directed integration between the missions of agencies, the resources through which they enact these and the roles, responsibilities and relationships that direct these resources and structures. The modes of alignment have also been shown to be dynamic, with structures evolving into different modes. For example, tension was resolved between the GCIO and agency management through shifting from a hierarchical structure to a more cooperative position. Finally, modes generate different alignment in related structures. For example, the synergy created by standardising technology through the use of common capabilities alleviated tension between different information systems and practices as well as relationships with suppliers, however it created tension between the GCIO and agency management by removing power from traditional decision-makers.

7.4 Ecotonal Coupling

Recognising the shifting relations and structures driven by compression and the modes of alignment, ecotonal coupling as a mechanism introduces the emergent nature of the interactions between different structural fields. It is the increased coupling and greater dynamism in the interactions between the fields of the international technology market and the New Zealand Public Sector in an unstable environment that provides the conditions for this mechanismic process. While these two fields operate within the service ecosystem, they are, as the case and findings show, characterised by distinct relational structures. Unique practices, values and goals and resources influence the way actors categorise objects, people and practices, and structure the ties that organise their relationships and positions. These differences create unique

landscapes characterised by different regulations, norms, relationships and cognitive structures which, subsequently, produce tension at their overlap and interaction.

Ecotonal coupling is grounded in the relational structures manifesting within the interaction and tension between these different field structures. This process can be seen as a generative tendency which changes the functioning and structure of the ecosystem through creating a transitional and interactional zone between different subsystems (fields) and offers niches for unique roles, and a structure through which innovation, new practices, frames, interactions and relationships emerge. Subsequently, these structures, recognise new actors and frames as well as dynamic zones of an active interaction which are enacted and bound in relationship structures. Ecotonal coupling creates conditions and interactions built on necessary roles, resources and alignment, overcoming technological, social and cultural structural distances and tensions.

7.4.1 *Tension and Ecotonal Emergence*

The central conditions of this generative coupling emerge from the challenge interactions between actors from the different fields in the face of a rich landscape of regulatory frameworks, processes, norms, and sense-making characteristics. These challenges were particularly evident in the early stages of government planning to change the ICT strategy and procurement process. Moreover, the dynamism of the technological environment and capabiltities, activities and business models of providers creates complexity and instability. Strict regulatory frameworks and processes, particularly around data sovereignty and security, place institutional limits on changes and actions distinct from the private sector. Similarly, the required transparency and scrutiny from the public, press, and elected officials prevents the agile vendor models being drawn on by the private sector amongst the disruption of infrastructure, platform and software-as-a-service technology. Moreover, the Public Sector system is vast and diverse with a complicated heritage built on agencies designing, building and operating their own technology solutions creating an incredibly complex ICT environment. Therefore, any efforts to transform this entire system required integrating an array of technologies and a vast amount of information and processes that did not just start and stop within the boundaries of agencies, but across their service delivery partners.

This morphostatic tendency, generated in the structural complexity and constraints, also reflected the problematic pace of development in the international IT market for a risk-averse public sector, heavily reliant on a transparent and lengthy procurement process. The efforts focussing on creating all-of-government as a single customer was a significant change from traditional individualised relationships between agencies and service providers. Consequently, not only was it a complex structural change and consolidation but also required the emergence of a different multi-dimensional structure of relationships, governance mechanisms, institutionalised frameworks and roles and resources.

Together these features created divisions between the material relations and the normative and cognitive frameworks used in organising the practices, resource integrating activities and relationships in each field foregrounding boundary features of significant difference and tension.

7.4.2   *Ecotonal Actors and Interaction*

With the inherent tensions operating at the intersections of these two fields, the shift to the as-a-service model and government as a single customer, coupled with the environmental shifts impacting service providers, the interactional force created the conditions for the emergence of a different structure. These conditions were characterised by a number of features, particularly roles which could be filled in mediating and transforming the interactions and flows between the fields (Exhibit 32). The relations between these fields were being enacted by the GCIO team and particularly the partners and regional offices of multinationals located in New Zealand operating as business transformation consultants. These actors could draw on the unique institutional structure, capability base and proximity afforded by their ability to interact and integrate resources on the periphery of their respective fields. The GCIO team built on their broad mandate to change the capacity of government and the private sector organisations drew on their peripheral positioning amongst larger markets to pursue flexibility and innovative relationships. While these actors fulfilled a bridging role, there was an emerging landscape that opened up the opportunity for new roles and interactional orders. These opportunities set the foundation for an emergent structure that could be enacted by actors who could understand competing logics and create a unique frame of reference, resources and new relations to filter, interpret, and selectively act on the transfer and integration of resources. These roles were

initially enacted by local partners who were able to draw on their peripheral positioning and agile structures to evolve into these positions.

Exhibit 32 The opportunity for niche roles

- *'There is always a market for local providers, and for those offering managed services, particularly when services like AWS remain at a distance and have a limited operational presence in New Zealand. Digital expertise and experience is highly sought-after, particularly when you look at the capability gaps in the market'.* AGENCY IT MANAGER

- *'It's one thing to adopt the technology and buy the services, but running it, optimizing it and also keeping pace with the change is something completely different. So this is why you are seeing the big players like AWS putting so much effort into their partner programmes.'* EXECUTIVE SERVICE PROVIDER

- *'Local providers are seeing these large agreements as an opportunity. Public clouds run by multinationals open up the need for lots of specialist help'.* EXECUTIVE SERVICE PROVIDER

Local service providers took the opportunity to inhabit the space between the two fields and enact the required bridging role. However, they also sought to utilise the unique structure and relations emerging in the interactional space to pursue innovation. Actors changed their network structure in order to provide specialist roles, integrate a range of capabilities and provide adaptive solutions while developing relationships with actors from both fields. The institutional complexity and underdeveloped interactional orders in this space provided opportunities to shape their activities, resources and schemas to effectively bridge the interfaces between the two fields shaping both their organisational identity and their role within the network (Exhibit 33). New resources were created, drawing on the technological infrastructure of multinational providers and the specifications of government agencies, developing new services which could sit on top of the infrastructure.

Exhibit 33 Actors adapting to the roles

> - *'So, more than simply corral raw capacity and manage its performance, we've moved up the stack, developed a portfolio of new on-demand services, wired in public cloud offerings, and overlaid a smart management console for customers and resellers to get going quickly and tie everything together'* EXECUTIVE SERVICE PROVIDER
>
> - *We're cloud agnostic, and we'll provide services across platforms. So it's changing the focus and those services that we can now overlay are we are adding value. Drilling into capacities and service use through the dashboarding and data we're pulling and finding ways to optimise their cloud environment, which is our value add.* RELATIONSHIP MANAGEMENT SERVICE PROVIDER

One particular provider used their bridging role defined in its infrastructure and platform services to overcome data sovereignty and security issues, using their geographic proximity to meet government requirements while partnering with multinationals to deliver their services. This provider also focussed on delivering on-demand services and management consoles which created fast, adaptive and flexible co-created solutions. These developments created boundary objects which both strengthened the necessity of the role while shaping the ongoing coordination and negotiations between the actors in the different fields. One example of this role is the development of a cloud platform providing users with a flexible self-service portal and in-country solutions for data management and development which integrates applications and workloads with the cloud infrastructure provided by multinational providers.

Local providers in these ecotone roles also hired employees previously working overseas for large multinationals (essential regarding the limited specialist skills and experience locally) and former staff members of central government agencies (Exhibit 34). These individuals brought knowledge from their separate previous fields and existing social relationships and networks which provided access to actors and social capital (trust, reliability). Moreover, the ecotone provides affordances on top of their history and knowledge to enact emergent relationships as well as forms of new resources and practices, free from dense institutional frameworks, practices and accountability structures of their previous fields.

Exhibit 34 Drawing capabilities into the ecotone

> *'We've drawn from restructures in agencies and we've got these people working in business development. The relationships in this space are gold. You have to go and buy these people who are well respected and get them on board, bringing those relationships and then we can leverage those.'* CEO SERVICE PROVIDER

7.4.3 *Enacting Ecotonal Spaces*

Government has sought to enact ecotonal coupling through accelerator programmes in recognising the division between the public and private sector and the limitations to innovation in government. Three Accelerator programmes, beginning in 2015, focused on government partnering with the private sector to co-design innovative solutions and start-ups focussed on building services for interacting with government. The accelerators programmes are run through an independent incubation and acceleration programme specialist. The programmes bring together entrepreneurs, software developers and start-up specialists and members of government agencies into 12 weeks projects. These teams utilise focused Lean methodologies to deliver a minimum viable product which are then 'pitched' to public/private sector investment panel as fundable projects.

The accelerator becomes a new way of sourcing and procuring innovations, and a means to overcome the problem of funding early-stage innovations in the public sector. These spaces challenge risk aversion and legitimise iterative development while drawing on entrepreneurs and other specialised capabilities to recombine existing government practices with diverse templates for action that individuals bring from their own fields (Exhibit 35). Solutions can be tested faster, cheaper and with less risk with agencies and cross-sector collaborations. The independent nature of the structure also provides the opportunity to alter actors' sense-making of routine activities or envision possible pathways which may be obscured in the practices or institutionalised environment of agencies. Moreover, actors who take part in the programme are also able to inhabit and enact a different role, as an innovator or entrepreneur, drawing on the unique social context to enact different personal motivations and relational interactions. The ecotonal structure also manifests in shared physical spaces to interact and communicate shared goals and meanings.

For actors outside of government, the accelerator structure provides the opportunity to engage with government agencies without the expensive specialised relationships and institutionalised legitimacy often required. These actors are no longer excluded by the institutional boundaries that prevent access to the field or the opportunity to collaborate with the public sector. Similarly, for start-up teams, it creates access to partnerships, potential investors, and resources and brings legitimacy to the processes and the actors involved.

Exhibit 35

- *'Procurement approaches often do not encourage new ideas from outside, rather relying on government determining the need, and seeking ideas from potential providers. When we change this and bring different groups together and leave behind the traditional processes we get access to all that creativity and the necessary components to do something with it'.* PROCUREMENT ANALYST

- *'It is possible to leverage emerging technology and best practice without a large upfront investment in developing these capabilities in-house. Government departments aren't equipped to do the agile, iterative processes built on trial and fail that you get in the private sector. So we have to step outside of that and find a place to get these capabilities together and give access to the government platform'.* GOVERNMENT RELATIONSHIP MANAGEMENT DIRECTOR

7.4.4   *Summary of Ecotonal Coupling*

Ecotonal coupling is shown to part of the interactional tension between fields creating an emergent structure. These tensions, resulting from differences between the fields create the need and opportunity for a mediating structure at this interactional boundary. The findings demonstrate the evolution of actors coming to inhabit this structure and creating a transitional and interactional space. These actors are able to draw on the structural conditions in this space, particularly given its position outside the direct influence of the fields, and create new resources and interactions which see them perform important roles in mediating, transferring and transforming resources and interaction across the distinct fields. Also in enacting this type of coupling actors create new spaces of interaction, relationships and frames.

7.5 Refraction

The findings of refraction focus on the distortions or 'bending' of properties and trajectories within and across emergent levels of organisation, recognising the mediational nature of complex interchanges of powers through time. Refraction implicates key framings of the conceptual development of this research. The first framing is that diachronic emergence is crucial for understanding context, as the emergent properties of relations and structures in the 'past', stretch into the 'present' to condition and influence actors. Secondly, the possibilities of agency and change are determined not only by what is present or absent within the spatiotemporal boundaries of a specific context of action but also by the causal efficacy of the 'massive presence of the past and the outside'. These factors resonate with the conceptual assertion that service ecosystems are complex reflections of their history and emergent trajectories of their conjunctive multiplicity of causes and the multi-levelled interaction of multi-dimensional powers. The diachronic emergence of structures suggests that particular structures and outcomes cumulatively develop which then transform, change and ultimately shape particular trajectories and interactions influencing, directly and indirectly, courses of action and events.

7.5.1 *Refraction of Previous Reforms*

The context and initiation of public sector reform programmes in government provide a basis for refraction. The two significant periods of reform; across the 1980-90s and under the BPS program, two decades later, are entangled and reveal the refractive nature of the service ecosystem. The initiating contexts of the reform programmes reveal similarities that suggest structural commonalities in the resulting trajectories and also reveal their conjunctive connection. Firstly, economic destabilisation features prominently in the conditions of reform, the GFC of 2008-2009 and fiscal crisis of the early 1980s. Secondly, a new governing party was introduced after three successive terms in opposition (Labour 1984, National in 2008), and in both periods these parties focussed on lifting public sector efficiency and drawing from private sector models for efficiency and reform. Lastly, both reforms draw from reforms in Australia, the United Kingdom and other OECD countries.

The earlier reforms included changes to the State Sector Act (1989 Amendment) and the Public Finance Act (1992 Amendment). These reforms also saw the split into many small single-

purpose agencies being led by CEs with a focus on departmental autonomy and performance related individual contracts. These features created the structural conditions targeted by the BPS reform but also a pattern of response within 18 subsequent reform initiatives between the late 1990s to the late 2000s. These initiatives include the 'Managing for Outcomes' programme previously noted.

The BPS programme was launched on the narrative of overcoming problems in the state sector and the challenging environment. The BPS programme drew from the 1980's reforms aiming to take on the coherence of its design, proceeding with legislation and enacting reforms affecting all facets of government: structure, appointments, business models and new accountability regimes. This is a significant departure from the history of intervening reform efforts aiming to change agency integration and system cohesion and accountability, effectiveness and functionality. The holistic nature and response to external conditions of the 1980's reform became a model for 2012 efforts. Similarly, the changes to legislation were amended to refocus on the issues of accountability, leadership and cross-government collaboration already mentioned. Moreover, the lack of success of intervening reforms in creating overarching relations and integration between the different structures of government provided models of what was ineffective.

Subsequently, this progression between the two epochs of reform provided a history that changed the perceived ability to pursue some directions, dissolving courses of action and directing others (Exhibit 36). For example, efforts to layer administrative reorganisation over the top of existing arrangements without affecting their core, such as was perceived in the 'Managing for Outcomes' focus of the early 2000s, were looked at negatively, driving mandates and structural reorganisation. Similarly, previous efforts directed towards departmental restructuring and the internal focus on ICT, rather than on changing relationships between government, individuals and business, dictated the integration of ICT into a broader digital transformation and the BPS programme in subsequent efforts. The reviews that supported reform efforts, the Advisory Group on the Review of the Centre (2001) and the Better Public Service Review (2011), were actually very similar in the problems and courses of action they identified. However, it was the holistic and structural approach to the latter reform and its response to the refraction of the past through the structural instability in the government environment that provided more pervasive change.

Previous reforms, even when intended outcomes were not achieved, provided conditions which government actors could draw from, mobilising past events and efforts both to specify the failing of existing norms, practices and relations and to use these relations as a foundation for new options. For example, the sectoral approach (which evolved out of Managing for Outcomes) was developed into a mandated feature focussed on an overarching structure (the BPS results), and efforts to remove cross-agency barriers in leadership, accountability, and resources. Similarly, repeated efforts to change CEs' responsibilities and accountabilities since the 1990s were returned to, shifting from the hard, immediate and vertical measures of the 1980s reforms, to collaborative, horizontal and future focussed state in the latter stage of the BPS programme.

Exhibit 36 The refraction of the past into the present

- *'The National Government came in after a few terms in opposition and wanted to lift the performance of the state sector. They saw the state sector as lacking action. The GFC at the time and the period of fiscal constraint meant action was needed. Their first efforts were to consolidate departments, and MBIE came out of that. They had got so far along this aggregation line and decided they needed better advice. They set up the BPS advisory group. The report recommended whole of system approaches to cross-cutting activities, such as procurement, property and ICT, back-end integration and the BPS results. These results addressed one of the key issues in the Public Sector, fragmentation, which came about in the late 80's early 90's....I don't think it would have happened if it wasn't for the leadership. Central figures were committed to changing state sector performance and were willing to set difficult targets to achieve that. There is over that 20-25 year period a continuity in the development. That context exists and there are these issues that come out over time which need to be addressed.* BPS RESULTS PROGRAMME ANALYST

- *There were features like the sector groups that already existed, but it was about finding how to leverage these to actually enable the underlying capability of what was there. There is also the perennial fact that technology is now allowing government to do things that were unheard of 5, 10, 20 years ago.'* GOVERNMENT RELATIONSHIP MANAGEMENT DIRECTOR

7.5.2 *Refraction through the Current Holistic State of the System*

The exogenous changes in the government environment, destabilisation through economic conditions, concerns over service delivery and ICT capability and changing citizen expectations, were important structural pressures that refracted discourse and strategic action to motivate and drive change. Similarly, narratives and relations of past reforms were used as resources of change. Actors who had experienced non-sustainable impacts of severe cost-cutting and the failure of reforms in the past were able to stand at the intersection of past, present and future providing particularly conditioned visions of the future and interpretations of past history. New Zealand's position as a leader in reforms and innovation in the public sector following the 1980's reforms, also provided a cultural narrative to impart directionality to a new set of changes. Additionally, the significant amount of time that had passed since the last major reforms provided evidence of gains and weaknesses which could mobilise change, while also providing a necessary point of inflexion to juxtapose the very different conditions in which government would operate in the future.

Reform programmes and subsequent efforts to create structures were also refracted through the institutionalised organising of the public sector and cultural features (Exhibit 37). The high levels of autonomy for agencies and their CEs and large number of single function organisations meant that dispersed agency made it difficult for strong mandates to not encounter resistance. These conditions exist as part of cultural and institutionalised features of the New Zealand public sector, subsequently, the balance of mandate and incentive was refracted through these structures. The nature of these processes are highlighted by examples such as the progressive shift to a guidance focussed role for the GCIO and the emergence of the Partnership framework, alongside the formal changes to legislation and cabinet mandates.

Exhibit 37 Refraction of reform through institutionalised structures

> - *New Zealand is not expected to be directed from the centre. The New Zealand environment has a very siloed structure but a recognition for collaborative work. Earlier reforms have created that siloed structural independency. So that the condition and it has meant we've been slower than others. Australia and the UK have taken a much more mandated approach. They're both countries we look to. To a certain degree, they have crashed and burned. We've moved slower in some aspects but otherwise there is a hiss*

and a roar and then intense push back.' GOVERNMENT RELATIONSHIP
MANAGEMENT DIRECTOR

- *'If we come in with the mandate that is not going to work. It was about finding what the
value would be and what would be the trigger point that could lead to success. There
is a real underlying ethos of helping agencies and ministers to succeed not just giving
them 'a programme'* MANAGER OF SUPPLIER/COMMERCIAL STRATEGY AND
DELIVERY

- *'New Zealand's devolved style of public service is established, and the focus on vertical
accountability is enshrined throughout. So you have a culture of autonomy that isn't set
up for process integration and sharing across organisational boundaries. So that
balance is interesting - the enthusiasm for devolved management and tackling ICT on a
cross-government basis'* INDUSTRY OBSERVER

The ability to implement changes and follow through on multiple year programmes of work
represents a refraction of the stability in Government from 2008 till the end of 2017. As Exhibit
38 suggests, there is a degree of stability and order necessary to sustain identities, interactions,
and institutions over time, which allows change inducing interactions to overcome inertia.
Stability in the structure of government provides sufficient maintenance of the system, allowing
the interactions that have changed parts of the structures to take place.

Exhibit 38 Refraction through government stability

- *'The targets provided data points in the short term which drive changes within the period
of election cycle. Ministers were able to show results and use these in public. However,
as five-year results, they crossed elections, but it became clear a long time before the
election they would be returning. So you would have 2011 through to 2017 of the
programme. This really increased the potential exit costs from the programme. So while
there is often discontinuation of programmes which discourages commitment to
anything, there was a realisation that it would survive and they would be held responsible
for the success or otherwise. So with the public commitment, tangible reporting and*

> *prioritisation of the programme coupled with that political stability there was a consistency and a point between now and then where changes and progress would need to be seen.'* BPS RESULTS PROGRAMME ANALYST

> - *We rode out the latest financial crisis. We've also had a real degree of stability in our government, we had the Helen Clarke government for all those years and now the John Key government. We've had stable programmes. A degree of stability provides the ability to break your own programs and innovate. With the direction set over the long-term, it would take real responses to actually achieve those targets.* GOVERNMENT RELATIONSHIP MANAGEMENT DIRECTOR

> - *The national government had a pretty clear priority on creating efficiency and cutting costs so that would drive many of the initial changes in response. It would then be the need for a new approach and creating the BPS advisory group that would see the reform programme and particularly the 'digital transformation' aspect evolve out of this.* GOVERNMENT RELATIONSHIP MANAGEMENT DIRECTOR

The changing role of the GCIO also highlights refractive tendencies driven by the changing environment and state of the government structure. The original creation of the GCIO was a fragmentation of the ICT leadership function. In 2008, the manager of the ICT leadership function became the GCIO as part of the SSC and Government Technology Services moved to the Department of Internal Affairs to separate the leadership and service delivery function. This change created the conditions for subsequent reintegration and movement away from the SSC in 2010 under the Directions and Priorities for Government ICT Strategy, a strengthening of the role and functional lead mandate under the BPS programme and an expansion of the role and capacity under the SAP in 2013. The role and the GCIO team has continued to evolve from this platform as the focus on digital transformation, beyond ICT efficiencies, has been further solidified.

7.5.3 *Connections to Change in Different Fields*

Increased dependence of the public sector on the ICT private sector, particularly in response to compressive forces, and in efforts to undertake reform also leads to refractive tendencies. Exposure to normative influences in the market impact on the sense-making of government leaders and open up new opportunities as well as manifest different modes of alignment. The increasing focus on the availability and value of data grew from increasing capabilities and changing strategies in the market (Exhibit 39).

Exhibit 39 Refraction of diffusing technology through different fields

> *'The choice to undertake and believe in big data and analytics, and the focus on these capabilities was an ideology that was unusual for government but became mandatory in this government. There has been a lack of understanding, appreciation for the value and definitely organisation of the information in the government's hands. If you look at where the market is going and the competition and commercial incentive now in data there is a real drive to develop the tools to basically monetise that information. There isn't obviously that same underlying logic in government, so it has taken engagement to change that mind-set'.*
> DIRECTOR SERVICE PROVIDER

Similarly, the increased interaction with private sector organisations and innovators has served as external pressures to move organisations away from hierarchy and formalisation. Involvement with incubators and accelerator programmes have served to show different design and development methodologies and provide tangible programmes of work and minimal viable products which has provided results for stakeholders outside the formalised programme of government business case development and authorisation. While many of these efforts have been small-scale, their increasing presence suggests they may be amplified.

The refractive trajectories are not always perceived positively. For example, the introduction, development and deployment of cloud solutions has followed a refractive trajectory from the private sector into the public sector. Exhibit 40 reflects on this and points to a clash between perceived long-term bureaucratic institutional logics and newer, market and corporate logics.

Exhibit 40 Interacting logics and technology adoption

- *'Multinationals were essentially cut out of the market for a long time by the initial requirement to have everything onshore. You've lost 10 years of innovation because of that. Part of that is the inefficiency of providers because they're not interested in tailoring, standardisation is the focus. So the adaptation needs to be the other way around. It's a mind-set shift, the decision-making process is antiquated. It doesn't need to be 18 months anymore and that's where change needs to happen. The pace of change is not meeting the market and that's the challenge how do you speed that whole thing up.'* SERVICE PROVIDER ACCOUNT DIRECTOR

- *'The common capability IaaS is not Cloud, in its true sense. The initial introduction allowed standardised operation, consolidated government procurement and solved the need to set up and manage systems all over New Zealand. It is a lot better than where we were, say seven years ago. Yet effectively it is a product that has been put into the market. Therefore when you put it up against competing offerings, it is more expensive, has less functionality, more complex contracts, and doesn't really have a projected future.'* SERVICE PROVIDER ACCOUNT DIRECTOR

- *'Government interference creates a massive conflict between the two models, the as-a-service in the market and public cloud. If you look at the developments in the market and how some of the 'initiatives' have been developed and untaken, that model is so antiquated. The process is not sustainable.'* EXECUTIVE SERVICE PROVIDER

The interaction between the different fields of government and the technology market reveals efficiency contradictions. The process of transferring the models and technology from the market to government is refracted through the institutional structure of the public sector and existing operating models, so the legitimacy and risk-averse concerns in the field undermine the efficiencies to be gained from allowing that transfer of resources across the fields.

7.5.4 *Summary of Refraction*

The findings of refraction emphasise the role of the past and history in influencing actions in the present as well as the existing structural layers in influencing how action and interaction

takes place and how decisions are made and responded to. Refraction accounts for how quite separate structures may impact on current conditions and actors responses. Refraction also highlights the way in which actors look backwards to mobilise the past. Subsequently, the mechanism of refraction gives weight to the assertion in the conceptualisation of the causal efficacy of the 'massive presence of the past and the outside'.

7.6   Summary of the Findings Chapter

This chapter has detailed the findings of the case study which applied the analytical framework and means of theorising. The findings have offered four explanatory mechanisms: compression, modes of alignment, ecotonal coupling and refraction. The descriptions of these mechanisms and their associated empirical evidence has identified the mechanisms by the kind of effects and phenomenon they produce and established the structure of the mechanism, showing how the entities, properties, activities, and relations, produce the effect of interest. As part of establishing the contents of the mechanisms the findings have shown how mechanisms - as particular ways of acting and the tendencies of structures - can be seen across very different types of structures and across and within levels of structure. For example compression was seen to operate both in actors subjective experience of time as well as the objective geographical distance between actors.

The findings have set out an understanding of the service ecosystem and actualised the overarching lens through the search for mechanisms. Subsequently, the next chapter will discuss these findings in response to the research questions and work towards the objective of developing new theoretical insight and sources of explanation regarding how service ecosystems develop through time, experience change and stability and produce different outcomes.

Table 13 Summary of findings

Mechanism	Findings summary	Emerging points of discussion
Compression	- Compression, driven by economic destabilisation, limits degrees of freedom for agency and strengthens the dependency between Government and service providers. - Compression is enacted as government agencies are consolidated and service providers reduce relational and material distance between themselves and government clients - Government reform strategies compress competing logics, priorities and paths of action - Common Capabilities and AoG contracts compress service providers opportunities and the relationship structure with agencies - Closure of the market compels provider investment helping compress the geographical distance between cloud infrastructure and government. - The affordances of new technology compress the specificity of artefacts and practices separating agencies - Compression through the convergence of technology blurs industry boundaries, drives business model and value proposition change and puts pressure on competencies - Actors experience compression of time through the programme targets and the rapid pace of development enabled by technology.	Compression occurs across different levels and dimensions of structures for example in industries, government priorities, technology artefacts, the material distance between actors and subjective experiences Compression highlights the role of positive feedback in the trajectories of service ecosystems
Hierarchy - MoA Tension - MoA	- Government ICT strategies and the BPS programme create a powerful overarching cross-government institutional structure - Systems-level leadership roles are established, including the GCIO, which are given power to affect decision making and displace existing structures. - Tension emerges between the capabilities of government agencies and the trajectory of government reform programmes. - Tension is created in the removal of decision autonomy and the role changes afforded by new technology - Narrative of technology adoption conflicts with guidance and risk perceptions in government - Traditional government operating models conflict with evolving business models and trajectories of multinational service providers	The modes of alignment exist across different levels of structure and point to the mutually shaping relationships of different types of structures and relations. For example, alleviating the tension between differences in technology can create tension in the perceptions of autonomy of actors

Mechanism	Findings summary	Emerging points of discussion
Cooperation - MoA	- Cooperation emerges from agencies collaborating under the BPS results - Legislative barriers to cooperation are broken down and accountability structures are aligned with cross-government outcomes - Partnership framework is established to materialise cooperation, collaborative narratives and planning and establish buy-in - The GCIO role evolves to focus on guidance, capabilities and bridging interactions - SFA develop the relationship with suppliers from products to strategically significant and mutually generative relationships - Collaborative solution provider networks emerge to align capabilities, provide opportunities and meet institutional requirements	The modes of alignment are dynamic as structures evolve together through their mutually shaping nature. The GCIO role evolved from a strict hierarchy through to cooperation particularly through the creation of the partnership framework. Similarly, supplier relationships evolved through the implementation of the SFAs.
Independence - MoA	- Independence is enacted by separating individuals from their roles and relocating them - The service innovation team and lab allow decoupling from government institutional pressures and create new interactional spaces - Subsidiaries and acquired organisations are allowed to create and maintain their own identities and roles - Independence from the government institutional field is created by utilising bridging ties	Independence points to the role of different spaces and decoupling and the creation of distance.
Ecotonal Coupling	- Ecotones emerge from the tensions at the boundaries between distinct fields - Actors fill niche roles creating new, and mediating the flows of, interactions and resources - Ecotones are enacted in accelerator programmes as differentiated interaction zones	Ecotonal coupling points to the dynamic and generative nature of boundaries and the interactional nature of spaces.
Refraction	- Economic conditions and change of government stimulate reform across the 1980s and 2010 onwards, earlier reforms provide courses of action and levers of change while manifesting the conditions that require change - The trajectory of reform is refracted through existing institutionalised structures such as agency autonomy and the changing technology and social environment - Stability of government throughout the reform period provides enabling conditions for change - Technology implementation and innovation are refracted through the field structures of government requiring adaption and new interactional, institutional and cognitive structures	Refraction suggests the influences of the past and the broader environment. Refraction demonstrates a complex relationship between the past, present and future

Chapter 8: Discussion of the Findings

This chapter discusses the findings in response to the research questions and outlines the emerging contribution. This research was designed to develop new insight and sources of explanation regarding how service ecosystems develop through time experiencing change and stability. These findings are built on operationalising the overarching lens, grounded in connecting social ontology to an analytical framework and process of theorising. Together this purpose and grounding drive three research questions, restated below, which guide the research to contribute to the literature.

- RQ1: How does a critical realist emergentist metatheory contribute to an understanding of service ecosystems?
- RQ2: What mechanisms can be identified, and how do these illustrate structural features and tendencies within service ecosystems?
- RQ3: How does the use of the analytical framework and the identification of mechanisms contribute to addressing those omissions and under-researched features generated through conflation?

The three research questions will be used to organise this chapter. The research and findings respond to these questions by providing insight into how service ecosystems are conceptualised, core tendencies and structural features that direct their development and the nature of stability and change, history and process and time and space. The key points of discussion that will be elaborated are:

- The value of considering many degrees of differentiation and stratification and the processual intertwining of being and becoming which capture the complexity of service ecosystems in their multi-dimensional and multi-levelled nature and their forms and effects played out over and in time.
- Change as captured by the notion of multi-rhythmics – the coalescing processes of multiple structures.
- Coevolution, as driven by the relationships of compatibility, contradiction and complementarity which generative mechanisms create between structures.

- Boundaries as generative structural features which both reinforce separations and exist as intersections that enable diverse connections and emergent features.
- Stability and change as co-constitutive and mutually reinforcing, rather than simply negating and displacing one another.
- Understanding the different roles of history and paths in the process of organising.
- Time and space as multiple, differentiated and powerful properties of structures.
- The integration of the multi-dimensional and multileveled features of service ecosystems in order to address their complexity. Their complexity is captured in multi-causality and contingency associated with upward and downward causation and causal efficacy across the spectrum of subjective and objective conditions.

The following sections respond to each of the three research questions. The sections are structured by setting out the positioning of the central issue the research question is predicated on, the response this research proposes, the illustration of evidence in the findings that grounds this response and the subsequent contribution of these findings to the literature. At the end of this chapter, a summary of the discussion is provided in Table 14. Following this, a chapter of conclusions which summarises the theoretical contributions of the research, illustrates the practical relevance of the findings and sets a path for future research is presented.

8.1 RQ.1 How does a critical realist emergentist metatheory contribute to an understanding of service ecosystems?

The metatheoretical position and the accompanying framework advanced in this thesis are argued to provide a needed set of analytical conditions that deal with the complexity of the multiple actors, relations and interactions that form service ecosystems (Aarikka-Stenroos & Ritala, 2017). Two central conditions 1) emergent relationality, and 2) the processual intertwinement of being and becoming, are demonstrated through the research findings and make their central contribution by overcoming two core issues of conflation – firstly, the deconstruction or collapse of the complexity of context (Section 4.2.1) and, secondly, the diachronic problem (Section 4.2.2). These issues of conflation are argued to be fundamentally problematic for studying service ecosystems. The following sections will discuss these conditions as a response to the first research question.

8.1.1 *Emergent Relationality – A Response to Collapsing Complexity*

The first issue of conflation reflects the tendency of theories and approaches to collapse the diverse and separate properties of service ecosystems and the agency of actors.

8.1.1.1 Condition

Emergent relationality recognises that all social entities are constituted through relations. This constitutive nature gives rise to stratified levels of organisation in which irreducible entities emerge along with their properties and powers. Grounding research in this approach, a focus on structures and relationality provides a perspective that is inclusive of the multi-dimensional and multi-levelled nature of service ecosystems as causally efficacious stratified and differentiated structures. Powers come from structures at different levels of organisation and may relate to social, ideal, material or artefactual entities as part of the subjective, intersubjective, and objective planes. Therefore, rather than collapse the complex nature of our research settings into idealised notions of a particular theory and construct an imaginary self-contained world, research is directed towards allowing the world to speak through a common underlying reference structure. This integrative outlook allows research, as has been done in the case study, to draw on any number of possible combinations of properties and features offered by existing frameworks while providing a means for reassembling the different structures, powers, properties and processes.

8.1.1.2 Expression through the Findings

The case illustrates there are many ways in which different structures, from individual actors to overarching fields, may be related in the social realm. The findings in the case, for example, recognise the role of subjective experiences of time, the impact of physical and relational distance, the generative nature of the affordances created through the shifting material and artefactual nature of technologies. Subsequently, this differentiated nature illustrates service ecosystems as a layered whole in which being is 'a complex configuration of the physical materiality, social and relational situatedness, cultural constructions and subjective identities (Bhaskar et al., 2010a). The identified mechanisms illustrate the differentiated and stratified

nature of service ecosystems as a central condition of explaining how they develop through time, experience change and stability and produce different outcomes for actors.

Compression as a mechanism illustrates multi-dimensionality by addressing a common generative 'way of acting' within the sensemaking (subjective), relational (intersubjective), institutional (interobjective) and material (objective) conditions of structures. Compression is seen in the findings to affect; the agency and subjective sensemaking of actors through their experience of time; the intersubjective and material distance between actors as they attempt to move closer to their customers relationally and physically; the interobjective distance between fields and the institutions which delineate different markets - as resource interdependency increases and the convergence of technology shifts value propositions and the nature of products and services.

Modes of alignment as a mechanism illustrate the multileveled nature of the generative structures. Within the different modes, the findings of independence illustrate that generative structures are replicated at different levels of the service ecosystem and shape new ideas, resources, practices and relationships. Independence is generative at the level of individual actors within organisations; between organisational actors; at the level of the network of actors and the fields between the technology market and the public sector. The mechanism of independence is generative through the creation of distance and the enactment of boundaries as discussed in the findings. However, the different modalities distance and boundaries occur in, demonstrate the assertion that the stratified nature of service ecosystems is built on levels of structure that are fundamentally different having distinct relations, constitutive elements and properties and powers. For example, at the intra-organisational level the findings point to the role of separate physical office space for employees, while at the level of the institutional field, independence is manifest through the creation of network structures that creates distance between the actors in different fields, using other actors as intermediaries to create a boundary.

8.1.1.3   *Contribution in Relation to the Literature*

The central contribution of the condition of emergent relationality is its integrative nature, both in its ability to include multi-dimensional and multileveled features and its common reference structure based on asking "what is it about the structures which might produce the effects at

issue?" (Sayer, 1992, p. 95). This contribution responds directly to the issue of conflation which deconstructs or collapses the complexity of service ecosystems.

The thesis' critique argues that the approaches to structure, in both the study of service ecosystems and the marketing literature more broadly, collapse, subsume or ignore a variety of social properties, contextual or embedding features and the capacities of individuals. In doing so, they often try to squeeze the complexity of the social world into one dimension or accommodate it by stretching their conceptualisations. This conflation has the effect of reducing the empirical sensitivity and analytical clarity of theorising and research so that explanations become either limited abstractions of some causal process or an essentialist account in which phenomena directly conforms to some device, verifying its exhaustive account.

These problems of a lack of dimensionality and levels of analysis are seen in the continued difficulty of integrating micro and macro theories of institutional analysis (Chia & MacKay, 2007; Delbridge & Edwards, 2013; Martin et al., 2017; Zilber, 2013). These difficulties are driven by the inability to address "more materialist, interest-driven explanations of behaviour and ideational, normative explanations" (Hinings et al., 2008, p. 473), which also leads to the term 'institution' gathering conceptual ambiguity and losing its explanatory power as it refers to different assumptions or is used as a catch-all term (Ahrne & Brunsson, 2011; Alvesson & Spicer, 2018; Edwards, 2016; Fleetwood, 2008a). For example, institutionalists will often direct their attention solely to the relationship between actors and institutions and 'the very existence of a spatial field and the role of networks and relational patterns are in a sense wiped out' (Djelic & Sahlin-Andersson, 2006, p. 22).

Emergent relationality as expressed through the findings instead asserts that there are a large number of heterogeneous and interdependent relations, structures and powers which relate to change, stability and outcomes in service ecosystems. It is therefore difficult to, a priori, establish the orientation, notion of structure, and the other-relatedness of actors and their activities, as well as social positions and other kinds of entities, such as artefacts or institutions. For example network analysts will often give primacy to the structure of social relations, and therefore describe the sensemaking of actors, or the presence of institutionalised meaning structures as epiphenomenal manifestations of, or secondary to, the network structure (Laud et al., 2015). Moreover, it is reductionist to collapse 'without remainder' these differing relations

and structures and their powers into a single explanatory feature, for example, sets of practices. In response, emergent relationality directs attention to the differentiated and irreducible nature and properties of different structures, focussing on their configurational nature and the need to address events as "multiply-determined by a variety of interacting powers, possessed by entities at a variety of levels of composition (Elder-Vass, 2010). Accommodating the compositional and emergent nature of these configurations allows research to overcome the one-dimensional theorising that is generated and sustained by conflation.

8.1.2 *The Processual Intertwinement of Being and Becoming – A Response to the Diachronic Problem*

The second issue of conflation is the inability to capture forms and effects played out over time and moving beyond the 'here and now'.

8.1.2.1 *Condition*

The second condition is the emphasis on the processual nature, the constant conditioned and contingent becoming, of social being. This condition emphasises the cumulative development of structures and their asymmetric and desynchronised timing (their temporally stratified causal efficacy) in service ecosystems. For research, this means explicitly accounting for the creation of context through a history of past events and interactions and acknowledging the causal efficacy of the past as activated in different structures during processes. The presence of the past, therefore, exists as part of a service ecosystem's structural composition and is potentially powerful in the presence of temporally stratified layers. Subsequently, with emergent relationality, this focus on process puts forward diachrony and synchrony as 'ontologically co-equal'. Therefore, the service ecosystem is necessarily intertwined in both being - that it is structured, layered and differentiated - and becoming, ultimately open in a flow of cumulative development.

8.1.2.2 *Expression through the Findings*

The findings, particularly through refraction and the modes of alignment, illustrate 'being' through the causal effect existing structures have on any action or interaction, and becoming

by establishing the processual and cumulative cycles of conditioning→interaction→ outcome→conditioning.

Firstly, this condition is illustrated through the mechanism of refraction. The findings demonstrate how structures developed in the past come to influence the sense-making of actors, their decisions and the narratives and institutional work they commit to in the present. Refraction demonstrates the strung-out process of conditioning by the 'past' as emergent properties of relations in the 'past', such as the formation of institutions, stretch into the 'present' of lower-levels upon activation to condition and influence actors. Previous reform efforts and programs are seen to dissolve some courses of action while others are encouraged based on their perceived success in the past. Previous reforms, even when intended outcomes were not achieved, provided the conditions in which government actors could draw from, mobilising past events and efforts both to specify the failing of existing norms, practices and relations and use these relations as a foundation for new options.

Refraction also points to path-dependent processes as decisions in the past serve to constrain options in the future or significantly reinforce paths of action. The case highlighted the role particular investments in infrastructure and under-investment in relation to the changing technology environment played in shaping strategic situations and creating the need to shift network structures, relationships and change decision rights and institutional mandates.

Secondly, the illustration of the changing role of the GCIO captured in the shifting modes of alignment and within refraction, reveals the processual development of structures compelled by the tendencies, countertendencies, capacities and affordances that a particular set of structures hold with each other at any given time. As the findings detail, the role of the GCIO was cumulatively developed through feedback as it was exercised in relation to suppliers, other agencies and the other changing structures embedding these relationships, for example, the trajectory of the government reform institutions and the maturity of the cloud services market. The shifting modes of alignment, moving from independence to hierarchy and through to cooperation, illustrates the processual nature of interactions and courses of action conditioned by the past, which subsequently produce outcomes which help reproduce or restructure the conditions for subsequent interactions.

Both refraction and the shifting modes of alignment recognise that what is happening is enabled by what has happened. Processes cannot be cut out between the differences in static states but must be seen as a continuum along which structures accrete.

8.1.2.3   Contribution in Relation to the Literature

The primary contribution that emerges from this condition is the recognition that besides identifying action and interaction as causes of events, explanations must include references to the necessary conditions for the existence of these. What emerges in the findings is that history does indeed 'pull or direct events in the present to influence outcomes in the future', contra structurationist emphasis (Peters et al., 2012, p. 19). The conditioning of processes leads to the accretion of structure - the central idea of diachronic emergence – which produces conditioned pathways of actor interaction (Delbridge & Edwards, 2013). Subsequently, a focus on local practice must be contextualised with attention to the cumulative embedding conditions under which these are undertaken and avoiding positioning actors as external to, or simply producing, their social context.

The assertion of the intertwined nature of being and becoming provides a basis for moving away from service ecosystems as static situated contexts or simply enacted rules and resources. Operationalising the overarching lens avoids the commitment to a substantialist mode of thinking which puts forward objects, entities or subjects (such as technologies, firms, and consumers) as the basis of enquiry and their interactions and the relations in which they are embedded as secondary (Araujo & Easton, 2012; Giesler & Fischer, 2017). The substantialist mode of thinking evident in marketing research (Giesler & Fischer, 2017; Lowe & Rod, 2018), has led to; a paucity of knowledge on process and change (Giesler & Fischer, 2017; Nenonen et al., 2014; Wilkinson & Young, 2013); the relegation of time and space to background descriptions of context (Halinen et al., 2012; Peters et al., 2012; Törnroos et al., 2017); individualism which reduces cultural, historical and social structures and forces to contextual variables to address micro-level patterned activity situated in static contexts (Giesler & Fischer, 2017; Tadajewski et al., 2014). Authors across the business network literature (Bizzi & Langley, 2012; Halinen et al., 2012) and more recently with those arguing for a systems turn in the marketing literature (Giesler & Fischer, 2017; Vargo et al., 2017) argue for a process mode of thinking. In place of the substantialist outlook, the findings demonstrate the processual

and historical mode assumed within the conditions of the critical realist emergentist metatheory. The findings illustrate service ecosystems as a process found in the exercise of a number of different forces in a moving field, open to events and developments affecting their course, yet unable to escape their precedents and antecedents.

However, this condition of intertwined being and becoming does not fall into a strong process perspective. This perspective resides in philosophy and metaphysics (Whitehead, 1929) and has gained traction in sociology and organisational literature (Chia, 1999; Tsoukas & Chia, 2002). A strong process perspective is grounded in the view that individuals, organisations and societies 'are deemed to be epiphenomena of primarily fluxing and changing patterns of relationships and event clusterings' (Nayak & Chia, 2011, p. 283). However, the conceptualisation advanced in this research argues that the world consists of structures, not just events (actions, interactions), as complex entities endowed with causal powers that combine and interact to produce actual events (Bhaskar, 1978). This position, reflected in Section 5.2.1, agrees with Smith (2010, p. 232) that "pure relationality cannot and does not create objects. Relations need substances and substances need relations". The strong process perspective, rejecting structural features, fits with the flat ontology this thesis critiques (Bryant, 2011; Elder-Vass, 2008; Vandenberghe, 2018). In response, the critical realist metatheory asserts that structures, strata and systems are causal, not ontologically ephemeral, and the immediacy of events and actions does not exhaust their underlying generative structures (Bhaskar, 1989). This non-exhaustibility is fundamental as it highlights core issues raised in the critique of failing to sustain a theory of emergence, the constructivist position and the focus on pragmatism (Section 4.4).

Consequently, the two conditions work together in overcoming conflation. Firstly, the logic of immediacy is rejected, which leads to focussing on one particular explanatory device, for example that 'individuals, (inter)actions, language, signifying systems, the lifeworld, institutions/roles, structures, or systems can only be analysed via the field of practices' (Schatzki, 2001). Such a singular focus supplants the need to conceptualise and understand the complex relationality of phenomena and causal factors. Secondly, the weak view of emergence is rejected, which as Archer (1990) argues, produces a 'sociology of the present tense' (See Section 4.4.1). This focus on the here and now leads to reductionism, voluntarism and subjectivism as the structural effects and objective power relations which provide the conditions of service ecosystems and orient the struggles aiming to reproduce or transform

them fall away. Instead, the "external structural moment", which is "badly under-developed" in conflationary perspectives like Giddens (Stones, 2005, p. 58), comes to the fore.

8.1.3 *Summary*

In summary, the response to the first research question asserts that the critical realist emergentist metatheory provides a more robust basis from which to analyse service ecosystems. The mechanisms offered in the findings illustrate the value of considering many degrees of differentiation and stratification, the basis of emergent relationality, and a processual account built on intertwining being and becoming. These two conditions capture the complexity of these systems in their multi-dimensional and multi-levelled nature as well as the process of organising through time. Subsequently, conflation is overcome by allowing research to maintain the differentiated and stratified nature of service ecosystems and capture forms and effects played out through time. These affordances in analysis and theorising are sustained by a commitment to both synchronic and diachronic emergence which is built on the propositions and conditions outlined in Table 5 (Section 5.3). The propositions and conditions of Table 5 are built on changing the conception of structure which changes the fundamental constitution of service ecosystems and, therefore, the terms and conditions on which it is to be researched and explained. Subsequently, as the findings demonstrate through their multi-dimensionality and processual nature, conflationary approaches are inadequate as they force reductive abstractions from the multi-layered complexity of social reality. Instead, the critical realist emergentist metatheory fills back up the 'differentiated totality' that is the service ecosystem, characterising it as an entity driven by a plurality of generative mechanisms operative at different levels through time. Moreover, the critical realist emergentist metatheory as an integrative base makes it possible to integrate the other structural features and interactions, which are characterised by practices, networks and institutional approaches, productively into theorising as the properties, parts, and relations of service ecosystems.

8.2 RQ2. How do the identified mechanisms illustrate structural features and tendencies within service ecosystems?

The response to the first research question sets the foundation for addressing structural features and tendencies within service ecosystems. The discussed conditions orientate the conceptualisation of the service ecosystem through establishing its complex and processual

nature and therefore how it is understood and explained. The mechanisms and their associated findings draw out important overarching structural tendencies and features which are core to explaining the service ecosystem and its development. These features, the nature of change, coevolution and boundaries will be discussed in this section. The research contributes an understanding of change in the form of rhythmics, illustrates the nature of coevolution and conceptualises boundaries as important generative structural features.

8.2.1   *Structural Feature and Tendencies – Change and Coevolution in Service Ecosystems*

Change is considered a central tendency in service ecosystems (Koskela-Huotari, Siltaloppi, & Vargo, 2016b; Vargo & Lusch, 2016, 2017). Vargo and Lusch (2017, p. 5) centralise the issue of change in their review of the future of SD-Logic, calling for interconnected theoretical work on the central question 'How do service ecosystems adapt and evolve?' This call reflects both the limited number of studies empirically investigating service ecosystem change as a whole and the tendency to focus on specific practices or aspects of change (Banoun et al., 2016).

The nature of change is an ongoing debate in the literature of many disciplines, including business networks, markets and service ecosystems (Banoun et al., 2016; Fligstein, 2013; Fonfara et al., 2016; Nenonen et al., 2014). Coevolution has emerged as a different central focus to conceptualise the mutual causality and feedback effects suggested by the primary condition of interdependence between the components of ecosystems (Aarikka-Stenroos & Ritala, 2017).

However, both change and coevolution are complex, and their understanding is underdeveloped. Theory and research often revert to broad and deterministic stage-models that fail to conceptualise the complexity of 'getting from' stage-to-stage or abstract micro-level actions which project linear, declared ends in conceptualising change (Buttriss & Wilkinson, 2014; Langley, Smallman, Tsoukas, & Van de Ven, 2013; Mason et al., 2013; Nenonen et al., 2014; Van de Ven & Poole, 2005). Similarly, while there is increasing descriptions of coevolving firms, industries, institutions and technologies, research similarly isolates empirical features such as altering intentions or strategies in response to competition or coevolving relationships of competition and cooperation (Aarikka-Stenroos & Ritala, 2017; Breslin, 2016). The account of how these coevolutionary processes take place, give rise to particular patterns of evolution and involve multiple dynamics that interact with one another over time is limited

(Aarikka-Stenroos & Ritala, 2017; Abatecola, 2014; Breslin, 2016; Hynes & Wilson, 2012; Jacobides et al., 2018; Murmann, 2013; Wilson & Hynes, 2009). Subsequently, both the notions of change and coevolution are severely restricted in being able to account for multiple structures, their direct and indirect relations and the contingencies associated with the idiosyncratic responses and interactions of multiple actors.

The following findings illustrate change as a tendency of multi-rhythmics – coalescing and converging trajectories in structures. Coevolution is then illustrated as driven by the relationships of compatibility, contradiction and complementary the generative mechanisms create between different structures that serve to direct and therefore mutually shape these structures. Both of these contributions add to the understanding of these features within service ecosystems and challenge approaches in the literature.

8.2.1.1   *Expression of Change through the findings*

The findings offer a picture of change processes as emergent, competitive and tentative as the trajectories of different structures overlap, converge and contradict. Changes take place in the meeting of multiple trajectories of structures. The coming together of the mechanisms of compression, modes of alignment and refraction highlight the way change comes to be through converging causal process at points in time. For example the implementation of cloud computing in government emerged from a set of converging trajectories; 1) the compressive convergence shaping the technology market and the capabilities and services of providers; 2) the sudden compressive force of the GFC; 3) past reform efforts to implement joined up and e-government which, through the refractions of history, conditioned future reform efforts; 4) the realisation of the tension between the capabilities of computing infrastructure and the tasks and roles demanded of agencies. Change, therefore, comes to be a feature of causal processes defined by the coalescing of multiple mechanisms in emergent spatio-temporalities – what this thesis recognises as rhythmics. Focussing on the emergent nature of spatio-temporalities identifies that these different processes and trajectories accrete across different timeframes and in different 'locations' (sets of structure), yet where they meet creates an emergent causal process in the system, which has its own space and time due to the structures it engages and effects.

This notion of change also points to the problem of a simple dichotomy between continuity and sharp breaks. Instead, compression and refraction reveal the co-presence of both critical events that are a shock to the system and the evolutionary and incremental developments and adjustments within a changing service ecosystem trajectory. The compressive force of the GFC demonstrates a shock to the system, whereas refraction demonstrates how efforts to reform institutional and relationship structures in the past become the basis for creating new hierarchical structures and governance arrangements in the future. For example, sectoral groupings and decentralised agency autonomy set in motion structures that shaped the trajectory of the service ecosystem and became sources of change narratives at a future date. Refraction and the precipitating dynamics caused by compression demonstrate the importance of understanding the non-synchronisation and discontinuity asserted by conceptualising different structures within an irreducibly stratified and processual system which ultimately lead to the emergence of new trajectories.

8.2.1.2   Positioning this view of change in the literature

The perspective of change emerging through the findings illustrates the central proposition of diachronic emergence in service ecosystems. Diachronic emergence recognises emergent trajectories as irreducible to the doings of contemporary actors, instead deriving from historical actions and the creation of context. Moreover, the layered nature of an emergently stratified system, suggests that a polyphonic view is necessary. Polyphony refers to "a form of composition in which multiple melodies are performed at the same time, each retaining its own individuality as it harmonises with others " (Albert, 2013, p. 155). The metaphor expresses the notion of rhythmics and recognises that structural trajectories and causal processes may mask, compete with, substitutes for, or amplify each other as they converge in causal processes.

This perspective of change introduces challenges to the literature. Suddaby, Foster, and Mills (2014) and Buttriss and Wilkinson (2014) argue, that institutional and business network studies respectively, often rely on a unitary view of causality, looking to actors' reactions or sudden crisis to drive change. The findings of this research suggest that change is multi-levelled and emergent found in complex causality as the structures of the service ecosystem coalesce together forming the conditions for change. This perspective argues that understanding change

necessarily requires revealing the causal processes and the different properties that interact to influence the trajectory of change from its initiation and emergence.

Viewing change in this way is consequential for studies, such as those considering institutional work, suggesting that these practices themselves, the success or failure of them as well as the conditions that give rise to them are not simply sequential but rather develop over time (Mountford & Geiger, 2018). This issue exemplifies the problem of being drawn into focussing on localised action where voluntarist accounts depict linear efforts to create strategies and structures. As Purdy, Ansari, and Gray (2017) argue, institutional logics are often seen as either created or retrieved in the right situation removing consideration of the interactions and processes through which meanings and practices are not just used or recombined but also initiated, reconstituted, or instantiated at multiple levels of social organisation. Similarly, Leibel et al. (2018) recognise that studies addressing discourse, rhetoric, and frames in changing fields, overlook the interactions from which these features originate. It is in these issues that structurationist inspired institutional theory and micro-institutionalists draw criticism for overlooking the external forces and events which present conditions to actors not of their making or choosing, and therefore producing voluntarist accounts focussing on the immediate contexts and linear outcomes of action (Archer, 1995; Elder-Vass, 2007a; Purser & Petranker, 2005; Whittington, 2015). The legacy of Giddens' influence and the efforts to build structure as practices on a flat plane is felt here as the rejection of irreducible structure, as prior to, rather than produced through agency (Jessop, 2005). In response, the offered view of change, combined with the condition of diachronic emergence considered in response to the first research question (Section 8.1.2) recognises the conditional and emergent nature of change driven by the coalescing interactions of multiple structures-in-process.

8.2.1.3   Expression of Coevolution through the findings

Coevolution emerges as a process driven by the relationships the generative mechanisms create between different structures establishing compatibilities, contradictions and complementarities that serve to direct and therefore mutually shape these structures. Continuing the illustration of the implementation of new technologies in government, the use of cloud computing required; 1) a shifting mode of alignment and new relationship structures with suppliers; 2) new governance models which required the creation of hierarchical agent, in the GCIO team, to

displace institutionalised structures of practice and decision-making within agencies; 3) changes to institutionalised laws in financing and procurement; and, 4) new material technologies and infrastructure. The generative nature of the modes of alignment are central to the mutual shaping of these structures. The changing relationships with suppliers were characterised by progressive shaping towards a cooperative relationship evidenced through the creation of SFAs which further resulted in new technology and practices. The empowerment of the GCIO as a hierarchical position shaped the ICT decision making and implementation for agencies. Tension generated by the misalignment between narratives of the cloud-first approach and initial prevention of public cloud adoption for some activities led to changes in this guidance and data management and risk management practices. Similarly, tensions that were created by affecting decision rights of agencies and directing the mandate from the GCIO office saw the GCIO team strengthened in order to provide a guidance and assurance role and lead to the creation of the Partnership Framework. Lastly, the introduction of new material and artefactual technology cooperatively evolved the means of using the technology as well as the interactions and terms between agencies and suppliers.

Coevolution is also demonstrated by the role ecotonal coupling had in changing the relationships between the fields of the public sector and the technology market. The ecotone boundary changed the way the two fields interacted through the mediational and transformative role of the inhabiting actors and the interactional conditions that were created. Subsequently, the relationship between the fields became much more cooperative and mutually shaping, rather than inertial and one of impacting on each other.

8.2.1.4 *Positioning of coevolution in relation to the literature*

The findings illustrate coevolution as built on the configurational nature of service ecosystems – the various structures and their relationships to each other which create compatibilities, contradictions, complementarities. Central to this are the modes of alignment which provide insight into the mechanism which stimulates dynamic interactions between multi-dimensional structures, driven by reciprocal selective pressures, altering their trajectories, as a result of their mutual interdependence (Walby, 2007).

This perspective of coevolution also introduces challenges to the literature. For example, models of coevolution in business networks literature often assert the teleological determination of actions focussing on coevolution as the responses between managers and their network, in which managers can choose to conform to or confront particular ways of operating, consolidate or create a new network position, and coerce or concede to others (Håkansson, Ford, Gadde, Snehota, & Waluszewski, 2009). This focus downplays the complexity of the many different structures that make up the field or system that these network relationships are embedded in and shape decisions and possible actions. Even keeping the level of analysis at the actions of individuals and relationships, a plural view of causality is needed as existing structures determine possible causal paths while individual or collective actions trigger some of those paths, but what paths are triggered in turn depends on positions within structures at a given moment and over time. This may also result in new structures being generated, together with the corresponding opportunities and constraints for further actions. This view resonates with Kunisch, Bartunek, Mueller, and Huy's (2017) suggestion that it is not atypical for change recipients to be enacting their own sets of events with their own pace at a time another change is introduced, and how the two sets of events interact with one another has considerable impact on the success of change. The findings suggest that service ecosystems as complex configurations with multiple interdependencies find their parts, both within and across several levels and material, subjective and intersubjective dimensions, generating tension and synergy and deviation-countering and amplifying trajectories.

The view of coevolution grounded in differentiating structures across and within levels provides for their causal powers and therefore, their co-determinative interaction. This prevents the dichotomy that Breslin (2016) sees in organisational studies of evolution. Breslin suggests that researchers adopt either a practice-based view or focus on the determining environment and subsequently either adaptation and strategic choice 'hold sway' or environmental change has primacy. Coevolution, as proposed by the findings, requires grounding the explanatory approach in trying "to get beyond the recognition that something produces some change to an understanding of what it is about the object that enables it to do this" (Sayer, 1992, p. 106). This understanding is in direct opposition to reducing changes to institutional arrangements to merely practices or cognitive decision making of actors which results in a loss of some potentially significant properties of different structures and the interdependencies of their components. Position, power, the role of cognitive frames and sense-making as well as network relationships, resources and other competing institutional pressures not only have the potential

to mediate the influence between actors and institutional changes and pressures but will collectively constitute the outcomes of their interplay (Beckert, 2010; Fligstein & McAdam, 2011).

The complex nature of this coevolutionary perspective suggests that the structurationist inspired nature of 'constraining' and 'enabling' structures, relied on for example in discussing institutions in service ecosystems (Vargo & Lusch, 2016), is reasonably uninformative in addressing the complexity of organising. Cardinale's (2018) critique of institutional studies mirrors this point, arguing that when researchers do put forward conditions that enable institutional work or change, research does not go on to recognise the continuing interaction of structures shaping those possibilities rather than others. The problem here is that there is no theorisation of the role structures play in influencing action within the space of enabled possibilities and through what mechanisms such influence operates (Cardinale, 2018). The suggestion that creating change in institutions is a linear process of creating new elements, forming new arrangements and stabilising these features, removes the dynamic interplay of the relations and structures that need to be aligned or produce the contingent outcomes for this process to take place. As the findings show when actors' trigger alternative action and interaction and thus rupture the recreation of stable features, the structures shift their relationships to other structures and therefore change the way they interact. Tensions emerge, evolve, and transform across time and space, and the degree to which alignment is found is a continuing process. Lastly, understanding coevolution in the modes of alignment and refraction better reflect the fact that institutions, practices and their changes are different for different kinds of actors, and their impact is not uniform across different forms of agency (Leibel et al., 2018; Schmidt, 2010, 2012; Sotarauta, 2016). Subsequently, it is a complex process to understand what sort of structures and properties are being brought into interaction, and how these interactions might sustain or change these different parts.

8.2.1.5 *Summary and contribution*

The mechanisms identified in this research point to the open systemic nature of service ecosystems and change as non-linear, structurally embedded, temporal, contextual, and asymmetrical. What emerges in this view of change and coevolution is the adage that the form of the combination (in this case the trajectory of the service ecosystem) causally codetermines

the elements, and the elements causally codetermine the form by mutually mediating and conditioning each other. The findings illustrate that service ecosystems are complex reflections of their history and emergent trajectories of their conjunctive causes rather than simple progressions or restructuring.

The findings provide a perspective of change built on rhythmics, highlighting the coalescing forms that create conditions for change, and coevolution as a dynamic competitive, tentative and emergent alignment. These contributions add to the ongoing debate regarding change, looking beyond deterministic stage-models or more micro-level linear declared ends (Nenonen et al., 2014), and provide a view of the mechanisms underlying patterns of coevolution and the multiple dynamics that interact with one another over time (Aarikka-Stenroos & Ritala, 2017; Murmann, 2013). The findings add to the understanding of these change processes by highlighting the cumulative development of structures which shapes the trajectory of service ecosystems and the asymmetric and desynchronised ways in which structures and relations interact due to their irreducibility and stratification. These views of change and coevolution contribute to Vargo and Lusch's (2017, p. 5) call for interconnected theoretical work on the central question, "How do service ecosystems adapt and evolve?"

Building on the response to the first research question, they also further emphasise moving away from substantialist accounts which create snapshots of difference between static structures and strong process accounts which may collapse the different rhythmics of change and the complex conditions for coevolution into singular connections between events and interactions. Moreover, these findings further develop Nenonen et al.'s (2014) perspective on plasticity in markets. These authors suggest, rather than understanding dynamics through the predictable and gradual or leaps of deterministic models, they are seen as, "spiral-like change processes, triggered by discrete turning points of crises, where the opposing forces eventually lead the entire market onto another level" (2014, p. 283). The findings regarding change as rhythmics recognises the need to develop an account of the conditions that lead to these loci of plasticity and the findings of coevolution demonstrate the complexity of these spiral-like process arguing that it is the dynamic modes of alignment which highlight indeterminate, emerging, amplifying and recursive tensions and interactions across time and space.

Finally, both the perspective of change and the complex nature of coevolution suggest the difficulty of addressing direct efforts to shape service ecosystems through specific capabilities

(Nenonen et al., 2018), or the power of institutional work (Koskela-Huotari et al., 2016a) particularly through the view of a focal actor. Fundamentally, the importance of a range of coalescing conditions and the mechanism driven trajectories that bring them together and the range of alignments between institutions, practices, relationships and resources, suggest both a distributed character to this sort of agency across a range of actors and the contingent and diachronically converging nature of structural conditions. This position suggests that the value of the ecosystem approach lies in understanding the complexity of alignment (Aarikka-Stenroos & Ritala, 2017; Jacobides et al., 2018), over the more traditional teleological driven and pragmatic perspective focusing on how focal actors may manage or shape networks, markets and ecosystems (Holmqvist & Diaz Ruiz, 2017).

8.2.2 *Structural Features and Tendencies - Boundaries in Service Ecosystems*

The findings propose boundaries as an important structural feature. The generative role of boundaries is offered by the ecotonal coupling mechanism as well as independence as a mode of alignment. Boundaries have had limited discussion in the service ecosystem literature. This reflects a call for further work on understanding the ties shared by different systems and the role of boundaries in institutional theory, strategic action field studies and strategic management, areas from which service ecosystems have extensively drawn (Fligstein & McAdam, 2012, p. 19; Furnari, 2016, p. 573; Valkokari, 2015). This call recognises the tendency to conceptualise fields and systems as relatively independent social arenas. As Fligstein and McAdam (2012, p. 18) and Furnari (2016) argue, "virtually all of the previous work on fields focuses on the internal workings of these orders, depicting them as largely self-contained, autonomous worlds". Moreover, the limited discussion also stems from the weak assumptions and structural considerations of the SD-Logic perspective, which is echoed by Prenkert's (2017) discussion of boundaries in business network studies. Similarly, the open system perspective of service ecosystems, as well as the focus on constant dynamism, has defeated a traditional perspective of rigid, distinguishing boundaries, meaning these are hard to define or implement as concepts (Barile et al., 2012; Reynolds & Ng, 2015).

It is easy to fall into the trap of thinking that a boundary only separates one thing from another, and subsequently, overemphasise the static or descriptive aspects (Cilliers, 2001; Richardson & Lissack, 2001). Similarly, as resource integration and value creation continually span traditional industry borders, involving actors from different social and technological systems,

boundaries lose their traditional delineations and rigidity. However, it also brings to the fore the study of linked ecologies and structures (Furnari, 2016). This interdependence is exemplified in the case as compression reveals the increased coupling of actors and the convergence of technology, markets and industries. Ecotonal coupling provides an understanding of boundaries as dynamic zones of connection, regarding them as emergent, relational, and active (Abbott, 1995; Lamont & Molnár, 2002). Similarly, independence as a mode of alignment considers the nature of space which is central to boundaries (Hernes, 2004). Together these features propose that boundaries are a fundamental part of organising. Moreover, the findings in the case regarding ecotonal coupling and independence exemplify two different ways of viewing boundaries. The first is oriented to treating boundaries as barriers that reinforce separations between actors, organisations, or institutional entities. The second is oriented to seeing boundaries as porous and tenuous and treating them as an intersection that enables diverse connections.

8.2.2.1 Boundaries as Separations - Independence

Firstly, independence as generative of structural properties and activities points to the separating nature of boundaries. A central feature of independence in the service ecosystem, as illustrated in the findings, is creating 'space' or distance from constraining features of the structures imposed on and conditioning courses of action and interaction. The independence generated by the service innovation team and lab characterised efforts to create a symbolic boundary aiming to decouple actors from institutional pressures and institutionalised practices (Boxenbaum & Jonsson, 2017). The boundary was sustained through its enactment in practices that served to buffer pressures, mediating interactions between the institutional pressures of the government field and that of the actors part of the service innovation team and lab. These findings reflect the creation of experimental spaces, as a type of boundary institutional work, in which members can engage with alternative models in ways that would not be possible if these activities were publicly visible (Cartel, Boxenbaum, & Aggeri, 2019).

Similarly, the findings of independence as a mode of alignment demonstrate the importance of boundaries in creating spaces where actors can shift the nature of their role and suspend differences to engage with alternative models and practices (Ernst & Yip, 2009; Hardy & Maguire, 2010). By decoupling and closing off a new space of interaction the creation and

enactment of boundaries help to dissolve other boundaries, in this case, the social and symbolic boundaries that typically separate actors across government in different departments. The variable and interactional nature of boundaries are also suggested by the findings of independence at the intra-organisational level the importance of physical boundaries - creating a new workspace - and temporal boundaries - creating time for individuals to work separated from their routine tasks.

8.2.2.2 *Boundaries as intersections – Ecotonal coupling*

Ecotonal coupling provides the second view of boundaries as transitional and interactional zones. The findings illustrate how the structured nature of service ecosystems, characterised by differing institutional regulations, values, norms and informational and technological features create tensions at the boundaries that characterise internal sites of difference. The interactions of the public sector and actors inhabiting the technology service field are mediated by the different types of boundary stabilities that structure their roles and activities, including normative and regulatory frameworks, associated practices and relationship network structures. Subsequently, the findings show this tension as generative of new features at the boundary between these different structures. The tension at the boundary generates a new space or landscape in which frames of interaction and material and structural ties are created to form a more interactional zone. This emerging structure creates the opportunity for new positions for actors to inhabit and to develop roles in the relationships and resource integrating practices of the actors divided by this boundary. These positions are adopted by actors who then expanded their roles and stabilised the new landscape by creating boundary objects (Vakkayil, 2014) and bringing in capabilities which strengthened the necessity of the role, allowing the new structure to fundamentally shift the mediation of the resources flows and interactions between the distinct fields.

Beyond merely a bridging tie in the network connecting actors or as a source of institutional or practice novelty, ecotone coupling refers to the emergence and reproduction of a structure that allows a more complex interactional and transitional zone between established field stabilities. These areas are sources of new actors and roles, the development of new resources, relationships and practices. These zones point to the importance of these 'thick boundaries' outside of looking for change in recognised institutional environments or in reaching

collaboration between boundary-spanning actors. Ecotonal coupling focuses on the generative nature of boundaries and the ways in which emerging structures operate differently than network ties or as sources of institutional complexity. The ecotone characterised by the accelerator programmes shows how these transitional and interactional zones may be fundamental to changing practices and providing the conditions for the type of interactions necessary for innovation and subsequent structural change in opposing and established fields. This type of coupling will become increasingly prevalent as compression demonstrates, particularly through the convergence of technology, markets and value-creating solutions.

8.2.2.3   Contribution to the literature

The stronger conceptualisation of structure advocated in this thesis provides an improved means to address boundaries in service ecosystems. The findings illustrate the importance of boundaries as generative structures, and therefore, explanatory features providing insight into the nature and trajectory of the service ecosystem. The findings demonstrate that boundaries should not be seen as static or simply descriptive aspects of separation (Barile et al., 2012; Prenkert, 2017). Rather, boundaries appear to be relevant structural features and generative tendencies in service ecosystems which are both productive barriers and emergent interactional and transitional intersections. Moreover, boundaries are multi-dimensional in terms of being material, temporal, symbolic and social and they are both enacted and constructed by actors in response to generative tension and existing structural properties and pressures in the environment. Boundaries are dynamic and influential through the action and interaction they allow, whether it is decoupling and autonomy of actors or aligning and bridging differences.

Boundaries created through independence as a mode of alignment suggest the need to focus on addressing the differentiated nature of spaces in service ecosystems, this notion will be further elaborated on in Section 8.3.3. The ecotonal coupling concept provides a number of contributions to the literature. Firstly, it provides a boundary concept that accepts the transitional and interfacing nature of boundaries for a broader perspective of interdependence, particularly given the limited attention paid to sites of difference in service ecosystem literature and the call for this in literature streams informing the service ecosystems concept (Fligstein & McAdam, 2012, p. 19; Furnari, 2016, p. 573; Valkokari, 2015). Secondly, many of the references to boundary concepts in the business network and marketing literature are directed

to establishing and delineating the inner working of a set of relationships or directed at the level of the firm (Prenkert, 2017). The ecotonal coupling concept provides for different levels of structure and an interfacing and interactional concept between inner working and within the service ecosystem.

A further contribution of the ecotonal coupling concept is illustrating the importance of 'thick boundaries' and interactional zones. By focussing on the dynamic landscape the ecotone creates, including the positions, roles of actors, relationships and institutional infrastructure, the ecotone concept provides a bridge to integrate a range of different features and concepts in the broader literature. For example, the notion of bridging ties as part of network structures (Koskela-Huotari, Siltaloppi, & Vargo, 2015), boundary-spanning roles (Fox & Cooper, 2014), the creation and use of boundary objects (Vakkayil, 2014), boundary positions in fields (Greenwood et al., 2011), boundary practice work (Hawkins & Rezazade M, 2012), and inter-field resource dependency (Furnari, 2016). The ecotone concept does this by integrating the diversity of structure, entities and relations proposed by the metatheory allowing these different features to all reside within the systemic concept. The findings demonstrate network relationships through the actors inhabiting the ecotone and their roles transferring and transforming resources. These actors create and use of boundary objects such as self-service portals and overcome geographical limitations by providing in-country infrastructure and cloud platforms. Moreover, the findings consider the boundary work these actors do in integrating the demands and frames of reference of the different fields they bridge, using their unique position in the institutional structures to act and create new practices and means of resource integration. Subsequently, ecotones provide an insight into the different roles, interactions, relationships and institutional features that influence innovation dynamics and change in service ecosystems.

8.3 RQ3. How does the use of the analytical framework and the identification of mechanisms contribute to those under-researched features of service ecosystems?

The final research question reflects the critique of the current literature and the identification of several under-researched areas in service ecosystems as well as the service and marketing literature more broadly (Section 4.3.3). In identifying these areas, this thesis posits that they are at least partly determined or generated by conflationary theorising and the lenses and

frameworks which articulate this. Drawing on the foundations set by the responses to the previous two research questions and extending these through discussion of the findings, this section proposes how the research contributes to each of these areas. The following sections will identify the under-researched areas and demonstrate how the approach taken in this research and the subsequent findings contribute.

8.3.1 *Stability and Change*

A core issue in the literature considering process and change is the recognition of stability and change not as antithetical but constitutive. Scholars argue that the traditional assumption that stability and change are antithetical serves to obscure the continual processes and outcomes that characterise progression through time (Buttriss & Wilkinson, 2014; Farjoun, 2010; Lawson, 2016). This issue, along with diverging substantialist and processual views noted, drives the suggestion that despite stability and change being fundamental concepts to business research, understanding of them remains limited (Andersen & Medlin, 2016; Buttriss & Wilkinson, 2014; Suddaby & Foster, 2017). In response, the framework advocated in this thesis recognises that change and stability do not exist as exclusive conditions. Instead, change and stability exist in mutually constituting processes by recognising both the necessary interdependence and relative autonomy that stratification suggests between levels of organisation. The commitment to stratified and differentiated reality allows that some relations may change while others remain stable or change may require stasis in higher or lower levels to be sustained (Elder-Vass, 2010). While change may happen in one or more sets of relations or structures, there is often a compositional consistency that maintains either lower or higher-level structures. This grounding points to both the coexisting and co-constitutive nature of morphogenetic and morphostatic structural cycles and rejects the tendency implicit in many models to draw sharp distinctions between periods of stasis and change.

8.3.1.1 *Expression of the co-constitutive nature of stability and change through the findings*

The findings provide a number of insights and examples of the coexisting and co-constitutive nature of stability and change. Within the findings of refraction, both stability and change are seen as conjunctive and enabling and as co-constitutive– recognising the two conditions of diachronic emergence and emergent relationality. Firstly, demonstrating the conjunctive nature

through the refractive tendencies of the ecosystem, the stability of structural features coming from previous attempts at reform created the conditions for changes in the future (conjunctive and enabling). This enabling nature is evidenced, for example, by the creation and reproduction of the sectoral groupings, which became the basis for the groups of agencies assigned to BPS result groups.

Secondly, the necessary stability within the government which enabled the reform program to change the way the public sector operates, procures and interacts with the private sector demonstrates the co-constitutive nature through refraction. The stability provided by overarching government plans and programs sustains the necessary interactions and conditions for implementing change programs. The consistency within these structures maintained the pressure and mandate for change in the practices of actors and structure of relationships while also creating a directive for changing other institutional features. This intertwining suggests going beyond addressing the oscillation between stability and change (Klarner & Raisch, 2013). Moreover, this intertwining reiterates the responses to the first two research questions - asserting the need to address a complex of structures, understand the creation of context and conditions and change as situated in coalescing trajectories driven by converging mechanisms.

The findings illustrating independence as a mode of alignment also point to the co-presence and interaction of stability and change. In Organisation B's acquisition of Organisation K, Organisation B set out to gain capabilities and shift their network position, but in doing so, it was necessary for Organisation K's operation, brand and positioning to remain largely the same in order for the network position to be available. Similarly, other acquisitions in the findings, which were driven by compression and converging markets and technology, demonstrate intertwining morphostatic and morphogenetic processes. A number of large organisations set out to gain capabilities and relationships and change their organisation's structure and activities. However, the purpose of this change was largely directed as stabilising their incumbent position, relevance and power in their networks and field. This is a different perspective than traditional efforts to commit to radical change in networks and as part of disrupting old relations, often aligned with mergers and acquisitions (Havila & Salmi, 2000; Salmi, 2000).

8.3.1.2   Contribution in Relation to the Literature

A view of stability and change grounded in recognising the stratified and differentiated nature of service ecosystems allows for the intertwining of the two as co-constitutive and mutually reinforcing, rather than negating and displacing one another. This is important for being able to bring different types and levels of structure into explanations. Moreover, this allows assertions to go beyond just successive patterns of stability and change, which is often the case in explaining change (Buttriss & Wilkinson, 2014), particularly when the framework compels the researcher to collapse their view of structure into one dimension. By focussing on emergent relationality and the search for mechanisms the reality of these systems is filled back up with its unity-in-difference.

The findings resonate with Nenonen et al's. (2014) suggestion, that focusing on constructs such as 'change' and 'fluidity' neglect the critical facet of dynamics built on the dual character of both fluidity and stability. Moreover, the underlying view of the stratified and differentiated nature of service ecosystems and their constituting structures responds to the calls of Buttriss and Wilkinson (2014) and Nenonen et al. (2014) for greater understanding of the unfolding of these kinds of dialectic dynamics. These findings also reflect and build on Koskela-Huotari et al. (2016a) who suggest that it is not enough to break the rules of resource integration and make new ones, but may require the maintenance of old rules in order to make changes more recognisable and therefore easier to integrate. These ideas also reflect the process of layering in institutional literature, which suggests that continuities and commitments may act as anchors for introducing more drastic changes (Van der Heijden, 2011).

Building on Farjoun (2010) the paradox of stability and change exists as a duality, and the stratified and differentiated position advocated in this research recognises the co-constitutive nature of the two forces. Building an integrative view of stability and change opens analysis to considering different dimensions that may be coexisting in enabling change or stability and the requirement to break with sharp distinctions between periods of stasis and change. Finally, these findings also resonate with a range of organisational scholars who advocate conceptualising, analysing and managing organisations in terms of dualistic, dialectic, and paradoxical processes (Graetz & Smith, 2008, 2010; Putnam, Fairhurst, & Banghart, 2016).

8.3.2   *Process and History*

The issues of process and history turn on the problem of decontextualising phenomena by removing the consideration of context being created by the history of past interactions, interconnections and events (Wilkinson & Young, 2013). This thesis has argued that this decontextualisation derives from a failure to recognise diachronic emergence, and conflation driven by a logic of immediacy and a focus on the 'here and now'. The need to see process as part of coalescing stratified, temporally and spatially differentiated interactions is already set out in this discussion. However, the findings also add to understanding the role of history and addressing the concept of paths.

8.3.2.1   *The Role of History and Paths Through the Findings*

Within the mechanisms of refraction and the modes of alignment, the findings add to the understanding of history by suggesting the different roles that history plays in the process of organising (Suddaby & Foster, 2017). The history of the system is present in multiple dimensions. Path dependence and lock-in can be associated with some of the objective features of history. For example, the case details the adoption of and material nature of technology which makes it impossible to change or perform certain tasks or decisions such as splitting agencies and departments into autonomous units. These events have objective and material structural outcomes, including creating tensions between the demands of government and the capabilities of agencies. History also affects inter-objective conditions such as the formation of laws. In the case, laws need to be changed to allow certain practices like cross-agency funding or changes to CE performance arrangements and accountability. The need to change the alignment of these structures feature prominently in the case. Similarly, at a more intersubjective level, the history of practices in service management and the development of customer-supplier roles between the public and private sector created structural inertia and tensions in attempting to change the trajectory of these developments. Agency management sort the autonomy and individualisation of their solutions and suppliers sort to maintain individualised agreements and contracts which reproduced a typical power structure. At a subjective level, individuals develop an understanding and structure for their roles, obligations and agency, particularly evident in the managerial autonomy of government agencies, which can impact the ability to gain support, agreement and actions, for example, in changing the way procurement was managed. History, therefore, is intertwined with material conditions,

longstanding institutions, relationships and sensemaking all which play a role in establishing the conditions of action.

History, as described in these findings, points to the role of path dependency, reflecting the ability of earlier events and choices in constraining and influencing agentic capacity and subsequent events and choices, and establishes the structured nature of the world. The findings also point towards the perspective of path creation reflecting a focus on socio-cognitive processes found in an emergent agency that help in creating of new states alongside other structural forces (Garud, Kumaraswamy, & Karnøe, 2010; Sydow, Schreyögg, & Koch, 2009). Refraction illustrates the ways in which actors may generate meaning from events and influence the present and future drawing on the past (Suddaby et al., 2010). For example, a strengthened hierarchical structure was able to be enacted for the GCIO by drawing on the failure of past ICT programmes asserting the lack of this structure as a core reason for failure. Likewise, the BPS reform programme drew models of implementation from the 1980s reforms and the failures of intervening reforms and were used as a source of narratives and sensemaking for possible options (Vaara, Sonenshein, & Boje, 2016). Subsequently, actors create paths by mobilising the past not only to avoid what has happened, but also to generate new options (Garud et al., 2010). This notion reflects Flaherty and Fine (2001) assertion that, "the past is a resource, not a cage. Instead of being imprisoned in it, we use it to make sense of the present and imagine the future." However, while the past and future are seen as interwoven in the present, actors are not free from conditioning or from the continued influence of existing structures. Refocusing on or redefining the trajectory of the past for changing the projected future will always be codetermined by the degrees of freedom and stringency of constraint that comes with the different dimensions and accretion of structure (Archer, 1982, 1995).

8.3.2.2   Summary and Contribution to the Literature

The findings demonstrate the importance of understanding the differentiated and multi-dimensional nature of structures and processes by illustrating the different modes in which history plays a role in the service ecosystem. These findings extend the work of organisational scholars who have taken an increased interest in understanding history (Mutch, 2019; Ocasio, Mauskapf, & Steele, 2016; Wadhwani, Suddaby, Mordhorst, & Popp, 2018). Of note are the intertwining and constitutive roles of the different dimensions of history, reflecting both the

powers of levels of organisation and subjective, intersubjective and objective dimensions. These findings reflect on Suddaby and Foster (2017) assertion of the different views of history expressed in the ontological assumptions that guide researchers, suggesting the need for the multi-dimensional and integrative position advanced by this thesis' metatheory. Moreover, Wadhwani et al. (2018) suggest that research often conflates 'history' with 'the past', pointing to the need to separate more subjective and objective conditions within management research.

The findings also point to the need to consider the roles of path dependency and path creation. However, given the advocated metatheory, accepting both being and becoming and the contingency of emergent relationality, these processes can be seen as path constitution (Sydow, Windeler, Muller-Seitz, & Lange, 2018), rather than adopting a path-dependence or path creation binary (Garud et al., 2010; Vergne & Durand, 2010). The path constitution notion suggests both the diachronic emergence and layering of structure and its conditioning power while accepting the contingency of the becoming of structure captured in the complexity of interaction driven by the condition of emergent relationality. The findings demonstrate this structured flow as capturing the past (as caused and determinate), present (as a moment of becoming) and future (Norrie, 2009). Path constitution resonates with Dobusch and Schüßler (2012) suggestion that the core theoretical construct for path research should be self-reinforcing dynamics driven by positive feedback. Within the understanding of process advanced in this thesis, this perspective directs attention to the organising of structures that create the necessary interchanges and realised, part realised or blocked powers that generate the events that characterise the self-reinforcing feedback.

This perspective offers a means to continue the use of theoretical pluralism and examine mechanisms at different levels and within different structures, allowing research to draw from similar notions such as imprinting, institutional persistence, escalating commitment and structural inertia (Schreyögg & Sydow, 2011). Refraction provides insight into one such mechanism, while open to integration with others.

8.3.3 *Time and Space*

An increasing call for understanding the complexities of time and space within marketing and service research reflects the management and sociological literature more generally (Castilhos et al., 2017; Törnroos et al., 2017). Time and space, far from being background variables,

require substantive investigation in both shaping and being shaped by the trajectories of service ecosystems. The metatheoretical propositions and conditions (Table 5 Section 5.3), consider time and space as multi-dimensional properties, manifest in structures, which may be actualised as causal powers and therefore implicated in the state of possibilities. This proposition moves beyond seeing these features as merely containers for events (Ermarth, 2010). As Lewis and Weigart (1990) suggest, an understanding of social time requires an adequate theory of social structure which allows different types of time to operate at different levels of structure. Likewise, Massey (2005) and Jessop, Brenner, and Jones (2008, p. 390) argue for a polymorphic view of space recognising its organisation of 'sociospatial relations in multiple forms'. Literature across philosophy, sociology and organisational studies argue that time and space are difficult to capture within a few perspectives and concepts (Adam, 1990, 2004; Domingues, 1995; Melnick, 2012; Wallerstein, 1998). The findings in this research address some of the possible perspectives and draw insight from the nature of the offered mechanisms.

8.3.3.1   Time

Time is a central component of order, stability and change (Adam, 1990). Time is seen to influence our interactions and the way we relate to others (Tidström & Hagberg-Andersson, 2012), being experienced as a powerful constraint on actions and as a means of strategising and making sense of the world (Adam, 1990; Elias, 1992; Peters et al., 2012). The findings show the differentiated nature of time and the subsequent impact this has within the trajectories of the service ecosystem. Compression reveals how the nature of time may be experienced differently in critical moments and phases when change is most strongly apprehended. As Lowe and Rod (2018) suggest, this may be considered Kairotic time, recognising the experience of time to be indeterminate, emergent and intense as part of eventful experience. In the case, the compression experienced in the temporal flow of time, particularly in the destabilisation and subsequent compression associated with the GFC, government reform and the pressures of social and technological environment. The nature of the BPS programme and the use of the targets reveal the tensed and relational nature of time, particularly bringing the future closer to the present and shifting actors' perceptions of time and the flow of time based on the structures around them, for example the pressures of accountability and the need to see and implement changes. As Reinecke and Ansari (2017) note, temporal structures shape what problems appear salient and how those problems are coped with.

The variability of time flow is also evident in how actors connect their past, present and future, particularly as the duration of projects and activities, is compressed (Dawson & Sykes, 2016). Recognising actor's agency as structured through their engagement with the past, present and future (Emirbayer & Mische, 1998), the findings demonstrate how compression limits agency as the relational and material pressures of time are changed. These changes limit actors' ability to draw on their past and plan and project possibilities in the future. However, the findings also reveal the enablement of agency and power, by demonstrating the ability of actors in structurally powerful positions to use time strategically in order to compel action and change. This process reflects Granqvist and Gustafsson (2016) call for a focus on temporal work and efforts to modify perceptions of time by "constructing urgency" or "enacting momentum". These actors can use the compression of time to their advantage, and subsequently, enact it in such a way to precipitate the influence it has on less powerful actors. Refraction also intertwines with this form of agency, allowing actors to mobilise particular aspects of the past to support their imagined futures. For example, using past reforms to craft narratives that show the cyclical nature of time or even to create distance between the past and the present creating a new period of time (Garud et al., 2010).

8.3.3.2   Space

Space is seen as a necessary part of events and the nature of context (Medlin & Ellegaard, 2015; Morgeson, Mitchell, & Liu, 2015). The findings in this research reflect Hardy and Maguire (2010) and Castilhos et al. (2017) call to study the "multiple and differentiated nature" of spaces while recognising space as a powerful property of structures (Warf, 2008).

The findings support Törnroos et al. (2017) and Castilhos et al. (2017) recognition of the different dimensions of space including the way in which it is manifest in different geographies, positions and relationships and cognitive representations. The findings reveal the importance of physical space, for example, the need to have infrastructure in the home country, which points to the importance of recognising that networks are not abstract or placeless but embedded in place and geography. This feature of space shaped the way network relationships were structured bringing in new ties and creating new relationships, particularly with local service providers bridging government and multinationals.

Relational features of space come to the fore, for example, through the cooperation developed within the partnership framework, creating the enactment of shared spaces. The shared spaces provide means for socialisation, personal interaction and joint activities to develop separately from agencies' daily operations. Similarly relocating actors outside of their agencies, creating independence, provided them with a new space to enact roles as innovators. These features speak to the roles of place in creating new meanings, identities and relationships (Castilhos et al., 2017). These spaces create new bonds between actors, allow them to develop new frames for their experiences and help materialise different features, whether it be cooperative meeting areas or working in an innovation or creative 'lab'.

Boundaries and distance are also central components in the production of space (Taylor & Spicer, 2007). Boundaries and processes of separation shape and designate space and bring forward webs of different tensions and modes of alignment. As this discussion has already highlighted, boundaries have their internal dynamics, creating new areas of interaction and structural relations. Similarly, boundaries point to fields as multi-dimensional spaces in which purposes, understanding and interactions are established. These dynamics played out in ecotonal coupling creating new spaces for purposes, meanings and understanding. Of note are the accelerator programmes in which risk aversion and a focus on process were challenged and replaced by collective experiments and learning by doing. Similarly, different roles as an innovator or entrepreneur are enabled, and some of the power relations formalised within government institutionalised legitimacy are displaced.

Distance, as intimately tied with space, is also a multi-dimensional concept and reflects the way different forms of spatial distribution affect interactions and collaboration (Törnroos et al., 2017). Distance is seen as a multiplicity of contextual differences related to different types of proximity (Lundquist & Trippl, 2013; Villani, Rasmussen, & Grimaldi, 2017). Compression illustrated the role of physical proximity. Organisation A, experiencing the effects of the GFC, enacted compression by moving physically closer to government clients in order to build trust and overcome the relational distance which may have produced friction in their interactions. Ecotonal coupling served as an important change of structure manifesting in the face of relational proximity challenges including distance between common ground in interpretations, institutional systems and resource differences in technology and knowledge sharing. Ecotonal actors drew on the changes their role and position established in the service ecosystem, in order to build capabilities and infrastructure to shape the way resources moved through networks and

create new interdependencies. Ecotonal actors were able to provide necessary infrastructure and hybrid services that reduced the distance between government clients and multinationals. Moreover, these actors worked on boundary objects and resources, such as reporting and management services, which helped reduce the cognitive and technical distance between service providers and government clients across their fields.

While these features recognise the overcoming of distance in the nature of space, the findings also show how distance, intertwined with boundaries, is used to maintain distinct spaces. As considered in the enactment of independence, Organisation D used their network structure to create distance through intermediary partners, in order to maintain their independence from conforming to the pressures of interaction in the government field or territory.

8.3.3.3 *Summary*

The findings illustrate the need for multifaceted concepts of time and space which recognise the differentiated ways these structural properties come to impact on the process of organising and the experiences of actors. By seeing time and space as part of structures, it allows their different and multiple natures to be identified and implicated in the production of events and actors interactions. Similarly, it points to the need to study the ecology of spaces and the interweaving of multiple temporalities that come into interaction in service ecosystems (Dawson, 2014; Törnroos et al., 2017). Both time and space are phenomena in their own right shaping practices and the process of organising. Understanding the different dimensionality of these features provides enhanced means to address the nexuses in which the ideational, social, and practical nature of these features interact with actors' experiences and within their interactions.

8.3.4 *Multileveled/Multi-dimensionality*

The final area of discussion related to the under-researched features of service ecosystems are the encompassing features of multileveled and multi-dimensional phenomena, relations and structures. It is argued that reductive and conflationary approaches focus research on one level or try and squeeze the social reality into a one-dimensional plane. The metatheoretical propositions and conditions offered in this thesis' conceptualisation presuppose emergent and

stratified layers of organisation existing in a laminated whole as a complex configuration of the physical material, social and relational situatedness, cultural constructions and subjective identities. This perspective provides the means to address multi-causality and contingency associated with upward and downward causation and give real causal efficacy to the spectrum of subjective and objective conditions.

The conditions underlying this have been discussed in response to the first research question. The condition of emergent relationality provides the foundation for both stratification and dimensional differentiation. The findings provide examples of structures, properties and powers existing across levels and multi-dimensionally. For example, compression is seen to operate multi-dimensionally; across the material distance of network structures and infrastructure; the structures of markets and industries through technology convergence; through actors' subjective interpretations of time. Likewise, independence as a mode of alignment is shown as enacted across levels of structure; generative at the level of individual actors within organisations; between organisational actors; at the level of the field between the technology market and the public sector. Additionally, the findings and discussion illustrated that change and stability exist in mutually constituting processes by recognising both the necessary interdependence and relative autonomy that stratification suggests between levels of organisation.

Beyond just the presence of nested levels and different types of relations it is the multi-directional influences and links which are paramount. Interlevel causality and the interaction between different dimensions provides the true nature of the complexity of service ecosystems and both their structure and organising. By analysing and accounting for these dynamics of service ecosystems, research can move away from reductive and conflationary approaches. The critique offered in this thesis has argued that it is an issue that, for example, institutional approaches primarily refer to the properties of institutions to explain their stability and evolution or network approaches will find in the nature of ties and particular network features the explanation for the reproduction of network structures. However, structural changes occur within and between social entities meaning that the actual causal mechanisms are likely to be complex and change over time, subsequently, causal importance of particular processes or structures needs to be demonstrated rather than assumed. Service ecosystems cannot be so easily reduced, and instead, these systems exist as a large number of heterogeneous and

interdependent, processes, forces, and structures, which are intertwined and mutually constitutive.

The findings provide examples of how the structures and properties of different frameworks are mutually implicated in the change, stability and outcomes within service ecosystems, particularly forming components of the generative mechanisms both as they act together and conjunctively. For example, the enactment of cooperative modes of alignment demonstrates that new sensemaking and institutional change often needs an appropriate set of relationships and ties through which to be diffused (Djelic & Sahlin-Andersson, 2006). This is evidenced by the role of the partnership framework, creating a set of relationships between diverse actors which allows the diffusion of new ideas and the translation of the normative and functional implications of the institutions that support digital reform. On a different level, the findings demonstrate that changing resources and the institutions that define their nature in the service ecosystem can reshape network structures. The contradictions created in the technological environment through the logic of the as-a-service business models destabilises existing network structures changing the power structure. Subsequently, actors, such as those inhabiting the ecotone, may change the network structure and improve their position.

Moreover, the case demonstrates how changing materiality in technology may condition and enable changing actions and grant actors different structural capacities (Volkoff & Strong, 2013). The digital materiality enabled by new cloud technology drives new logics of interactions, new organisational forms and the interactions and collaborations of actors. However, technology in its implementation and development is also seen to be 'inscribed' by structural and cultural relations (Mutch, 2010). The influence of refraction reveals this feature by illustrating how technology and models drawn into the government from the technology environment are refracted through existing institutional logics and frameworks, creating a divergence from the private sector. Similarly, technology influences differentiated structures creating different outcomes. Through the compressive affordances of cloud computing, new opportunities and potential paths of action were created, yet its compressive nature in relation to actors' skills and capabilities created problems and revealed the limited labour market the New Zealand. These interactions demonstrate the importance of understanding the differentiated relationality of entities and structures. This has been the subject of critiques of structurationist and practice-based approaches to the study of technology in organisational studies. Authors have argued that these approaches conflate the artefactual and material nature

of technology with the emergent uses it is engaged in, failing to distinguish the complexity of the relations that exist in the interaction of socio-technical structures (Faulkner & Runde, 2012; Leonardi, 2013; Mutch, 2007, 2010, 2013).

8.3.4.1   *Summary*

The identification of the mechanisms and their specific content point to the importance of simultaneously bringing in different structural features including networks and relationships, technology and resources, institutional fields and practices and the understanding and sensemaking of individual actors. Research must, therefore, look within and across levels as well as provide causal efficacy to different features without collapsing or conflating their presence and potential power. Not only does this improve understanding of the underlying structures and their complex interchanges that give rise to events, but it also improves the understanding of actors' roles as the activators of these interacting powers possessed by entities at a variety of levels of composition. This allows research to see between deterministic overbearing structural accounts and the disembedding of actors from the complex web of relations and structures.

For the study of service ecosystems, which has primarily turned to the sociological, organisational and management literature, research risks repeating the issues empirical applications and theorising in these domains have encountered, moving between the overemphasis of one element or one layer of the complex reality of these systems (Beckert, 2010; Coraiola, Suddaby, & Foster, 2018; Fuhse, 2013; Hinings et al., 2017; Zietsma et al., 2017). This leaves research to continually discuss possible mediating features or endless 'turns' (Donati, 2017), for example, materiality and space in institutional theory (Zilber, 2017) or the role of meaning and reflexivity in networks (Gulati & Srivastava, 2014), without recognising the co-constitutive nature of these features and, consequently, falsely bracketing their multi and holistic causality. At the core of multileveled and multi-dimensional accounts is a required integrative metatheory which enables theoretical pluralism through a common social ontology and means of theorising.

8.4 Conclusion of the Discussion

The discussion of the findings has set the foundation for offering the contributions and drawing conclusions from this thesis. The four mechanisms have expressed the nature of the service ecosystem, structural features and tendencies and provided insight into core features which are intrinsic to their development and the experiences of actors. Table 14 provides a summary of the discussion, connecting the thesis' research questions and the contributions to identified issues.

- The response to the first research question provided necessary conditions regarding the constitution of service ecosystems and therefore the terms on which they can be addressed and understood. Emergent relationality and intertwined being and becoming respond directly to the problem of conflation. Through expression in the mechanisms, the findings provide justification for the central propositions of the advanced emergentist position.

- The response to the second research question builds on the grounding provided by the conditions of emergent relationality and intertwined being and becoming to propose a unique conceptualisation of change, address the nature of coevolution and establish the generative nature of boundaries. The view of change captured in multi-rhythmics and polyphonic processes sets a foundation for moving beyond reductive change models and focussing on the coalescing conditions of change processes. Coevolution is suggested to exist in the mutual shaping of structures driven by their configuration into relations of compatibilities, contradictions, complementarities. This perspective of coevolution emphasises the need to understand the complexity of alignment as the basis of the ecosystem concept. Together these tendencies illustrate that service ecosystems are complex reflections of their history and emergent trajectories of their conjunctive causes rather than simple progressions or restructuring. Finally, boundaries are shown to be important structural features within the service ecosystem. The findings point to boundaries as both barriers that reinforce separations and as porous intersections that enable diverse connections. Boundaries are generative features and shape a range of relations and structures, including practices, interactions, roles, relationships and institutions.

- The response to the third research question is able to build on the previous two. In overcoming conflation through research question one and building an understanding of the

features of the service ecosystem in question two, the third research question provides insight into important yet under-theorised properties of service ecosystems. The findings have established the co-constitutive nature of change and stability; the differentiated roles of history and the basis of positive feedback in path constitution; the differentiated and powerful nature of space and time as multi-dimensional features, and; the need to account for multicausality and contingency grounded in the nature and interplay of multiple levels and multiples dimensions providing.

These points of discussion emerge from the mechanisms derived from the empirical research and the foundation this theorising has in the analytical framework and the metatheoretical propositions and conditions. Subsequently, the discussion has provided the platform to conclude with reflections on the central objectives of this thesis. The findings and discussion have provided a context of justification for the task of metatheorising directed towards offering an overarching lens grounded in connecting social ontology to an analytical framework and the process of theorising. Moreover, these have provided new theoretical insight and sources for explanation regarding how service ecosystems develop through time, experience change and stability and produce different outcomes. Chapter nine will reflect on the theoretical and practical implications of the research and expand on the thesis' conclusions regarding these overarching objectives.

Table 14 Summary of Discussion

Research Question	Area of Contribution	Core Issue	Basis of contribution
How does a critical realist emergentist metatheory contribute to an understanding of service ecosystems?	Conflationary Theorising	The tendency to collapse the diverse and separate structures and properties.	Emergent relationality considers the differentiated and irreducible nature and properties of different structures, focussing on their configurational nature. This overcomes the one-dimensional theorising that is generated and sustained by conflation.
		The inability to capture forms and effects played out over time.	Processual intertwinement of being and becoming sets the basis of diachronic emergence and the accretion of structure over time, emphasising the 'external structural moment and the necessary and efficacious conditions for action and interaction as causes of events
What mechanisms can be identified and how do these illustrate structural features and tendencies within service ecosystems?	Understanding change	Change as a concept and its epistemological basis are fundamental and unresolved questions.	Change is a tendency of multi-rhythmics – causal processes defined by the coalescing and converging trajectories in structures driven by multiple mechanisms creating emergent spatio-temporalities. The loci of conditions of change are emergent and tied to multiple processes.
	The mechanism of coevolution	The account of coevolutionary processes and the nature of multiple dynamics that interact with one another over time is limited.	Coevolution lies in the relationships the mechanisms create between different structures establishing compatibilities, contradictions and complementarities. This view of coevolution highlights indeterminate, emerging, amplifying and recursive tensions and interactions across time and space.
	The nature and role of boundaries	Boundaries have had limited discussion in the service ecosystem literature.	Boundaries are both separations and intersections that enable diverse connections. Boundaries are generative structures and are dynamic and multi-dimensional in terms of being material, temporal, symbolic and social.

How does the use of the analytical framework and the identification of mechanisms contribute to addressing those omissions and under-researched features generated through conflation?	Stability and Change	Assuming that stability and change are antithetical serves to obscure the continual processes and outcomes that characterise progression through time	Recognising the stratified and differentiated nature of service ecosystems allows for the intertwining of stability and change as co-constitutive and mutually reinforcing, rather than negating and displacing one another. Stability and change are also conjunctive and enabling but not simple distinctions between periods of stasis and change.
	Process and History	Research often fails to capture context as created by the history of past interactions and events and falls into static 'snapshots' or decontextualised micro-level or singular perspectives.	Path constitution recognises the intertwining of creation and dependence through the conditioning of diachronic emergence and layering of structure and the contingency of the becoming of structure captured in the complexity of interaction driven by the condition of emergent relationality. The stratified and differentiated nature of structures reveals the different dimensions of history, reflecting the powers of levels of organisation and the subjective, intersubjective and objective dimensions
	Time and Space	Attention is needed to investigating the complexity and role of temporal and spatial features beyond treating these as 'context'.	Time and space are seen as structural features, allowing their different and multiple natures to be identified and implicated in the production of events and interactions. Multiple temporalities and spaces manifest in different geographies, positions, relationships and cognitive representations, shaping experiences, interactions and ideational, social, and material features.
	Multi-levelled/ dimensional phenomena	Service ecosystems invoke a range of levels of analysis and multileveled phenomena and the existence of subjective, inter-subjective and material features.	Interlevel causality and the interaction between different dimensions provides the true nature of the complexity of service ecosystems and their structure and organising. Research should not falsely bracket multi and holistic causality, rather aiming to integrate the causal efficacy of co-constitutive levels and multi-dimensional features without collapsing or conflating their presence and potential power.

Chapter 9: Conclusions - Theoretical and Practical Implications

This chapter summarises the central implications of the research, reflecting the stated objectives, the responses to the research questions and the empirical findings. Firstly, the theoretical implications will be addressed by reflecting on the objectives. Practical implications will then be provided before directions for future research and the limitations of the research are considered.

9.1 Theoretical Implications

The conceptualisation and findings of this study serve as a critical, alternative and corrective extension to the literature developing and applying the service ecosystem concept. In discussing the theoretical implications, this section will reflect on both of the stated objectives: the offering of an overarching lens and the actualisation of this lens in the study of service ecosystems.

9.1.1 *Offering an overarching lens grounded in connecting social ontology to an analytical framework and the process of theorising.*

This thesis aimed to develop its contribution through problematisation, rather than gap spotting (Alvesson & Sandberg, 2013; Sandberg & Alvesson, 2011). As the service ecosystem concept becomes an influential unit of analysis and a set of assumptions describing the world and how it may be explained, the concepts metatheoretical foundations are open to critical examination. Therefore, a central contribution of this thesis is the development and subsequent application of a set of metatheoretical propositions and conditions which inform an analytical framework for the study of service ecosystems based on a critique of the assumptions informing the literature to date. This contribution reflects a critical stance to the existing literature while also drawing from Vargo and Lusch's (2017) own call for further interconnected metatheoretical and midrange theoretical work addressing service ecosystems. Moreover, in questioning some of the accepted framework and assumptions, this thesis responds to others scholars who have called for the incorporation of different perspectives and research problems, particularly

outside those of the central SD-Logic figures (Aarikka-Stenroos & Ritala, 2017; Hietanen et al., 2018; Leroy et al., 2013).

In considering interaction, change, stability and structure in service ecosystems, a critical realist and emergentist metatheory has been offered reflecting a bricolage of scholars (Archer, 1982, 1995; Donati, 2010, 2015; Elder-Vass, 2007a, 2010; Mingers, 2014). Within this framing of critical realism and emergentism, this thesis has given necessity to synchronic and diachronic emergence captured in the processual, differentiated and stratified nature of the social world. Fundamentally, this position is built on recognising the causal efficacy and constitutive role of relations within entities, properties and powers that subsequently exist as emergently stratified structures. The central change is grounded in shifting the understanding of being-in-relation, and the nature and reality ascribed to relations. The move is away from the social world as a space 'containing' relations, to relations as the very tissue of that space and therefore constitutive of the formations it takes on. Relations are no longer, therefore, reflections of actors, and their actions within dyads and interpersonal relationships or used to express particular positions in a social system. Rather, relations are an irreducible ontological premise distinguishing and connecting entities in a relative way, bringing them into existence as particulars and establishing their powers and properties. It is this basis that allows the conceptualisation of stratified planes of organisation with powers and properties internally dependent but sui generis and irreducible to their constituting entities. Subsequently, this thesis has offered a unique perspective on the structure of service ecosystems, how they ordered and formed and how this is influenced and changed.

The core set of metatheoretical propositions that have been developed from this integrative relational and ontological realist basis allows the assertion that service ecosystems are real, emergently irreducible multi-planed entities. This perspective provides for emergence in cause and form, reflecting not just an organising heuristic but referring to levels of differentiated and irreducible interpenetrating structures, in the process of structural being and emergent becoming. Subsequently, this foundation overcomes the tendency to collapse the necessary complexity of the synchronic composition and ignore the cumulative development and the temporally and spatially stratified nature of service ecosystems as complex multi-level systems. The setting of this metatheoretical foundation overcomes the central issue of conflationary theorising, which the thesis has argued is detrimental to achieving the aims of the service

ecosystem concept and generative of a number of key under-researched and theorised areas within marketing and service research.

Thinking in this way opens up the incorporation of a greater range of complexity and reflects a view of service ecosystems as regulated and transformed by various evolving mechanisms emerging from physical, mental, material, and social levels of reality. This view is opposed to collapsing or aiming to reduce these features into a single modality, whether that be practices, institutions or network interactions. The integrative position set out in the metatheoretical conditions allows an expanded range of concepts which may be invoked in the explanation of service ecosystems as totalities of internally and externally related relations and structures. The value of this contribution lies in providing the necessary metatheoretical unity and theoretical pluralism to provide fundamental compatibility and integration to the concepts and ideas used in considering subjective, intersubjective, material and symbolic aspects and at the micro, meso and macro levels of research. As a basis for theorising, this underlying structure allows research to move away from one-dimensional approaches and fill reality back up with its unity-in-difference. This approach is then actualised in the search for mechanisms which are built on the re-assembly of the different powers, properties and presence of entities, actions and structures. Explanatory models derived from this approach reflect the indirect and mediated link between the objective and subjective dimensions of social life provide for the socio-organisational world of discourses, structures, relations and networks as real and inherently variable and messy. This approach opens up research to the calls for interdisciplinary and transdisciplinary work in SD-Logic and the service ecosystem concept (Gustafsson et al., 2016), while working towards a view of the 'real' through evaluating and comparing the explanatory power of different theoretical explanations which most accurately represent the complex reality, outside of the artificial boundaries or constructions of particular frameworks.

The integrative approach to theorising and the presence of a common reference metatheory responds to the lack of integration in practice theories (Nicolini, 2017; Schmidt, 2018), institutional theories (Edwards, 2016; Thornton et al., 2012) and network theories (Azarian, 2010; Djelic & Sahlin-Andersson, 2006), and their competing claims and opposing assumptions (Beckert, 2010; Edwards, 2016). Similarly, it allows research to move away from the conceptual stretching and diluting that comes with trying to squeeze complex phenomena and multi-dimensionality into a singular focus on 'institutions' or 'practices' (Ahrne & Brunsson, 2011; Alvesson & Spicer, 2018; Edwards, 2016; Fleetwood, 2008a; Suddaby, 2010).

By expanding the range of concepts which may be invoked in explanation, this improves the opportunity to reduce the vagueness of concepts and their overextension and possibly build more innovative and reflective concepts and explanations. This is important for service ecosystem researchers as they draw from other research fields - for example, from institutional studies in organisational studies, where a copious amount of research on the role and nature of institutions already exists (Alvesson & Spicer, 2018).

This contribution also feeds into a number of broader concerns in the surrounding literature. Firstly, a core issue surrounding the ecosystem concept across the different streams offering an ecosystem metaphor/model/concept, has been: what is unique about this perspective and does it add useful explanatory power and understanding? (Aarikka-Stenroos & Ritala, 2017; Holmqvist & Diaz Ruiz, 2017; Oh et al., 2016; Valkokari, 2015). The proposal that service ecosystems are existing social objects responds to this issue. The perspective advocated in this research is to address a multi-dimensional and multi-levelled system existing in a larger environment incorporating individual, organisational, network, institutional fields and any level of emergent structure, as emergent and subsequently interplaying levels of organisation. Moreover, the notion of rhythmics as the basis of process is central as is the configuration or alignment of multi-dimensional and multi-levelled structures in generating the complex interchanges that go with the realised, part realised or blocked nature of structural powers and therefore events. This perspective, paired with the analytical approach laid out, provides a basis for the value of the ecosystem perspective, beyond just a heuristic device or synonym for interdependence or substitutable for a network or other concepts.

Secondly, the emergentist perspective advocated in this thesis makes a contribution to the debate on substance versus process approaches, which is gaining traction in the marketing literature (Giesler & Fischer, 2017; Lowe & Rod, 2018), following development in sociology and subsequently organisational research (Chia, 1999; Hernes, 2014; Tsoukas & Chia, 2002). As noted, the emergentist perspective recognises the intertwined nature of both being and becoming. The argument for the reality of structures and the subsequent stratified nature of the world allows us to go deeper into the conditions of phenomena rather than suggesting there is only events and experiences. The value of this resolution is that the history of past interactions, interconnections, and events is acknowledged as a conditioning broader socio-historic totality, looking beyond the here and now and the privileging of surface experience, intentionality and the ahistorical fallacy. Finally, this thesis contributes a sustained engagement with a critical

realist approach, which has few examples in marketing and service literature (exceptions include Easton (2002, 2010), Ryan, Tähtinen, Vanharanta, and Mainela (2012) and Thomas (2018)) and also responds to calls for reflection on the metatheoretical and critical orientations and foundations of theories in marketing (Peters et al., 2012; Tadajewski, 2004, 2008).

9.1.2 *Using the overarching lens to develop new theoretical insight and sources for explanation regarding how service ecosystems develop through time.*

Using the overarching lens in empirical and analytical research is important to justify and develop its contribution. The research process and the findings offer conceptual and empirical contributions which build on those under-researched areas noted in Section 4.3.2 and respond to key questions regarding the means of emergence and evolutionary dynamics in service ecosystems (Banoun et al., 2016; Barile et al., 2016; Kleinaltenkamp et al., 2018; Reynoso et al., 2018; Vargo & Lusch, 2017). It is the search for mechanisms that informs these contributions. Seeking mechanisms is premised on both the metatheoretical conditions and the critical realist assumptions underlying this research - which require going beyond the activities and experiences of actors and the networks of interaction characterising events and into the ways of acting of structures. In taking this approach, four mechanisms were identified, which provided explanations of the morphogenetic and morphostatic processes of the case service ecosystem as it developed across time.

These mechanisms, as noted in Table 12, relate to particular properties of relations as ontic features which illustrate the way they coalesce in shaping the trajectory of the service ecosystem. Finding these different generative natures of the mechanisms contributes empirically informed features to service ecosystems, which help explain adaptation and evolution. For example, compression was seen to exist in the state or nature of relations and subsequently, the structures they formed, illustrating the intertwined multi-dimensionality of service ecosystems. Compression was seen to be explanatory in the material conditions of infrastructure, the affordances of technology, the relational distance and actor's subjective experiences of time and sense-making strategies. This multi-dimensionality illustrates service ecosystems as multi-planed wholes which are complex configurations of physical embodiment, social and relational situatedness, cultural constructions and subjective identities (Bhaskar et al., 2010a).

The modes of alignment referred to the generative nature of relations and the structures they formed, interacting and being brought into contact. This mechanism illustrated the coevolutionary pressures different structures produced in relation to each other and how relations can exist across different levels. Moreover, the modes of alignment demonstrated the processual nature of the reconfigurations of relations and structures as their directive power is realised, part realised or blocked.

Ecotonal coupling illustrated the generative and emergent nature of tension and boundaries in creating new positions, new ties, new resources and new fields of interactions. Finally, refraction has illustrated the causal efficacy of the 'massive presence of the past and the outside' and pointed to the different roles of history, the cumulative development that shapes conditions of action and the mediational nature of different levels of structure.

The thesis illustrates that new theoretical insight and sources of explanation come from connecting social ontology to an analytical framework and the process of theorising. These findings are built on the directed effort to look below experience and the manifestation of particular events, focussing on the postulation of mechanisms which address the ways of acting and the tendencies of structures in service ecosystems. This approach allows the research to suggest their applicability and generalisation to other service ecosystems outside the case where similar conditions, structures and relations are present (Sayer, 2000). As the diversity of events and experiences attributed to the different mechanisms show, postulating mechanisms as explanations is built on this deeper view of generative structures, not decontextualised generalisation of experience or predicting successive patterns of events. Given, the common nature of many of the conditions that underlie the case, the mechanisms themselves stand as useful contributions to take forward.

The methodological approach taken to analyse and interpret the data and subsequently postulate these mechanisms also provides a further contribution to both the marketing and service literature as well as directly to the study of service ecosystems. There are consistent calls in this literature to develop new approaches to the study of systems and deal with greater complexity in research setting (Aarikka-Stenroos & Ritala, 2017; Vargo et al., 2017; Wilkinson & Young, 2013). Similarly, the empirical development of the service ecosystem approach is limited and emerging studies reproduce existing approaches (e.g. Koskela-Huotari et al., 2016a). The retroductive methodological approach and the specific accompanying data

analysis strategies and tools contribute to these calls and build on developments to case and process-based research in the marketing and service literature (Aaboen et al., 2012; Bizzi & Langley, 2012; Halinen et al., 2013; Kohtamäki & Rajala, 2016). Integrating the methodological approach with the social ontology, analytical framework and process of theorising establishes an integrative and coherent structure to analysing data and building theory and explanations. As a result, the approach developed and applied in this research extends efforts underpinning the service ecosystem concept to work towards multi, inter and ultimately trans-disciplinary bodies of knowledge which reflect both the reality and an awareness of the complexity of service systems (Reynoso et al., 2018).

The findings also offer empirical illustrations that are useful for the study of service ecosystems. The call to study time and space in marketing research is increasingly gaining attention (Castilhos et al., 2017; Halinen et al., 2012; Lowe & Rod, 2018; Törnroos et al., 2017), yet these features remain under-researched empirically and have not, thus far, been specifically addressed in service ecosystem literature. The findings illustrate the multi-dimensionality of space and time. Time is shown to play a role as both a forceful property that influences agency and that may be used as a resource. Similarly, the role of proximity and distance in cognitive, relational, institutional and material space illustrated as well as the generative nature of differentiated space in, for example, allowing actors to enact new roles.

Similarly, there is a call across the marketing literature to study process without falling into simple stage-based models, abstracted and isolated changes in action or comparisons between discreet static descriptions (Buttriss & Wilkinson, 2014; Giesler & Fischer, 2017; Lowe & Rod, 2018; Nenonen et al., 2014). The way the proposed mechanisms are found within different properties of structures and relations and the way in which they act conjunctively as well as coalesce, across levels and dimensions, provides support for the idea of rhythmics as a more nuanced approach to the study and understanding of processes and change. This view of change and the view of coevolution contribute to understanding of plasticity suggested by Nenonen et al. (2014). These views advance the notion of plasticity by emphasising the need to develop an account of the conditions that lead to these loci of plasticity and demonstrate the complexity of spiral-like change processes that are indeterminate, emerging, amplifying and recursive tensions and interactions.

This view of change and coevolution processes contributes to the, much emphasised, institutionalisation process in service ecosystems (Jaakkola et al., 2019; Kleinaltenkamp et al., 2018), by recognising the cumulative and emergent nature of change, rather than presenting a linear and teleological process of directed institutional work or the simple replacement of one set of institutional arrangements with another. The findings, particularly, demonstrate the shifting modes of alignment that take place as change is enacted, even when there is a clear overarching strategy, for example, in enacting the ICT Strategy and Action Plan. The institutionalisation process requires the alignment of the perceptions of different actors, social networks and socialisation spaces to encourage necessary interaction and dissemination and legitimisation of new logics. Moreover, particular actors, roles and governance positions needed to be enacted and accompanying symbols and representations (e.g. planning documents and contracts) and a broader alignment with the whole institutional setting, including the necessary laws to allow new forms of procurement and the broader shift to as-a-service models in the technology market.

Unlike other theories and approaches, the underlying metatheory does not fasten on to particular features, a priori, preventing exploration of the causal efficacy of a range of structures and relations. However, it also points to the processual and emergent nature of change and coevolution as relations and the configuration of structures are changed creating new modes of alignment that must be dealt with as the trajectory of the system unfolds. This is important to understand in transitions where there are changes both within and between structures, as the relevance and efficacy of different structural features, powers and properties change over time as the alignment in structures shifts and are instantiated in different types of interactions.

Finally, the empirical application of a critical realist and emergentist overarching lens contributes to the calls for researchers to demonstrate the value of an emergentist account in practice and explore the use and development of critical realist ideas within applied settings (Elder-Vass, 2008; Price & Martin, 2018).

9.2 Practical Implications

The approach to understand service ecosystems developed in thesis and the consequent findings have relevant implications for actors, particularly those receptive to the ecosystem view, enabling them to see beyond their organisations and perceive multiple tiers of direct and

indirect dependence and interdependence. Developing strategy in complex service ecosystems requires an understanding of these, often opaque, linkages and the ability to think both vertically and horizontally in terms of their socio-technical embeddedness. The critical realist emergentist view underpinning the research and its outcomes has an important role in this by arguing that the structural complexity and the interdependence and dependence that practitioners feel and experience, driving their interest and understanding of 'ecosystem' perspectives, is real. This systemic nature is not an illusionary or divorced theoretical construction or buzzword, but rather reflects ever-denser and richer networks of connection, collaboration, and interdependence and the complex web of relations and structures that underlie the surface experience.

Understanding embeddedness is key to both a well-informed view and approach to managerial agency, as strategy and action is situated in a host of conditions and collaborative and interdependent relationships. Actors in these systems need to have a realistic perspective, alongside a realistic academic source of insight, into the extent and nature of managing and controlling these structures. This reflexive outlook tempers the calls in business press and academic literature for hyperdynamic organisations and market shapers, suggesting that understanding and responding to conditions is key. This is not to fall into a pessimistic determinism or functionalism, but rather a recognition that the conditions in which action takes place are immediately existing, given and not easily created. Those who can create the best alignment and respond most reflectively to feedback from the structures in which they are embedded will be most effective. This reflects the stronger conception of structure and organisation that underpins this thesis. Moreover, it reflects calls in service research for the development of 'T-shaped' professionals, who have specialised vertical competences but also horizontal capabilities to address various, extended, multisector, dynamic contexts (Barile et al., 2016).

A central concern of uncovering mechanisms operating in the development of service ecosystems is to improve the understanding of the types of structural features that encourage certain changes and stabilities that can be recognisable. Creating a better understanding of these trajectories and pointing to particular structural configurations and events may improve actors' abilities to identify windows of opportunity and plan for particular pathways and consequences following different interventions.

The case illustrates the importance of timing and structural conditions when intending to influence service ecosystems. As noted the government reform efforts in the period of 2010 to 2017 were not the first attempts to create similar changes in the public sector. The mechanisms offered insight into the conditions that created the window of opportunity, including the compressive destabilisation of the GFC, new technologies and capabilities that destabilised the surrounding environment and actor's practices as well as allowing the integration of the ICT transformation with the broader reform under the BPS programme. However, it also reflects the position of the system in its trajectory, allowing the refractive role of history and broader changes in the social and technological environment to come into play. These included past failing reforms that left traces of structural change and directed future change efforts and narratives, a maturing technology market as well as the exhaustion of much of the governments' technology infrastructure and capabilities. For actors, this means understanding rhythmics and recognising that possibilities for effective agency and change often rely on the coalescing of different processes of structural change. While exogenous shocks have always been considered important triggering events (Fligstein & McAdam, 2012), it is, however, how these shocks coalesce with other structural processes and how they are reflected (or refracted) throughout the system that is important. Service ecosystem change needs to be seen as a cumulative process, and while there may be sensitive periods in which destabilisation is most readily identifiable, the processes in between these are crucial for the conditioning of the system.

The proposed refractive tendencies of service ecosystems should also encourage decision-makers to look back in time to search for possible causal dynamics that may be shaping present trajectories as well as pinpointing lessons from similar structural changes. Firstly, organisations should understand the different role history plays in their present and future conditions. History, as part of the diachronic emergence of any structures, comes into play in a number of forms. The case illustrated the role of path-dependent lock-in to supplier relationships and lack of investment of resources and capabilities as well as the building of a precedent for agency and decision-making autonomy that all needed to be overcome. However, it also showed how history can be used to make sense of current reform efforts and may be used to create a narrative of future trajectories or to mark changes, signalling different periods. Too often change is seen as moving away from the past but the past and history play an important role.

Similarly, understanding how forces and different exchanges between structures are mediated and experienced by different actors is also an important point of reflexivity. In the case, it was noted that CEs and agency ICT managers took previous guidance from central government actors on public cloud as a blanket rejection of its adoption, which subsequently had to be undone to enable adoption for these services. Similarly, there was significant readjustment and continual tension in bringing a true 'as-a-service' model to government actors which was much more developed in the private sector, where its adoption was not refracted through the institutional and governance layers of structure that persist in the public sector. It is important to move away from the depiction of change as an invariant process affecting all actors equally and focus on understanding different ramifications depending on an actor's positioning in a multi-layered system. As this example also suggests, this consideration is particularly salient for the interactions between the public and private sectors, where the institutional infrastructure and the conditions that actors, across this divide, face are often unique and conflicting.

For organisations looking to change, one-off change is no longer sufficient. The structural complexity of service ecosystems, their open nature to their environments and the separate agency across their interdependencies mean that their structural order will be subject to frequent reciprocal adjustments and interactive non-linear relationships with multiple feedbacks. Transitions need to be seen as open trajectories, while change and transformation require strong visions and outcomes. Transitions involve iterative shifting assemblies of relations and structures which produce new interactions and new compositions. Consequently, change efforts need to be directed towards enabling, rather than prescriptive, changes. Actors should intend to create the conditions for the outcomes they are working towards rather than expecting linear shifts. This perspective is at the centre of the morphogenetic cycles which advocates the processual separation of conditions and outcomes. This is exemplified in the case as the development of the government-supplier relationships and supporting governance structures worked iteratively towards a more dynamic as-a-service model. The changes in these interactional structures required a continuously evolving roadmap of alignment between technical knowledge and capabilities, values, business models, mission, governance structures, incentive structures, formal regulations, laws, standards, negotiated actor roles, new actors and relationships.

The complexity of shifting modes of alignment, the dynamic structural order and the host of multilateral interdependencies in a service ecosystem are particularly problematic for traditional notions of leadership. Firstly, given the networked nature of relationships, leadership has a more distributed character requiring structures of governance, management and monitoring. Structures that define the roles of leaders need to be in place and enabling conditions need to be developed that imbue the position with necessary power. In the case, the importance of a hierarchical structure of reform that sat above the separate CEs was important as it served to channel their collective agency, similarly legislative changes and shifting of decision rights needed to be put in place for the GCIO role to be effective. Moreover, the different and changing modes of alignment offer insight into the different nature of leadership and the need for coevolving modes. For example, the leadership style of the GCIO over agencies evolved from a strong hierarchy, controlling, mandating and overseeing ICT decisions, to a more collaborative stance through the partnership framework emphasising participation, commitment and cooperation. A similar style of leadership development happened as the GCIO engaged with the supplier market, initially pursuing tension, aiming to reorient relationships and service provision and then moving again to a more collaborative and cooperative stance pursuing shared goals and innovation. The role of a leader as part of a structure seeking independence was also evident in the service innovation group which required leadership that was able to engage in decoupling from institutional pressures and pursue risk and initiate creativity.

Finally, with the continued convergence of technology (Song, Elvers, & Leker, 2017) and the force of compression illustrated in this research, ecotone coupling should be of interest to actors. 'Service ecotones' can play an increasingly important role in the future of innovation and enhancing the management and coevolution of service ecosystems. This type of coupling provides opportunities for entrepreneurs and organisations to explore business models built on inhabiting ecotonal areas and serving as part of the ecotone's mediating role between fields that have tensions. Ultimately, this can be a source of competitive advantage as an emerging niche and facilitate the development of agile business models. Ecotones may also be a useful place to incubate innovations away from the pressures of open ecosystems, allowing for agile development and input from across different fields. Ecotones may allow organisations to focus less on ownership and control and more on developing capabilities and levers to maximise interactions with external systems. The shift to as-a-service models in the public-sector ecosystem is evidence of this change. Finally, the idea of ecotonal coupling and enacting

ecotonal spaces may be a useful consideration for connecting the private and public sectors providing new ways of coming together to innovate.

9.3 Recommendations for Future Research and Limitations

This thesis in offering a unique set of grounding conditions draws on an illustrative and exploratory theory-building case study. The nature of this thesis' as grounded in offering an overarching lens and its use in the contextualised explanation of a case study lend itself to further exploration and application. The research derives its mechanisms and support for the analytical framework and metatheoretical approach from a single case study. Firstly, this means exploring multiple service ecosystems, using the framework and developing further insights into the mechanisms at work across different contexts and systems. The case was sampled purposively for both its depth and richness in relation to understanding service ecosystems and contemporary issues facing a number of actors particular the public sector and private sector actors, particularly in and interacting with the technology market (Gibbert & Ruigrok, 2010). Subsequently, other research settings provide important points of comparison and extension. Moreover, the proposed mechanisms uncovered in this research lend themselves to further insight and potential application to other empirical settings. This includes seeing different events and outcomes as well as similar patterns in the operation of these generative mechanisms. These avenues of future research will extend the generalisability of the theoretical approach and findings of this study.

The perspective of theory development advocated in this thesis builds on the assertion "if a defensible causal explanation has been produced in one case then the constituents of that explanation provide a basis for developing theory beyond that case" (Easton, 2010, p. 127). The concern is not generalising findings through statistical inference from a particular sample to a broader sample population (Easton, 2010). Rather the purpose is to provide causal explanations of the mechanisms at work in a given setting to obtain insights to explain events observed within the specific context of a different setting (Wynn Jr & Williams, 2012). Consequently, recognising that observation is fallible, future research could also turn a critical eye on these explanations - "only by seeing the same data through the different theoretical lenses employed by different researchers, can understanding of some of the features of the real world occur" (Easton, 2010, p. 123). "By comparatively evaluating existing arguments, we can

arrive at reasoned, though provisional, judgements about what reality is objectively like; about what belongs to that reality and what does not " (Archer, Collier, & Porpora, 2004, p. 2). This avenue for future research would also reflect the trade-off between investigating phenomena in breadth or depth. The present study used an intensive case-study design focusing on a service ecosystem, identifying the mechanisms operative in this system. Subsequently, the focus on depth was directed at the service ecosystem, which required a breadth of actors and events, so the depth of each actors experience or the specifics of certain events or process has necessarily been sacrificed. This is an unavoidable limitation but establishes the basis for further research to develop and conceptually refine the proposed mechanisms and support for the analytical framework and metatheoretical approach.

This thesis suggests that service ecosystem research could benefit from more cross-disciplinary theoretical work because ecosystems include multiple interactions and links (e.g., technology, cultural, and business interactions). While the insights of institutional theory are a good example of this, there are many avenues for explanatory concepts and devices across the sociology of markets, organisational studies, socio-technical studies, sociology and other domains that will provide insight into the multi-level and multi-dimensional nature of service ecosystems. The service ecosystem literature would benefit significantly from a survey of the particular types of entities and structures that can be seen to constitute the structures of the concept, along with relevant examples of their properties and powers and causal tendencies. The use of horizontal literature reviews looking across streams of research (Holmqvist & Diaz Ruiz, 2017), may be an important approach to these reviews. Engagement with a range of theoretical concepts that may offer competing accounts or explanatory devices is also important as it will enhance the process of theorising mechanisms by building more robust propositions by meshing different features into the explanatory schema while also comparing different explanatory arguments. This critical approach opens up the opportunity for researchers to look at similar phenomenon or even the same cases and offer different interpretations, as exemplified by Welch and Wilkinson (2005). Crucial to these points is that new, relations, structures or properties are not simply added on individually as 'turns', for example towards materiality, or as mediating factors – 'the role of social ties in disseminating institutions'. Instead, these need to be integrated into holistic studies of service ecosystems in their multi-dimensional and multi-levelled complexity. Otherwise, derived mechanisms will remain reductions and abstractions and fall towards the underlying structure being emphasised.

The findings of the study also propose areas in which further research could build on this thesis. Firstly, the emphasis on diachronic emergence and refraction point to the need to take history and process seriously in understanding context and the conditions of phenomena. While service and marketing research has often been noted to be contempo-centric and concerned with immediacy (Tadajewski et al., 2014), the different roles of history and the different influence it has, objectively, intersubjectively and subjectively on the present and future trajectories of service ecosystems is an important consideration. Questions within this focus may address the role of initial conditions in the formation of service ecosystems and their subsequent path-dependency or address more specific sustaining mechanisms that allow a service ecosystem to survive crisis.

The mechanism of ecotonal coupling also requires future empirical exploration. The generative nature of boundaries is likely to continually emerge given continued convergence between technology, industries and markets. The conditions under which these areas emerge, the types and roles of actors who come to inhabit these structures and the durability and continuation of these features as distinct areas all require further exploration. Moreover, more specific nested mechanisms relating to the presence of ecotones may be identified, including how new practices, institutions or resources emerge in ecotones and how they may be implicated in or disseminate to the connecting fields. This may include how actors establish boundaries to shield themselves from institutional pressures.

The connection between fields brought forward by compression and ecotonal coupling also highlights the importance of studying interacting fields and service ecosystems. As has been noted in other research streams, studying interdependence and systems, not enough research addresses the relations and interactions between distinct fields or systems and how they might be causally implicated in the changes and stability of each other (Furnari, 2016; Valkokari, 2015). This differentiated but connected nature of structures along with the findings in the case also point to the need to further study the "multiple and differentiated nature" of spaces (Hardy & Maguire, 2010), both in their different features but also how they interact together and the role they play in the trajectory of service ecosystems. This can include multi-dimensional and multiscale natures of space such as physical, social and mental space.

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Appendices

10.1 **Appendix A**

Table 15 Overview of published papers derived during the thesis

Publication	Focus and Relevance
Simmonds, H., Gazley, A. & Daellenbach, K. (2018). Theorising Change and Stability in Service Ecosystems: A morphogenetic approach. *Service Industries Journal*, 38 (3-4), pp. 250-263, DOI: <u>10.1080/02642069.2017.1389908</u>	The paper addresses efforts to consider stability and change in service ecosystems. The paper critiques the focus on institutional theory and structuration perspectives, offering the morphogenetic approach as an alternative for building midrange theory to address the stabilising (morphostatic) and change inducing (morphogenetic) mechanisms in service ecosystems.
Simmonds, H. & Gazley, A. (2018). Marketing Systems: Critical Realist interventions towards better theorising. *Journal of Critical Realism*, 17(2), pp. 140-159, DOI: <u>10.1080/14767430.2018.1454684</u>	Using the tools of critical realism (CR), this paper critiques the omissions in the metatheory of systems in marketing research. The paper argues for the need for critical realist foundations as opposed to the constructivist position currently espoused. The paper puts forward CR to reconstruct a more comprehensive basis for the development of marketing systems theory.
Simmonds, H. (2018). Enabling the marketing systems orientation: Re-establishing the ontic necessity of relations. *Kybernetes*, 47 (10), pp. 1992-2011, DOI:<u>10.1108/K-09-2017-0352</u>	This paper considers a number of inconsistencies in current approaches to the study of systems in marketing arguing these arise based on the absence of a view of relations that supports an effective theory of emergence. In response, the paper develops a set of ontological presuppositions regarding the nature of marketing systems and a subsequent set of epistemic conditions as an integrative metatheoretical position.

Simmonds, H. (2018). Emancipatory marketing and the emancipation of marketing research: A critical realist interpretation. *Journal of Critical Realism*, 17(5), pp. 466-491, DOI: <u>10.1080/14767430.2018.1533156</u>	The paper uses the method of critique situated in the Gödelian dialectic gathering criticisms of marketing research to identify inconsistencies that prevent progress. The paper then draws on Bhaskarian dialectical critical realism and its ontological – axiological chain to offer an integrated ontology, a processual view of the world, a systemic and ecological perspective and a reflexive turn in our research.
Simmonds, H. & Gazley, A. (2018). Service Ecotones: The complex boundary zones of service (eco) systems. *Journal of Service Theory and Practice*, 28 (3), pp.384-404, DOI:<u>10.1108/JSTP-08-2017-0136</u>	The paper addresses the lack of discussion of boundaries and the interfaces between service ecosystems. The paper uses an embedded case study to illustrate how the boundaries between systems can be conceptualised as ecotones. The findings reflect the generative nature of these service ecotones as areas of unique landscapes and diversity of actors and roles, which play a role in the coevolution of the separate service ecosystems

10.2 **Appendix B**

10.2.1 *Decision Explorer Maps*

Figure 7 Overall Decision Explorer map
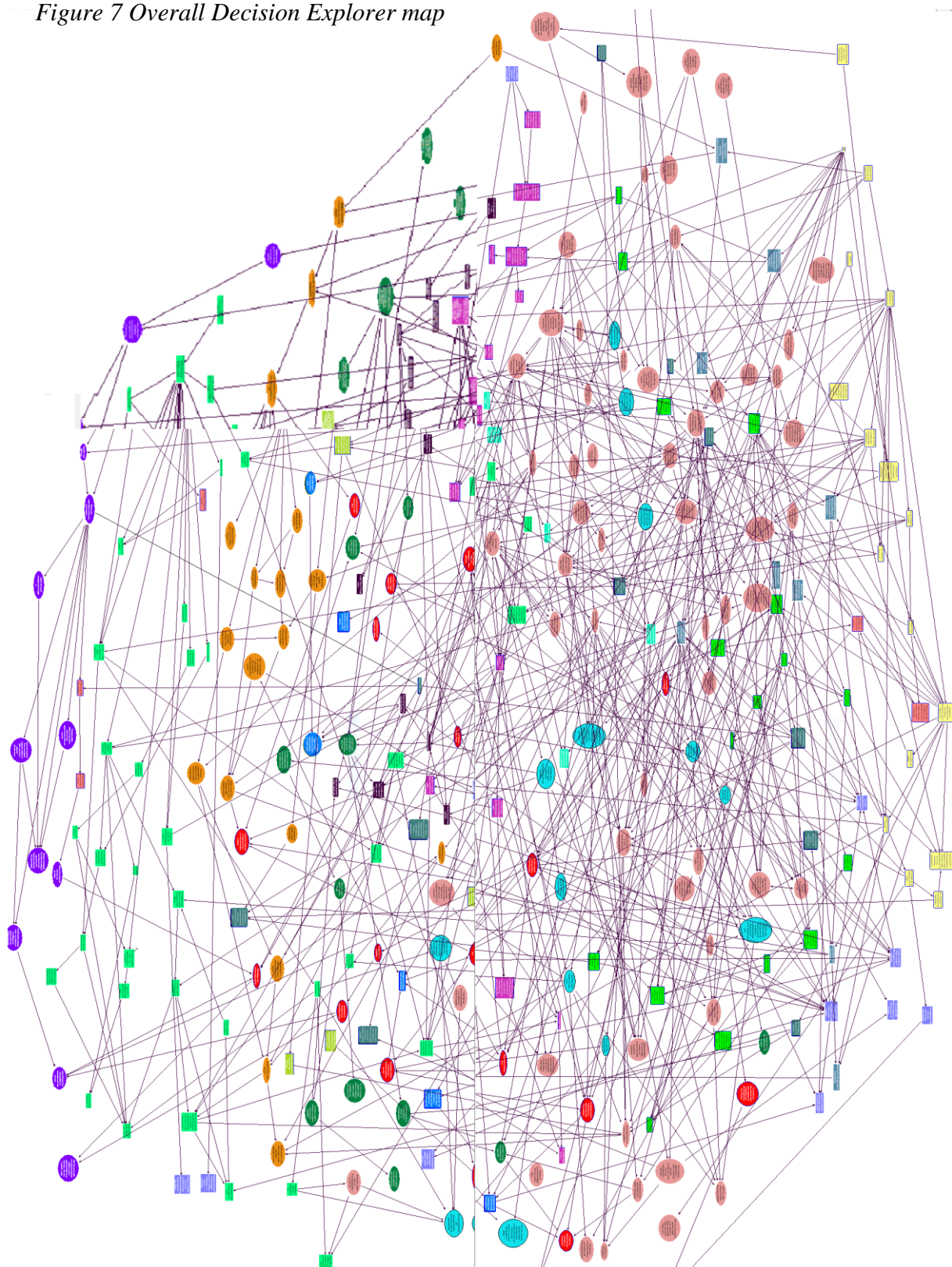
Figure 8 Individual Decision Explorer Map
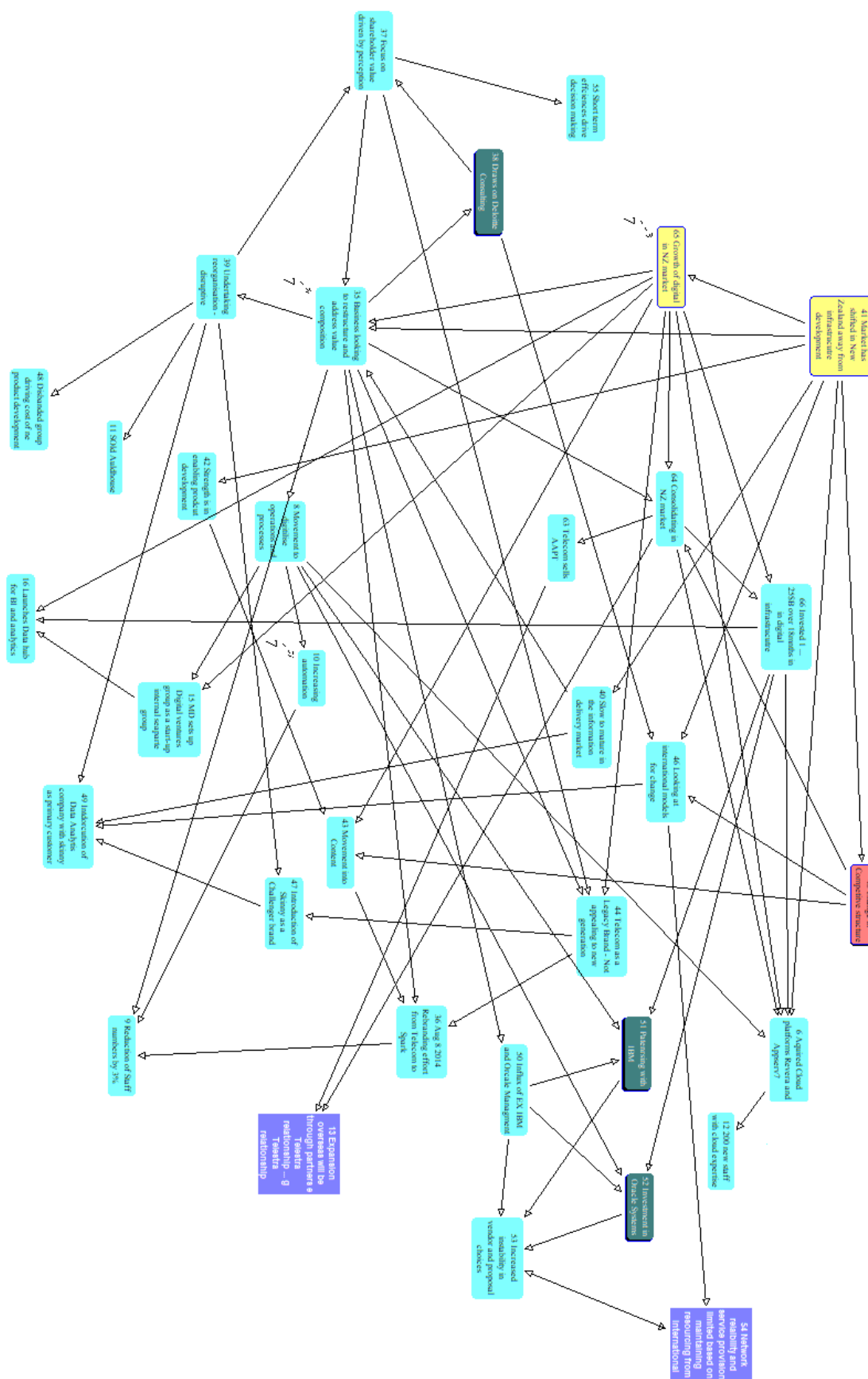
10.2.2 *Event structure analysis in ETHNO*

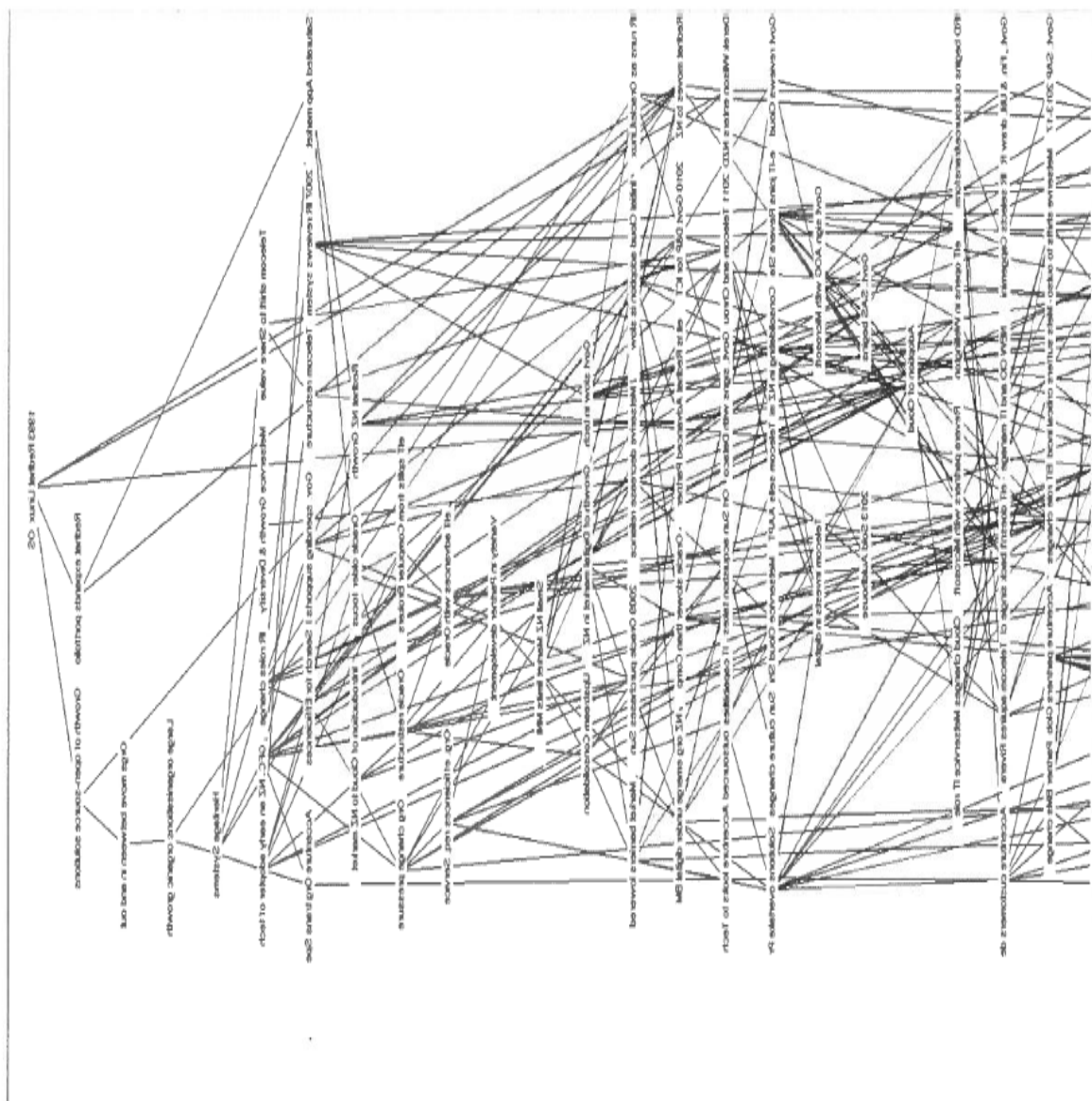*Figure 9 Linking interface in ETHNO*

Figure 10 Composition interface in ETHNO
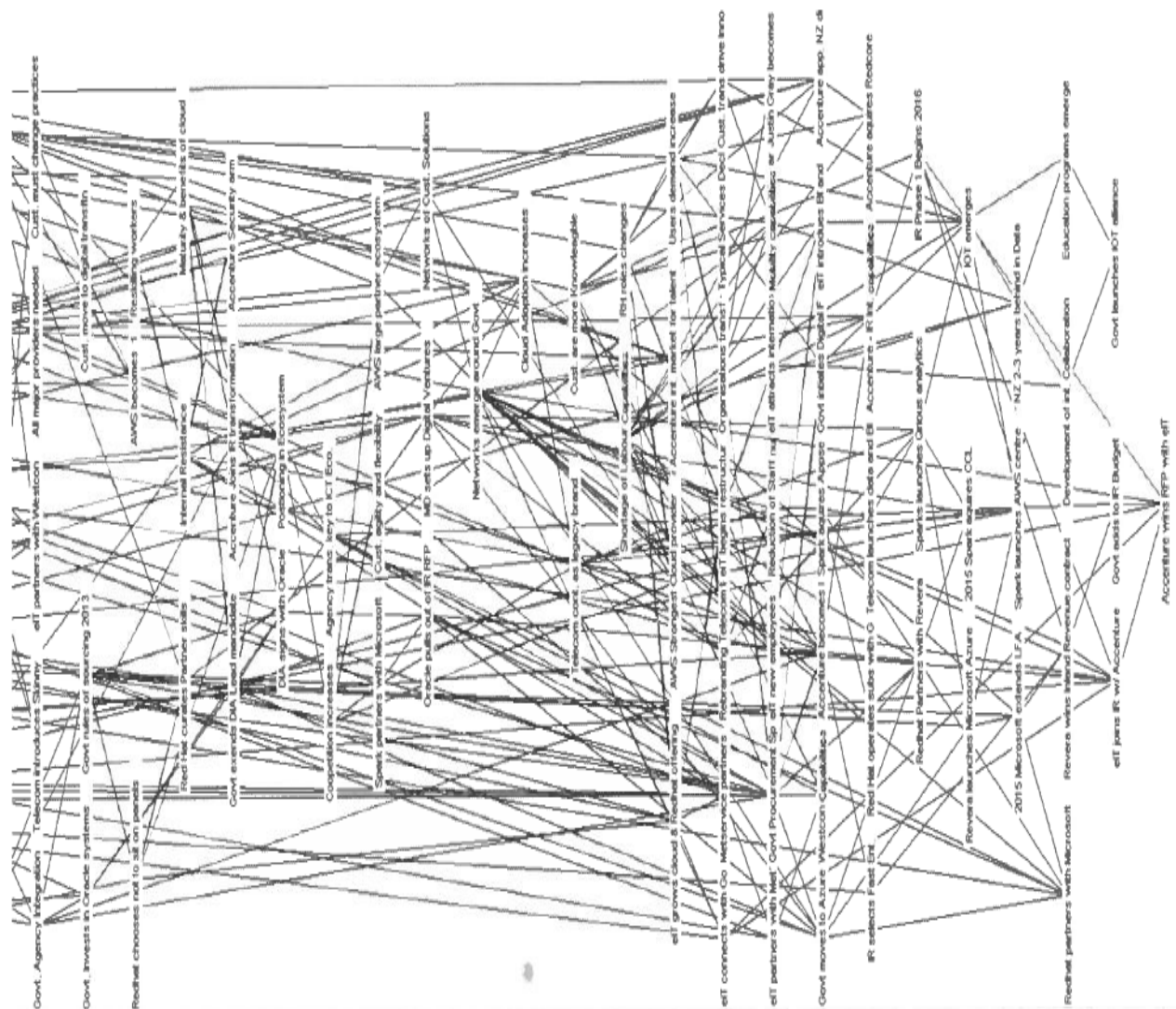
10.2.3 *Event Structure Chart in ETHNO*

Figure 11 Example of Ethno Diagram chart

10.2.4 *Examples of literature used as alternative and sensitising templates for Redescription*

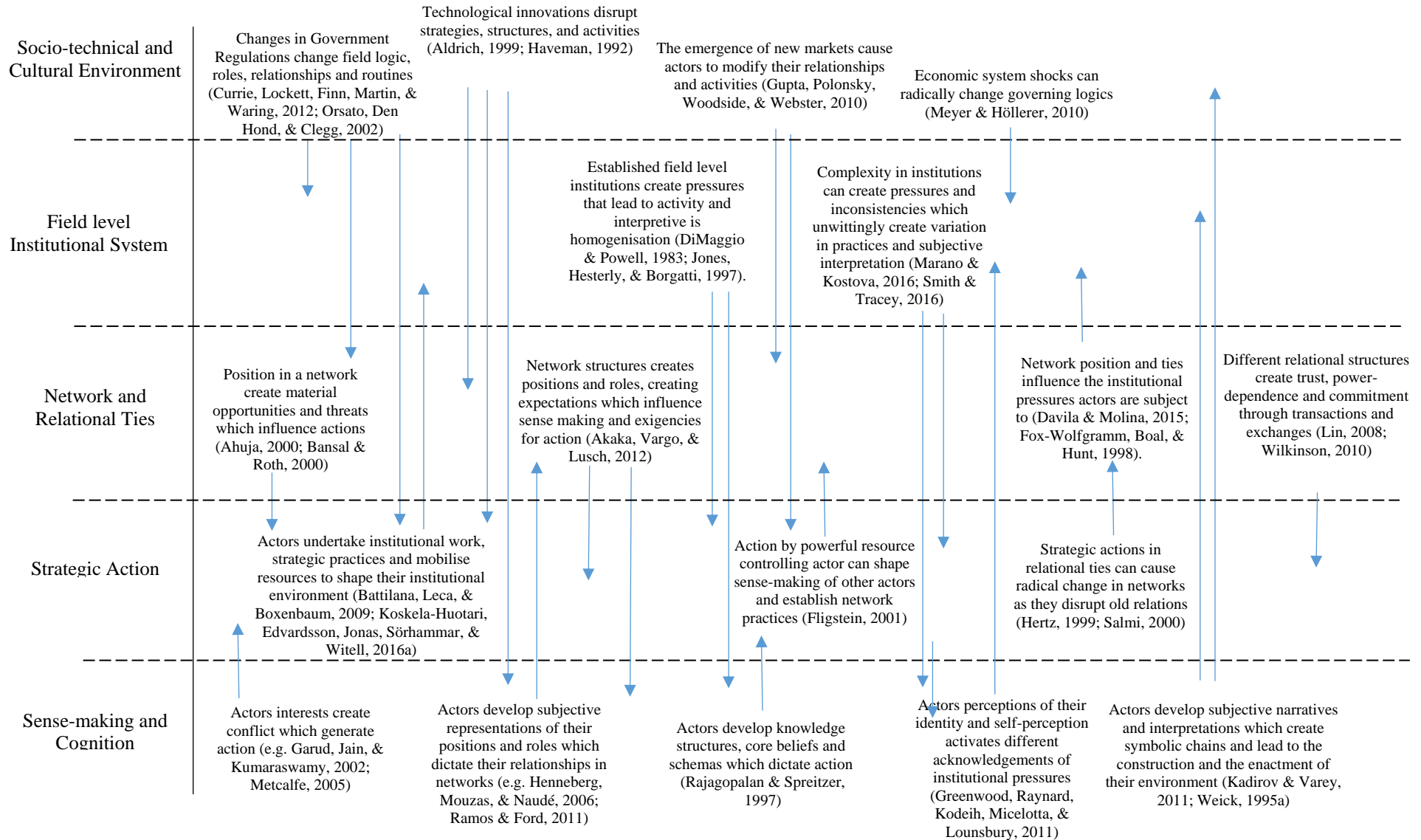*Figure 12 Example of literature used as sensitising templates*

Table 16 Examples of literature used to act as templates for analysis

Framework	Conditions	Powers	Processes
Sensemaking	Actors efforts to imagine alternative futures influence their understanding of the past trajectories and present contingencies (Kaplan & Orlikowski, 2013)	Leaders create narratives to shape other actors understanding of identity (Besharov & Brickson, 2016; Sonenshein, 2010)	Individuals construct collective frames as they interact, and these emerging collective frames, in turn, influence the frames applied by individual actors (Kaplan & Tripsas, 2008)
	Focal issues or events provide the conditions for creating collective sensemaking involves producing narrative accounts (Gephart, Topal, & Zhang, 2010)	Actors use their private and vested interests to create supportive politics in originations (Garud et al., 2002; Metcalfe, 2005)	Sensemaking is created in the conversations between people, and collective sensemaking is generated in an ongoing iterative manner, as actors shape each other's meanings in repeated cycles of sensemaking (Maitlis & Christianson, 2014).
Practices	Roles embody a cognitive repertoire of skills and "scripts" necessary for their proper enactment (Portes, 2010). Roles and their practices exist as expectations of individuals' behaviours identities, and influence individual interpretations of social situations (Akaka & Chandler, 2011)	It is through engagement in the "doing" of work that logics are instantiated and by which any incompatibilities become "problematised." A practice perspective casts novel institutional complexity as "part of the ordinary, everyday nature of work, rather than exceptional phenomena" (Jarzabkowski, Matthiesen, & Van de Ven, 2009; Smets & Jarzabkowski, 2013; Smets, Morris, & Greenwood, 2012)	- Filtering work refers to activities that involve the minimisation or elimination of features of the practice that are incongruent with the new context - Repurposing is the changing of meaning or application of a practice to align with the receiving context - Coupling refers to actors integrating the new practice with existing practices or objects that are already seen as locally legitimate. (Gond & Boxenbaum, 2013)
	Individuals have different abilities to create new or modify practices and is influenced by the motivations and backgrounds of the actors	Social Skill highlights how certain individuals possess a highly developed cognitive capacity for reading people and environments, framing lines of action, and	- Institutional logics are not purely top-down: real people, in real contexts, with consequential past experiences of their own, play with them, question

	(Jarzabkowski, 2008; Jarzabkowski, Balogun, & Seidl, 2007)	mobilising people in the service of these action ''frames''(Fligstein, 2001, 2013)	them, combine them with institutional logics from other domains, take what they can use from them, and make them fit their needs" (Binder, 2007, p. 568; McPherson & Sauder, 2013).
Networks	Member organisations have different ways of doing things (cultures) and/or institutional logics (e.g. approach to decision making, diverging perspectives and priorities), which can make it challenging to agree on essential structures, processes and outcomes (Bryson, Crosby, & Stone, 2006).	Power in business networks can be defined as the ability to manage the perceptions of the other party, the ability of an actor to impose its will on others, the ability to evoke, the ability to influence, the ability of a firm to affect decision-making and/or behaviour, or the ability to control one's own or another entity's range of intended or actual actions (Kähkönen & Virolainen, 2011).	Actor network structure and relationships shape their sensemaking and drive to develop shared understanding and meaning (Bengtsson, Kock, Lundgren-Henriksson, & Näsholm, 2016; Cozzolino & Rothaermel, 2018)
	Social capital is based on attributes of the relationship between individuals, that provide access to information, resources, support and so on (Burt, 2005).	Networks can be a forum to think and act beyond the organisational norm, structure or mandate; to work deliberately in deviation from the standard organisational processes, overtly or covertly, to influence change in systems (Casebeer, Popp, & Scott, 2009; Kapucu & Demiroz, 2011)	- Different types of relational ties influence adaption over time (Schmidt, Tyler, & Brennan, 2007) - Networks can provide legitimacy, attract more resources, and provide capacity to address complex problems. (Gulati, Lavie, & Madhavan, 2011)

Organisational Fields	Organisations that are located at the periphery of a field are less connected to other organisations and can be less affected by institutional relationships and expectations (Leblebici, Salancik, Copay, & King, 1991)	Organisational identity provides a sense of self and meaning, and places one in a wider social context, it allows organisations to claim to be a part of an "institutionally standardized social category", which in turn affects the availability of social, cultural, and material resources (Glynn, 2008; Koçak, Hannan, & Hsu, 2013; Negro, Kocak, & Hsu, 2010).	As specific practices and structures become infused with normative associations within society they become characteristics that organisations adopt in order to gain or maintain legitimacy (DiMaggio & Powell, 1983; Jepperson, 1991; Nielsen, 2001)
	- Incumbents are powerful organisations or groups which have the necessary political or material resources to enforce an advantageous view of appropriate field behavior and definition of field membership on other groups. - Challengers are organisations or groups which define themselves as members of a given strategic action field, but find themselves at a disadvantage in the field (Fligstein, 2013)	Fields as positional systems in which actors compete for various forms of capital influence actors' motivation and ability to act as institutional entrepreneurs (Battilana et al., 2009; Greenwood et al., 2011)	Mnemonic fields provide individual actors with the contents and frameworks of remembering. They define the practices and categories actors use to remember the past, make sense of the present, and imagine the future. Link between the structure and the cognitive system of meanings in place in an organisational field (Coraiola et al., 2018)
Institutional Fields	The ability to claim to be part of an "institutionally standardized social category" affects the availability of social, cultural, and material resources (Negro et al., 2010)	Individuals can mobilise different institutional logics to initiate change and the 'ambiguities and contradictions between logics within a field provide increased scope for change as these mitigate certainty and make alternatives more easily available' (Brown, Ainsworth, & Grant, 2012)	Adoption becomes a way of demonstrating organisation legitimacy through copying others, or is legislated (coercive) or is diffused as the appropriate standard (normative) (Greenwood et al., 2008).
	Field position, structure, ownership and governance influence the way organisations respond to	Logics as "socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which	Three types of isomorphism: (1) coercive isomorphism – compliance by expedience through indicators of rules and sanctions;

	institutional (Greenwood et al., 2011).	individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality" (Thornton et al., 2012)	(2) normative isomorphism – which cautions towards social obligations through indicators of certifications and accreditations; and (3) mimetic isomorphism – cautions towards 'taken for granted activities' through indicators of prevalence (Scott, 2013)
	Organisational identity aspirations influence how it responds to institutional pressures (Glynn, 2008; Kodeih & Greenwood, 2014)	Actors may include different institutional practices into the same organisation either by combining or layering them (Pache & Santos, 2010)	- Layering, in which new institutions are layered on top of existing arrangements without affecting their core logic; - Drift, in which on-the-ground implementation gradually changes policies-in-use without any official decision; - Conversion, in which the goals of existing policies are adjusted, while instruments remain unchanged; - Displacement, in which new institutions slowly overtake existing ones (Streeck & Thelen, 2005; Thelen, 2003).

10.2.5 *Example of Visual Mapping used to redescribe event patterns*

Figure 13 Example of Visual Mapping