

Doctor of Education Thesis

2011

Who Killed the Primary Care Strategy?

A Socio-Material Analysis

Janice Turner

Abstract

This study places the intended creation and implementation of an inter-professional education strategy at the intersection of three networks. The networks in question are cultural historical activity theory (CHAT), actor network theory (ANT), and a complex healthcare organisation (NHSX). CHAT and ANT, whilst both socio-material in origin, afford quite different readings of NHSX: therefore, the former has been used to identify, distil, and decompose the organisational activity systems, and the latter has been used to problematise them. The strategy was created in 2005 and had ceased to exist by 2010.

This study therefore employs CHAT and ANT accounts to trace the lifespan of the strategy through the organisation, in particular through organisational working, learning, and boundary crossing, in an attempt to explain its untimely demise. It is envisaged that this study will provide an aid to framing how socio-material approaches can be combined to support inter-professional policy construction and implementation in a way that will allow flexibility for others to adapt to their own distinctive circumstances.

Acknowledgements

I wish to acknowledge my heartfelt and sincere thanks to the following:

To my family:

My three children (Andy, Danny, and Caitlin), my father (Andy) and Betty, and my sisters (Lesley and Margaret).

To my Supervisor:

For his infinite patience and inspiration (Dr John I' Anson).

To my colleagues in NHSX:

For their constant encouragement and support (Dr David Blaney, Dr RoseMarie Parr, Dr Diane Kelly to name just a few).

To my friends:

Who were so generous with their time (in particular Anne Richardson and Fiona White).

Table of Contents

Abstract	ii
Acknowledgements	iii
Table of Contents	iv
List of Abbreviations	ix
List of Figures	x
List of Tables	xi

Chapter One - Situating the Study within a Personal, Professional, and Organisational Context

1.0	Introduction	1
1.1	A Summary Overview of the Study	3
1.2	A Personal Note	5
1.3	The Rationale for the Study	8
1.4	The Political and Policy Context of the Study	9
1.5	Situating the Study within the Complexity of NHSScotland	13
1.6	Intended Cross Cutting Function	15
1.7	Situating the Strategy within the Complexity of NHSX	17
1.8	Identified System Tensions	24
1.9	Summary	25

Chapter Two - Situating the Study within the Literature – Disentangling the

Activity Systems

2.0	Introduction	27
2.1	An Overview of CHAT and ANT	27
2.2	The Development of Central Concepts: CHAT	28
2.3	The Development of Central Concepts: ANT	45
2.4	Comparison of Central Concepts	54
2.5	Justification of the Conceptual Framework	62
2.6	Summary	64

Chapter Three - Designing the Study

3.0	Introduction	65
3.1	Methodology: Ontology and Epistemology	65
3.2	Case Study as a Methodological Framework	69
3.3	Ethics, Data Collection, and Management	73
3.4	CHAT as a Theoretical Framework for Data Analysis	85
3.5	Generating the Research Problem and Research Questions	91
3.6	Limitations of CHAT as a Research Framework	91
3.7	Summary	94

Chapter Four – CHAT Activity System Research Analysis

4.0	Introduction	95
4.1	The Object of Activity and the Activity System	96
4.2	The Process of Identifying Activity Systems and Triangulation of Data	97

4.3	Modeling the Organisation's Work Practices	100
4.4	Producing the Organisation's Activity System	103
4.5	Decomposing the Organisation's Activity System	104
4.6	Detailed Investigation of Work Practices in NHSX	106
4.7	Interpreting Findings	115
4.8	A Consideration of ANT Translations	117
4.9	Summary	126

Chapter Five – How Does Our Organisation Work?

5.0	Introduction	128
5.1	How Does our Organisation Model Working?	129
5.2	Organisational Working: Situating An ANT and CHAT Account	135
5.3	Collaborative Working: A Veritable Kaleidoscope of Differences	141
5.4	Agency in Distributed Multi Activity Collaboration	150
5.5	The Construction of the Community: Authority and Organising	156
5.6	Is our Organisation Working?	162
5.7	Summary	168

Chapter Six - How Does our Organisation Learn?

6.0	Introduction	170
6.1	How Does our Organisation Model Learning?	172
6.2	Learning: An ANT and CHAT Account	180
6.3	Collaborative Learning: A Fractured Story	187
6.4	Engeström's Expansive Learning and Development	193

6.5	Is our Organisation Learning?	196
6.6	Summary	202

Chapter Seven – Centres, Boundaries, and Peripheries

7.0	Introduction	203
7.1	How Does our Organisational Develop Cross Cutting Working?	205
7.2	Boundary Crossing: An ANT and CHAT Account	208
7.3	Boundary Objects, Blanks, and Genres	216
7.4	Enactment, Representation, and Performance	223
7.5	Boundaries as Metaphors and Topologies	225
7.6	Material Discursive Nature of Boundary Drawing	229
7.7	Where are our Boundaries and how are they Crossed?	230
7.8	Summary	235

Chapter Eight – Re-Entangling the Activity Systems; Conclusions, Contributions to Knowledge, and Further Research

8.0	Introduction	237
8.1	Dilemmas of Mobilising the Policy	238
8.2	Solving the Riddle: Who Killed the Primary Care Strategy?	248
8.3	Contributions to Knowledge and Practice	253
8.4	Disturbing the Boundaries of Theories: Recommendations for Further Research	256
8.5	A Personal Note Revisited: The Author Translated Through Time and Space	259

8.6	Concluding Summary	261
	References	262
	Appendix 1: Ethical Considerations	296

List of Abbreviations

The list below defines some of the concepts that may be obscure out with the selected literature and / or the NHS in Scotland and that are central to this research thesis.

ANT	actor network theory
BERA	British Educational Research Association
CHAT	cultural historical activity theory
CHPs	Community Health Partnerships
EdD	Doctor of Education
SEHD	Scottish Executive Health Department
SGHD	Scottish Government Health Department
ZPD	zone of proximal development

List of Figures

Chapter	Figure	Figure Heading	Page
2	1	Vygotsky's Basic Mediated Action Triangle	33
	2	The Mediational Structure of an Activity System	35
	3	Phases of a Cycle of Expansive Development	39
	4	Chained or Nested Activity Systems	41
	5	Overlapping and Interacting Activity Systems	42
3	6	Project Process Map	80
4	7	Steps Taken to Identify Narratives and Activity Systems	98
	8	Modeling the Organisational Activity System of NHSX	103
	9	Sub Activity System 1	107
	10	Sub Activity System 2	110
	11	Sub Activity System 3	112
5	12	Contradictions: Organisational Working Sub Activity System	163
6	13	Contradictions: Organisational Learning Sub Activity System	197
7	14	Contradictions: Organisational Boundaries Sub Activity System	232
8	15	Mapping Questions and Contradictions onto Activity Systems	243

List of Tables

Chapter	Table	Table Heading	Page
1	1	Activity Systems Analysis Summary	4
	2	The Proposed Structure of NHSX in 2001	14
	3	Multi-Professional Educational Complexity	20
2	4	Dialectics	30
3	5	Summary of Sources of Data Collected	74
	6	Chronological Numbers of Participants Interviewed	76
	7	Range of Professional Disciplines Interviewed	77
	8	Initial Data Themes	82
	9	Coded Theme Areas	81
	10	Identifying Key Categories	83
	11	Eight Step Model for Translating Activity Systems	88
	12	Activity Notation - Elements of Activity as Combinations	89
4	13	Changing Project Team 2005-2010	101
	14	Organisational Work Practices as Defined by the Eight Step Model	102
	15	NHSX Organisational Activity Notation	104
5	16	CHAT: Dominant Modes of Coordination	159

Chapter One - Situating the Study within a Personal, Professional, and Organisational Context

1.0 Introduction

In recognition of the lack of corporate planning and support for community based health care education the NHSX¹ Corporate Plan 2007-8 (NES 2007a: 4I) stated:

A new Primary Care Educational Strategy capable of responding to the Delivering for Health agenda is in preparation and due for completion by December 2007.

Planning for the strategy began in 2005, with an extended development phase between 2006 and 2009. By 2010 the strategy had failed to be implemented and was effectively silenced.

The purpose of this case study is to use activity systems analysis, derived from cultural historical activity theory (CHAT), to explore, understand, and describe how systemic contradictions within a complex organisation affect the development of an inter-professional strategy document from construction to proposed implementation. Actor network theory (ANT) shares many similarities with CHAT in that both are socio-material and focus on networks of actors instead of interrelations between macro and micro scale phenomena - however, these framings can lead to alternative accounts. Therefore, although in chapter two I will justify my reasons for favouring

¹ NHSX is a fictional name applied to the organisation studied

CHAT as my main methodological framework, I will hold ANT in its various iterations in dialogic tension throughout the study as a comparative socio-material account.

The central research question is - how can activity systems analysis be used to understand the systemic contradictions that affect the development and implementation failure of an inter-professional education strategy within a complex healthcare organisation? In order to understand the phenomenon in the central research question I will break it down into four sub questions (Cresswell, 2007: 109) as follows:

- How does the project team (subject) negotiate the circulating draft strategy (tools) through corporate working structures to achieve the required objective (object)?
- How do the rules (rules) affect the organisation's (community) ability to learn, develop, and implement educational strategy in an inter-professional context (object)?
- How does the organisation (community) support a cross cutting work stream (division of labour) to fulfil organisational objectives (object)?
- How does ANT and CHAT literature contribute to an understanding of organisational activity systems?

The following section will provide a summary overview to begin to contextualise the study.

1.1 A Summary Overview of the Study

This thesis is set out in eight chapters and begins in chapter one by setting the personal, professional, and organisational context for the study. Chapter two comprises the literature review and focuses on developments in both actor network theory (ANT) and cultural historical activity theory (CHAT). Chapter three provides the methodology and data collection and management section and introduces case study as the preferred methodology supported by an activity notation model derived from CHAT. Chapter four identifies the process whereby both the identification of the activity system and triangulation of the data is undertaken. This chapter then puts the activity notation model into practice to demonstrate the organisational activity system and three sub organisational activity systems in relation to working, learning, and boundary crossing. Chapters five, six, and seven, deal with each of these areas respectively situating the data within both current ANT and CHAT theories. Chapter seven introduces the concepts of representationalism and performativity - that problematise the fairly simplified reading of analysis delivered in chapters five and six - and begins to unravel the mystery of who killed the Primary Care Strategy. As this is a professional doctorate chapter five and six will focus on key areas that I may be able to influence within my professional practice. Finally, in chapter eight I will review all preceding chapters to explore the dilemmas of mobilising the policy, justify my disturbance of the boundaries of ANT and CHAT, and attempt to solve the riddle of who killed the Primary Care Strategy. I will conclude by identifying both the contribution that this study has made to my personal and professional knowledge, and some significant implications and recommendations for further educational research.

The main elements that compose this study are further summarised in Table 1.

Table 1 Activity Systems Analysis Summary²

Research purpose	The research purpose is to use activity systems analysis to explore, understand and describe how systemic contradictions within a complex organisation affect the development of an inter-professional strategy document from construction to implementation
Central research question	How can activity systems analysis be used to understand the systemic contradictions that affect the development and implementation failure of an inter-professional education strategy within a complex healthcare organisation?
Data context	Historical analysis of NHSX between 2005-2010
Data sources	Draft strategy documents, reports, minutes of meetings and events, e-mails, presentations, 1:1 unstructured and semi-structured interviews
Data analysis techniques	Case study with thematic analysis specifically targeted to identify how the data set fit into the organisational activity system and sub activity systems using Mwanza's Eight Step Model derived from CHAT. Comparison and critique is provided through actor network theory (ANT) translation accounts
Unit of analysis	Historically located complex healthcare organisation (NHSX)
Use of activity system	The organisational activity system is decomposed into three sub activity systems to describe how systemic contradictions affected the organisation with regard to organisational working, learning, and boundary crossing
Results	The combination of activity systems analysis (CHAT and ANT) afforded insight into the construction and failed implementation of an inter-professional education strategy with particular regard to organisational working, learning, and boundary crossing. In addition, this study has highlighted new areas for educational research activity.
Implications	Activity systems analysis can complement other socio-material methods such as actor network theory to provide further information on how human / nonhuman relationships shared within multi-professional complex organisational contexts can contribute to bringing about systemic contradictions and cause tensions in participant activities. The process of activity systems analysis is transferable to other complex organisational systems.

² Table adapted from Yamagata-Lynch (2010: 38)

1.2 A Personal Note

In order to ground myself in the context of this study, and in considering my personal journey through it, I will consider my role within a professional and organisational context, paying particular regard to my evolving bias and assumptions as learner, participant, and researcher.

1.2.1 Personal and Organisational Context

I currently work as an Education Projects Manager for regional development in the West of Scotland and for community development nationally within the organisation studied. NHSX is a Special NHS Board established in 2002 to provide education and training for the NHS in Scotland (SEHD, 2001). Its stated aim from 2005-2010 was to contribute to the highest quality of healthcare in NHS Scotland by promoting best practice in the education and lifelong learning of its entire staff. This has recently been adapted and 2011 brings a new corporate mission and vision (see section 1.6.1). However, as the journey of the strategy ended prior to this, the new corporate stance will be referred to only as an indication of corporate intention in chapters five, six, and seven. Between 2002-2010 NHSX addressed the original corporate aim by generating educational solutions for workforce development by designing, commissioning, quality assuring, and where appropriate, delivering education for the NHS workforce. NHSX was created through combining three predecessor organisations responsible for the education needs of doctors, dentists, psychologists, nurses, midwives, health visitors, pharmacists and allied health professionals (see section 1.4). Therefore, what were previous independent professional silos are now

required, under certain circumstances, to adopt an inter-professional approach and a unified corporate identity to deliver various key organisational objectives.

Prior to working at NHSX, apart from a brief foray into the world of academia as a senior lecturer, my professional experience has mostly been sited within primary health care services. My passion for this project was created through a very iterative process that I will outline according to its progression here. On commencing the Doctor of Education (EdD), I had no focus and a very limited appreciation of research. Also, as a recent law graduate, working in healthcare, I had a strong interest but a very positivistic approach to policy development through genesis to implementation. When I commenced employment at NHSX I left my own professional background in nursing to work in an inter-professional capacity commissioning and managing educational projects. This provided both opportunities for creation and innovation but also highlighted clear difficulties in trying to engage across uni-professional silo organisational networks. Part of the ethos for the inception of NHSX was that 'it would play a key part in helping NHS Scotland adapt to the changes required to be a fully flexible learning organisation' (SEHD, 2001: 1), and, that 'it would bring substantial added value to what already exists, particularly in the areas of multidisciplinary working and learning and educational research and development' (SEHD, 2002: 2). This was to be achieved through 'fostering a spirit of partnership, collaboration and team working' (SEHD, 2002: 4). Therefore, one of the first projects I became involved in at NHSX was in regard to facilitating the development of learning organisations. This project was led by an extremely enthusiastic and supportive colleague who, as a general medical practitioner, did not exhibit any of the protectionist behaviour which was sometimes apparent within other uni-professional NHSX groupings (see chapters five, section 5.3; and six, section 6.3).

Learning organisations (Beeby and Booth, 2000; Buckler, 1998; Campbell and Cairns, 1994; Cantle, 2000; Davies and Nutley, 2000; Diez et al, 2004; Eisenberg, 2000; Senge, 1994; Sharma, 2005; Timpson, 1998; Yeo, 2002; Yeo, 2005; Yeo, 2006) then became the subject for my first two EdD assignments, but, during the course of study, I began to question the limited empirical research and the potentially commercial motivating factors involved. However, part of the learning organisation concept relates to systems thinking and networks. Influenced by my experience of difficulty in moving through professional spaces at NHSX and my familiarity with both formal and informal networks I became very interested in the effects organisational spaces have on attempts at change. Networks then became part of my research focus. I began to appreciate that if I had difficulty negotiating networks (as a human actant) then it would be fascinating to study the effects of these same network spaces on policy through development to implementation (as a nonhuman actant). The perfect opportunity appeared to present itself in undertaking research into the development and proposed implementation of the NHSX Primary Care Strategy. In 2006 I was a co-author of this document, the corporate intention of which was to develop an inter-professional approach to the development of educational solutions for the workforce development of all health professionals working in primary care settings. By 2009 the strategy had been developed by numerous authors and owners (see chapter four, section 4.3, Table 15), had been renamed as the NHSX Community Healthcare Strategy, and had become the source of a large body of tension between professional groupings. By 2010 the strategy ceased to exist operationally within the organisation and was no longer referred to by name.

1.2.2 Assumptions

I acknowledge that the process of undertaking my EdD was at times either positively or negatively informed by my existing or emerging tacit and explicit assumptions as a researcher and participant in the study (see chapter three, section 3.2.2). This has been very illuminating and will be used to enlighten my developing future professional practice and working relationships. Particular assumptions surfaced have been in relation to my previous professional identity (sick children's nurse, general nurse, midwife, health visitor), that makes me biased and partial in relation to those professions issues; my most recent academic background (law), that surfaces a propensity to argue toward a solution instead of accepting parallel opinions, and has resulted in a very keen interest in policy formation; and my previous employment (senior lecturer), which makes me aware of the gulf between academia and health service expectations; and finally as an operational and strategic manager, which makes me question motives for resistance to change and organisational performance. The opportunity to share and question those assumptions in a non threatening open culture with a few key professionals within my organisation was invaluable throughout my research journey and prevented me at times from feeling ontologically psychotic.

1.3 The Rationale for the Study

As a fairly new organisation NHSX is composed of many vertical uni-professional silo structures, but carries a corporate intention and obligation to achieve horizontal corporate inter-professional working and learning. During the life of the strategy

numerous attempts at collective horizontal activity had limited success. This research study therefore provides a unique opportunity within NHSX to increase organisational and professional understanding of how systemic contradictions affect the construction, development, translation, and implementation of an inter-professional education strategy. CHAT and ANT, although originally operating in separate areas, both facilitate understanding of complex activity systems. By bringing these two ‘theories’ together, and holding them in productive tension to illuminate organisational issues of working, learning, and boundary crossing, I believe that new insight and knowledge may be produced. This work therefore aims to build on existing research in an innovative and creative way by using CHAT to identify and delineate activity systems and deploying ANT to problematise them. Finally, the knowledge developed within this study will be applicable both to NHSX and to other NHS Boards as complex health care systems.

1.4 The Political and Policy Context of the Study

One of the main priorities of the previous administration set out in *Delivering for Health* (SEHD, 2005) was to ‘shift the balance of care’ from secondary to primary health care services. *Better Health Better Care* (SGHD, 2007) was the main health policy document of the newly named Scottish Government Health Department in 2007. And, although in 2011 there has been a change of administration, the previous ‘shifting the balance’ ethos remains a priority with the new policy supporting the delivery of care close to home or in the community where possible. This increased focus on primary care services is set against a context of major restructuring, as in 2004 The NHS Service Reform (Scotland) Act (SEHD, 2004), led to the dissolution

of NHS Trusts and the inception of community health partnerships. NHSX develops an annual Corporate Plan and is held to account for performance by the Scottish Government through an annual Accountability Review (for an update on new processes from 2010 see section 1.6). Through this process it was recognised that NHSX has historically been very much focussed on secondary care services, and, what little existed in relation to primary care development was ad hoc, sporadic, and uncoordinated. Therefore, in response, the preparation of the Primary Care Strategy began in 2005. Then in 2007, under a different leader, a small group of four were tasked with redrafting the original and further developing the strategy for endorsement by the NHSX Board and Business Group prior to implementation by the given target date of December 2007. However, as indicated previously, this endorsement was not achieved and the journey of the strategy ended in 2010.

As stated above, the draft strategy was in direct response to Scottish Government policy. Policy initiatives in healthcare typically privilege the policy maker's reality and there is an assumption that service providers will therefore adjust their work to suit. According to Fenwick and Edwards (2010: 140):

Policy continues to be discussed informally as a task of 'rolling it out', as though all the messy material complexities and political negotiations of policy texts in diverse enactments can be smoothed away like laying a carpet.

This often leads to conflicts and contradictions between the objectives of policy makers and end user implementation (Emad and Roth, 2009: 19). Therefore, using ANT and CHAT in this study can 'slow down the analysis to attend to the particulars, especially the material ones, at play in policy enactment' (Fenwick and Edwards,

2010: 140). The strategy was born in 2005, ostensibly to facilitate the fulfilment of Scottish Government targets and measurement outcomes by supporting education for healthcare staff in the shifting the balance of care agenda. However, there was a second internal organisational intention – that of achieving effective horizontal working across the vertical silo structures. Within the organisation, two communities (one directorate and the strategy project team) enacted different versions of the shifting the balance of care directive and created competing translations of the policy text. These continued in parallel development until the strategy ceased to be in 2010. This study will therefore follow the draft strategy as an ‘object’ as it travels across multiple spaces utilising CHAT and ANT to disrupt, disentangle, and create challenges to the way networks work, learn, and cross boundaries within complex organisational settings. CHAT provides a cultural historical and developmental view of networks grounded in the orientation of particular activities toward particular objects. It foregrounds the development of competence and expertise as professionals labour to make a network a success. ANT provides a political and rhetorical view of networks and foregrounds the continuing recruiting of new allies – both human and nonhuman – to strengthen networks. The two theoretical frameworks are very different, even contradictory, and can lead to very different conclusions. Throughout this thesis, rather than attempting to reconcile these approaches, I will try to keep them in productive tension, yielding a productive dialogue. Therefore, to investigate organisational working, learning, and boundary crossing at NHSX I will follow the actors and texts, disruptions, and genres wherever they lead. That is, I will examine the way textual knowledge circulates through NHSX and pay particular attention to how those texts and their genres are developed, adapted, transformed, translated, displaced, re-linked and added to as they circulate.

As indicated, both ANT and CHAT afford a *socio-material* perspective of analysis that help reveal the dynamics that actually constitute what comprises everyday life, including working and learning. According to Fenwick (2010: 105):

Humans and what they take to be their ‘learning’ and ‘social’ processes do not float, distinct, in ‘contexts’ of work that can be conceptualised and dismissed as a wash of material ‘stuff’ and spaces. The things that assemble these contexts, and incidentally the actions and bodies including human ones that are part of these assemblages, are continuously acting on each other to bring forth objects and knowledge. These objects might be taken by a casual observer as natural and given – things comprising a ‘context’. But a more careful analysis notes that these objects, including objects of knowledge, are very messy, slippery and indeterminate. Indeed some socio-material analyses accept the simultaneous existence of multiple ontologies that can be detected in the play of objects. This has enormous implications for understanding worklife and the process of learning.

Socio-material perspectives on organisational working and learning will be explored in further detail in chapters five and six respectively. The concept of multiple ontologies will be further explored in chapter seven (section 7.2.1).

1.5 Situating the Organisation within the Complexity of NHS Scotland

The Scottish Government is the executive arm of the devolved government of Scotland. It was established in 1999 as the Scottish Executive (SEHD) from the extant Scottish Office. Following the 2007 Scottish Parliament election, the term 'Executive' was rebranded and changed to 'Government' by the new Scottish National Party administration. The Scottish Government (SGHD) is responsible in Scotland for all issues that are not explicitly reserved to the United Kingdom Parliament at Westminster by Schedule 5 of the Scotland Act 1998; including the NHS in Scotland. In 2010 the Scottish Government hosted eleven Health Directorates that were responsible for clinical service delivery in NHS Scotland, as well as for policies on the development and implementation of health and community care. There are fourteen Territorial Health Boards in NHS Scotland. These local Health Boards are supported by nine non-geographical Special Health Boards providing national services, one of which is NHSX.

Learning Together: the Education, Training and Lifelong Learning Strategy for the NHS in Scotland (SEHD, 1999) signalled the intention to create an umbrella forum for educational support for all staff. In 2001, the Minister for Health and Community Care announced the creation of a new Special Health Board in April 2002 to bring that intention into effect. NHSX as that new body combines the Scottish Council for Postgraduate Medical and Dental Education (SCPMDE), the Post Qualification Board for Health Service Pharmacists in Scotland (PQEB) and the successor body to the National Board for Nursing, Midwifery and Health Visiting in Scotland (NBS).

Table 2 The Proposed Structure of NHSX in 2001

The NHSX Consultation document (SEHD, 2001) outlined four options for the proposed organisational structure:

Option	The Proposed Structure of NHSX
The first two options represent arrangements based on staff groups	
1	Establish three directorates corresponding to the functions of the current three bodies. This has the advantage of retaining continuity and reducing initial turbulence, helping to ensure that the current day-to-day operations of the three bodies are not jeopardised. It would also give the staff groups concerned a clearly identified and effective support structure and be sensitive to differences in education and training for different staff groups. The Board would have to consider how to develop the directorate structure as additional staff groups were brought into its remit.
2	Establish directorates in a similar way, but organised around staff groups with linked functions (for example, dentists and professions complementary to dentistry, or mental health professionals) rather than groups with similar educational paths (as at present – for example doctors and dentists). Such directorates could respond readily to multi-disciplinary, mixed-skill team working approaches and might be straightforwardly expanded in the medium term to take in relevant PAMs ³
The next two options are more radical to realise the benefits of cross disciplinary working and learning	
3	Strong central cross-cutting functions within an enlarged central core could take on generic activities applicable to all staff and have the capacity to expand to better embrace their needs over time. This might encompass cross-disciplinary work on areas already common to the three existing bodies, such as continuing professional development, workforce planning and intelligence, quality assurance, implementation of training programmes, aspects of appraisal, and educational research and development. This central capacity would be additional to functional directorates specific to particular groups of staff, as described in options 1 and 2.
4	Activities such as those described in option 3 could, instead of being grouped in a central core, be allocated to a series of cross-cutting functional directorates, with remits which could be straightforwardly extended to include new staff groups as they were brought under the umbrella of the new body. At the same time some operations, and some aspects of the activities mentioned above, would need to remain profession-specific and the structures of NHSX would need to be sufficiently flexible to accommodate this uni-professional work and give it sufficient weight within the organisation

³ PAMs as an acronym stood for Professionals Allied to Medicine, this professional group has been renamed Allied Health Professionals (AHPs)

There was a total of 129 responses to the consultation with a clear preference for Option 1. This is perhaps not surprising as the consultation document advised the adoption of Option 1 in the first instance with a review after a year to ensure that the initial arrangements ‘did not leave the cross cutting function marginalised’ (SEHD, 2001: 21). Interestingly, Options 3 and 4 had emphasised that NHSX would adopt a cross disciplinary and cross functional activity from the outset. In 2001 cross functional activity was deemed too risky. Arguably, now in 2011 it remains the opinion of many that this is still the case. This will be explored in the organisational activity system and three sub activity systems of NHSX in chapter four, and in relation to organisational working (chapter five), organisational learning (chapter six), and crossing organisational boundaries (chapter seven).

1.6 Intended Cross Cutting Function

As stated above, NHSX was established in 2001 with a caveat to review organisational function to ensure that the initial set up arrangements ‘did not leave the cross cutting function marginalised’ (SEHD, 2001: 21). This was to be achieved through the ‘creation of innovative and creative approaches to educational provision’ (SEHD, 2001: 20) and ‘the realisation of the benefits of cross disciplinary working and learning’ (SEHD, 2001: 21). Chapters five, six, and seven contrast the data collection and analysis during 2005-2010, with the newly specified 2011 corporate mission, vision, eight ways of working, six broad strategic themes, and ten strategic objectives, all which continue to strongly emphasise cross cutting functionality as a corporate priority.

In addition, in an attempt to strengthen the ‘cross cutting function’ within NHSX the Educational Development Directorate was established in 2009. This corporate aims of this new directorate include to:

- Lead and manage the formulation and delivery of educational development for NHSX so as to ensure quality assured, cost effective and patient focussed educational solutions for NHS Boards in support of Scottish Government policy.
- Ensure coherence and consistency in educational approaches, governance and infrastructure to support NHS Scotland.
- Develop and embed education and training provision across NHS Scotland working with a wide range of stakeholders.
- Lead specific corporate work streams.
- Support all directorates in NHSX with the development of educational solutions for NHS staff to enable redesigned patient services.

Current examples of cross cutting functionality within this directorate are educational programs to support patient safety, educational research, and educational governance. This structural change in NHSX is new and it remains to be seen how much its purpose will be treated as peripheral to or integrated within the organisation. The following quotation from a senior member of staff (PGD1) is illustrative of this:

If you think about the introduction of the new education directorate, now it is a brand new directorate, and I really don't know what the scope of that directorate is, and I have no idea what the perception of the other directorates are in relation to that particular directorate. It has the potential to provide, to be the hub that brings together the other directorates, through which the other

directorates feed, through which there is a lot of communication. It also has the potential, and I have said this quite openly, it has the potential to become a bin. It has the potential to become a directorate where if the other directorates don't want it then it goes to the education directorate.

1.7 Situating the Strategy within the Complexity of NHSX

In order to situate the strategy I will firstly review the culture and complexity of the organisation and then provide an outline trajectory of the strategy as it travelled through it.

1.7.1 The Culture and Complexity of NHSX

The organisation has developed a new Strategic Framework 2010-2014 which is supported by an annual Corporate Plan⁴ that quotes the organisational vision as 'Quality Education for a Healthier Scotland'; and the organisational mission 'to provide educational solutions that support excellence in healthcare for the people of Scotland'. In order to achieve this everything the organisation does is based on eight ways of working:

- be open, listen and learn
- work together with others to benefit patients
- look ahead and be creative
- promote equality and value diversity

⁴ Corporate organisational information available at <http://www.nes.scot.nhs.uk/about-nes>

- always aim for quality and excellence
- understand and respond quickly and confidently
- work to a clear common cause
- give people power and lead by example

Both the Strategic Framework and the Corporate Plan are shaped round six broad strategic themes, the three most relevant of which are:

- Education to create an excellent workforce
- Developing innovative educational infrastructure
- Delivering our aims through a connected organisation

To support the organisational themes NHSX has developed ten strategic objectives ‘to deliver our vision, help us prioritise our work and create a streamlined, focused and better connected organisation’. Key themes in relation to this study include the intention to provide:

- Integrated education to support models of care which are closer to people in their communities (theme 6)
- Education in partnership that maximises shared knowledge and understanding (theme 7)
- Flexible, connected and responsive educational infrastructure which covers people, technology, and educational content (theme 8)
- Improvement in the sharing of knowledge across our organisation (theme 10)

The marketed organisational culture in 2011 then is one of openness, joint working, creativity, clarity, flexibility, integration, sharing, connectedness, with a dispersion of power and leadership. Chapters five (organisational working), six (organisational learning), and seven (organisational boundaries) will consider the historical development of the organisation and explore whether these principles are reflected in the data collected and analysed during this study.

Under the above themes, objectives, and ways of working, NHSX is set up as a national educational organisation, with corporate systems and processes to drive a unified identity. However, NHSX is a very complex organisation, being composed of eight directorates (five of which deliver education, the remaining three provide corporate services relating to human resources, organisational development, and finance), composed of around 700 staff, representing over twenty professions. The five directorates that provide education (directly or indirectly) and the professions they deliver to are listed in Table 3 (below). Each of the above directorates has its own structure and hierarchy and is represented at the organisational Business Group to undertake corporate decision making. This results in a multiplicity of professional domains that the circulating draft strategy had to negotiate and engage with. Potential tensions in this cross functionality are well summarised in the following quotation from one interviewee (PD2):

Let us be completely honest, it is easier to do uni-professional work than it is to do inter-professional work. It is easier because if you come from that profession then you have all the networks to get it done. You are not going to have another professional group that you might not understand coming in, in the middle of your project, and saying what the hell are you doing that for – I wouldn't do it

that way, or whatever. Uni-professional work takes a much shorter time than true inter-professional working because you have got to get the ownership and buy in and all that kind of thing.

Table 3 Multi-Professional Educational Complexity

Directorate	Provides educational programs for:
Dentistry	Dentists Dental Nurses
Medicine	Hospital Medicine and General Practitioners (GP) GP Practice Managers GP Practice Nurses
Nursing, Midwives and Allied Health Professions	Nursing Midwifery Psychology Chaplaincy Healthcare Scientists Physiotherapists Speech and Language Therapists Occupational Therapists Podiatrists Dieticians Art therapists Drama therapists Music therapists Orthoptics Radiographers
Pharmacy	Pharmacists
Educational Development	Support for all professional groupings including administrative and clerical staff

Chapter five (section 5.3) will collate and explore further data with regard to organisational and professional working complexities.

1.7.2 Summary of Key Points in the Trajectory of the Strategy

The Primary Care Strategy started its journey in 2005 and quickly became a 102 page document developed by a fairly large multi-disciplinary team lead by a general medical practitioner (see chapter four, section 4.3, Table 15). The ethos of its creation was to enhance the development of community based healthcare services in NHS Scotland. Key internal organisational themes were around the need to reconfigure NHSX and strengthen the cross cutting function and learning potential across the uni-professional directorates to reduce duplication, fragmentation, and inconsistent educational development. Hand written notes taken by the researcher at one of the very early meetings reveal an interesting discussion around the lack of an organisational collective educational ethos where professionals from nursing, medicine, pharmacy, and dentistry could not agree even a rudimentary shared understanding of what the definition and content of educational methodology and an educational strategy should entail. The initial draft strategy was therefore written in uni-professional sections by a designated member from each directorate. Each of these sections detailed what that particular professional grouping were doing to support educational developments within a community healthcare context. These sections were then put together with a foreword and a summary by the project lead to form an early draft of the strategy for consultation. From 2005 to 2007 this composite but still mainly uni-professionally driven draft strategy passed through numerous amendments but remained a lengthy document. Two quotations from interviewees in early 2008 reflect the difficulties inherent in the journey of the strategy:

I think that the fact that this strategy started in 2005 and it is now 2008 speaks volumes of how difficult it has been (PGD1).

I never thought it [the strategy] would see the light of day for a number of reasons. I knew what resistance it got from one of the Board meetings I was at, but it just shows that dogged determination and tweaking at it can make a big difference – stick at it and you will probably get anything through – but stick to it like glue (GP1).

By mid 2008, under new authorship, the strategy had been renamed the Community Health Education Strategy as a reaction to changing Scottish Government policy, and was reduced to a 7 page document that had been written by the members of a small core project team. The strategy was no longer composed of individual uni-professional reporting sections but was an attempt at a corporate document to align organisational activity with the developing policy and healthcare delivery structures. This short strategy was set out in the following sections; introduction, background to NHS context and developing structures (community health partnerships - CHPs), existing organisational activity in relation to community based care, a proposed model for organisational engagement with CHPs, and the proposed internal (re)structuring in the organisation to drive its implementation and recommendations. At this time the internal structure of NHSX was still of central consideration and was listed as:

- Working at different levels (national, regional, Deanery, local)
- Not currently configured to provide cohesive delivery across primary care

- Professional groupings being configured differently with different capacity at different levels

From 2008 to 2010 the strategy again passed through numerous iterations but remained very short in length as the textual changes reflected developing external policy rather than internal organisational shifts. Therefore, the key difference was that although both major drafts of the strategy were written in an attempt to reflect and influence corporate intention, the development of the first strategy (2005-2008) was overseen by a fairly substantial multi-professional group, and was written in uni-professional sections that were then bundled together. Whereas, the second major redrafting of the strategy in 2008 was driven by a small group and contained a proposed collective model to support joint working. As a participant in both I would reflect that although the former was written in uni-professional sections it was seen within NHSX to support joined up inter-professional working because representatives from the directorates physically sat down around a table and met together (but did not achieve collective agreement). The latter, although attempting to develop a joined up model of collaborative working, was regarded with more suspicion as the directorates were not directly involved in drafting its content. By mid 2010 the strategy had been through so many political internally driven iterations that, according to one respondent (Int7):

It says nothing anymore, it is totally bland in the fact that it is not contentious anymore, it started off very contentious, but it has now been neutered to fit with everyone, there is nothing left in it anyone can object to.

So where did the contentious text go and why? In an attempt to answer this question chapters five, six, and seven, will trace the journey of the strategy through NHSX.

1.8 Identified System Tensions

In chapter four I use a case study approach and activity systems analyses to identify system contradictions within the data that was collected. However, there would appear to be clear tensions demonstrated by the above descriptions of organisational context, particularly in relation to organisational working, learning, and the associated historical influence of the coming together of NHSX as an organisation. These will be explored in further detail in chapters five, six, and seven. To further contextualise the study I will now briefly outline further sources of potential and actual tensions arising from the current political and cultural economies in relation to inter and intra-organisational health service settings.

1.8.1 Within NHS Scotland

Within NHS Scotland systems tensions are currently being exerted through increasing demand (higher patient expectations, modernised technology, diagnostics) and decreasing supply (economic crisis, changing demography that reflects a much higher incidence in elderly potentially needing care, and lower incidence in the young potentially providing care). As section 9 of the 2010 Report by the Auditor General states:

Scotland's economy is in recession and the public sector is under greatest financial pressure since devolution ten years ago. By 2013-14 the Scottish budget could be between 7 and 13 per cent lower in real terms

In addition there is debate regarding the use of the Barnett formula⁵ to determine the size of Scotland's block grant from the UK Parliament which could be significantly reduced as a result of the recent elections. Driven by the national economic review of public sector services (Auditor General; 2009), and recent political challenges, the future of NHSX as a Special Health Board is currently under question (SGHD; 2010).

1.8.2 Within NHSX

In 2002 NHSX was set up under Option 1 (section 1.4, Table 2, above). The main tensions were identified as a need to 'reduce initial turbulence', 'to ensure the current day to day operations of the three bodies were not jeopardised', to 'be sensitive to differences in education and training for different staff groups' and 'to develop the directorate structure as additional staff groups were brought into its remit'. During 2005-2010 the strategy document referred to those tensions as ongoing and continuous and although highlighted, discussed and debated - not resolved.

1.9 Summary

This Chapter started with stating the purpose of the study - to use activity systems analysis to explore, understand, and describe how systemic contradictions within a

⁵ Barnett formula available at <http://www.parliament.uk/commons/lib/research/rp98/rp98-008.pdf>

complex organisation affect the development of an inter-professional strategy document from construction to implementation. A summary overview and rationale for the study was provided and this was followed by situating the study within a personal, professional, organisational, and political context. Key points from this chapter include the foregrounding of the complexity of the organisation and its stated priority intention to support cross cutting functionality but with a question mark falling on its ability to successfully perform such a horizontal remit. I then introduced the background and outlined the trajectory of the travelling draft strategy between 2005 and 2010 noting that it ultimately failed to achieve implementation. I have selected CHAT and ANT to provide theoretical frameworks to investigate this failure. The former has been used to identify, distil, and decompose the organisational activity systems of NHSX, and the latter has been used to problematise them. In the following chapter I will therefore undertake a literature review of both ANT and CHAT, to explore their similarities and differences and justify my preference of CHAT as my initial main theoretical framework to support this study.

Chapter Two - Situating the Study within the Literature

Disentangling the Networks

2.0 Introduction

On commencing this study I was initially drawn to ANT after exploring and discarding ‘learning organisations’ as my theoretically underpinning focus. However, as I delved into the ANT literature I became exposed to parallels with CHAT literature and became very interested in reading them together, trying to differentiate how they would afford alternative viewings of the life and death of the strategy I studied. Therefore in this chapter I will provide an overview of both theories, undertake a comparison of their central concepts, explore their application to areas of innovation, and defend my ultimate rationale for the justification of my chosen conceptual framework. Although I have strived to be concise, due to the fact that I have chosen to combine my reading across both ANT and CHAT this literature review is of considerable length in an attempt to do justice to both.

2.1 An Overview of CHAT and ANT

CHAT and ANT are both materialist and monist, they focus on ‘the concrete networks of actors instead of interrelations between macro and micro scale phenomena’ (Miettinen, 1999: 171), they also draw on distributed resources for doing and acting: and they allow for the independent activity of objects. Additionally, they both have a strong interest in mediation and instability. But the two frameworks are nevertheless quite different. CHAT, as a theory of distributed cognition focuses on issues of

labour, learning, and concept formulation and is predominantly used in fields such as educational, cultural, and cognitive psychology - although it is also making inroads in human computer interaction, communication, and anthropology. Whereas, ANT focuses on issues of power in science and politics and is predominantly used in science and technology, philosophy and sociology (Spinuzzi, 2008: 92-93). The different framings afforded through each will be explored in relation to the selected methodology (chapter three, section 3.1), agency (chapter five, section 5.4), diffraction (chapter seven, section 7.2.1), and representation and performativity (chapter seven, section 7.4). The following sections will develop the central concepts of both CHAT and ANT in their multiple and developmental generations.

2.2 The Development of Central Concepts: CHAT

Engeström (1996a) outlines three 'generations' of activity theory, in which its tenets were established (Thorne, 2005:394-395).

In the first generation, Lev Vygotsky and his collaborators built directly on Engels' ideas to develop the concept of mediated human activity in the individual, laying the foundations of activity theory. First generation CHAT therefore applied the radical idea that there is no knowledge, human nature, or person, that can be said to exist prior to, and separate from, the transformative process of engagement with the world (Sawchuk and Stetsenko, 2008: 343).

In the second generation, Leont'ev applied the concept of mediation to larger social groups, yielding the unit of the activity system; this innovation is widely considered to be the beginning of activity theory. And in the third and current generation, Engeström and his collaborators drew on the works of Ilyenkov (1982) to identify

contradictions in activity systems and to conceptualise activity networks. Also in this third generation, activity theory began to come to grips with polycontextuality and boundary crossing across collective systems (section 2.2.6).

This synopsis outlines the central concepts that I will now explore in the following sections in relation to CHAT: dialectics, mediated action, the structure of activity, contradictions, and activity networks.

2.2.1 Dialectics

From a CHAT perspective, activity networks consist of a developing set of activities anchored by a common object toward which people strive. The root of this developmental view is dialectics, the inter-actionist understanding of change that permeates Marxist accounts of activity (Sawchuk and Stetsenko, 2008: 352).

Dialectics can be traced back to Spinoza and Hegel (Kagawa and Moro, 2009: 177).

Everything that exists is the outcome of a process, and therefore, understanding in any broad area of reality always involves understanding a process of change, which is always intelligible, never merely arbitrary. Every complex situation contains within itself conflicting elements, and these are destabilising, therefore no such situation can just continue indefinitely. The conflicts have to work themselves out until they achieve resolution and this will then constitute a new situation – and of course a situation that contains new conflicts (Magee, 2001: 158). This became the ‘dialectical process’ which is made up of three stages:

- The thesis – the initial state of affairs

- The antithesis of the thesis - the reaction that this always provokes, the countervailing forces, the conflicting elements
- The synthesis - the conflict between the two eventually resolves itself into a new situation which sheds elements of both but also retains elements of both

Table 4 summarises some of the key ideas that are at the heart of Hegelianism and are also central to Marxism.

Table 4 Dialectics

-
1. Reality is not a state of affairs, but an ongoing historical process.
 2. Because of this, the key to understanding reality is to understand the nature of historical change.
 3. Historical change is not random but obeys a discoverable law.
 4. The discoverable law of change is the dialectic, which is repeated triadic movements of thesis, antithesis, and synthesis.
 5. What keeps this law perpetually in operation is alienation, which ensures that each successive state of affairs is eventually brought to an end by its own internal contradictions.
 6. The process is not under the control of human beings, but is driven forward by its own internal laws, and human beings are swept along by it.
 7. The process as described will continue until a situation is reached in which all internal contradictions have been resolved, there will be no alienation, and therefore no longer any force at work promoting change.
 8. When this conflict free situation is reached, human beings will no longer be swept along by forces outside their control, but will be able for the first time to take their destiny into their own hands, and will become themselves the arbiters of change.
 9. This will for the first time make human freedom and self fulfilment possible for human beings.
 10. The form of society within which this form of freedom will be exercised, and self fulfilment achieved, will not be the atomized society of independently functioning individuals that is envisaged by liberals, but an organic society in which individuals are absorbed into a whole that is much bigger, and therefore more fulfilling, than their own separate lives.

(Magee, 2001: 164-170)

However, after these ten great similarities with Hegel comes the big difference, which is something Marx took from his near contemporary, another German called Ludwig Feuerbach. Whatever it is of which reality basically consists, is believed by Marx to be not something spiritual, but something material. So this whole vast historical and dialectical process that we have just followed through in ten theses is seen by Marx as happening to the material forces of which he believes the world to consist. So, unlike Hegel, Marx insisted on the indivisibility of the subject-object divide which lies at the core of Marx's materialism. Therefore, although Marx bases his dialectics on the Hegelian core principles identified above, he focuses on a non Hegelian materialist dialectics in his work. Dialectical materialism was popularised by Marx's collaborator and posthumous editor, Frederick Engels (1954). Seminal works (Leont'ev, Luria, Vygotsky) in the development of CHAT are based on an Engelsian understanding of dialectics, although later work such as Engeström's has drawn heavily on Marx.

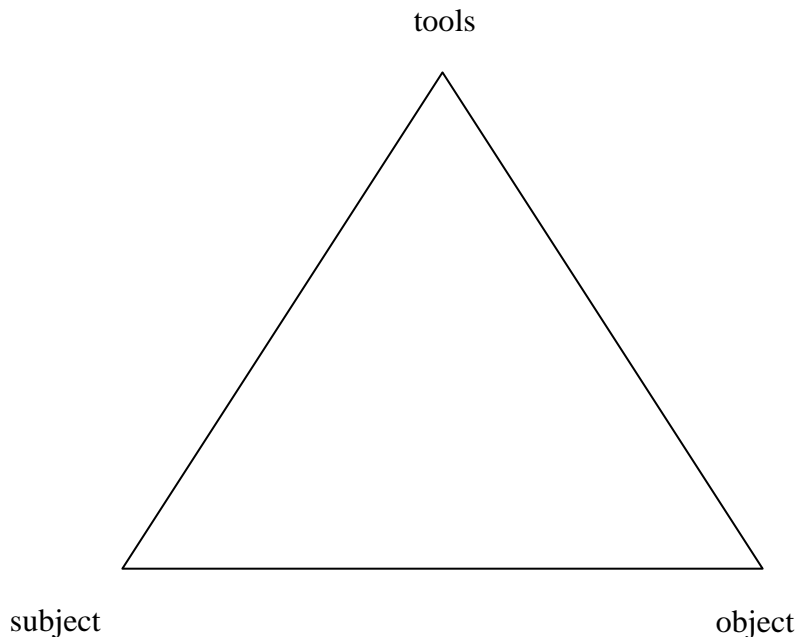
So, where does dialectics lead? This science of interconnections provided a unified theory predicated on the continuously developing interactions among parties rather than on rigid cause and effect relations or essentialist understandings of things in themselves. This understanding of dialectics underpins the work of Lev Vygotsky which in turn underpins CHAT. Finally, dialectics underscores the mutual though asymmetrical constitution of material action and thought and highlights the active socio-material construction of reality (Sawchuk and Stetsenko, 2008: 352).

2.2.2 Mediated Action

Vygotsky introduced mediated action as a concept to explain the semiotic process that enables human consciousness development through interaction with artefacts, tools, and social others in an environment and results in individuals finding new meanings in their world. Vygotsky assumed that this relationship among artefacts, tools, and social others was not constant but changed over time. The interactions in which individuals engage allow opportunities for mediated action that contribute to the social formation of their consciousness. In this interaction, individuals are not passive participants waiting for the environment to instigate meaning making processes for them, but through their interactions individuals make meaning of the world while they modify and create activities that trigger transformations of artefacts, tools, and people in their environment (Daniels, 2001: 85-86). For Vygotsky the key that links thinking to communicative activity resides in the double function of the sign, which simultaneously points in two directions – outwardly ‘as a unit of social interaction (i.e. a unit of *behaviour*), and inwardly, as a unit of thinking (i.e. as a unit of *mind*)’ (Prawat, 1999: 268, italics in original). In this sense the significance and value of signs possess reversibility in that they can act upon the agent the same way they act upon the environment or others. In his later writings Vygotsky argued for a dialectical tension between the stable meaning of linguistic signs and an unstable precarious element that emerges as people engage in concrete, goal directed, communicative, and psychological activity (Prawat, 1999: 269). Thorne and Lantolf (2006) set out in a recent review to provide greater understanding of communicative processes as inherently cognitive processes, and cognitive processes as indivisible from humanistic issues of agency and construal of self and world (see chapter three, section 3.1.1).

Figure 1 (below) represents what is often referred to as Vygotsky's basic mediated action triangle.

Figure 1 Vygotsky's Basic Mediated Action Triangle



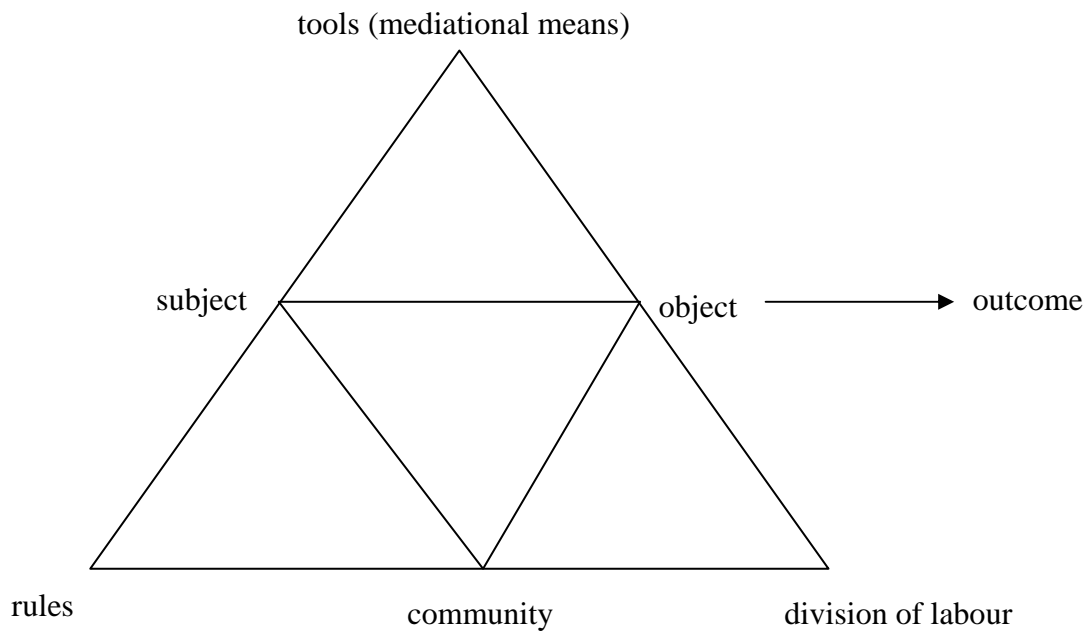
The *subject* in this graphic is the individual or individuals engaged in the activity. The *mediating artefact / tool* can include artefacts, social others and prior knowledge that contribute to the subject's mediated action experiences within the activity. The *object* is the goal of the activity. The one thing that distinguishes one activity from another is the difference of their objects (Leont'ev, 1978: 62). The shifting and developing of an object is related to a motive which drives it (Daniels, 2001: 86). Signs are not represented in the basic triangle, but are assumed to be an artefact of the mediated action process (Yamagata-Lynch, 2010: 16). This triangular representation of mediated action was Vygotsky's attempt to explain human consciousness development in a manner that did not rely on dualistic stimulus response associations

(Yamagata-Lynch, 2010: 16). In addition, CHAT does not assume a divide between the cognitive and the social (Hakkarainen, 2003: 680), or between the individual and tools. Vygotsky insisted that human activity must be understood as mediated by physical and psychological tools, a stance that can be understood as distributed cognition (Cole and Engeström, 1993). Human activity at the individual level is therefore seen as dialectic among humans and their mediators (Spinuzzi, 2008: 70).

2.2.3 Structure of Activity

This essential unit of mediated action was sufficient for studying individuals psychologically. But, in his later work, Vygotsky attempted to extend the concept of mediation to groups, laying the foundations of what is now called cultural historical activity theory (CHAT). This development was achieved by Vygotsky's collaborator Leont'ev who extended Vygotsky's insights on the basis of Marx and Engel's work. Leont'ev proposed that the essential unit of analysis should be the activity system, a unit that included Vygotsky's triangle of individual mediated action but also the individual's community, the rules that mediated the individual's relation to that community, and the division of labour that mediated between the community and the object of the activity; thus bringing the aspects of distribution, exchange, and consumption into sharper focus (Kagawa and Moro, 2009: 178). Leont'ev did not diagram the activity system but Engeström later popularised it through diagrams such as the one in Figure 2 (below).

Figure 2 The Mediational Structure of an Activity System



The *subjects* component of the model portrays both the individual and social nature of human activity as reflected through collaborations and consultations in order to satisfy a shared objective. The subjects' relationship with the object of activity is mediated through the use of tools. The *tools* component reflects the mediational aspects of human activity through the use of both physical and conceptual tools. Physical tools are used to handle or manipulate objects whilst conceptual tools are used to influence behaviour in one way or another. The *community* component puts the analysis of the activity being investigated into the social and cultural context of the environment in which the subject operates. This notion reaffirms the suitability of CHAT to the study of human practices in an organisation. The *rules* component highlights the fact that within a community of actors, there are bound to be rules and regulations that affect in one way or another the means by which activity is carried out. These rules may either be explicit, or implicit, for example, cultural norms that are in place within a particular community. The *division of labour* component refers to the allocation of

responsibilities and variations in job roles of the subjects as they carry out activity within the community. Understanding the *object* component is vital as it is used in a very specific way. Rather than artefact or thing, it means the transformational focus of an ongoing activity (as in ‘the object of the game’ or ‘the object of the exercise’ (Leont’ev, 1981: 46-69; Nardi, 2005: 40; Spinuzzi, 2008: 71; Yamagata-Lynch, 2010: 17). The object of an activity ‘is both the projection of a human mind onto the objective world and a projection of the world onto human mind’ (Kaptelinin, 2005: 5) in that it dialectically transforms both.

The object is shared by all in the activity system though it may be polymotivated. That is, different individuals may have different motivations as they collectively work to transform it. Also, the object is typically not a single entity, ‘it is an assembly of material entities embedded in economic and social relationships’ (Miettinen, 2005: 58). It is this understanding of the object as the transformational focus of *collective* dialectical development that leads us to CHAT’s account of developmental change: contradictions (section 2.2.5). Therefore, in order to fully understand contradictions I will first briefly explore the complex concepts of collective activity and mediation.

2.2.4 Collective Activity and Mediation

For Engeström activity is a collective process, but without the activity of individuals, a collective activity is impossible. Lektorsky (2009: 79) supplies an analogy of a water wave where:

...we should take into account that its movement is possible only owing to the movement of separate particles interacting with each other and transferring

movement from some particles to others. But the interactions of these particles are not the same as the wave movement.

Similarly, collective activity cannot exist without individuals participating in it. An individual can influence collective activity but only by connecting with it and participating in it - but to predict the activity of an individual is more difficult than to predict the behaviour of a social group. Collective activity and mediation are therefore crucial for understanding an individual subject. Mediation means exist in a field that is, on the one hand, external to each individual and, on the other hand, presupposes the activity of individuals. It is beyond the border of the division between mine and not mine (Daniels, 2001: 13-14). Some approaches have tended to focus on semiotic means of mediation (Wertsch, 1991) whereas others have tended to focus more on activity itself (Engeström, 2008). There is a lot of interesting recent research in Russia on how conscious individual processes are generated in the process of activity (Lektorsky, 2009: 80). However, there does not seem to be an easy solution. An individual subject cannot be dissolved into the system of collective activity. The individual is a specific system of its own. The problems of the relationship between conscious and unconscious processes, of the existence of free will, and of the nature of the ego continue to be discussed in philosophy, psychology, and cognitive science. CHAT suggests an interesting way to approach these problems but it does not have a ready or easy solution.

2.2.5 Contradictions

Contradiction is absolutely central to the dialectical account of developmental change that CHAT proffers. Contradictions are not the same as problems or conflicts (Daniels, 2001: 94) but are ‘historically accumulating structural tensions within and between activity systems’ (Engeström, 2008:205). Contradiction is firmly embedded in dialectical materialism, a mainstay of the Marxist ideology that dominated the Soviet Union during CHAT’s initial development, but did not become an important part of CHAT analysis until late in its development. Engeström credits Ilyenkov with conceptualising ‘the idea of internal contradictions as the driving force of change and development in activity systems’ (Engeström, 1996a: 133).

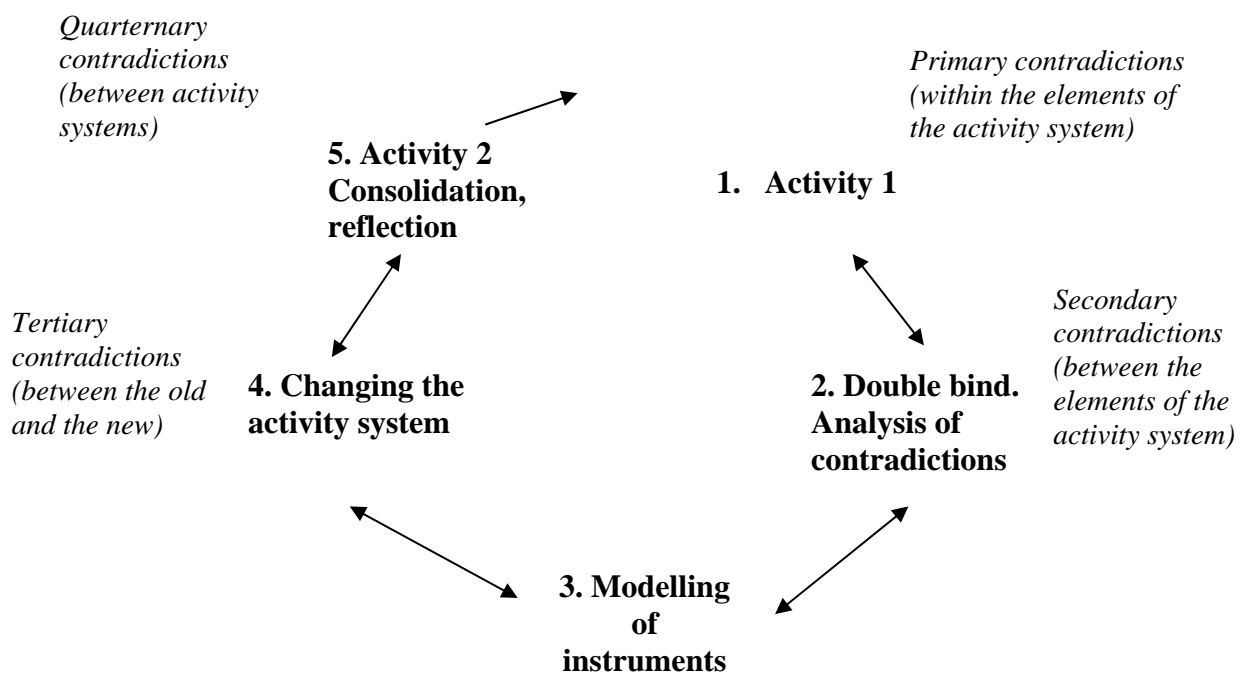
Contradictions are engines of change; they provide the impetus for the sorts of reorganising, re-conceiving, and reworking that characterises a living activity system or network. Identifying a contradiction in progress can help researchers conceptualise the problem and develop appropriate responses to it (Engeström, 1996a; Helle, 2000; Yamagata-Lynch, 2010: 8). Also, identifying contradictions in the past provides a historical approach that can help researchers identify and examine particular crises that were key to the development of new innovations and solutions (Engeström, 2008: 207; Spinuzzi, 2003). In either case contradiction puts a name to the oppositional nature of dialectics (Spinuzzi, 2008: 73). Such contradiction can take four forms (Engeström, 2001: 137; Marken, 2006: 33; Miettinen, 2009: 161-163; Virkkunen, 2009: 150):

- Primary contradiction – occurs when one of the elements of the system contradicts itself

- Secondary contradiction – occurs when one element of the activity conflicts with another element of the activity, pushing the system farther away from a quasi stationary equilibrium, eventually to a bifurcation point at which a new solution is necessary
- Tertiary contradiction – an activity may remain stable for some time, but at some point it will begin to change and a contradiction may arise between the old way of doing things and the new way
- Quaternary contradiction – occur between activity systems and neighbouring activity systems

The above process is called the cycle of expansive development and is represented in Figure 3 (below).

Figure 3 Phases of a Cycle of Expansive Development⁶



⁶ Model adapted from Virkunen (2009: 151)

This model also underpins Engeström's model of expansive learning which will be further described and explored in chapter six.

2.2.6 Activity Networks

Importantly, developing the notion of contradictions allowed CHAT to study development at the level of activity, and that led to examining development between and among activities. This work contributed to the 'third generation' of CHAT which, according to Engeström (1996a: 133):

...needs to develop conceptual tools in order to understand dialogue, multiple perspectives, and networks of interacting activity systems.

The notion of activity networks, first proposed by Engeström with explicit reference to Latour (1992), is a way to deal with the insularity implied by Leont'ev's activity systems. Activities could now be understood as related to one another rather than as independent. There are two main variations of activity networks:

- Chained or nested activity systems
- Overlapping activity systems

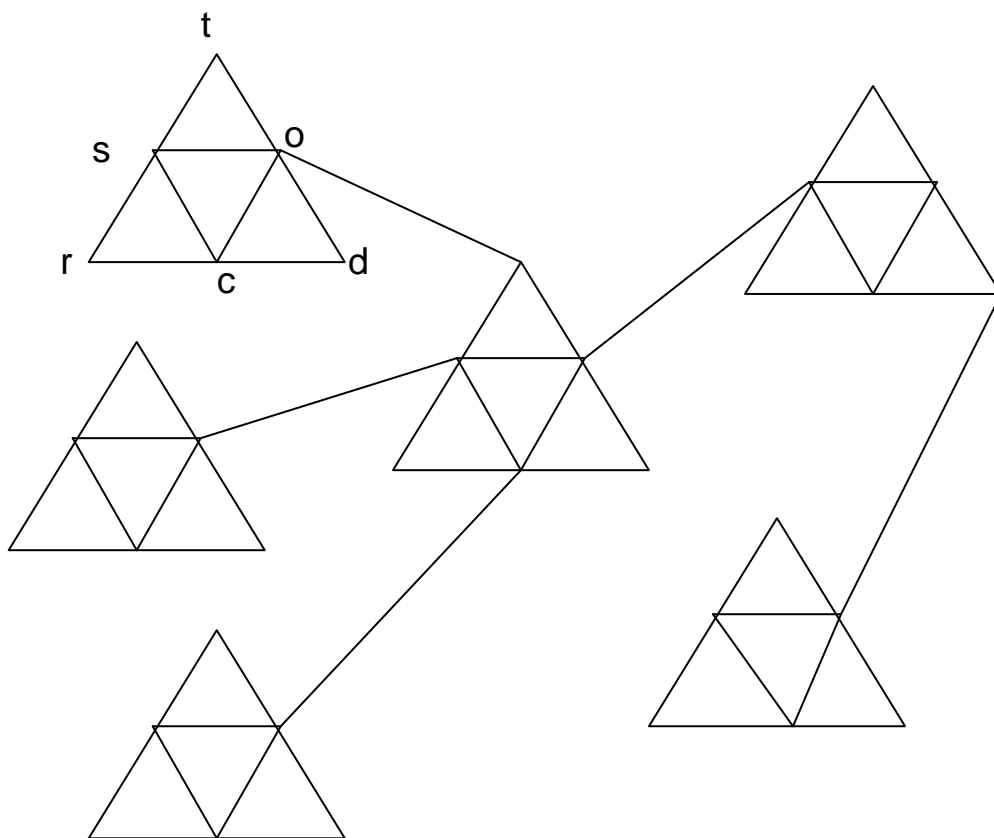
Variation 1 - Chained or nested activity systems

In this variation activity systems are linked by their 'corners' and each corner is something that has been produced by one activity system to be consumed by another.

These networks may be suitable for analysing mass production work or are useful

when analysing complicated human activity over time because they capture how a previous or simultaneous activity can affect another activity (Barab et al, 2002: 98; Yamagata-Lynch, 2010: 50). However, this raises issues regarding boundaries which may be difficult to define and are not as clear cut as this portrayal makes them out to be (chapter seven). For instance, the activity network in Figure 4 (below) draws artificially distinct boundaries between activities, but organisations have ‘hidden passes’ (Spinuzzi, 2008: 77), or informal linkages that potentially connect any part of the organisation to any other.

Figure 4 Chained or Nested Activity Systems⁷



⁷ Model adapted from Spinuzzi (2008: 76).

Variation 2 - Overlapping activity systems

In this second variation multiple activity systems with entirely different developmental paths can converge on the same object, and through their combined work, can become spliced together and influence each other. This engagement can be permanent or quite transitional. Such work has no centre or stable configuration. The standing set of transformations is not necessarily orderly, progressive, modular, or relatively static; it is more likely to be conflicting, overlapping and dynamic. That is to say, activities that have developed independently are now being spliced together. This understanding of networks is strongly associated with knowledge work and has been described as ‘knotworking’ (Engeström, Engeström and Vähäaho, 1999: 345) or ‘netWORKing’ (Nardi et al, 2002: 230, see also chapter five, section 5.4.2).

Figure 5 Overlapping Activity Systems

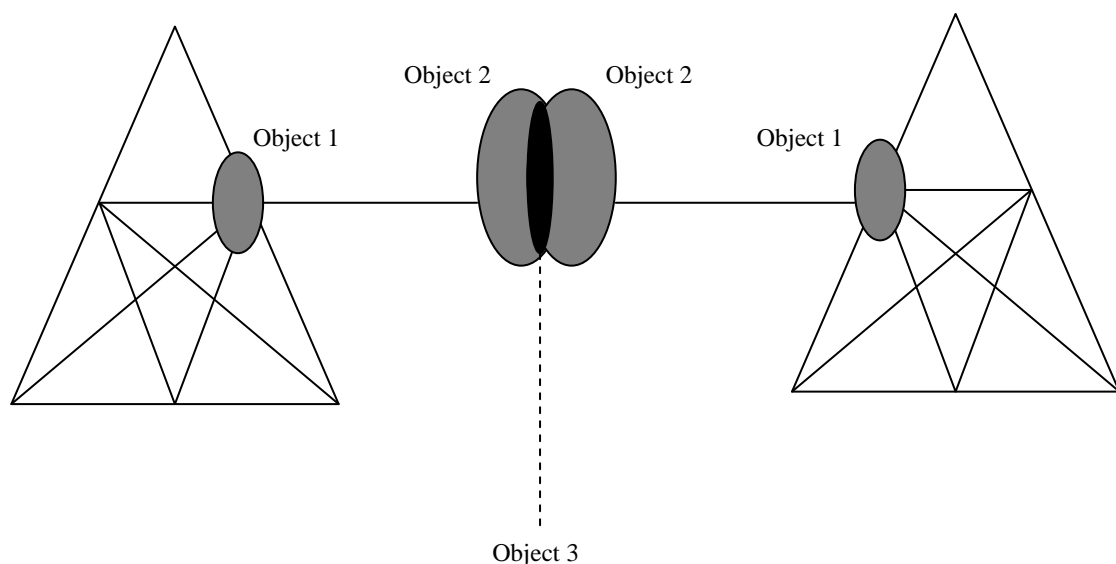


Figure 5 (above), represents two of what may be a myriad of interacting activity systems as a minimum model for third generation of activity theory (Daniels, 2001:

92). There are two central features in this third generation of CHAT, that is, polycontextuality and boundary crossing (Engeström et al, 1995: 319-320).

Polycontextuality involves working on tasks from different activities or frames of work simultaneously. According to Engeström et al (1995: 320):

Polycontextuality means that experts are engaged not only in multiple simultaneous tasks and task specific participation frameworks within one and the same activity: they are also increasingly involved in multiple communities of practice.

These multiple communities of practice operate within ‘parallel activity contexts’: that is, activity systems with their own internal rules and expectations as well as external relations with other activity systems (Tuomi-Gröhn, Engeström, and Young, 2003: 3). The developmental transfer between activity systems thus becomes a focus of analysis. In addition, polycontextuality leads to boundary crossing, which, according to Daniels (2001: 92) is:

...the unfolding of object orientated cooperative activity of several actors, focusing on tools and means of construction of boundary objects in concrete work processes.

When two different activities are linked together, ‘the two contexts’ in linked activities must be ‘iteratively connected’. The tools, relationships, and social languages may be very different so the linked activities need ‘boundary crossers’ who can mediate between them (Engeström et al, 1995: 321). Boundary crossing work is

more complicated in activity networks in which boundaries cannot be defined by hard organisational or disciplinary edges (Fitzpatrick, 2000; see chapter seven for an exploration of boundary crossing within organisations).

Third generation CHAT therefore recognises contradictions set up over multiple activity systems as a major source of change and development (Engeström, 2009), as, according to Tuomi-Gröhn (2003: 200):

...significant learning processes are achieved by collective activities and meaningful transfer takes place between collective activity systems.

In this view novel solutions come from the expertise of the overlapping activities in a multifaceted and multidirectional fashion. One recent example in the literature is that of sales engineers who learn multiple aspects of their work by gathering knowledge simultaneously from all the different activities whose borders they cross. According to Ludvigsen, Lahn and Havnes (2003:292):

This boundary crossing work involves negotiating the conflicting goals of different activity systems. The sales engineers from [their organisation] do not consider themselves as members of the project organisation responsible for constructional design, but they try to make alliances with nodes in the network.

But of these alliances, and the political rhetorical actions that sustain them, activity theorists tend to say very little (Spinuzzi, 2008: 80). These alliances will be explored from an ANT and CHAT perspective in chapters four and five.

Finally, Engeström (2009) has called into question the need for a fourth generation of CHAT with new forms of activity such as ‘wildfire activities’ and ‘mycorrhizae activities’ in which interaction takes the shape of knotworking without a stable centre. This concept will be explored further in relation to the boundaries and structures of activity systems in chapter seven (section 7.5.1).

In summary therefore, CHAT is a richly developed and frequently complicated approach to understanding human activity. Based on dialectics, it emphasises the sorts of things that dialectics emphasise: change, development, interaction, irreversible evolution, all performed through the cyclical resolution of dialectical contradictions. In this account the human being mediates their own and other’s work with physical and psychological tools, but ultimately human beings hold agency and nonhumans do not (chapter three, section 3.1.1). Therefore it is a decidedly asymmetrical account that has an understanding of networks founded on an arborescent, evolutionary explanation of how activities link, combine, merge, interpenetrate, and divide over time through a process of developing and resolving contradictions.

.

2.3 The Development of Central Concepts: ANT

In contrast, ANT involves understanding networks as becoming interconnected in ways that are not necessarily organic, self contained, or unified. Like dialectics a rhizomatic understanding rejects simple cause and effect relationships. But, unlike dialectics, it assumes multiplicity rather than immanent unity in everything and understands change as not necessarily developmental. ANT follows a pragmatic strand of thought that draws from Michel Serres (Serres and Latour, 1995) and to a lesser extent to Deleuze and Guattari (1987) and can be traced back to Machiavelli.

Therefore, I will discuss the initial ANT roots in Machiavelli and explore the central concepts of symmetry, actor networks, mediation, translation, composition, black boxing and delegation. This form of ANT is now seen as an early forerunner in its ‘diasporic creativity’ towards material semiotics (Law, 2008: 142). However, in order to inform my understanding and justification of both CHAT and ANT I include both their historical transformations and current iterations to arrive at my conceptual understanding and preference that is outlined and defended in section 2.5 (below).

2.3.1 Early ANT: A Machiavellian View

As stated above, ANT draws on a pragmatic strand of thought that can be traced back to Machiavelli (1469-1527). What attracted actor network theorists to Machiavelli in the 1980’s is Machiavelli’s pragmatism and antireductionism which is on display in *The Prince* (Machiavelli and Bull, 2003). Rather than rely on abstract social structures, ideals, or general laws to provide explanations, Machiavelli examines the relations forged among actors and allows those relations to be their own explanation. This pragmatic approach had a profound effect on the development of actor network theory. For instance, in *Aramis*, Latour (1996: 199) contrasts classic sociology with his (Machiavellian) relationist sociology and articulates pragmatism as relational interactions that, unlike dialectical interactions, can always be reversed. This pragmatism leads to antireductionism which translates to the principle of symmetry that ANT espouses. In this view, power is not a possession of a prince; it is a consequence of a system - orders are followed not because the person who issued them is powerful but because they are transformed into actions that serve the interests of those who execute them. Such an understanding of power contradicts the popular

conception of Machiavelli as a schemer bent on consolidating dictatorial power; but Machiavelli was an ardent republican who thought that in most respects the people were better decision makers than a prince. This strand of symmetry as negotiation runs throughout the ANT literature. Taken together therefore, pragmatism and antireductionism lead to an understanding of activity that is quite different from that of CHAT. Pragmatism leads away from abstract social structures and causal explanations and toward relational sociology. Antireductionism leads to symmetry, multiplicity, and monoscale explanations.

Early ANT can therefore be seen as a complex, sometimes loosely drawn approach to understanding scientific and technical knowledge. Based on relational sociology, it emphasises the sorts of things its Machiavellian roots emphasise: alliances, relationships, reversals, and betrayals. But unlike Machiavelli, it applies those principles to nonhumans as much as humans, and in doing so it expands from a political theory to ontology (Spinuzzi, 2008: 92). In this account every actant defines and mediates others, and thus every actant is a potential agent - it is a symmetrical account.

2.3.2 Actor Networks

Whereas CHAT came to networks relatively late, networks were an inherent part of ANT from the beginning, as the following three quotations from Callon, Latour, and Spinuzzi illustrate:

...all groups, actors, and intermediaries describe a network: they identify and define other groups, actors, and intermediaries, together with the relationships that bring these together (Callon, 1991: 142).

...the network of intermediaries accepted by an actor after negotiation and transformation is in turn transformed *by* that actor. It is converted into a scenario, carrying the signature of its author, looking for actors ready to play its roles. For this reason I speak of actor-networks; for an actor is also a network....it is the same task to define the artefact tying together the various groups or the groups tying together one artefact (Latour, 1993: 381, italics in original).

...an actant in an actor network is not a unitary subject passing through boundaries between multiple activity contexts. Rather an actant is an effect of the network, something that gains its identity through the interactions of an ecology (Spinuzzi, 2008: 84).

An actant is therefore like Donna Haraway's (1991) cyborg: decentralised, interconnected; an assemblage with constructed confused boundaries rather than an organic entity. In addition, that which is an actant is *also* a network (Law, 1992). This account of actants rejects not only the subject-object distinction but also rejects dialectics. By turning to relationist materialism rather than dialectical materialism, ANT makes an arborescent account impossible. This is not epistemological but ontological in nature; that is, it is not a matter of how we interpret something but how that something is 'enacted into being' (Law and Singleton, 2005: 334; see chapter

seven, section 7.4 for a consideration of enactment). Finally, ANT's brand of relational materialism does not assume that such relationships lead to development, increased complexity or unity, or that changes are irreversible, as dialectic does. Rather, these relationships are metaphorically described as alliances among humans and nonhumans that can be negotiated, compromised, unravelled, or betrayed.

2.3.3 Mediation

Actor networks are mediated in a very different way from CHAT networks. In ANT mediation involves coming between two actants – whether human or nonhuman – and creating a relation between them (Thrift, 2000: 215). Every actant is also a mediator; therefore if everything mediates everything else agency must be seen as distributed (Law, 1992: 383; chapter three, section 3.1.1). This allows ANT, like CHAT, to escape the subject-object dichotomy. However, according to Spinuzzi (2008: 87):

...whereas CHAT escapes this dichotomy by viewing the subject mediator relationship as a dialectic that *changes* pre-existing entities, ANT handles the problem by seeing subjects and mediators as network effects: subjects and objects, actants, and mediators *emerge* from the assemblage rather than pre-existing it (italics in original).

In ANT mediation involves mutual transformation of the assemblage, and this transformation has four parts; translation, composition, reversible black boxing, and delegation.

2.3.4 The Four Parts of Mediation

The concept of translation was taken by Callon from the French philosopher Serres and introduced the concepts of power, rhetoric, and politics to characterise network relationships. According to Callon and Latour (1981: 279):

By translation we understand all the negotiation, acts of persuasion and violence thanks to which an actor or force takes authority to speak or act on behalf of another actor or force.

In CHAT the subject-object relation is a historical phenomenon whereas ANT postulates a general theory of association of forces, regardless of what they are. With the meta-theoretical concept of 'force', it was possible for ANT to ignore the differences between entities and transcend the dualist distinction between nature and society and between human and nonhuman. Again, according to Callon and Latour (1981: 292):

Strength and success lies in the ability to bind together forces, to make them compatible and equivalent. That is why we stress so strongly that they must be looked at in the same way, and dealt with using similar concepts.

The concept of translation involves four moments:

- Problematisation – what must be accompanied or negotiated?
- Interessement – what stakeholders are involved in the negotiation?

- Enrolment – how do these stakeholders relate – how do they negotiate?
- Mobilisation – how can the stakeholders be persuaded to link up and accomplish the objectives?

The translation account highlights contingencies, alliances and multiplicity of meanings, not development over time (Law, 1986). Rather than taking parties and ideas as abstractions with their own unities, it highlights these actors as rhizomatic actants that can be redone at any or all forms of the above four moments.

Translation, when successful, leads to a composition of a relatively coherent assemblage of actants. The actants are mobilised to commonly achieve a goal that accomplishes the accumulated goals of the various actants. In so doing the assemblage becomes an actant itself. The more tightly an assemblage coheres as a single actant, the more easily it is to treat it as such. That is, an especially coherent composition can be ‘black boxed’ or turned into a single thing that resists decomposition. However, in an important difference to dialectics, black boxing is entirely reversible. Unlike dialectics, in which interactions result in inalterable changes, the sociology of translation describes settlements that can always be reversed (Callon, 1991: 150).

Finally, in ANT tasks can be delegated but so can morality, with delegation involving ‘crossing the boundary between signs and things’ (Latour, 1999b: 185). For example, traffic calming devices such as speed bumps are seen to make drivers behave more safely and morally (Latour, 1999b: 186).

The above sections have described early ANT, in the following section I will move through its developing continuum towards its current alignment with material semiotics.

2.3.5 Current ANT: A Move to Material Semiotics

As Latour (1999a: 15) stated in *On Recalling ANT*:

There are four things that do not work with actor-network theory; the word actor, the word network, the word theory, and the hyphen. Four nails in the coffin.

On defining why ANT does not work the point that Latour appears to be making is an objection to the reification of ANT as a theory and a model that has solidified ways of working and inquiry into set representational methods that ANT approaches were intended to disrupt. *On Recalling ANT* was part of a collection of essays entitled *Actor Network Theory and After* (Law and Hassard, 1999), where a number of ANT scholars (including Law, Callon, and Mol), suggested alternative approaches to move away from early ANT towards new conceptual spaces. This move is summarised as follows by Latour (1999a: 25):

...yes, I think there is life after ANT. Once we have strongly pushed a stake into the heart of the creature safely buried in its coffin – thus abandoning what is so wrong with ANT, that is ‘actor’, ‘network’, ‘theory’ without forgetting the hyphen! – some other creature will emerge, light and beautiful, our future collective achievement.

The new creature that has emerged is material semiotics. In a recent article Law (2008, 141-2) sets out the differences between early ANT and current thinking as follows:

- ANT is not abstract but is grounded in empirical case studies similar to symbolic interactionism
- ANT is not a 'theory' but is descriptive rather than foundational, telling stories about 'how' relations assemble
- ANT is a diaspora better captured by 'material semiotics' – to enhance the 'openness, uncertainty, revisability and diversity of the most interesting work'
- ANT is relational and cannot subscribe to the objectivity of an overall view
- ANT is multiple (Law, 2004: 45-68), fluid (de Laet and Mol, 2000; Law, 2004: 70-86) and spatial (Callon and Law, 2004; Hetherington and Law, 2000; Oppenheim, 2007)

Crucial to this material semiotics is performativity (see chapter seven, section 7.4). As stated by Law (2008: 151):

...something seismic is happening here. A vital metaphorical and explanatory shift is taking place. We are no longer dealing with *construction*, social or otherwise: there is no stable prime mover, social or individual, to construct anything, no builder, no puppeteer...rather we are dealing with *enactment* or *performance*. In this heterogeneous world everything plays its part, relationally (italics in original; see also chapter seven, section 7.4).

Also, material semiotics does not have to imagine a single actor network: ‘webs may be partially associated in endless different ways but the need for a center has gone’ (Law, 2008: 153). This decentering effect has similarities with the third / fourth generation CHAT concepts of knotworking and mycorrhizae, although, unlike ANT, CHAT retains an asymmetrical account (section 2.2.6).

There is a caveat to this ANT development towards material semiotics as Law (2008: 147) cautions:

ANT posits a non-humanist relational and semiotic logic...It is obnoxious to those who take people to be morally special and intellectually flawed for those who frame the social in terms of meaning and intersubjectivity.

Both early ANT and material semiotics will be considered in chapters five, six, and seven in an attempt to open up and broaden my analytical understanding of working, learning, and boundary crossing that is afforded through CHAT contradiction accounts. In the preceding sections I outlined the development of both ANT and CHAT and in the following section I will compare their central concepts.

2.4 Comparison of Central Concepts

In sections 2.4.1 to 2.4 .4 (below) I will utilise the concepts of dualism, mediation, symmetry, and cognition and conceptual tools, as mechanisms to further compare and contrast the central concepts of CHAT and ANT. I will then summarise my findings

in order to defend and justify my CHAT derived framework to identify the activity system and subsystems that centralise the focus of this study.

2.4.1 Socio-Material Solutions to the Problem of Dualism

The concept of nature and society production in ANT and the concept of activity in CHAT have much in common as attempts to transcend the dualism between subject and object, nature and society. By excluding binaries, socio-material approaches can enhance meaning making, reveal hidden dynamics, and unsettle categories ‘that have become problematic conventions’ (Fenwick, 2010: 105). This study will apply such readings to the concepts of organisational working (chapter five), organisational learning (chapter six), and the flux of differential boundaries that separate entities (chapter seven). The following section regarding ‘mediation’ continues and extends this consideration of dualism.

2.4.2 Comparison of Mediation in ANT and CHAT

In order to critique the central concepts further I will compare the symmetrical (ANT) and the dialectical (CHAT) interpretations of the concept of mediation.

The concept of mediation has a central role in ANT’s meta-theory, as according to Latour (1993a: 113):

...nothing is, by itself, reducible or irreducible to anything else, never by itself, but always through the mediation of another.

Therefore, in Latour's (1993b: 87-88) analysis of modernism, the concept work of mediation is an event or a process that gives birth to, and explains, both nature and culture:

Nature and Society are not two opposite transcendences but one and the same growing out of the work of mediation. A mediator is an original event and creates what it translates as well as entities between which it plays a mediating role.

This could be interpreted as saying that instead of a monocausal explanation, a relational interactional causality is needed. This definition of mediation resembles very much the basic principle of Hegelian dialectics. In Hegel, the mind develops through the material and is mediated by it. According to Latour (1993b), dialectics imply the social constructivist reduction in the form of the Prometheus myth: an all powerful human agent imposing an arbitrate form on shapeless matter. In reality, nonhumans also act, displace goals, and contribute to their redefinition (Latour, 1994: 38). This critique may hit the Hegelian dialectics that postulate that nature is socially constructed: reduced to a form given only by the *human* mind and activity.

In CHAT, participation is mediated by, and constrained by, symbolic and material artefacts that carry with them historical patterns of usage (Sawchuk and Stetsenko, 2008: 357). Mediation in this sense involves explicit and implicit ideologies, normative and expected conduct, as well as the institutionalisation of everyday practice, and participation in work and learning environments that are governed by strictures such as accountability and epistemological prescriptivism. According to

CHAT, the specifically human type of consciousness is needed to make sense of the relation between man and his environment. It is needed when the aim is to analyse the work of constructing associations between heterogeneous entities, the work of creating new assemblies of materials and humans. Although all entities of the assembly do have the power to influence or act, they are asymmetrical in regard to taking the initiative in the construction of associations. This is in direct contrast to ANT which, as described, upholds a symmetrical account, although, Miettinen (1999: 177) has challenged that he finds the beginning of acceptance of CHAT asymmetry from Latour when Latour (1994: 35) states:

The attribution to one actor of the role of prime mover in no way weakens the necessity of the composition of forces to explain the action.

Therefore, in CHAT, artefacts as representations are presumed to serve a mediating function between independently existing entities. However, this CHAT reading of mediation is troubled in the following two quotations from Barad:

The ubiquitous pronouncements proclaiming that experience or the material is 'mediated' have offered precious little guidance about how to proceed. The notion of mediation has for too long stood in the way of a more thoroughgoing accounting of the empirical world (2003: 823).

...as long as representation is the name of the game, the notion of mediation – whether through the lens of consciousness, language, culture, technology, or labour – holds nature at bay, beyond our grasp, generating and regenerating the

philosophical problem of the possibility of human knowledge out of this metaphysical quarantining of the object world (2007: 375).

Barad is therefore calling into question whether a medium – an ‘ether’ – is necessary (2007: 409 n9). The concept of mediation will therefore be further explored with regard to agency, representation, and performativity in chapters three (section 3.1.1) and seven (section 7.4). This brings us now to the question of generalised symmetry.

2.4.3 Limitations of the Concept of Generalised Symmetry?

The central methodological principle of ANT is the principle of generalised symmetry. However in *Reassembling the Social*, Latour writes (2005: 76):

There is no empirical case where the existence of *two* coherent and homogenous aggregates, for instance technology ‘and’ society, could make any sense. ANT is not, I repeat is not, the establishment of some absurd ‘symmetry between humans and non-humans’. To be symmetric, for us, simply means *not* to impose a priori some spurious *asymmetry* among human intentional action and a material world of causal relations (*italics in original*).

Then, in a footnote to the above passage, Latour adds:

This is the reason why I have abandoned most of the geometrical metaphor about the ‘principle of symmetry’ when I realized that readers concluded from it

that nature and society had to be ‘maintained together’ so as to study ‘symmetrically’ ‘objects’ *and* ‘subjects’, ‘non-humans’ *and* ‘humans’. But what I had in mind was not *and*, but *neither*, a *joint dissolution of both collectors*. The last thing I wanted to give nature and society a new lease of life through symmetry (italics in original).

The above erasure of the transcendence of the principle of symmetry has been to a large extent ignored in the extant literature regarding current ANT writings and therefore also in critiques of ANT where there would appear to be five interrelated problems that are often debated with regard to the use of symmetrical language (Hakkarainen, 2003: 685; Miettinen, 1999: 181). These are:

- The problem of structuring the analysis of the network and selecting the relevant elements or actors
- The problem of silent actors
- The problem of human capability or intentionality in explaining the establishment of network associations
- Reversed asymmetry and black boxing
- The exclusion of ‘Otherness’

The first problem concerns the delineating and structuring of the description and analysis of heterogeneous networks (Sørensen, 2007a). Due to the heterogeneity of networks and the principle of generalised symmetry, no criteria for defining the nature and scope of actors can be presented in advance. Latour said that the concept of network is a way of getting rid of system and structure (Latour, 2005: 128-133). But if

no theoretically relevant elements of the network can be discerned in advance, how is it possible to decide what is important and essential and what is not without theoretical preconceptions? In addition Star (1991) noted that 'heterogeneous engineers' come in different shapes and sizes thus affecting and potentially limiting their voice. This problem leads to the second one - that of silent actors. This is comprised of two interrelated parts: the human asymmetry and the generalised asymmetry that omits the analysis of the nonhuman elements. The construction of associations between humans and nonhumans would appear to be involved mainly only as a rhetorical resource used by human actors in their controversies (Miettinen, 1997: 7). A solution is proposed by Hetherington and Lee (2000: 173) who suggest utilising the 'blank figure' within systems to consider these absences alongside presences (see chapter seven, section 7.3.2 for discussion of the strategy as blank object). The third problem concerns the analysis of the role of human cognition and intentionality. The ANT principle of symmetry leads it away from specific human capacities such as the study of cognition, human competence (other than the ability to form strategies and alliances), intentionality, expression, powers of invention and of 'fabulation' (Spinuzzi, 2008: 41, 44; Thrift, 2000: 215; Woolgar, 1995: 175). The fourth problem of reversed asymmetry and black boxing is raised by Hakkarainen (2003: 685):

[Latour] does not examine how artefacts affect human cognition, but takes human agents as given...but his conception of mind is essentially a form of 'cognitive elitism' (in respect of taking people and their intellectual resources as given) rather than adopting a historical approach to cognitive competencies as would be the case in CHAT.

The final problem relates to the tendency of ANT to colonise or homogenise the 'Other' and therefore deny its 'Otherness'. Lee and Brown (1994) criticise ANT in this respect for taking a God like view. This leads to the final area of comparison; that of cognition and conceptual tools.

2.4.4 Cognition and Conceptual Tools

Latour (1988: 51) argued that cognitive explanation was superfluous to scientific activity. He refers to 'inscription devices' as conceptual tools that can be 'transferred in space and time without changing their content or internal relations' that explain most of the superiority of scientific thought by transforming complicated objects and events into a form that an individual agent can easily control. According to Latour (1988:51):

...if any shift in thinking occurs; it has nothing to do with mind, but with manipulation of inscription devices.

However, by building on the CHAT theory of cognition it is argued that the use of conceptual tools significantly transforms cognitive processes (Cole and Engeström, 1993). For example, Vygotsky's cultural historical theory of cognition, similar to symbolic interactionism, espouses that sociological and cognitive explanation are not mutually exclusive. Vygotsky argued that the human mind is constituted by internalisation of socio-cultural processes. This approach emphasised the social origin of human cognitive processes by analysing the cognitive effects of language and

symbol systems. That is, that the human mind or forms of thought are not given at birth, but emerge in the process of enculturation. Until the time of Hegel it had been thought that while there is a process of biological evolution, the mind or forms of thought are given. Vygotsky argued that human cognition is based on the use of psychological tools for mastering mental processes. Culturally and historically originated signs act as mediating instruments of psychological activity, thus providing auxiliary means for solving problems. The difference between ANT and CHAT in this regard would appear to sit within the area of representation, enactment, and performance. This will be further explored in chapter seven.

The foregoing has provided a detailed account of the development of both ANT and CHAT and a comparison of their central concepts and challenges to their limitations. In light of this I will now justify my main choice of conceptual framework to use throughout the remainder of this study.

2.5 Justification of the Conceptual Framework

Although initially working in traditionally separate areas, the edges of ANT and CHAT have begun to meet and contend with each other. CHAT is now in its ‘third generation’ (Hong, Yang, and Cheng, 2007: 125-126), and ANT has moved from being a ‘theory’ towards being a ‘disparate family of material semiotic tools’ (Law, 2008: 141). So why compare CHAT and ANT at all? In addition, which generation of each would provoke the most useful comparison?

The incipient third generation of CHAT would appear still to be a work in progress, forming a ‘multivoiced activity system’ (Engeström, 1993: 64). As such, CHAT

provides a set of heuristics and tools that can be situationally adapted to the process under consideration. Engeström (2001) described the third generation's ongoing task as that of developing conceptual tools to address dialogue, a multiplicity of participant perspectives, and the interrelations between defined systems. A recent innovation in this direction is the metaphor of 'knotworking' (Engeström, 2008: 199-233), which provides a theoretical framework for relating multiple activity systems across time and space. Whereas, 'teams' are considered relatively stable human and resource configurations, and 'networks' similarly are stable structures within which nodes are accessed by individuals or collectives, Engeström et al (1999: 345) describe knotworking as:

...the construction of constantly changing combinations of people and artefacts over lengthy trajectories of time and widely distributed in space.

CHAT therefore provides a structure through which to analyse the organisational activity in NHSX taking cognisance of historical developments dispersed over space and time.

Current ANT warns us 'to beware...of any text about actor network theory that pretends to the objectivity of an overall view' (Law, 2008: 142). Therefore, in encompassing ANT in this study I acknowledge that I have synthesised particular accounts of ANT, particularly Callon's translations, where I anticipated that they would afford alternative readings of the data by enacting 'questions and phenomena in rich ways that discern difficult ambivalences, messy objects, multiple overlapping worlds and apparent contradictions' (Fenwick and Richards, 2010: ix). In other words, I have chosen to use ANT in an innovative and creative way to shake some of the

representational CHAT readings from inside their black boxes. I will therefore use CHAT to identify and demarcate the main activity system of NHSX with its three associated subsystems, and ANT to problematise and enrich my interpretation of the data.

Finally, I wish to acknowledge the theoretical boundaries of this study as situated in the literature that I have chosen and defined (see chapter seven regarding system boundaries).

2.6 Summary

In this Chapter I reviewed the literature pertinent to the development of both ANT and CHAT, drawing out their central concepts in relation to dualism, mediation, (a)symmetry, and cognition as a comparison of their similarities and differences. Both have gone through multiple iterations and are therefore represented within the literature in a developing temporal context. In conclusion, although I have expressed a preference to focus more acutely on CHAT as my preferred initial framework I will keep ANT in productive tension to allow an increased breadth of analysis and to bring to light some areas of potential black boxing and exclusionings. In the following chapter I will set out the design of the study incorporating methodology, data management and analysis, and the identification of the organisational activity system. Throughout the study I will fold into my account both the actual and the potential, both what there is and the work of connecting it and making it appear.

Chapter Three – Designing the Study

3.0 Introduction

As the circulating draft strategy can be regarded as a specific material practice through which local semantic and ontological determinacy are intra-actively enacted (see chapter seven, section 7.4); I will begin this chapter by contextualising and exploring issues relating to ontology, epistemology, and agency from an ANT and CHAT perspective. I will then provide an overview and rationale for my selected methodology by reviewing case study and the role of the researcher within it before describing the sources and management of data collection. Once the initial themes and categories are identified from the data, I will provide a brief focus on CHAT as an inductive developmental work research framework for data analysis. In appreciation of the potential complexity of activity systems analysis, and in order to structure and analyse my data, I adopt Mwanza's Eight Step Model for translating activity systems. Through this structured analysis the research problem and subsequent research questions are generated. In this chapter the model is explained and demonstrated in principle prior to being applied to NHSX as a complex organisational activity system in chapter four. I conclude with a consideration of the limitations of CHAT as a theoretical framework.

3.1 Methodology: Ontology and Epistemology

The framework that underpins this study is composed of ontology, epistemology, and methodology and can be referred to as a paradigm (Denzin and Lincoln, 2005a: 22).

Paradigms are human constructions that define the worldview of the researcher as interpretive bricoleur (Denzin and Lincoln, 2005b: 183). The differing focus between ANT and CHAT has led to many internecine relations and issues of competing epistemological and ontological orientations. These different approaches are captured well in this quotation from the last of four lectures given by Eduardo Viveiros de Castro in 1998:

...the Cartesian rupture with medieval scholastics produced a radical simplification of our ontology, by positioning only two principles of substances: un-extended thought and extended matter. Such simplification is still with us. Modernity started with it: with the massive conversion of ontological into epistemological questions – that is questions of representation – a conversion prompted by the fact that every mode of being not assimilable to obdurate ‘matter’ had to be swallowed by ‘thought’. The simplification of ontology accordingly led to an enormous complication of epistemology. After objects or things were pacified, retreating to an exterior, silent and uniform world of ‘Nature’, subjects began to proliferate and to chatter endlessly: transcendental Egos, legislative Understandings, philosophies of language, theories of mind, social representations, logic of the signifier, webs of signification, discursive practices, politics of knowledge – you name it.

Although this study compares ANT approaches to those of CHAT they share little in their ontological assumptions (Fenwick, 2010: 112). In ANT the idea that symmetry is a methodological good has been turned into an ontological argument, that is, since both nature and culture are produced together in the same process, it is asymmetrical

to assume that nature has a particular and distinctive form, and therefore needs to be explained in terms that are different to those of the social (Callon, 1986b: 200). This can be seen as the extension of methodological symmetry into ontology; what there is and how it is divided up should not be assumed beforehand but emerges through interactions and relations. Law (2004a: 102-103) then links epistemological and ontological symmetry together in a 'deliberately permissive' method assemblage of fractionality (see chapter seven, section 7.2.1).

From a CHAT perspective Vygotsky was critical of research that divorces or ignores the mutually constitutive relationships between methodology and epistemology.

Concepts, tools, and techniques do not result in the uncovering of knowledge; they are themselves non neutral, historically formed *producers* of particular kinds of knowledge (this can also be levied at the role of the researcher see section 3.2.2 below). Another area that contours the methodology, ontology, and epistemology is agency.

3.1.1 Agency

Agency is defined as the 'socio-culturally mediated capacity to act in a world' and is often read in the context of a Cartesian dualism of the individual and society (Ahearn, 2001: 112). The literature on agency is vast and therefore for the purposes of this study and in keeping with an ANT and CHAT perspective the main focus will be in investing agency in human or nonhuman forms and how this reflects on the ontology of the methodology. Agency is usually associated with issues of subjectivity and intentionality. From the perspective of CHAT, agency is seen as the subject potentialities and positions of the externalised creation of new tools and forms of

activity with which humans transform both their outer and inner worlds and thus master their own lives and futures (Yamazumi, 2007: 20). Therefore, by introducing a 'complex mediated act' as the unit to account for the development of higher psychological functions, Vygotsky opened a way for a non-deterministic account of agency whereby the individual is acted upon and acts upon society (Escandon, 2010). The new generation of CHAT with its multiply linked activity systems, leads Yamazumi (2007) to suggest that the focus on agency must shift to the analysis of a new type of agency in fields of distributed and networked activities. To resolve contradictions in multi activity collaboration there needs to be new forms of distributed interagency across boundaries between the activity systems involved (Daniels, 2008: 63). In CHAT recent suggested forms include characteristics of 'critical design' (Engeström, 2007), 'relational' (Edwards, 2007), and 'expansive' agency (Yamazumi, 2009).

In contrast, ANT does not conceptualise agency as an individual source of empowerment rooted in conscious intentions that mobilise action. Instead ANT focuses on the 'circulating forces that get things done through a network of elements acting upon one another' (Fenwick and Edwards, 2010: 21). In this way ANT can be viewed as aligning with performativity (see chapter seven, section 7.5). However, within the literature, there is a body of argument that ANT, in its principled attribution of agency to humans and nonhumans, has failed to consider how the very notion of nonhuman agency is premised on a dichotomous ontological positioning in which nonhuman is opposed to human (Schatzki, 2001: 11; Thrift, 2000: 220). Thereby the ANT approach to nonhuman agency may exclude a crucial factor from analysis, as, according to Casper (1994: 840):

...attribution of human and nonhuman to heterogeneous entities is always already the consequence of particular political practices.

Casper therefore demonstrates the kinds of political assumptions that can lie hidden in accounts that take for granted a pre-existing distinction between humans and nonhumans. These different framings of agency will be used to explore different readings of the data in the following chapters, in particular in chapter five (section 5.4) where further consideration of current notions of agency will facilitate an analysis of organisational working in NHSX.

3.2 Case Study as a Methodological Framework

As part of the overall methodological approach to this study I will outline both the rationale and use of case study as a ‘method’ (Stakes, 2005: 443-444), and the role of the researcher within it.

3.2.1 Case Study

Qualitative research focuses on understanding and making meaning about a phenomenon in context. It is an open ended method or bricolage with a rich history that accommodates to different kinds of research approach (Denzin and Lincoln, 2005a: 4-28). Although CHAT researchers can engage in various forms of qualitative research, case studies are particularly compatible with the theoretical assertions and analytical intentions involved in activity systems analyses (Yamagata-Lynch, 2010:

63). I will briefly explore case study as a methodology here in preparation for chapter four that presents an in depth account of a CHAT comparative case study.

Case study is driven by the epistemological question ‘what can be learned about the case?’ (Stake, 2005: 443). Case study is both a process of inquiry about the case and a product of that inquiry (Stake, 2005: 444). Case study optimises understanding by pursuing research questions. It gains credibility by thoroughly triangulating the descriptions and interpretations, not just in a single step but continuously throughout the period of study. Stake (2005: 445-446) identifies three types of case study, that is, intrinsic, instrumental, and multiple (see also Cresswell, 2007: 74):

- Intrinsic – study is undertaken because of an intrinsic interest in the case itself, one bounded case is selected to illustrate the issue
- Instrumental – a particular case is examined mainly to provide insight into an issue, the case is of secondary interest, it plays a supportive role, and it facilitates our understanding of something else
- Multiple – a number of cases may be studied jointly in order to investigate a phenomenon

The case study undertaken and detailed in chapter four is ‘instrumental’ as it uses the case setting of the organisation to facilitate a deeper understanding of strategy construction and implementation.

Case study research involves the study of an issue explored through one or more cases in a bounded system or multiple bounded systems. This poses the problem of identifying what are the ‘boundaries’ of the system to be studied (Atkinson and

Delamont, 2005: 827; Cresswell, 2007: 76; Yamagata-Lynch, 2010: 34). In chapter two it was noted that 'boundary' issues are topical in both current CHAT and ANT thinking (Mol and Law, 2005: 637). It is standard practice to bound research cases within a context defined in time and space, such as an organisation, locale, or activity (Cresswell, 2007: 75). However, complex organisations such as NHSX are characterised by unpredictable and intermittent connections among widely distributed points and are therefore not neatly segmentable into contexts or activities. Therefore, instead of bounding the case, Spinuzzi (2008: 204) suggests it is more fruitful to follow the actors and texts, the contradictions, the disruptions, and especially the genres (see chapter seven). I acknowledge that this study has been bounded by theoretical and analytical constraints imposed by myself as researcher. Hence, in an attempt to enable the detailed tracing that Spinuzzi suggests, I have developed a CHAT organisational activity system and three sub activity systems which I will subject to ANT translation accounts to permit following actors and texts into areas of mess and uncertainty (chapter four).

3.2.2 Role of Researcher

The truncation and restriction by the researcher in setting parameters of data analysis is well summarised by Thorne (2005: 397):

Research methodologies and genre specific write ups necessarily truncate the complexity of the phenomena they represent in essentialising: methodologies are forms that are organised according to political and epistemological conventions.

Therefore, although method does not dictate results, it sets parameters that channel the construction of data and interpretive possibilities.

Consequently, there needs to be a self-conscious, political awareness of how researchers as theory builders are socially, ideologically, and institutionally located within their setting, and an acknowledgement of the influence of researcher as author (Fontana and Frey, 2005: 714). As the role of the researcher is to vicariously experience, make sense of, and report participant experiences, during the data collection and analysis processes, researchers must constantly evaluate how interpretations of observations are being influenced by their emic (insider) and etic (outsider) values (Stake, 2005: 461). In this study I ranged from being investigator (during data analysis), to a participant as observer (for example at some Business Group Meetings), to full participant (for example in writing drafts of the strategy document), in the community studied, and, as such, was highly engaged in the participants everyday actions related to their object orientated activities (Yamagata-Lynch, 2010: 66-67). In addition, I acknowledge that there was a multi-faceted professional role between myself as researcher and the participants in the study as the participants were recruited through social and professional networks to which I, as researcher, also belonged (see chapter one, section 1.2.3 for previously expressed assumptions and biases). Finally, on a personal note, the above understanding of case study has broadened my previous association with studying cases as part of the knowledge and practice of law into a deeper awareness of the context and possibilities surrounding methodological orientation to the 'case'. In summary, I acknowledge that the writing of this study is influenced by my interpreting voice and will seek to use

this awareness to continually question and expose my assumptions (Denzin and Lincoln, 2005a: 18; Fontana and Frey, 2005: 714).

3.3 Ethics, Data Collection, and Management

Ethics was subject to the University of Stirling, School of Education, research ethics scrutiny and the BERA (British Educational Research Association) code of ethics practice was adhered to (see Appendix 1, page 300). The sections below describe the sources and types of data collected and the methods used to manage the resultant wealth of data before going on to explain the Eight Step Model, an analytic procedure that evolved in the field of CHAT, as my initial chosen vehicle for data analysis.

3.3.1 Data Collection

Data was collected over a five year period (2005-2010) from multiple sources as reflective of case study research (Cresswell, 2007: 75; Yin, 2008: 114). These are represented in Table 7 below. As I commenced my EdD in 2006, the data collected in 2005 was not initially driven by my doctoral thesis but by retrospective gathering from various organisational sources. In 2006-7, I began a more focussed data collection as my research interest began to take shape. Seven semi structured interviews were carried out with key organisational stakeholders to elicit early issues, contexts, and themes. In 2007-8 I was not directly involved with this area of work (see chapter four, section 4.3, Table 15), but was able to receive copies of all data and transcripts of interviews (carried out by a colleague). In 2008-9 I was once again directly supporting this work and therefore, because of my research interest, there is

an increase in the activity represented in the table below. In 2009 the main project lead left and Business Group approval for the continuation of the work was withdrawn. This is reflected in the diminished activity recorded that year.

Table 5 Summary of Sources of Data Collected

Year	E-mails or written notes	Drafts of Strategy	Minutes of meetings	Reports / Business Papers	Interviews	Events	Presentations Articles Process Maps
2005/6	34	3	7	1	0	0	1
2006/7	45	5	2	1	7	0	0
2007/8	31	1	3	1	10	0	0
2008/9	76	3	5	7	18	2	5
2009/10	26	1	4	2	0	0	0
Totals	212	13	21	12	35	2	4

E-mails or Written Notes

The e-mails collected are in relation to specific communication regarding the development of the strategy. The written notes mostly pertained to written comments from individuals in response to circulated drafts of sections of the strategy or feedback from meetings focussed on the development of the strategy. This source of data has been used to contextualise the study and is not drawn on directly or referenced explicitly.

Drafts of the Strategy

There were 13 drafts of the strategy in total. They ranged from the initial 102 page document in 2005 to the final 7 page document in 2010. The authors of the strategy changed during the five year period but remained small in number and are represented among the participants that were interviewed (see chapter four, section 4.3, Table 15).

This source of data has been used to contextualise the study and has also been referenced specifically.

Minutes of Meetings

These included minutes from strategy related Business Group, core group, and steering group project meetings. Membership of these meetings was inclusive of a number of the individuals interviewed. In addition, minutes of relevant organisational Business Group meetings were included for analysis where the strategy had formed part of the Business Group discussion and decision making. This source of data has been used to contextualise the study only.

Reports and Business Papers

These included Briefing Papers to the NHSX Business Group, Summary Reports for the Chief Executive, and an organisational Board Paper. As many of these were written by the researcher they have been used to contextualise the study only.

Interviews

A range of semi-structured and unstructured interviews (Fontana and Frey, 2005: 705), were undertaken between 2006 and 2009. Participant selection criteria was informed by selecting individuals who had:

- (a) a lead role in organisational decision making, or,
- (b) a vested interest in the outcome of the strategy, or
- (c) a role in the production of the strategy, or
- (d) a combination of the above

There was a total of 35 interviews conducted between 2006 and 2009. Detail of these is summarised in Table 8. A breakdown of interviewees into their professional disciplines is summarised in Table 9. Where the interviewee had a dual role (for example Deputy Chief Executive Officer and Medic), he or she has been listed in their main organisational capacity area.

Table 6 Chronological Numbers of Participants Interviewed

Year	Number of interviews	Detail
2006/7	7	Unstructured 1:1 interviews. Hand written notes taken by the researcher and transcribed manually
2007/8	10	Semi-structured 1:1 interviews undertaken by the researcher's colleague. Recorded by Dictaphone with participant consent and transcribed by an external company.
2008/9	18	Semi structured 1:1 interviews conducted by the researcher. Recorded by Dictaphone with participant consent and transcribed by the researcher

Table 7 Range of Professional Disciplines Interviewed

Discipline / Area of Work	Number Interviewed
CEO	1
Deputy CEO	1
Medical Deans	3
Pharmacy	3
Nursing	4
General Practitioners	6
Dentistry	3
Project Managers	5
Research Officers	3
Psychology	1
Chaplaincy	1
Knowledge Services	1
Allied Health Professional	2
Corporate Planning	1

The slightly higher number of General Practitioners (GPs) interviewed reflects that the strategy was lead by two different GPs (from 2005-2007 and 2007-2009); and the central role of independent contractors within a community healthcare setting. As the data drawn from this source was very rich, it has been selected as the main focus for reporting within the study.

Events

Two educational events were held in 2009, the purpose of which was to provide an opportunity to ‘inform and support the refinement’ of the strategy in the developing policy context (Shifting the Balance of Care⁸). The invited audience included Community Health Partnership (CHP) Directors, CHP General Managers, CHP Clinical Leads and NHS Health Board Shifting the Balance of Care Leads. A Report

⁸ Shifting the Balance of Care Web Site available at <http://www.shiftingthebalance.scot.nhs.uk/> (last accessed on 19th March 2011)

from both events was written by the researcher and submitted to the Business Group in May 2009. This data source has been used to contextualise the study only.

Presentations, Articles, and Process Maps

This included two power point presentations. One presentation was used for the events and one was to the Business Group. These were constructed jointly between the Strategy Lead and the researcher. In addition, two summary articles were published by the researcher. One was published in the NHSX internal communication magazine and the other was published in an external communication magazine that is sent to all NHS Boards in Scotland. These articles contained information regarding the policy background, context, purpose, and process and time scale in relation to the developing strategy. Finally, a project process map was developed by the researcher to reflect activity between June 2008 and March 2009. This map was used by the Business Group when considering the future trajectory of the strategy (Figure 6, below). This data source was used for contextualisation only.

Observational Analysis

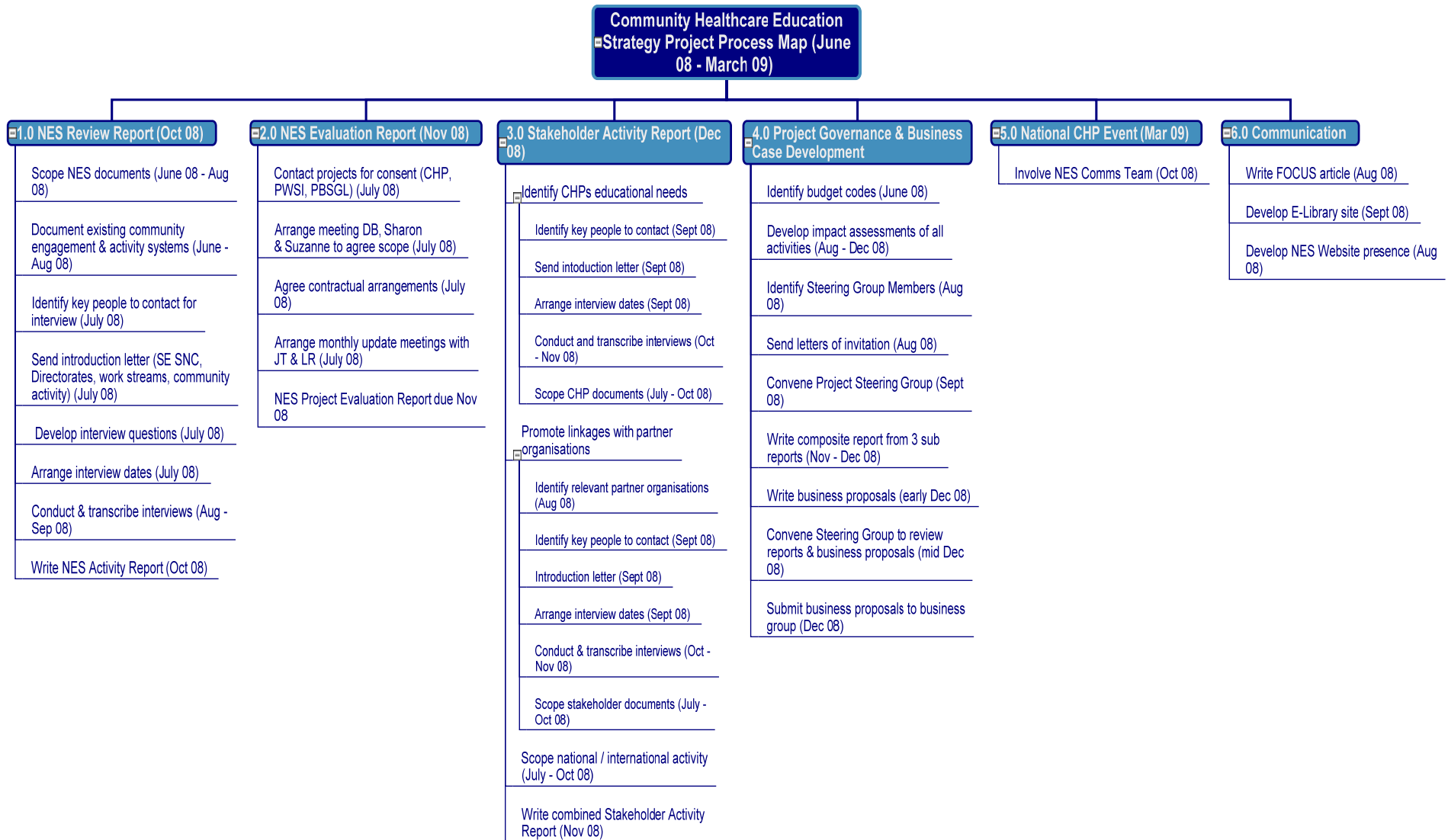
Due to my role within the organisation, I was present at many of the business meetings, project meetings, and events. In addition, I had open access to the office space of the stakeholders involved. During many of these sessions I recorded both descriptive and reflective notes, detailing the organisational settings, behaviours, activities and reactions. However, observational analysis must be interpreted with caution and acknowledgement of the observational agency of the researcher.

According to Barad (2007: 114):

...there is no unambiguous way to differentiate between the object and the agencies of observation. No inherent Cartesian subject-object distinction exists...observations do not refer to properties of observation independent objects (since they don't pre-exist as such)...if the distinction between object and agencies of observation is not inherent, what sense, if any, should we contribute to the notion of observation?

I therefore acknowledge that my observation involved giving meaning to a particular set of variables at the exclusion of other variables, thereby placing a particular embodied 'cut' delineating the object from my agencies of observation. ANT does not accept anterior constructs such as structure or agency (Fenwick, 2010: 112) so by incorporating an ANT translation account into my CHAT data analysis it is anticipated that such exclusionings and messy variables will be afforded a degree of presence.

Figure 6 Project Process Map



3.3.2 Data Management

The above data collection resulted in a voluminous amount of material that required to be recorded, transcribed, managed, and organised. The data was therefore arranged into file folders and computer files as an overall database, taking care not to have ‘too many files [that it] spoils the soup’ (Stake, 2005: 461). This was scrutinised and larger thoughts began to emerge into initial categories from multiple perspectives across numerous sources of data which were then described, classified, and interpreted on an ongoing iterative process. This activity is summarised by Cresswell (2007: 150):

...to analyse qualitative data, the researcher engages in the process of moving in analytic circles rather than using a fixed linear approach.

A total of 81 initial themes were identified from my collected data (Table 10, following page). These 81 themes were then coded with regard to how often they appeared by adopting a system of layering the information akin to old fashioned presentation transparencies so that the more frequent the theme appeared the deeper the colour of the transparency became (that is from white through light blue, to medium blue and finally dark blue). This produced 20 coded theme areas as follows:

Table 9 Coded Theme Areas

leadership	language	identities	silos	spatial
professional	organisational	cultural	historical	mess
knowledge	relational and	realities and	formal /	vertical and
flows	reductionist	epistemologies	informal	horizontal
posturing and	authority and	agency	cross cutting	attitudinal
politics	organising			

Table 8 Initial Data Themes

Lack of central leadership	Opaque CEO agenda	NES is a microcosm	Internal communication is appalling	Professional boundaries	Too busy to work together
Protectionism	Cultural issues	NES works in vertical silos	Conflicting policy barriers	GP is king	Fragmentation and separateness
Very good at producing educational resource then drop into workplace and leave to fester	Doctors are uni dimensional – can't see anyone else's perspective or reality	Cross cutting work in NES is not easy to implement – risk of losing professional identities	There is no power within the communication department in NES	Issues in NES relating to infrastructure and history	No impetus or encouragement to look outside of own professional grouping
No incentives for cross cutting work – only threats	Integration is impossible to do	Horizontal working does not work - impossible	Astounded by lack of information	Informal systems / networks work well	There is a lot of tribalism still
Work streams are developed on a wing and a prayer	Engagement happens informally in NES by chance	Multi professional work just fizzles out	The crystal ball is a bit cloudy at the minute	Substantive divide between hospital and GP practice	Huge amount of internal posturing and internal politics
Multi disciplinary working does not work in NES as different directorates are on different planets	Everyone has their own reality – need to find solutions to encompass everyone's reality	As long as there is no noise being made and they (dentists) haven't been in trouble then they are allowed to continue	Dentists run their own business and there is usually no need to work with anyone else	Trust is crucial for things to work – a lot of it is the difference between trust and lack of trust	NES is so rigidly structured it can't take the blinkers off to see the opportunities in the NHS
No clarity of what is happening	Artificial portfolios and muddled thinking in NES	Don't know CEO agenda – how strong is he?	The group causing the most tension is nursing	A lot of good money goes after bad	Joint work streams should join up but rarely do
Power sits within the individual directorates		Moaning shops	Organisational bureaucracy	NMAHP is very secondary care focussed	NES documents full of hot air and noise
Usual NES gobbledegook instead of language that is understood	Some groups are very resistant to working together	People not comfortable to speak outside their professional group	Access to info is via water cooler and coffee room syndrome	There is a lot of conflict of interest with those that lead the directorates	NMAHP commissions out most of its work so there is no ownership
Fear of loss of professional identity and trust	Difficult to implement policy across different structures in NES - islands	Should be all about communication and connections	Informal creativity gets killed by formal structures in NES	The Business Group stifles things rather than encouraging things	NES pedantically defines work but does not penetrate into service
The barriers are partly structural and partly attitudinal	There is very little guidance for anything	Nursing structure makes joint working very difficult	The structure of NES needs to be knocked down and started again	NES is seen about being aloof, ivory tower and academic	Huge gaps in information services
Worrying about competitive bits of work	Muddled corporate thinking	People support own pet projects		Leadership in NES is very variable in quality	No mechanisms to brake barriers
Very big koi carps swimming in a small pool and don't know what is happening in the sea – some have 2 heads having been internally mutated	NMAHP is a law unto itself – work very hard behind the scenes to forge good relations but it really doesn't make any difference	Much is needed around knowledge management and information flows – needs to become more joined up and cross cutting		Need for true collaboration not just a piece of paper that says we are in partnership	Need to accept conflicting views and not trying to make everyone have a consensus. Collaboration is not about consensus
Reduction does not work, need mess – gives a much richer & deeper picture	No priority given to multi professional working	Multi professional education has to be seen as soft stuff – considered separately	Funding streams mitigate against joint working	Medicine & nursing have the ear of the CEO & don't admit the truth	Rigidity of silos - no platform in NES for multi disciplinary working

The 20 themes were then grouped under the following three categories as follows:

Table 10 Identifying Key Categories

Working (Chapter Five)	Learning (Chapter Six)	Boundaries (Chapter Seven)
Vertical and horizontal	Vertical and horizontal	Vertical and horizontal
Language	Language	Language
Informal and formal	Informal and formal	Informal and formal
Historical	Historical	Historical
Attitudinal	Attitudinal	Attitudinal
Relational and reductionist	Identities	Different planets
Organisational working	Cultures	Professional
Posturing and politics	Different realities and epistemologies	Cross cutting work
Authority and organising	Knowledge and information flows	Silos
Agency		Spatial
Leadership		

Where there appeared to be significant overlap the theme has been included more than once. These three categories will be used to form the basis of investigation in chapters five (working), six (learning), and seven (boundaries). In addition, each of the three categories is represented as a sub activity system of the organisation (see chapter four, section 4.6). Therefore, each of these chapters will start with a summary table representing its area of interest, prompted by a question generated by the sub activity system, and followed by an exploration of the relevant concepts within the literature, which will then be applied to the data as captured, analysed, and synthesised in chapters three and four.

Although I have chosen to count my themes I do not give statistical interpretation or value to the importance of each theme, but rather consider this as a ‘winnowing’

mechanism (Cresswell, 2007: 152), to structure and inform the resultant analysis and to afford me opportunity for 'criss-crossed' reflection (Stake, 2005: 450).

I will also adopt a deconstructive stance to help focus attention by:

- Examining silences – what is not said, noting who or what is excluded
- Attending to disruptions and contradictions
- Interpreting metaphors as a rich source of multiple meanings

Also, the researcher needs to attempt to ensure the validity of the findings in their writing and present their detailed meaning to prospective readers, even if, according to Stake (2005: 453):

...meanings do not transfer intact but instead squeeze into the conceptual space of the reader.

Therefore to reduce the likelihood of misinterpretation triangulation is adopted (Atkinson and Delamont, 2005: 824; Fontana and Frey, 2005: 723). According to Stake (2005, 454):

This is a process of using multiple perceptions to clarify meaning by identifying different ways the case is being seen in different realities.

Chapter four (section 4.2) will consider triangulation, its limitations and challenges, in the context of the process of modelling the organisation's activity system.

3.4 CHAT as a Theoretical Framework for Data Analysis

Qualitative CHAT data analysis is an inductive process that leads to a thick description of participants, their activities, and the activity setting (Yamagata-Lynch, 2010: 71); and is designed to enhance understanding of human activity situated in a collective context graphically represented by a series of triangle diagrams. This method can guide researchers and practitioners in their design, implementation, analysis, and development of conclusions in a research study or project evaluation. In addition, it supports a systematic and systemic approach to understanding human activities and interactions in complex environments. Therefore, in this data analysis process, activity systems analysis can provide opportunities for researchers to:

- Work with a manageable unit of analysis
- Find systemic implications
- Understand systemic contradictions and tensions
- Communicate findings from the analysis

Moreover, human experiences involve a complex, intertwined knot of variables that cannot be easily separated into mutually exclusive elements. When these complex experiences are separated into variable units they lose the richness that is involved in associated activities, but when researchers do not separate these experiences into manageable units of variables it is difficult to make meaningful inferences from situations. Activity systems analysis provides a method to extract meaningful information from massive and complex qualitative data sets and to conceptualise how phenomena are entrenched within the situation that is being examined (for a summary

of recent examples of activity systems analysis used in a variety of contexts see Yamagata-Lynch, 2010: 37-62). The unit of analysis in this method is the mediated human activity itself embedded within its social context. (Yamagata-Lynch, 2010: 6). This includes both observable experiences and mental activities. For example, chapters five, six, and seven will contain multiple narratives that affected participants' cognitive and observable experiences.

The Developmental Work Research (DWR) is a methodology developed in Finland at the Centre for Historical Activity Theory of the University of Helsinki since the mid 1980s (Bodker, 2009: 276; Engeström, 2008: 5). DWR stands at the crossroad of education, knowledge management, and knowledge creation; investigating the links between individual and social dimensions of learning and knowledge creation. CHAT can be used as a DWR framework to recognise areas to implement organisational change by identifying systemic contradictions that bring tensions to participant activities. In DWR the researcher often engages in longitudinal and extensive investigations involving interviews, observations, and document analysis with a large number of participants. Additionally, the researcher often takes an active role in the organisational change process while collaborating with participants to identify systemic contradictions and possible solutions to alleviate tensions in work activities (Spinuzzi, 2008: 187-188; Yamagata-Lynch, 2010: 44). DWR is mentioned here as a link to the methods of data analysis but will be further explored in chapter six in relation to network learning.

In appreciation of the potential complexity of activity systems analysis (Yamagata-Lynch, 2010: 29-30), and in order to structure and analyse my data I am adopting Mwanza's (2001) process to operationalise CHAT based on Engeström's (2008) activity triangle model (for a case study example see Marken, 2006). This is done by applying the following six stages:

- Stage 1 model the situation being examined
- Stage 2 produce an activity system of the situation
- Stage 3 decompose the situation's activity system
- Stage 4 generate research questions
- Stage 5 conduct a detailed investigation
- Stage 6 interpret findings

I will now expand and detail each stage prior to applying them to the organisational activity system of NHSX in chapter four.

Stage 1 Model the situation being examined

Mwanza (2001) interpreted Engeström's triangle to develop an Eight Step Model incorporating open ended questions based on the various components of the activity triangle representation. This is detailed below in Table 13.

Table 11 **Eight Step Model for Translating Activity Systems**

Identify the;		Question to ask
Step 1	Activity	What sort of activity am I interested in?
Step 2	Objective	Why is this activity taking place?
Step 3	Subjects	Who is involved in carrying out this activity?
Step 4	Tools	By what means are the subjects carrying out this activity?
Step 5	Rules and regulations	Are there any cultural norms, rules, and regulations governing the performance of the activity?
Step 6	Division of labour	Who is responsible for what when carrying out this activity and how are the roles organised?
Step 7	Community	What is the environment in which the activity is carried out?
Step 8	Outcome	What is the desired outcome from this activity?

Stage 2 **Produce an activity system of the situation**

The researcher then uses information gained by the Eight Step Model to map onto Engeström’s triangular model in order to produce an activity system. This approach helps to identify areas to be focussed on during the investigation. This is a ‘macro’ system that can be broken down into ‘micro’ systems using Stage 3 (below).

Stage 3 **Decompose the situation’s activity system**

Mwanza further reinterprets CHAT by subtracting the elements of activity theory by removing them from their place in Engeström’s triangle and instead presents them as combinations as demonstrated in Table 14 (below).

Table 12 Activity Notation - Elements of Activity as Combinations

Actors (Doers)		Mediator		Objective (Purpose)
Subjects	~	Tools	~	Object
Subjects	~	Rules	~	Object
Subjects	~	Division of labour	~	Object
Community	~	Tools	~	Object
Community	~	Rules	~	Object
Community	~	Division of labour	~	Object

Mwanza introduced this ‘activity notation’ to aid the process of breaking down the situation’s activity triangle system into smaller manageable units or sub activity triangles. Each of the six combinations within the activity notation represents a complete sub activity triangle from the main activity system, for example, it is possible to identify the subject-rules-object sub activity triangle representation whose mediated relationship could be analysed in terms of rules. This will be applied to NHSX as an organisational activity system in chapter four (section 4.6).

Stage 4 Generate research questions

Questions that are specific to a particular combination within the activity notation which are also representative of a sub activity triangle are then generated (Mwanza, 2001: 4, italics in original):

- What *Tools* do the *Subjects* use to achieve their *Objective* and how?
- What *Rules* affect the way the *Subjects* achieve their *Objective* and how?

- How does the *Division of Labour* influence the way the *Subjects* satisfy their *Objective*?
- How do the *Tools* in use affect the way the *Community* achieves the *Objective*?
- What *Rules* affect the way the *Community* satisfies their *Objective* and how?
- How does the *Division of Labour* affect the way the *Community* achieves the *Objective*?

Stage 5 Conduct a detailed investigation

The questions generated above are then used to conduct a detailed investigation (see chapter four).

Stage 6 Interpret findings

In order to make sense of what is happening within the activity system, data gathered can be analysed in terms of CHAT's notion of contradiction (see chapter two, section 2.2.4). According to Engeström (2008) these contradictions can be a source of change and development (106, 215), knowledge creation (133), and innovation (205-206).

The questions generated in Stage 4 help to identify areas of contradiction that come to light through problems or breakdowns within and between activity systems. As stated above, the data and identified inherent contradictions, will be further analysed and explored within the following three categories distilled from the initial twenty themes; organisational working (chapter five), organisational learning (chapter six), and organisational boundaries (chapter seven).

3.5 Generating the Research Problem and Research Questions

The aim of a research problem in qualitative research is to provide a rationale or need for studying a particular issue (Cresswell, 2007: 102). My research issue arose through personal experience of being involved as a co-author of an organisational education strategy and the frustration inherent in trying to negotiate its successful passage through complex multi-professional and uni-professional silo groupings. It became my intention to ground my understanding by drawing on two main research orientations – those of ANT and CHAT – and thereby gain a deeper awareness of where, why, and how barriers arose. By doing so this knowledge could be applied to future inter-professional strategy development and to the system I work in (Schryer, Lingard and Spafford, 2007: 28-29).

In addition, although my research will be framed by the CHAT inspired Eight Step Model; it is fascinating to track both the ANT and CHAT literatures to their most recent iterations using their similarities and differences to inform my developing thinking and awareness. It is my assumption that by adopting a case study approach as a method particularly suited to both ANT and CHAT (Law, 2008: 141-142; Yamagata-Lynch, 2010: 63) I can contribute to the extant literature of both.

3.6 Limitations of CHAT as a Research Framework

As stated by Sawchuk and Stetsenko (2008: 340), CHAT is a uniquely broad theoretical foundation - though not without its gaps. In a recent article, Yamagata-Lynch (2010: 27-35) explores criticisms of CHAT including its comprehensiveness as a theoretical framework, the complexities involved in understanding and conducting

activity systems analysis, and the problems associated with using human activity as a unit of analysis in research (see also Engeström, 2009). Two of the most pertinent criticisms appear to be:

- Analysis of activity is inadequate for examining human psychology and culture
- CHAT is not a unifying theory that can be generalised and it does not inform practice

In relation to the first criticism, Toomela engaged in a series of discussions in *Culture and Psychology*. He provided an extensive argument redefining how Vygotsky defined ‘internalisation’ and the shortcomings of CHAT as a framework for examining human cultural and psychological phenomena. According to Toomela (2000: 362):

Activity as a unit of analysis does not allow us to differentiate many qualitatively different psychological mechanisms that may underlie what is considered the same activity when viewed externally. Cultural-historical theory, founded by Lev Vygotsky, considers instead that – and explains why – sign meaning should be taken as a central unit of analysis. Sign (usually a word) is a dialectical entity of external, material and internal, ideal aspects of the mind. The unity of specifically human environment ‘culture’ and individual psychological mechanisms can be studied through the analysis of sign meanings but not with the analysis of external activities alone. Activity theory, once

separated from cultural-historical psychology, is a dead end pursuit for an understanding of the human mind.

In other words, Toomela was arguing that activity theory is an inadequate framework for identifying and understanding cultural and psychological phenomena because it did not follow Vygotsky's cultural-historical approach. Toomela's series of criticisms assume that activity theorists focus their work on observable activities within cultural settings with no recognition of human cognitive processes and have discontinued using Vygotsky's semiotic analysis methods. This is disputed by Yamagata-Lynch (2010: 28):

Activity systems analysis methods capture observable material tools such as signs and symbols. Each data-based activity systems model represents multiple mediated action processes that investigators can use as a guide to explain human activity as a complex coordinated experience shared and distributed among individual cognition, action, motivation, artifacts, cultural tools, social norms, local communities, and the greater cultural setting.

In relation to the second criticism, researchers need to be aware that their investigative goals are not to make claims that can be generalised in a traditional sense. CHAT is concerned about solving actual problems in practice over time rather than focussing on the ability to understand, predict and control events (Engeström, 2009; van der Vere and Valsiner, 1991: 399; Yamagata-Lynch, 2010: 31-32). This is also true of case study as an approach (Creswell, 2007: 74; Stake, 2005: 443).

Finally, by employing ANT as a comparison, contrast, and critique this study will further investigate the comprehensiveness of CHAT as a particularly human-centric theoretical framework.

3.7 Summary

This chapter commenced by exploring the ontological assumptions of ANT and CHAT, their agential similarities and differences, and applied these to justify the selected methodology of case study and the role of the researcher within it. Methods of data collection and management were then detailed, followed by the mechanism to sift and winnow through it to reach the emergent twenty themes and three categories. The CHAT derived Eight Step Model for translating activity systems was produced and described in detail and the chapter was concluded by acknowledging the limitations of CHAT as a system of analysis. In chapter four I will combine my research data and selected methodology to identify and model the overall organisational activity system of NHSX in detail. Then, the three data categories of working, learning, and boundary crossing will be used to decompose the organisational activity system into three individual sub activity systems. Although the main analytical mechanism is through CHAT I will continue to draw upon an ANT inspired framing and affordance of the data to capitalise on any alternative readings that it produces.

Chapter Four – CHAT Activity System Research Analysis

4.0 Introduction

As stated in chapter one, the purpose of this study is to use activity systems analysis to explore, understand, and describe, how systemic contradictions within a complex organisation affect the development of a corporate inter-professional strategy document from construction to implementation. Therefore, in order to do so, I examined the journey of the strategy from creation to proposed implementation over a period of five years (2005-2010) from the perspectives of investigator, investigator as participant, and full participant. In chapter three I described my data collection, analysis, and chosen methodological framework drawn from CHAT, and, in this chapter, I will apply these to my specific research context. Although, for simplicity and clarity, this analysis does not include detailed perceptions from ANT I will introduce these again in chapters five, six and seven where I will explore the outcomes with regard to organisational working, learning, and boundary issues respectively. However, at the end of this chapter I provide a brief consideration of how an ANT translation, as opposed to CHAT contradiction, may transform the result of the analysis. In chapter eight I will review the totality of the study, identify significant areas for further research, describe contributions to my professional and organisational knowledge, and reflect on my personal journey in undertaking this EdD.

4.1 The Object of Activity and the Activity System

Prior to modelling the organisational activity system it is worthwhile to review and summarise the ‘object of activity’ and ‘the activity system’.

4.1.1 The Object of Activity

The notion of the object of activity invites a situated analysis of the activity that is under way. Objects of activity need to be understood as simultaneously given, socially constructed, contested, and emergent. Objects of activity also provide the basis for theorising motivation. The complexity of the term should not be thought of as a shortcoming of CHAT; rather it both reflects and reveals the complexity of human activity. When it is applied to organisational analysis, it can be said that organisations coalesce around objects of activity that are partly shared, partly fragmented, possibly contested, and certainly emergent, and, because objects of activity are likely to be rooted in multiple activity systems, they may not be at all easy to change in the short term (Blackler, 2009: 27). Rather than follow the organisation and its prescribed objectives both Engeström and Spinuzzi urge us to ‘follow the object’ (see chapter six, section 6.4). In this analysis the objective of the activity system is the corporate decision to implement a community based healthcare strategy (object). The strategy as the object(ive) is therefore followed in all three selected sub activity systems relating to organisational working, learning, and boundaries as detailed below.

4.1.2 The Activity System

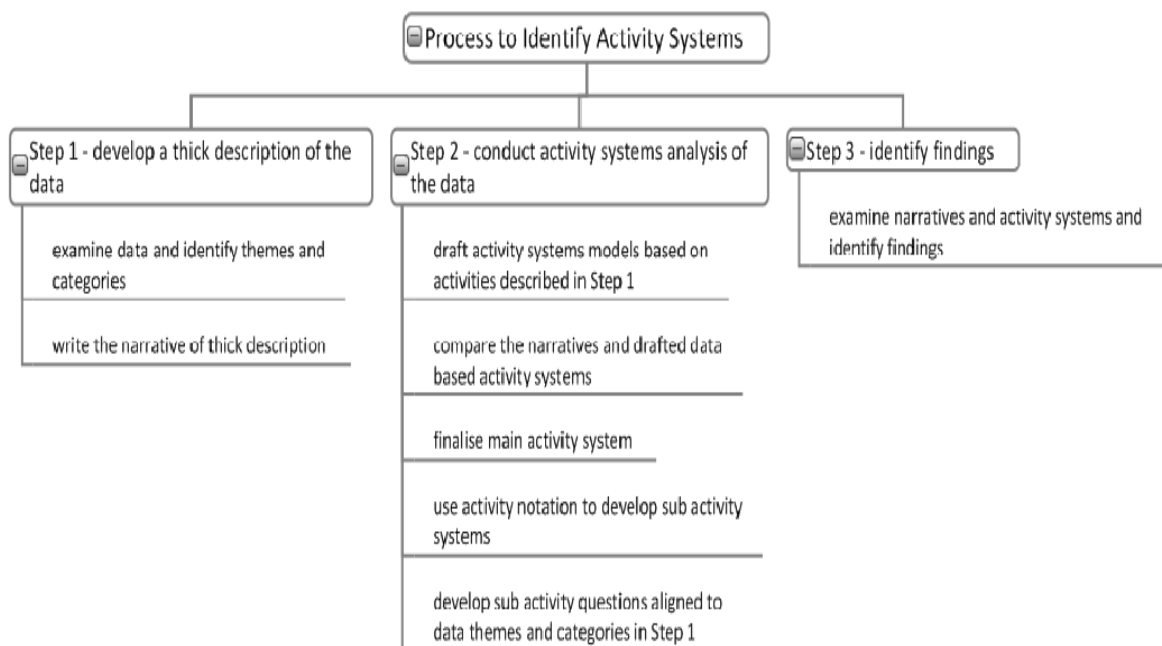
Rather than the socially mediated individual being taken as the unit of analysis, the historically located activity system should be the fundamental unit. While featuring the crucial link between subject and object, this approach features the essentially social nature of activity and the centrality of it to durable cultural artefacts. The object of activity is theorised as a collective project that is stabilised by shared tools, signs, and procedures. In the context of this study the activity system is the corporate organisation of NHSX between 2005 and 2010.

4.2 The Process of Identifying Activity Systems and Triangulation of Data

After my intense engagement with the data as outlined in chapter three, I developed a ‘thick description’ (Cresswell, 2007: 194-195; Yamagata-Lynch, 2010: 71) of participant experience in narrative format to ‘make sense out of the local situation’ (Denzin and Lincoln, 2005a: 17), and facilitate the identification of activity systems. Thick description includes analytic attention to the multiple codings and structuring principles through which social life is enacted and represented (Geertz, 1973: 3-31). Figure 7 (below) demonstrates the steps I took in this process. In Step 1, I examined the data as outlined in chapter three (section 3.3). In Step 2, to conduct an activity systems analysis of the data, I followed the steps outlined in chapter three (section 3.4) using the themes and categories from the data to identify, structure, and inform the sub activity systems. In this process I continually went back and forth between the data and the triangular models to identify any discrepancies or areas that were in need of further attention. This resulted in the emergence of information from the data that I

did not find in the previous analytical stages. Therefore, identifying activity systems was an iterative process that involved multiple stages of revisions rather than a one stage linear development. Step 3 is a consequential development of undertaking Steps 1 and 2.

Figure 7 Steps Taken to Identify Narratives and Activity Systems



In an attempt to ensure robustness of analysis I implemented several *triangulation* strategies by gathering data across diverse and multiple sources from different time and space settings (for example, interviews, observation, document analysis); and theoretical triangulation by examining the literature on CHAT and ANT, referring to it when introducing, exploring, and documenting study findings.

However, within current literature triangulation has been subject to multiple renderings and conflicting representations. An overview is provided by Atkinson and Delamont (2005: 832):

Although it is not fruitful to assume, as in oversimplified versions, that research methods or data types can be aggregated to generate a more rounded or complete picture of a social world than would be generated by a single method alone, it might be productive to approach it in a way that is more congruent with our approach: that is, to recognise that there can be a mode of triangulation derived from an explicit recognition of multiple social orders and principles of structuring. Triangulation thought of in this way has a very specific, if restricted, subset of meanings within the overall analytic strategy. Consequently, a triangulated account depends not only on an opportunistic combination of methods and sources but also on a principled array of methodological strategies that reflect the indigenous principles of order and action.

Richardson and St Pierre (2005: 963) also challenge a restricted notion of triangulation, calling for an alternative concept of *crystallisation*:

There are far more than three sides by which to approach the world. The central image for validity is not the triangle – a rigid, fixed, two dimensional object. Rather, the central imagery is the crystal, which combines symmetry and substance with an infinite variety of shapes, substances, transmutations, multi-dimensionality, and angles of approach. Crystals grow, change, and are altered, but they are not amorphous. Crystals are prisms that reflect externalities and refract within themselves, creating different colours, patterns, and arrays casting off in different directions. What we see depends on our angle of repose – not triangulation but rather crystallisation.

So crystallisation involves multiple surfaces that refract within themselves to afford multiple viewings. This is not dissimilar to Barad's (2007: 72-73) 'diffraction patterns' which are marked by the relational patterns of difference, bring the reality of entanglements to light, and help sort out some ontological and epistemological issues (see chapter 7, section 7.2.1).

Finally, before leaving the concept of triangulation, it is interesting to note that much of the literature relating to CHAT and ANT does not hold strong accounts with specific regard to triangulation of data. Superficially, the geometric descriptions of the fixed triangle and the symmetry, transmutations, and multi-dimensionality of the crystal would appear perhaps to align to CHAT and ANT respectively. However, Figure 8 (section 4.4, below), with its intersecting multiple planes would appear to indicate that current CHAT may be moving to a more refracted and diffracted mode of analysis.

4.3 Modelling the Situation being Examined

As outlined in chapter one, NHSX operates with the National Health Service in Scotland as a Special Health Board responsible for supporting NHS services delivered to the people of Scotland by developing and delivering education and training for those who work in NHS Scotland. Partly in response to the national policy directive to shift the balance of healthcare to community settings, NHSX had taken a corporate decision to create, develop, and implement a Primary Care Strategy and to finance associated educational projects to carry out its recommendations. This strategy was also intended to have a cross cutting function at corporate level across all directorates and professional groupings within the organisation. At its inception in 2005 it was one

of the first work streams designed in this way as the majority were either uni-professional in focus or led and governed by a single directorate (for example medicine, pharmacy, dentistry, nursing). A small project team was therefore created to drive this work and although the membership changed during the five years project duration, it was always led (project lead = PL) by a General Practitioner and supported by at least one project manager (project manager = PM), and at times a partnership development officer (PDO) as demonstrated in Table 15.

Table 13 Changing Project Team 2005-2010

Year	Project Lead (GP)	Project Manager	Partnership Development Officer
2005-6	PL1	PM1, PM2*	PDO1
2006-7	PL1	PM1, PM2	PDO2
2007-8	PL2	PM1	
2008-9	PL2	PM2	PDO3
2009-10	PL2 (until Oct 2009) then not replaced	PM2 (until March 2010)	PDO3 (until January 2010)

(*As researcher and participant in this project I am identified as PM2)

The object of activity (the implementation of the inter-professional strategy) is theorised as a collective project that is stabilised by shared tools, signs, and procedures. Therefore to begin to use activity analysis to make sense of the data I began with Mwanza’s eight questions as an initial sorting mechanism to align the data with the seven key elements of any activity system, that is; ‘tools’, ‘rules’, ‘object’, ‘subject’, ‘community’, ‘division of labour’ and ‘outcome’. Although not all elements will be key in every case, any activity systems analysis must consider all of them to promote inclusion and determine which elements are critical to reaching a deep and useful understanding of the activity in question. The resultant guiding ‘answers’ in

Table 16 (below) are from an initial composite analysis of the data collected and outlined in chapter three (section 3.3.1).

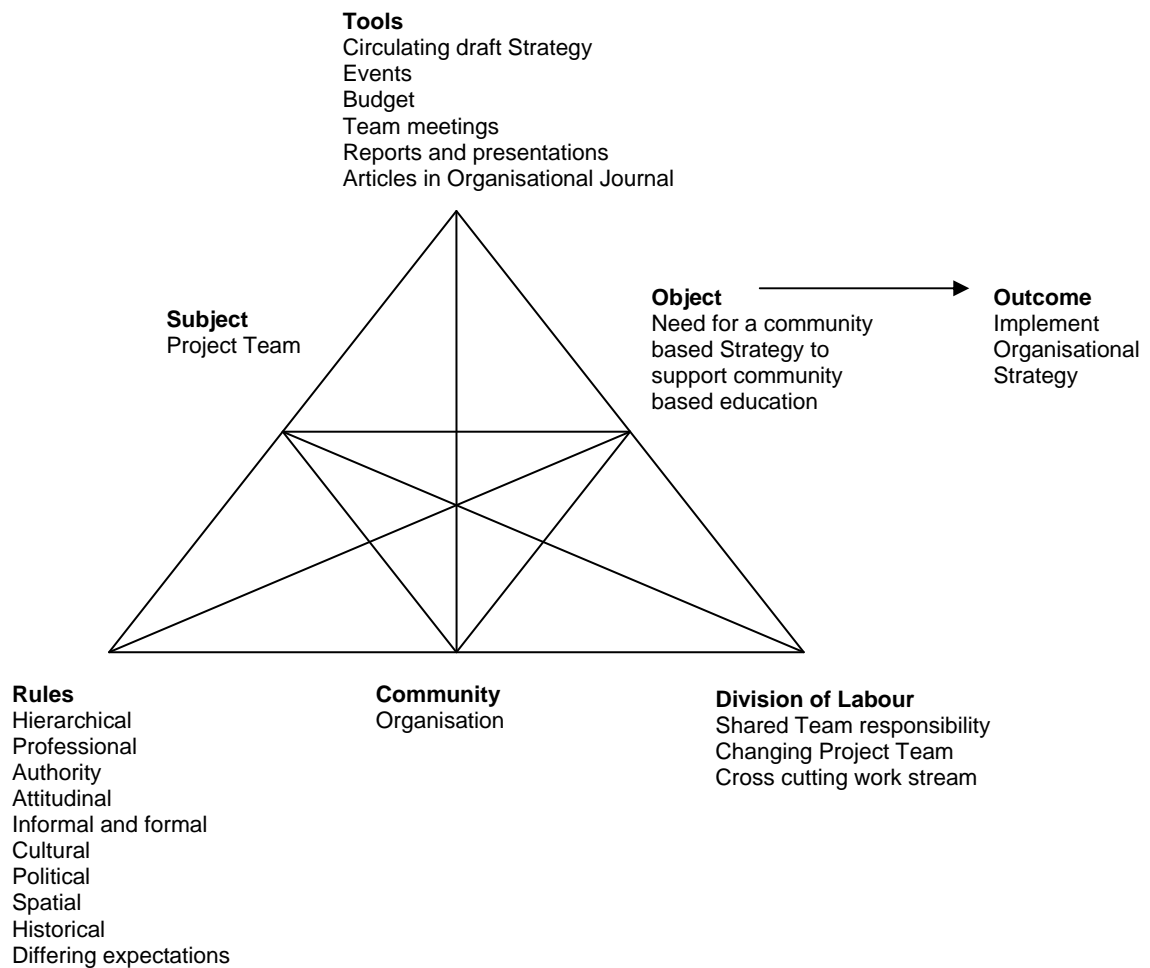
Table 14 Organisational Work Practices as Defined by the Eight Step Model

Eight Step Model Questions	Answers
Activity of interest (what sort of activity am I interested in?)	For the purpose of this study the activity of interest was defined as the creation and proposed implementation of an inter-professional corporate educational strategy
Object(ive) of activity (why is this activity taking place?)	This activity was taking place due to the corporate recognition of need to create and implement a community based strategy to support education for community based health professionals
Subjects in this activity (who is involved in carrying out this activity?)	The subjects involved in this activity were identified as the Project Team
Tools mediating the activity (by what means are the subjects carrying out this activity?)	Circulating draft strategy Events Budget Team meetings Reports and presentations Articles in Organisational Journal
Rules and regulations mediating this activity (are there any cultural norms, rules or regulations governing the performance of this activity?)	Hierarchical Professional Authority Attitudinal Informal and formal Cultural Political Spatial Historical Differing expectations
Division of labour mediating this activity (who is responsible for what, when carrying out this activity and how are the roles organised?)	Changing project team Shared team responsibility Cross cutting work stream
Community in which activity is conducted (what is the environment in which this activity is carried out?)	The community consisted of NHSX as an organisation
What is the desired outcome from carrying out this activity?	The desired outcome is an increased understanding of the complexity involved in creating and implementing an inter-professional educational strategy within a complex organisational environment and the furtherance of effective inter-professional working and learning.

4.4 Producing the Organisation's Activity System

The above information was then mapped onto a simplified version of Engeström's triangular model in order to produce an initial activity system of the situation within NHSX as shown in Figure 8 (below). This modelling helps to identify and detail the areas to focus on during the research by creating sub activity triangles (section 4.4).

Figure 8 Modelling the Organisational Activity System of NHSX



4.5 Decomposing the Organisation's Activity System

Table 17 represents the activity notation system of NHSX.

Table 15 NHSX Organisational Activity Notation

Actors (Doers)	Mediator	Objective (Purpose)
(Subject) Project Team	(Tools) Circulating draft Strategy Events Budget Team meetings Reports and presentations Articles in Organisational Journal	(Object) Need for a community based Strategy to support community based education
(Subject) Project Team	(Rules) Hierarchical Professional Authority Attitudinal Informal and formal Cultural Political Spatial Historical Differing expectations	(Object) Need for a community based Strategy to support community based education
(Subject) Project Team	(Division of Labour) Changing members of project team Cross cutting work stream Shared team responsibility	(Object) Need for a community based Strategy to support community based education
(Community) Organisation	(Tools) Circulating draft Strategy Events Budget Team meetings Reports and presentations Articles in Organisational Journal	(Object) Need for a community based Strategy to support community based education
(Community) Organisation	(Rules) Hierarchical Professional Authority Attitudinal Informal and formal Cultural Political Spatial Historical Differing expectations	(Object) Need for a community based Strategy to support community based education
(Community) Organisation	(Division of Labour) Changing members of project team Cross cutting work stream Shared team responsibility	(Object) Need for a community based Strategy to support community based education

The activity system produced in section 4.2 is very complex because it incorporates various sub activities that together make up the main system being analysed.

Therefore Table 17 uses Mwanza's (2001, see chapter three, section 3.4, Table 14) activity notation to aid the process of breaking down the situation's activity triangle system into smaller manageable units. Each horizontal combination represents a complete sub activity system. In order to conduct a detailed investigation of organisational work practices these sub activity systems are open to interrogation by Mwanza's six questions as follows:

- What *Tools* do the *Subjects* use to achieve their *Objective* and how?
- What *Rules* affect the way the *Subjects* achieve their *Objective* and how?
- How does the *Division of Labour* influence the way the *Subjects* satisfy their *Objective*?
- How do the *Tools* in use affect the way the *Community* achieves the *Objective*?
- What *Rules* affect the way the *Community* satisfies their *Objective* and how?
- How does the *Division of Labour* affect the way the *Community* achieves the *Objective*?

Mwanza (2001) suggests using these questions at the beginning of the study, but I have used them on an ongoing basis to constantly question the data and provide a mechanism to (re)focus when becoming lost in the breadth and depth of collected information, thereby helping to ensure an evolving systemic interaction between the data and the iteratively emergent properties of research design and analysis (Atkinson and Delamont, 2005: 833). This afforded a methodology to 'think through things', to

‘see for oneself’, and to ‘participate as well as observe’ (Henare, Holbraad, and Wastell, 2007: 4). In addition, although as researcher in this study I have positioned myself at many points on the participant-observer continuum, for purposes of data analysis, I clearly need to take the investigator role to be able to ‘break the data into analytical units’ (Yamagata-Lynch, 2010: 72). Finally, although helpful to situate my analysis these ‘analytical units’ are not tightly bound as my data refused to stay constrained and constricted within them; this overlap will be discussed and demonstrated in the following chapters.

4.6 Detailed Investigation of Work Practices in NHSX

In chapter three (section 3.3.2) I described how the large amount of data collected was sifted into twenty themes and then sorted into the three main categories of working, learning, and boundary crossing. I then analysed the data again by modelling these three categories as sub activity systems of the main organisational activity system depicted above (Figure 8). I then set each sub system a specific question generated by using Mwanza’s activity notation to identify areas of contradiction both within and between the sub systems that together make up the main activity system. I selected three out of the possible six sub activity systems in Table 17 (above), as they appear to have most resonance with the initial themes from the data. I will use these as a primary focus but will not exclude consideration of the remaining three to give breadth to my analysis. Therefore, the overlapping questions generated by the remaining three sub systems are included at the end of this section.

Also, in chapter three (section 3.2), the non generalisation of case study findings was discussed. Likewise, the findings from these specific organisational sub activity

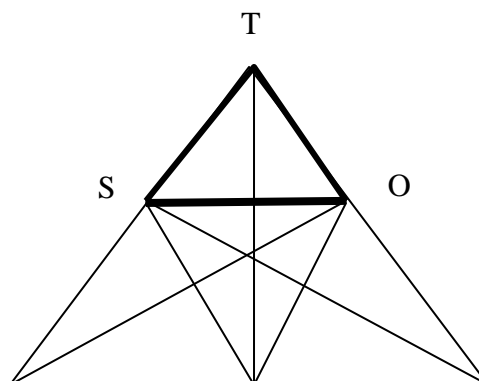
systems are also not able to be generalised but the *process* of the application structure can be replicated as a CHAT based methodology to support the data capture stage of a different study. I will now provide a triangular representation of each of the selected three sub systems, the question it generates, and a brief contextual outline of the organisational activity that it depicts and is situated within. At the end of each section I will include outline illustrative quotations from the data collected in 2008 during 1:1 interviews that will be referred to more fully in the following chapters. Finally, the sections are intended to give a brief composite overview as the data will be investigated more fully in chapters five (working), six (learning), and seven (boundaries).

4.6.1 Sub Activity System 1: Organisational Working

Question – How does the project team (subject) negotiate the circulating draft strategy (tools) through corporate working structures to achieve the required objective (object)?

This question was generated by combining the components in the row coloured yellow in Table 17 (above) and is represented as a sub activity system below:

Figure 9 Sub Activity System 1



As stated above (section 4.3), the project team (subject) was composed of a small group of individuals who were given corporate responsibility to draft, consult, develop, and implement an inter-professional educational strategy to co-ordinate the organisational existing and planned activities to support health professionals working within community settings. In order to negotiate the circulating draft strategy (tool) through the corporate structures of the organisation (community), to achieve implementation (object) the project team had to interface and connect with the following internal structures:

- Business Group
- Board
- individual directorates
- project core group
- project reference group
- other corporate work streams

In addition, there were numerous meetings, both formal and informal, between the project team and the Chief Executive, the Chair, and with individual Directors.

The organisational hierarchy is atypical of an NHS Board in that it is very heavily weighted towards highly 'banded' staff (8 and above). In the NHS most employee posts are now banded through a system called Agenda for Change. Bands range from 1 through to 9 (with 1 being the lowest paid, 9 the highest). Some contracted staff (doctors, dentists), and executive level directors are exempt from Agenda for Change and have their own systems of remuneration. In addition, the Medical Director, the Medical and Dental Deans, the sub Deans, and some of the Directors and Associate

Directors, are on higher salaries than the Chief Executive and therefore have considerable power both in the organisation and in their clinical specialty areas. This brings with it questions regarding authority and leadership.

The negotiation of the strategy through the organisation also took place in both horizontal and vertical zones: horizontal in that it was intended to cut across the totality of individual professional groupings and vertical in that it travelled up and down professional silos in the shape of directorates. Given the historical inheritance and structure of the organisation, and the at times contested direction and clarity of leadership, there was scope for posturing and politics to be played out to protect individual professional / directorate interests. This was at times achieved by 'blocking' the progression of the strategy, by setting up competing work streams, by lack of engagement and / or endorsement, or through open challenge. Chapter five will explore issues of organisational working in further detail.

Substantiating comments from interviewees regarding organisational working include:

Engagement happens informally in NHSX by chance (Int5)

There is muddled corporate thinking (GP1)

We don't know the CEO agenda – how strong is he? (Int4)

There is a lot of conflict of interests with those that lead the Directorates (APD1)

Medicine and nursing have the ear of the CEO and don't admit the truth (ADP1)

Leadership in NHSX is very variable in quality (Int13)

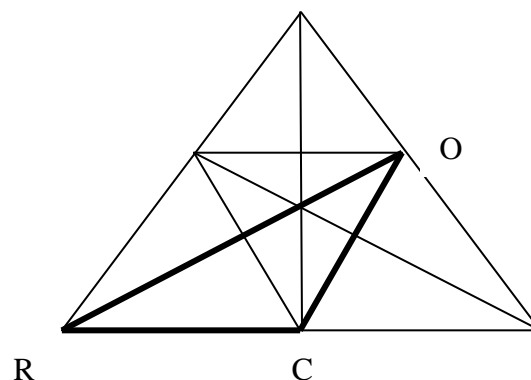
These illustrative quotes, together with those in the following two sections, will be explored further in the following chapters.

4.6.2 Sub Activity System 2: Organisational Learning

Question – How do the rules (rules) affect the organisation’s (community) ability to learn, develop, and implement educational strategy in an inter-professional context (object)?

This question was generated by combining the components in the row coloured blue in Table 17 (above) and is represented as a sub activity system below:

Figure 10 Sub Activity System 2



Rules within an organisation can be covert and overt, formal and informal. The rules of NHSX appeared to encapsulate all of these, however I have not incorporated the formal overt rules in my activity system notation as they are similar to any other NHS organisation and mostly refer to Human Resource policies (for example, employment, absence, equality and diversity), finance policies (for example contracts,

procurement), and IT policies (for example, intellectual property rights, freedom of information, security of data).

Informal or covert rules exist at many and varying levels and many appear to be widely accepted as routine organisational, corporate, or directorate practice. These rules revolve around issues of professional language, attitude, identity, and culture; different framings of personal and professional epistemologies, different educational ethos and methods of working, different expectations for the outcomes of the strategy, and how knowledge and information flow (or don't) through the organisation. Chapter six will explore issues of organisational learning in further detail.

Substantiating comments from interviewees regarding organisational learning include:

Everyone has their own reality – need to find solutions to encompass everyone's reality (Int9)

People are not comfortable to speak outside of their professional groups (PD6)

Much is needed around knowledge management and information flows – needs to become more joined up and cross cutting (PM4)

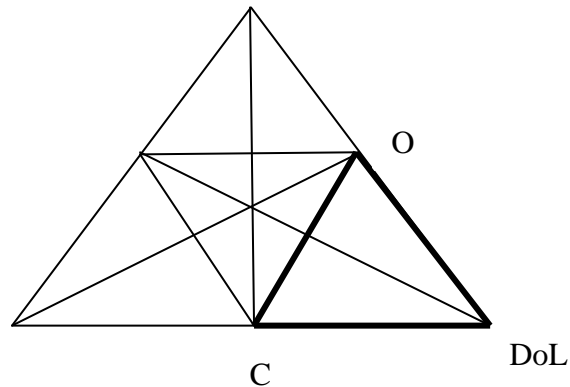
There is a need to accept conflicting views and not try to make everyone have a consensus – collaboration is not about consensus (AP3)

4.6.3 Sub Activity System 3: Crossing Boundaries

Question - How does the organisation (community) support a cross cutting work stream (division of labour) to fulfil organisational objectives (object)?

This question was generated by combining the components in the row coloured pink in Table 17 (above) and is represented as a sub activity system below:

Figure 11 Sub Activity System 3



The cross cutting function of the organisation has already been referred to in chapter one (section 1.4), where it was explained that in 2002 the then Minister for Health and Community Care announced the creation of a new Special Health Board as a result of the recommendations in *Learning Together* (SEHD, 1999). As that new Board, NHSX combined the Scottish Council for Postgraduate Medical and Dental Education (SCPMDE), the Post Qualification Board for Health Service Pharmacists in Scotland (PQEB) and the successor body to the National Board for Nursing, Midwifery and Health Visiting in Scotland (NBS). After a process of consultation the preferred organisational structuring option was to maintain each of these bodies as individual directorates, creating distinct professional silos, each with its own professional agenda as well as corporate accountability and responsibility. In 2001 this was seen as a more acceptable option than to disaggregate the predecessor groupings into cross functional

directorates (see chapter one, section 1.4, Table 2, option 4), or to apply strong central cross cutting functions within an enlarged central core of generic activities (option 3). This fragmented structure created horizontal (corporate) and vertical (silo) spaces through which the strategy had to travel and boundaries it had to cross, including:

- structural
- horizontal and vertical
- professional
- discursive
- formal and informal
- political

In addition, although the cross cutting (division of labour) functionality of achieving the objective of implementing the strategy document (object) belonged to the organisation (community), not all of the organisation was appreciative of this intended outcome. Therefore, in some circumstances although the changing project team was part of the organisation, they were isolated in their attempts at corporate joined up working. According to Yamagata-Lynch (2010: 99):

This suggests that the community component of an activity system may not necessarily endorse and support the division of labour to attain the object.

Boundaries therefore may be tacit or explicit and appeared numerous in context. Chapter seven will explore the requirement for boundary crossing of the strategy in more detail.

Substantiating comments from interviewees regarding organisational boundaries include:

There are no incentives for cross cutting working – only threats (PD1)

Integration is impossible to do (DCEO1)

The structure of NHSX needs to be knocked down and started again (PM5)

NHSX works in vertical silos (DN1)

Informal systems and networks work well (C1)

There is no mechanism to break barriers (D1)

Before proceeding to the next section to identify contradiction and interpret findings, I return to the remaining non depicted three sub activity systems. From the activity notation these three sub activity systems have generated the following questions that will be used to further facilitate data analysis:

1. How do the organisational rules (rules) affect the project team (subject) in achieving their objective (object)?
2. How does the changing composition (division of labour) of the project team (subject) affect the achievement of their objective (object)?
3. How does the organisation (community) support the developing draft strategy (tools) to be implemented (object)?

4.7 Identifying Contradiction and Interpreting Findings

In chapter one (section 1.7.2), from information detailed in 2001 at the proposed inception of NHSX, I outlined where systems tensions may arise in relation to organisational working, learning, and the intended cross cutting functionality of the organisation.

These were in regard with a need to:

- Reduce internal turbulence
- Ensure the current day to day operations of the three bodies was not jeopardised
- Be sensitive to differences in education and training for different staff groups
- Develop the directorate structure as additional staff groups were brought into its remit

Now ten years later in 2011, I will apply the concept of activity systems contradiction (and to a lesser extent ANT translations – see section 4.8 below) to identify organisational tensions and to compare development from those stated above.

Chapters five (working), six (learning), and seven (boundary crossing) will each conclude with both a CHAT contradiction account and an ANT translation account of the specific category area, that will then be joined back together in chapter eight to explore the organisational dilemmas inherent in mobilising the policy. It is anticipated that the addition of an ANT translation account (and in widening the focus to include material semiotics) will tease out the multiple and various forms of negotiation and jostle any exclusionings out from a potentially black boxed CHAT account.

Contradictions were described in chapter two (section 2.2.5), as primary, secondary, tertiary, and quaternary, as a key to understanding the sources of trouble as well as the innovative and developmental potentials of activity (Engeström, 2008: 27); the latter three types of contradiction being regarded as developmental forms of the primary contradiction (Miettinen, 2009: 162). These contradictions may be understood when data on current disturbances are interpreted against a historical analysis of the evolution of the activity system. Such a historical analysis helps the researcher to trace the formation of current tensions through earlier cycles of development. The identification of inner contradictions of the activity system provides pointers toward remapping the seemingly chaotic realm of local disturbances and innovations as an emerging zone of proximal development of the collaborative activity system (Engeström, 2008: 27-28; see also chapter six, section 6.4 for the zone of proximal development and expansive organisational learning). According to Yamagata-Lynch (2010: 7):

Systemic contradictions and tensions that influence a series of related activities can reveal how *human* beings modify and create new activities while adapting to the environment when their experiences trigger transformations of objects and the environment itself (*italics inserted*).

This limitation to human agency and activity appears to deny the centralising concept of ANT's symmetry within translation. I will now, therefore, briefly consider the concept of ANT translations to provide an initial breadth of ANT analysis to ascertain firstly, whether the above CHAT contradictions mirror areas of ANT translation, and

secondly, what differences this affords to the understanding of the journey of the strategy.

4.8 A Consideration of ANT Translation

In chapter two (section 2.3) I discussed the development of ANT from its early fixed framework stages towards a more fluid conception of material semiotics, and noted that in contrast to CHAT's dialectical account of history as a series of contradictions, ANT's rhizomatic account is that of Callon's (1986b) translations. Although acknowledged as being 'used somewhat mechanistically as a pre given heuristic framework' (Fenwick and Edwards, 2010: 14), the fact remains that a large percentage of extant ANT literature still relates to these moments of translation. As this reflects previous ANT thinking, I will provide only a brief overview and focus on translation, preferring to give more detailed consideration of current ANT / material semiotic thinking in chapters five, six, and seven, in relation to organisational working, learning, and boundary crossing.

An early ANT analysis of the same organisational system looks quite different to that described by the CHAT activity notation. This account is not developmental, as is CHATs, but it is still material and transformational. It provides an understanding that highlights contingencies, with actants being continuously defined, converging, and intersecting within and between networks. Unlike a CHAT activity network, an ANT network does not assume a common object or motivation, and, whereas CHAT's object allowed us to trace back to existing activity systems full of existing actors, 'ANT's problematisation actually *creates* and *isolates* the actants' (Spinuzzi, 2008:

125, italics in original). What keeps an ANT network together is the way in which a situation is problematised and the ways in which the actants are defined, enrolled, and mobilised within that problem space. This negotiation is somewhat unstable and therefore is always reversible – in theory, at least – but the alliances that are made accumulate like layers of sediment and therefore it becomes harder to undo a settlement when other layers of settlements have accumulated on it (Spinuzzi, 2008: 124). These settlements become folded in on themselves so that history is not seen as a series of bifurcating decisions but an accumulation of material propositions with varying temporalities. In summary then, translations have four component parts:

- Problematisation – what must be accompanied or negotiated?
- Interessement – what stakeholders are involved in the negotiation?
- Enrolment – how do these stakeholders relate – how do they negotiate?
- Mobilisation – how can the stakeholders be persuaded to link up and accomplish the objectives?

I will now examine how this works in an organisational context using Callon's account of translation. I will begin with Translation 1 – the corporate structure and function of NHSX coming into being from its predecessor organisations, with its unique educational remit and role in fulfilling Scottish Government policy drivers. Then I will move on to consider Translation 2 – the journey of the strategy as driven by the project team through the organisation.

4.8.1 Translation 1: The Organisational Becoming

As stated above, unlike CHAT, ANT does not posit a persistent object that can be used to define entities. Rather in the problematisation of the situation we have the obligatory passage point that frames ideas, intermediaries, or problems and related entities in particular ways. According to Fenwick and Edwards (2010: 18):

These are central assemblages through which all the relations in the network must flow at some time.

In the context of the study, NHSX as a Special Health Board has a responsibility for supporting NHS services delivered to the people of Scotland by developing and delivering education and training for those who work in NHSScotland. In addition, NHSX is accountable to the Scottish Government in all areas of performance, by being open to public scrutiny through annual Accountability Reviews. As the Special Health Board for Education NHSX therefore has to demonstrate the uniqueness of its status and function amongst potential challenges of a new administration restructuring the Special Health Boards and / or perceived overlap in functionality between the other Special Health Boards, some of which carry a remit for education as secondary to their principal function (for example quality, public health). NHSX is therefore the obligatory passage point, through which to direct the development of an inter-professional strategy in response to the problematisation of the Scottish Government to support the development of educational solutions to those health care staff that work within community healthcare settings. The picture however is a bit more muddled. The Scottish Government at that time had a fragmented portfolio over

numerous groupings comprising the Health Directorates and therefore multiple strands of, at times, conflicting accountability and reporting arrangements. Therefore, numerous overlapping work streams were commissioned to the organisation, in turn led by different Directors in different directorates. This led one Executive Director (DCEO1) within the organisation to question the motive of creating the strategy by asking:

How clear is the Government about how the primary care agenda should be handled? Not sure myself.

Once the organisational problematisation is articulated and established, other entities are attracted or invited to the framing, detaching themselves from existing networks and negotiating their connection and role in the emerging new network (Fenwick and Edwards, 2010: 14). This is the moment of interessement where these actants all define each other, selecting which entities are to be included or excluded, and finding ways that their interests are congruent. According to Spinuzzi (2008: 125):

They lock each other into place as allies, opponents, etc....they are interested in different things but they determine a common way to get to those goals.

To achieve interessement NHSX had been incepted from predecessor professional bodies and came into being in 2002 – three years before the strategy became a corporate priority. Interessement therefore included all historical component parts of the organisation, that is, the inherited professional silos, the preferred organisational structure (detailed in chapter one, section 1.4, Table 2), and the decision making and

reporting systems driven by the Board and Business Group. To achieve corporate identity these components had to interpose themselves between each others goals and make themselves inherent to each others interests: this assumed cohesiveness being represented in the annual Corporate Plan that reflects current and projected organisational activity. Thus combined, the organisation was in a position to offer infrastructure and professional expertise that no other actant could offer thereby cementing its position as obligatory passage point. The following quotation from a Program Director (PNRR1) provides some evidence of entities negotiating their role and connections with the new work stream:

Organisational cross cutting work is not easy to implement, we have a long way to go with this but have started making efforts.

However, it is questionable how much professionals detached from their existing roles and responsibilities and political interests within the organisation, prompting this comment from an Executive Director (DCEO1):

There is not a lack of willingness to engage but it just doesn't seem to fit – what is the added value? If there is none why bother?

The above included entities then experience enrolment within the system whereby they become engaged in new identities and behaviours. Chapters five, six, and seven explore organisational identities and behaviours and question to what extent the vertical silo culture enrolled and engaged in the horizontal corporate structure. An

illustration of the perceived gulf in corporate identity was summarised metaphorically by two of the Directors:

Multidisciplinary working does not work in NHSX as different Directors are on different planets (DN1).

Cross cutting into someone else's patch has a risk of losing professional identities and that is why people are reluctant to engage (DCEO1).

Finally then, to mobilisation and to the consideration of how the stakeholders can be persuaded to link together to achieve the stated corporate objective. In a translation analysis the emphasis is on bargaining and contingency, not development as it is in contradiction analysis. The ANT view of development is quite different from that of CHAT. In ANT any settlement can be reversed, but, on the other hand, a settlement can outlive the actants that were originally involved in forming it. The settlement of the initially fragmented organisation into a unified corporate structure is questionably only partial, with the foreshadowing threat of restructuring under a new administration remaining evident. Chapter five will explore this further in the context of organisational working.

4.8.2 Translation 2: The Journey of the Strategy in the Organisation

The problematisation in this translation is the implementation of the inter-professional educational strategy within NHSX, with the obligatory passage point being the approval of the Business Group as corporate organisational decision makers. If the

Business Group do not sanction their approval for the development and implementation of work streams then they cease to exist. Interestement in this context would include the organisational directorates, the project team, the reference group, key organisational stakeholders - and because this is a symmetrical account - the draft strategy, and the IT and paper systems that it circulated within. Methods of enrolment included various sorts of agreements and divisions meant to further differentiate and segment the actants. Negotiations included those with external partners by the project group (including the Scottish Government and the other Special Health Boards), in an attempt to strengthen internal positioning of the work stream; with internal organisational allies in an attempt to influence strategic decision making both at and before Business Group meetings; with key stake holders in each directorate in an attempt to gather inter-professional support, and with selected invited audiences at national events to raise the profile of the anticipated outcomes to exert external pressure on the organisation to maintain the strategy as a priority development area. These negotiations consisted of both formal and informal meetings and horizontal and vertical movements across the corporate structure. If an interestement is successful actants accept interrelated roles (Spinuzzi, 2008: 126). That is what partially happened here, as during the negotiation some of the actants came to divide their work roles. For example three Special Health Boards began to work together to achieve a common objective of each implementing their own equivalent of the strategy through mutual sharing and negotiation of content. In addition, new alliances were made with other existing and developing organisational work streams (in particular with regard to long term conditions, 'shifting the balance of care', 18 Week Referral to Treat, and the West of Scotland General Practitioner Continuous Professional Development Partnership). Those roles were negotiated, defined, and questionably made durable

largely through texts (including the circulating draft strategy), informal relational networks, informal and formal knowledge flows, and legislation / policy guidance. Such texts were also key to the last stage, that of mobilisation, which occurs when the network becomes sufficiently durable that its translations are extended to other locations and domains. But in so mobilising who represents whom? Who speaks in whose name? Externally, the strategy was promoted as aligning the organisation with the developing political thinking and strategic direction of the Scottish Government Health Directorate to shift the balance of care and associated resources away from secondary care settings and into the community (see Translation 1 above). But it was also an early internal organisational intentional attempt to achieve effective horizontal working across the vertical corporate uni-professional structures of the organisation. The more actants that were mobilised under the banner of achieving the outcome of the strategy, the more 'real' it became. This became strengthened through representations such as business papers, activity maps, fliers for events, reports, minutes of meetings, and other documentary instruments that continued to lock in the actants. The first articulation of the strategy was a settlement, with each new year of development bringing new layers of representations that served to reduce the reversibility of the settlement. In this ANT account, settlement is best understood as accumulation rather than historical development (Spinuzzi, 2008: 127). However, there is always the potential for betrayal and reversal, with actants deciding to pull out of negotiations, adopt competing interests, or for new actants to join and forge alternative settlements. And as everything is reversible the settlement is never quite stabilised, its existence is an ongoing achievement, one that is not indefinitely sustainable.

In the next chapters I will explore the journey of the strategy in more detail but here it is fitting to note that after inception in 2005 through its development to 2008 the layers of settlement, though not without challenge, were iteratively laid down. Reversals and betrayals became more overtly apparent from 2008 to 2009, prompting the main Project Lead (PL2) to question the corporate support and validity of the work:

How strong do we want to argue to retain it? Why is the organisation not seriously focussed on outcomes about making things better instead of worrying about power and boundaries and competitive bits of work?

When PL2 subsequently left in October 2009, the strategy lost its Champion and became the subject of competing corporate political interests and support for its continuation was withdrawn.

So, what do we learn from a translation account that we do not learn from a contradiction account? By allowing actants to define each other ANT decouples actants from an evolving object and opens the possibilities of seeing new actants emerge through negotiation. By keying actants to *interests* rather than *objects*, ANT theory embraces interlinked (interpenetrated, overlapped, multi-rolled, spliced) activity rather than trying to put it back in the box, as CHAT tends to do. And by seeing history in terms of political-rhetorical settlements and negotiations, the translation account opens up the possibility of examining phenomena non-developmentally. A criticism is that it is difficult to perform a symmetrical analysis as human interests and agency, collectively and individually, would appear to be easier

to identify than those of nonhumans (see chapters three, section 3.1.1 and chapter five, section 5.4).

4.9 Summary

By using a CHAT derived model this chapter has identified the organisational activity system of NHSX and the three sub activity systems of working, learning, and boundaries. This has provided an initial focus on specific areas of activity and a method to sort through the wealth of data collected. In addition, the concept of ANT translations was explored to provide an initial breadth of analysis to ascertain what differences this affords to the understanding of the journey of the strategy. I will commence chapters five, six, and seven by providing the research question as generated by the above sub activity systems (section 4.6), outline the key categories from data analysis (chapter three, section 3.3.2, Table 12), and provide an excerpt from the semi structured interview questionnaire to provide a clear focus to exploration and analysis in each contextual area. During interview the questions were not structured around the themes of organisational working, learning, and boundaries as these were distilled from the resultant analysis of the answers. Therefore, for ease of reference although artificially divided, I have grouped together under each chapter heading the questions that mostly articulated these categories, although there is a significant degree of overlap between them.

Chapters five and six pay close attention to the data as received and analysed in the contexts of organisational working and learning. Dividing these categories into separate chapters necessitates a degree of overlap, one that has recently been identified as a gap area in the literature (chapter five, section 5.2). Thus a goal here is

to understand how issues of learning and work can be embedded in one another; that is, the labour process and the learning process as mutually constitutive. However, in chapter seven I begin to disrupt the simplicity of these accounts of work and learning by raising questions of representation and performativity. It would appear that CHAT supports representationalist assumptions that mediate access to the material world, whereas ANT in its rhizomatic becoming aligns more with performativity. It is also in chapter seven, taking these into account that I begin to solve the mystery of who killed the Primary Care Strategy.

Chapter Five – How Does our Organisation Work?

Research Question – How does the project team (subject) negotiate the circulating draft strategy (tools) through corporate working structures to achieve the required objective (object)?

5.0 Introduction

The following key categories of ‘working’ data were identified in chapter three:

Working
Vertical and horizontal
Language
Informal and formal
Historical
Attitudinal
Relational and reductionist
Organisational working
Posturing and politics
Authority and organising
Agency
Leadership

The following questions represented areas of organisational working in the semi-structured interviews:

- Which organisational directorate are you part of?
- Describe your main areas of organisational activity.
- Describe any successes or difficulties in working with more than one professional group within NHSX.

- What is your understanding of the intended organisational outcomes of the draft strategy?

In chapter one I introduced the complexity of the organisation and in chapter three I introduced some of the key participants in the study. In chapter four (section 4.6.1) I modelled the organisational working sub activity system, and provided an outline of organisational history, structures, and work practices informing this research study, particularly centering around clarity of leadership and authority. In this chapter I will further explore this situational complexity taking cognisance of ‘organisation’ as a complex term that defines a common unit of analysis whilst lending itself to both relational and reductionist interpretations. Further to the literature reviewed in chapter two, I will scrutinise both ANT and CHAT for their relevance to organisational working and consider their implications. The categories outlined in the table above will then be used to sharpen the focus to interrogate the captured data and explore how the organisation works in its myriad domains. Subsequently, Engeström’s model of dominant modes of coordination will be used to illustrate some of the complex links across professional working and agency. In the concluding section I will consider both a CHAT contradiction account and an ANT translation account in an attempt to answer the chapter question and open up organisational working areas that are potentially subject to black boxing and exclusionings.

5.1 How Does our Organisation Model Working?

In order to answer this question and the one heading the chapter, I will consider the organisation with regard to geographical and compositional structure, decision

making processes, perceived tensions and priorities, and developing corporate culture, and history. The organisation is one of professional, divisional, and geographical complexity. NHSX as a Special Health Board came into being in 2001 by combining the Scottish Council for Postgraduate Medicine (SCPMDE), the Post Qualification Board for Health Service Pharmacists (PQEB), and the successor body to the National Board for Nursing, Midwifery, and Health Visiting in Scotland (NBS). As outlined in chapter one (section 1.6, Table 3) the organisation has grown in ten years to include a total of twenty professional groupings. NHSX is composed of eight directorates; four of which have their own external (to the organisation) professional accountability and governance structures reporting to the relevant regulatory bodies, and with their own internal (to the organisation), governance, ethos, purpose, and business plan. The fifth directorate (the Education Development Directorate) is a multi professional grouping and therefore does not have a singular external accountability and governance requirement. Instead, this directorate is composed of individuals from many professional backgrounds and therefore has dispersed external accountability but collective internal governance. The remaining three directorates provide corporate support functions relating to finance, human resources, and organisational development. Although the organisation has a main presence in Edinburgh it is geographically dispersed with an additional fourteen offices throughout Scotland. Organisational decision making is by the Business Group with major corporate decisions being referred for endorsement to the Board. The process for decision making is usually by the submission of a detailed written business proposal in advance of the meeting and then attendance at the Business Group to provide a presentation or to answer salient questions. The Business Group meets bi-monthly and is composed of a Director from each directorate, the Deputy Chief Executive, the

Chief Executive and the Chair. Proposals that do not receive Business Group approval are not progressed. In addition, each corporate lead for specified work streams meets with the Chief Executive to appraise and update him with detailed activity, to discuss any difficulties or issues, and to ensure alignment of proposed outcomes with agreed corporate priorities. These meetings are not subject to open challenge from the other directorates, as they are during Business Group meetings, and therefore provide an opportunity to raise any intra-organisational political issues in confidence. However, this also allows the potential for corporate ambiguity if there is not standardisation of the content of advice given across often parallel or competing work streams. An example of this came in 2008 when the strategy was being heavily contested by an opposing but very similar internal work stream and there was a question of who should take the corporate lead for the shifting the balance of care agenda, which had been given to the project lead of the strategy (PL2). This precipitated PL2 and me as PM2 to arrange to meet the Chief Executive for advice and consultation to clarify corporate responsibility. After discussion the advice was:

Keep on fighting with my support, you will meet huge barriers but you must just push through them, they [other work stream] won't like it and will resist you every step of the way, I know that but I am behind you with this (CEO1).

As the internal resistance of an opposing work stream was therefore well known but not directly challenged at corporate level, this raised a question of central leadership and authority to act within the organisation (see sections 5.5 and 5.6 below).

As stated above, the organisation came into being in 2002 and has therefore only been operational as a corporate structure for nine years, during which time there has been numerous operational but limited structural changes. From a historical context, in chapter one (section 1.4, Table 2), I presented the options that were available during the consultation phase of the inception of the organisation in 2001. The main organisational priorities and apparent systems tensions (chapter one, section 1.7) then centered on ‘retaining continuity’, ‘reducing initial turbulence’, limiting ‘jeopardy’, maintaining a ‘clear identity’, providing an ‘effective support structure’ and ensuring ‘sensitivity to differences’. The Scottish Government recommended that although there had been adoption of Option 1 in the first instance there should be a review after a year to ensure that the initial arrangements ‘did not leave the cross cutting function marginalised’ (SEHD, 2001: 21). However, seven years later in 2008 the draft strategy stated:

There is no single working model and different directorates engage with community care staff in different ways. The present activity within NHSX in relation to community based health care is based on a mixture of historical funding streams, policy directives, and the previous role of each directorate prior to the formation of NHSX. There is a clear mismatch between NHSX resource and the number and potential needs of the community based workforce. A main focus is to integrate community based health care education and training across existing work streams.

Also in 2008 this fragmentation would appear to be compounded by the lack of corporate inter-professional focus with one interviewee (GP4) claiming:

There is a lot of fragmentation and separateness, and I think that is because we have different professional groupings, and a project or a topic will be given to one directorate, and although you are trying to do it across directorates, that is quite difficult if one directorate is leading on something or is running a competing work stream. There is no place for an inter-professional group and nowhere for that to sit. So at the moment people tend to just think that it sits across, whereas actually it just doesn't exist.

From these excerpts from the strategy and interviews it would appear that the cross cutting organisational function remained marginalised but that the stated integration of work streams continued to remain a corporate priority. Three years later in 2011, (see chapter one, section 1.6.1) the current organisational Corporate Plan 2010-2011, and Strategic Framework 2011-2014 outline eight ways of organisational working, six broad strategic themes, and ten corporate objectives. The ones most relevant to organisational working are:

The ways of working:

- Be open, listen and learn
- Look ahead and be creative
- Work to a clear common cause
- Give people power and lead by example

The broad strategic theme:

- Delivering our aims through a connected organisation

The strategic objective:

- We will develop flexible, connected and responsive educational infrastructure which covers people, technology, and educational content (theme 8)

I commenced employment within the organisation in 2004 and have therefore been a participant in its development for seven years, and, since 2006, I have undertaken the role of researcher within the organisation as part of my Doctor of Education (EdD) studies which affords me the opportunity to appraise the organisational working culture from within. As indicated in chapter four (section 4.6.1) numerous issues regarding organisational working were volunteered during the 35 unstructured and semi-structured interviews that took place during the four years between 2006 and 2009. However, many of these comments appear to be in direct contradiction to the stated and published overt corporate culture of 2011 (above). This chapter will therefore explore both overt and covert organisational working practices in the developing historical context.

The term ‘organisational working’ resists an easy definition. Therefore, in order to situate the data I will commence by exploring organisational studies from both an ANT and CHAT perspective, reading across both to highlight similarities and differences, and, in doing so I will attempt to view ‘work’ from a socio-material

perspective and resist synthesising the concept into ‘one transcendent pronouncement’ (Fenwick, 2010: 106).

5.2 Organisational Working: Situating An ANT and CHAT Account

Organisational studies have attracted researchers from many traditions: positivism, social constructivism, critical realism, action research, and ethnomethodology among them. In addition, these researchers may have very different interests and agendas; from those who wish simply to discover what is happening in organisations, to management and management researchers who want to find out how they may be run more effectively, and to critical theorists who are seeking to develop a more detached analysis of the role of organisations in contemporary societies. Therefore, organisation studies do not constitute a unified discipline (Ackroyd et al, 2005; Kemmis and McTaggart, 2005: 562; Morgan, 2006; Tsoukas and Knudsen, 2003). Also, organisational working and organisational learning have a tendency to be separated within literature pertaining to organisational studies and hence harbour a fragmented theoretical relationship. And, although there are some instances of interwoven conceptual dialogue, the fact remains that the intellectual histories of analysis of work and analysis of learning have been mostly developed upon the bedrock of isolated trajectories. According to Sawchuk (2008: 73-74):

Understandings of organisational working and learning and the ensuing potential for organisational change should be mutually constitutive as opposed to belonging in separate camps.

The term 'organisation' also lends itself to a myriad of interpretations and metaphors (Blackler, 2009: 20; Latour, 2005: 153-154; Morgan, 2006). From A CHAT perspective, in chapter two (section 2.2.1), I introduced a Marxist account of work activity as a framework for detailed analysis within the context of an inherently contradictory, dialectical process (Sawchuk, 2008: 76). However, from an ANT perspective, Fenwick (2010: 106) cautions that the term 'work' should be used cautiously as conceptions of 'work' across different fields are multiple and resist synthesis and that 'any generalized theory of work must ignore all the exceptions or distort them to fit a singular pre-conceived model'.

ANT and CHAT literature refer to 'networks' more than to 'organisations', although CHAT is recently becoming more aligned with organisational studies (see section 5.2.2 below). As already stated the term 'organisation' is very complex and can be used to represent many structures. A very basic, but very useful, definition of the terms 'organisation' and 'networks' is provided by the Oxford English Dictionary:

- Organisation – an organised group of people with a particular purpose, such as a business or government department
- Network – an arrangement of horizontal and vertical lines, a group or a system of interconnected people or things

In cross functional working, where the strategy was located, there is more of an intersecting arrangement reflecting a system of interconnected people and things across horizontal and vertical lines. Whilst acknowledging that this working distinction between network and organisation is far too simplistic, it is the informal vertical and horizontal intersections that I wish to prise open and explore as well as

the more formally ordered corporate functionality. Therefore, if for the purpose of reading across CHAT and ANT we understand an organisation to be a form of network, then, as discussed in chapter two (section 2.4, Table 5), both ANT and CHAT approaches agree that networks are relatively stable material assemblages of humans and nonhumans that collectively form standing sets of transformations. And in both approaches, networks are understood as heterogeneous, multiply linked, transformative, and black boxed. In summary, that is:

- Heterogeneous – constituted through relationships or associations among elements
- Multiply linked – including through functional groupings, tools, rules, communities, genres, and social languages
- Transformative – due to the multiple links among heterogeneous elements a network must represent and re-represent phenomena in various, often conflicting, ways
- Black boxed – networks that develop over time develop black boxes to manage complexities. Although black boxes come from ANT they emerge from historically developing activities that are kept separate enough for stable interfaces to develop

This section has provided an overview of the ‘fit’ of ANT and CHAT with organisational studies, the following sections will now explore each in turn drawing out their areas of strength and / or weaknesses to facilitate an analysis of organisational working in NHSX.

5.2.1 An ANT Account

In *Reassembling the Social*, Latour (2005:141-156), describes an interlude between a Student (S) and a Professor (P), the following of which is a short excerpt:

S – Am I bothering you?

P – Not at all. These are my office hours. Come in, have a seat.

S – Thank you.

P – So...I take it you are a bit lost?

S – Well, yes. I am finding it difficult, I have to say, to apply Actor Network Theory to my case study on organisations.

P – No wonder! It isn't applicable to anything.

On defining why ANT is not good for 'organisation studies' the point that Latour (2005: 142) appears to be making within the extended student-professor dialogue is that ANT is not a 'tool' to 'frame' data but is rather a method of description, that should be informed by following the actors, their theories, contexts, metaphysics and ontologies (2005: 147). This call to follow the actor is similar to CHAT's call to follow the object and will be explored in further detail in chapter six (section 6.4). Also, unlike CHAT, ANT does not explicitly differentiate 'work' from any other activity as it 'does not accept anterior constructs such as work as they begin from different understandings of what constitutes reality' (Fenwick, 2010: 114), hence Latour's dismissal of ANT as a tool to frame organisational studies. However, ANT can be very useful to open up and explore issues relating to work, as, according to Fenwick (2010: 113) ANT:

...offers the most radical material challenge to understandings of learning, work, and organisation. When anyone speaks of a system or a structure ANT asks, how has it been compiled? Where is it? What is holding it together?

Finally, like Engeström, Law has provided a focus on the division of labour in an organisational context (2004a: 155), but unlike Engeström this is in the context of seeking and producing organisational 'truths'. I now turn to a CHAT account, a major difference, and depending on your viewpoint a major criticism is that CHAT is human centric. CHAT, according to Fenwick (2010: 112):

...is a human centric analysis in the clear delineation of nonhuman artefacts as bounded, distinct from humans, and while embedding cultural histories, [these are] relegated to the role of mediating human activity.

The following section will therefore consider organisational working from a CHAT perspective, with particular regard to developing collective activity systems.

5.2.2 A CHAT Account

In recent years CHAT has received some attention in organisational work studies (Blackler, 2009: 19-39). In CHAT, with its basis in Marxist theory, organisations are viewed as sites of central contradiction (chapter two, section 2.2.5) and ideological struggle between those who control the means of production and those whose labour and knowledge are exploited. Values at work are embedded in the object of the activity. Objects are viewed as contradictory unities of use value and exchange value,

generated materially, mentally, and textually. Negotiations of objects are always also negotiations of values and motives: not just of 'what' but also of 'why', 'for whom', and 'where to'. Such negotiations are highly value laden whether their value aspect is openly articulated or not (Sawchuk, 2008: 78. See section 5.3 for illustrative examples of negotiation in NHSX). According to Engeström (2006b: 194), the articulation, questioning, and expansive transformation of values can eventually only succeed at the level of collective activity systems. In this way third generation CHAT is similar to ANT in that it foregrounds heterogeneous relations, but ANT would add and indeed focus on the 'how' question in addition to the above (Law, 2008: 141; see also section 5.2.1). Regarding collective activity, Engeström (2006b: 194) states that 'problem solving and reflection in action at individual or dyadic level will not suffice'. He establishes the point that the unit of analysis must necessarily be expanded beyond individual working and learning to the level of activity where individuals, social relations, and contexts are unified. Engeström's concern therefore is to trace the multiplicity of contradictory value production processes by tagging the objects of work and following their alternating valuations. This interest in collective development has involved Engeström in detailed studies of particular activities and the tensions they embrace, and the use of such data to support a process of reflection and experimentation: these have been variously dubbed 'knotworking', 'mycorrhizae activities' and 'collaborative intentional capital' (see section 5.4).

In the following sections I will provide a rich tapestry of quotations regarding organisational working as illustrative of the categories defined from the data and represented in the table at the start of this chapter.

5.3 Collaborative Working: a Veritable Kaleidoscope of Differences

The table at the beginning of this chapter indicated ‘language’, ‘relational and reductionist’, ‘formal and informal’, ‘attitudinal’, ‘posturing and politics’, ‘agency’ and ‘authority’ as key categories arising from the data analysis relating to organisational working. I will therefore outline the rich amount of interview data that was collected in relation to each. However, although I have ‘teased’ out these categories I have tried to restrict my inclination to tidy them into neatly bounded segments – instead, as far as possible, this section is openly structured to allow the mess of the data to maintain its original and characteristic wealth. To aid interpretation I have introduced a brief outline of any additional areas of literature that may prove useful for understanding each concept. However, I will not introduce many new aspects or go into too much depth of detail as I wish to maintain my focus on pursuing what interpretations are afforded by the ANT and CHAT literature. I will consider ‘agency’ and ‘authority’ separately in sections 5.4 and 5.5 respectively, as they appear to be very complex and central issues to NHSX. Once all categories have been explored I will subject the findings to both a CHAT contradiction and an ANT translation account in section 5.6.

Data collected during the semi-structured interviews reflected ‘language’ in two main ways: that is the spoken and the written. Quotations regarding spoken language include:

There is no impetus to look or talk outside of your own professional grouping
(PD6).

People are not comfortable to speak outside of their professional group (GP3).

You have to allay people's fears before they build into major mayhem, people don't speak to each other – they don't even share the same language (PM1).

Quotations regarding written language (here in direct relation to the draft strategy)

include:

It needs to be a simple document, not a fifty page tome with a lot of hot air and noise (GP1).

They should very much value the message we are trying to give instead of the usual organisational gobbledygook that usually comes out – what we are looking at here is language that they will understand (C1).

Why is this and what does it mean with regard to negotiating the strategy across professional groupings - if different professions talk a 'different language' and the organisation is charged with talking gobbledygook (in other words 'management speak')? In organisational studies it has become something of a truism that the specificities of a discipline's methods, object(s) of study, and gate keeping mechanisms are built from historically developed ideologies, professional cultures, and philosophical traditions. In particular, the construction of dominant paradigms and sub fields of linguistic inquiry have shown extremes of disciplinary territory that in many cases have become inseparable from the inquiry itself (Thorne and Lantolf, 2006: 172). That is, theoretical frameworks have shown a tendency to become treated

as co-equivalent with the phenomena they attempt to document and explain. An example of such frameworks arises within the Nursing Directorate of NHSX which adopts the use of competency frameworks to deliver most of their projects, but these are viewed with a degree of suspicion from others out with the nursing profession:

The frameworks we use [in NHSX] are just so different; nursing puts everything into competencies and just ticks the box (GP6).

Makoni and Pennycook (2006: 27) describe the highly consequential implications of the confusion of static model with living cultural communicative practices and argue that so called languages are ‘epiphenomena on invention’, a term that describes the historical and political processes that reify mutable, local, and contingent communicative repertoires into categorical linguistic varieties. In addition, formalist theories of language have generally assumed ‘a dichotomy between language and the extra linguistic world to which language refers’ (Hanks, 1996: 118). Here CHAT and ANT differ. Thorne and Lantolf (2006: 177) argue that as CHAT brings communicative activity to centre stage and is profoundly marked by discussions about the importance of semiotic mediation and the development of human communities it requires a theory of language that is concerned with human communication rather than formal theories of language structure divorced from such activity. According to Hanks (1996: 119), that is:

...one that calls into question both the ontological distinction between language and the world and the epistemological one between knowledge of language and knowledge of the world.

Thorne and Lantolf (2006: 175-177) argue that communicative processes should therefore be understood as cognitive processes, and those cognitive processes are indivisible from humanistic issues of agency (see section 5.4 below). CHAT therefore gives an asymmetrical humanistic account, although Ahearn (2001: 128-129) moves slightly nearer to ANT by stating:

...locating language and agency in the interstices between people, rather than within individuals themselves, requires a different way of thinking about studying interactions in multi – activity working and collaboration (see section 5.4 regarding collaborative agency).

In addition to at times talking diverse languages, different professional groups adopt dissimilar ways of working through different directorate structures and hierarchies. This is partly historical, partly attitudinal, and partly through their predetermined function within the organisation, and, according to one Senior Medic (GP1) partly due to:

...having muddled thinking and artificial portfolios in the organisation.

For example, the Nursing Directorate commissions a lot of educational project activity but does not directly deliver education to nurses; whereas the Medical Directorate does not commission educational projects but does have an extensive remit in delivering education to all medical students. The following three quotations from Senior Medics in the organisation underline this difference:

I know the frustration from the strategy lead's [PL2] point of view was nursing, and they are in a very difficult position because they have got a completely different structure, they don't deliver (PGD1).

I think it goes back to the history of nursing, and I think that it is the three organisations that came together, and for some of the directorates they must deliver on that original uni-professional work, and sometimes that takes precedence over multi-professional working (PD2).

Nursing has been set up so that it is completely different from everything else which is part of the problem, and you are not going to be able to change that (PD3).

As indicated above, attitudinal barriers to working with other professions were also very evident from the interview data. These barriers were at times openly acknowledged as the illustrative quotations below highlight:

I just want to work in my own wee corner, don't bother me with this joined up stuff (PM1).

There is no way of linking things up in any kind of meaningful way, and I think the barriers here are partly structural but partly attitudinal (MD1).

Other attitudinal barriers centred on trust, or the lack of it, and tribalism (for recent literature reviewing trust and tribalism see Beech and Huxham, 2003: 2; Rhodes, 2007: 1246). For example, in relation to trust:

I do think that working at a lower level, at a smaller level with key individuals building trust, which is crucial to how these things [inter-professional working] are going to work. It is where you see things working and not working – a lot of it is the difference between trust and the lack of trust (GP 3).

And in relation to tribalism:

There is a lot of tribalism still - there is a lot of conflict of interest frankly with those that lead the directorates. They are very protectionist about sharing what is going on (Int5).

As stated in chapter one (section 1.6.1, Table 3), the organisation represents over twenty different professional groupings all of which have individual professional cultures and identities (for recent reviews of some of the literature comprising professionalism, professional roles, and practice, see Knorr Cetina, 2001; Rouse, 2001; Simpson and Carroll, 2005; Stronach et al, 2002; Swidler, 2001; and Turner 2001). As professional characteristics are not homogeneous across each profession, this amounts to an organisational kaleidoscope of multiple differentiations in professional languages, cultures, and identities, each of which can be framed in a boundary context, situating the circulating draft strategy within countless different and fragmented professional working domains, including both spatial and political

(Simpson and Carroll, 20005: 3; see chapter seven). Quotations highlighting spatial imageries included:

Horizontal working across silos – well it doesn't work does it – we need to chip away (PGD1).

You have directorate working and some would call that vertical working, and then you have got horizontal working, it is trying to get everyone - you are never going to get diagonal working, which is maybe what it needs to be (APGDD1).

The difficulty in negotiating across these spatial domains is multiplied by structural and conflicting policy barriers that shape the direction of NHSX activity. These included clashing directives from different departments of the Scottish Government and the impact that this had on the at times contested priorities of the different structural groupings of NHSX:

I wouldn't underestimate the other conflicting barriers in policy terms which this is up against (D1).

Well, the work comes from the Scottish Government doesn't it? They say we have got this issue, we have got that issue, and can you deal with this? It goes to a particular directorate as a project but other bits of the same generic work come in and go to other directorates as competing projects. We need to look at how work comes in so that it is not so carved up (PGD2).

These contested areas of policy were also viewed as causing concern regarding reductionist as opposed to relational working in that large subject areas, for example primary care or patient safety, were being disaggregated into small project ‘chunks’ that were not joined up at an NHSX corporate level. This is reflected in the following:

There is a problem with policy or strategy implementation – how to implement them – it’s just so difficult because of our different structures (PGD2).

Well a lot of it is the same and I think it is often reduced down to one tiny area and that is more challenging – we should be looking at it in the context of an overall program rather than saying well there is this project and that project and they are all separately funded and managed (GP4).

Our work is still very separate and reduced but in terms of the logical world that we live in, it is obviously very complex, very messy, and busy (PM7).

This separated reductionist approach was depicted as frequently being driven by externally (Scottish Government policy and strategy), and internally (NHSX corporate planning process and accountability), short term targets and performance measures:

If there is pressure to deliver targets – if that is what it is reduced to – then the way to achieve your target time is to primarily do things uni-professionally, and then maybe try to add a bit on (PD1).

Meeting the annual Scottish Government targets is seen as much more important than sustaining a long term view (APGD2).

The reported relational / reductionist views above overlap to some extent the perceived formal / informal working relationships within the organisation.

Interviewees described effective informal working relationships and opportunities to nurture innovation that were at times described as being constrained by the organisational formal systems and processes:

Joint working happens by chance, or through someone you know rather than a central edict that gets looked at, it tends to be by word of mouth through informal relations (APGDD1).

To work with other professional groups well it's the informal relationships that work [in the organisation] not the formal ones (PM4).

And informal creativity gets killed by the formal systems and processes in the organisation (KS1).

Finally, there were many differing professional expectations expressed within NHSX for the outcome of the strategy:

I think it is really important that we have it but it is very much in the balance and it won't please everyone (ADN1).

So my expectations from a professional point of view are very high, that being said I am also cautious that there are one or two groups who are still very resistant to true working together (Int 18).

Let us be realistic, and maybe a little cynical, I suppose that if it increases our portfolio then it is doing its job (APGDD1).

These quotations from respondents suggest that during 2006-2009 there were many barriers to joint organisational working indeed within the organisation. The section above detailed many examples in relation to language, informal and formal working, history, relational and reductionist ways of working, together with posturing and politics within the organisation. In the following two sections I will explore the remaining two highlighted categories; that is, agency and authority respectively. The chapter will then be concluded by reading across the complexity, identifying the contradictions, and utilising ANT and CHAT to begin to answer the question posed at the beginning of this chapter.

5.4 Agency in Distributed Multi-Activity Collaboration

The table at the beginning of this chapter also indicated ‘agency’ as a key category arising from the data analysis. Chapter three (section 3.1.1) introduced the concept of agency from an asymmetrical human (CHAT) and symmetrical nonhuman (ANT) perspective. The ontological and epistemological implications of this will be further explored in chapter seven (section 7.5) with regard to performativity. As stated in section 5.2.1, ANT does not provide a specific focus on organisational working as it does not accept an anterior account of the term ‘organisational working’ as

constituting reality. Rather, ANT affords anti-humanist and anti-subject orientated meanings as being generated through processes. For the same reason ANT does not accept the anterior construct of ‘agency’. However, according to Fenwick (2010: 114), both ANT and CHAT:

...examine how practices become fixed and durable in time and space, and seek out ambivalences, uncertainties, and contradictions – the openings...Agency is understood as enacted in the emergence and interactions – as well as the exclusionings – occurring in the smallest encounters (see also section 5.6).

As CHAT does accept agency as a construct I will use it as my primary focus, but will hold ANT as a comparison account.

The first and second generations of CHAT were limited in their focus on a single activity system as the unit of analysis of human action and practice; however, the third generation of CHAT has developed conceptual tools to understand multiple perspectives and networks of interacting activity systems (chapter two, section 2.2.6). The challenge of the third generation is therefore to expand the unit of analysis to ‘interacting activity systems with a particular shared object as minimal model’ (Engeström, 2001: 136). Therefore, in this section I will explore developing concepts of agency in more depth from a CHAT perspective in relation to organisational working, in particular focusing on the concepts of ‘relational’ and ‘expansive’ agency and conclude that, although remaining asymmetrical, these conceptions are moving towards a more ANT based approach and away from a strictly human centered socio-cultural ontology. Finally, as can be seen through ‘expansive’ agency, CHAT’s

adoption of non linear mycorrhizae would appear to be reaching towards a similar understanding as that which is characterised by ANT's rhizomes.

5.4.1 Relational Agency

Seeing the 'shape and implications of spatio-temporally distributed work and expertise' as 'fragile and open, literally under construction', Engeström (2005: 324) offers two new concepts that he describes as immature but presents in order to open up the field for further theoretical work:

- Collaborative intentionality capital – an emerging form of organisational assets which makes collaboration on complex tasks possible beyond organisational boundaries.
- Object orientated interagency – which suggests a slightly more interactional focus, that is, a form of connecting and reciprocating, 'while circling around a complex object and dwelling in the object, and maintaining a long term relationship with it - that is, 'knotworking'' (Engeström, 2005: 333).

Central to both these concepts is the CHAT recognition that action is object orientated, and that our interpretations of the problems, or objects of activity, that we are working on and trying to transform, are shaped by the historical practices of the systems in which we are operating. First, our interpretations of an object (the implementation of the circulating draft strategy) such as a work task, are restricted by the system in which it is located (the many silo structures composing NHSX). Second, an object may motivate us to react in particular ways by eliciting responses from us that are permissible within particular sets of social practices (the myriad of

professional domains discussed above). Far from being static, these object orientated systems are responsive to changes in material and conceptual tools (the draft strategy document), and shifts in the divisions of labour (the changing composition of the project team), or community (NHSX), arising from internal or external influences (corporate objectives, outcome measures, policy drivers). Systems are therefore reconfigured as we deal with contradictions that arise within them. Because systems are dynamic, the object embedded in a system is not static and may be subject to changing interpretations which in turn work back on the system to produce the systemic change that Engeström describes as expansive learning (see chapter two, section 2.2.5, Figure 3; and chapter six, section 6.4). For Engeström human agency is powerful as a set of collective intentions. Both collaborative intentionality capital and object orientated interagency are offered as ways of beginning to describe what enables the reaching out that occurs when people operate across the boundaries of discrete activity systems to work on common objects in distributed activity fields such as across departments / directorates in an organisation. Here we see a shift in focus on the relational as an important move in the development of meshes of mutual responsibility, and, although remaining asymmetrical, a move from an overly strong focus on the individual (Sørensen, 2007). The ideas of collaborative intentionality capital and object orientated interagency fit well with the methods of developmental work research (DWR, see chapter three, section 3.4). Edwards (2007) has further developed this concept of 'relational agency' as the capacity to align one's thoughts and actions with those of others in order to interpret problems of practice and to respond to those interpretations. Therefore, in CHAT terms, relational agency is a capacity to work with others to expand the object that one is working on and trying to transform, by recognising, examining, and working with the resources that others

bring to bear as they interpret and respond to the object. Relational agency shifts the focus from the system to joint action within and across systems and the impact on those who engage in it. The concept of relational agency is also topical within ANT literature (Sørensen, 2007a; Sørensen 2007b), but without the specific context of organisational working.

5.4.2 Expansive Agency

Expansive agency relates closely to the concept of expansive learning (chapter six, section 6.4) as a horizontal movement across boundaries in fields of networked and distributed activities. To highlight the importance of horizontal and multidirectional connections Engeström (2006a) introduces ‘mycorrhizae’ which are organising activities orientated towards ‘runaway objects’ that are seen as an alternative to ANT’s ‘rhizome’ (Due, 2007: 129). A mycorrhizae formation ‘is a symbiotic association between a fungus and the roots, or rhizoids of a plant’ (Yamazumi, 2009:215), and is simultaneously ‘a living expanding process (or bundle of developing connections) and a relatively durable, stabilised structure’ (Engeström, 2006a: 12). According to Due, (2007: 129) the term rhizome is taken to represent:

...an ordered set of relations in which each elements relate to every other, without any hierarchical, functional, or centralised order being imposed on those relations...A rhizomatic process further consists of partial processes which are not integrated within a structure, and the course of which cannot be predicted from a knowledge of the causes that influence the process. Therefore, the rhizomatic process is epistemologically immanent in that it excludes an external definition of its course of development.

In a somewhat oblique criticism to differentiate between the two concepts of rhizomes and mycorrhizae, Engeström (2008: 228) writes:

[the rhizome] highlights the importance of horizontal and multidirectional connections in human lives, in contrast to the dominant vertical, treelike images of hierarchy. Originally a biological concept, rhizome refers to a horizontal underground stem, such as found in many ferns, where only the leaves may be visible. As such, I find the implications of rhizome somewhat limited. I am more interested in the invisible organic texture underneath visible fungi. Such a formation is called mycorrhizae.

In the third generation of CHAT mycorrhizae situate a new distributed form of agency through a process called knotworking. Knotworking, which is also seen as an emergent form of collaborative work, refers to partially improvised forms of intense collaboration between partners that are otherwise loosely connected. In knotworking there is no fixed centre of authority and control. Distributed agency located in knotworking type formations is valuable where the ‘combinations of people and the contents of tasks change constantly’ (Engeström, Engeström, and Vähäaho, 1999: 353), and there is ‘frequently changing initiatives and distributed leaderships’ (Yamamuzi, 2009: 216). In the third generation of CHAT, this focusing on reaching beyond and across the boundaries and gaps between activity systems must be acknowledged as a historically new feature of distributed or fractured agency – a type of agency which is located in the knots or mycorrhizae like formations within systems.

In summary, relational agency assumes a common object, distributed fields of activity, collective intentions, and mutual responsibility. In this study the latter two (collective intentions, mutual responsibility) remain questionable as will be explored in section 5.5 in relation to ‘authority’. The concept of authority is also a feature of expansive agency in that it assumes no fixed centre of authority or control. Expansive agency also raises a spatial analogy in that it brings rhizomes and mycorrhizae into close, but asymmetrical, alignment in that they both deny arborescent linear development and support multidirectional connections; the former (rhizomes) having no hierarchy or centre, and the latter (mycorrhizae) resembling developing connections to a stabilised structure. This will be explored further in chapter seven in relation to spaces, structures, and boundary crossing.

5.5 Construction of Community: Authority and Organising

As previously stated in chapter four (section 4.6.1) NHSX is not typical of most NHS Boards in that it employs predominantly managerial and above level staff which brings with it issues of autonomy, leadership, organising, and authority. In addition, although familiar managerial genres, such as organisational maps, charts, or organigrams, represent and demarcate formal reporting and accounting structures they do not demarcate informal working relationships where contestations of authority and leadership may potentially be played out. Interestingly, for a large public sector complex organisation, NHSX does not have a horizontal corporate ‘map’ as such although each directorate does have its individual pictorial representation of its own vertical uni-professional hierarchy.

The table at the beginning of this chapter lists authority, leadership, and organising as being key categories resulting from the data analysis. Within the organisation there

were questions raised regarding the authority of leadership, the authority to allocate work, the authority between competing work streams, and the authority between different professional groupings. The following give a rich flavour of this:

Well just now I don't know where decision making sits or who has the authority.

Does the Business Group just divide things up? (GP2)

Multi-professional working is just a flash in the pan – authority must come from on high to make it happen (ADP3).

The CEO doesn't like to force multi-professional developments (ADP2).

Medicine and nursing have the ear of the CEO and don't admit the truth - that gives a problem for leadership (ADP1).

Decision making is about fire fighting, what needs to get done to get them [other directorates] off our backs (APGDD2).

Leadership by and large in the organisation is very variable in its quality, and they all talk a good game and you just have to watch what is what (Int13).

It is leadership that makes it hard to work across the directorates, leadership and power (C1).

I think there needs to be a single organisation, and all that means to be honest, but it takes a lot of leadership in order to make that happen. Do we have that? I don't think so (PM1).

Authority, leadership, and power were therefore clearly identified by respondents as being of issue in NHSX. This is not atypical of organisational working, as, according to Lantolf and Genung (2002: 193):

Communities and activities within them are rarely stable and smoothly functioning entities; they are characterised by shifting motives, goals, and rules of behaviour and they normally entail struggle and conflict, including contestations of power, how it is deployed and potentially challenged.

Positions of authority in organisations can bring inherent power. Both ANT and CHAT literature acknowledge power as a central, although not always straightforward, concept. From an ANT perspective according to Fenwick (2010: 13):

...power is central to any understandings of space and context translated through networks. ANT can also trace how assemblages may solidify certain relations of power in ways that continue to affect movements and identities.

Power in ANT is therefore seen to emerge through a series of complex actions between human and nonhuman elements, and is, in this instance, a very illuminating frame through which to view the strategy as it circulates through the organisational spaces of power (Business Group, conflicting interests of some directors, formal and

informal relationships). CHAT literature also acknowledges that it is not easy to depict and analyse hierarchical power relations within a single activity system and points toward third generation CHAT to open up new possibilities. According to Engeström (2009b: 307):

In an organisation managing is usually best seen as a sub activity system on its own, relatively independent of the activity systems of primary productive work.

CHAT does not give in depth treatment to the area of authority (Taylor, 2009: 232). However, it does link the locus of ‘agency’ to the dominant mode of ‘coordination’ (as a central manifestation of authority), and to ‘learning’ as detailed in Table 18 (below).

Table 16 CHAT: Dominant Modes of Coordination⁹

	NATURE OF OBJECT	LOCUS OF AGENCY	DOMINANT MODE OF INTERACTION	COORDINATING MECHANISM	LEARNING MOVEMENT
CRAFT	Personal object	Individual actor	Coordination	Identification and subordination	Peripheral participation, gradual transition toward the center
MASS PRODUCTION	Problematic object	Team	Cooperation	Process management	Focal involvement, linear and vertical improvement
SOCIAL PRODUCTION	Runaway object	Knots in mycorrhizae	Reflective communication	Negotiation and peer review	Expansive swarming engagement, multi-directional pulsation

⁹ Table adapted from Engeström (2009b: 316)

Although arguably artificially representative, this model is helpful in identifying areas of system tensions and contradictions by separating out the three types of production, all of which can be identified in NHSX. The fourth column of the table sketches the typical coordinating mechanisms in very broadly conceived historical types of Marxist based production. In craft-based organisations, when each individual practitioner is focused on his or her own object or fragment of the object, practitioners are commonly held together by externally imposed or tradition-based identification and subordination. Craft based production can be seen to equate to uni-professional 'craft' areas such as medicine, nursing, dentistry, pharmacy, and psychology. In organisations, teams emerge as units for cooperative solving of problems, their efforts being typically coordinated by various forms of explicit process management. Within NHSX a project team was developed (see chapter four, section 4.3), from individuals who arguably identified themselves and each other as belonging to the 'craft' description of work production. This team adopted changing process management techniques due to the frequently alternating composition of the team. Teams can run into troubles and find their limits when faced with objects which require constant questioning and reconfiguration of the division of labour, rules, and boundaries of the team and the wider organisation – in short, negotiation across horizontal and vertical boundaries of the given process. Ostensibly, this is what happened and ultimately contributed to the failure of the strategy. In the third row of the above model, negotiation is a central coordinating mechanism of the distributed agency required in knotworking within social production. Negotiation is required when the very object of the activity is unstable, resists attempts at control and standardisation, and requires rapid integration of expertise from various locations and traditions. This integration of expertise, although necessary, was demonstrably

complex, not least because of the reasons identified by interviewees in section 5.3. In addition, negotiation here represents more than an instrumental search for a singular, isolated compromise decision; it is basically a construction of a negotiated order in which the participants can pursue their intersecting activities.

The second column sketches agency, which according to Engeström (2009b: 317) is closely related to authority and:

...happens within historically changing patterns of activity and mediation and is described as shifts from the individual to the team and further to pulsating knots in mycorrhizae (see section 5.4 regarding relational agency).

The project team driving the strategy all had more than one organisational role; that is, most had a professional remit and accountability to one directorate and became part of the project team as an additional component of their employment. This was also further complicated in that some had multiple roles (for example, General Practitioner, Director of Post Graduate General Practice Education, University Professor, Project Lead). This multiplicity of role is characteristic of a large percentage of staff within the organisation and at times produces a conflict of interest in project / corporate outcomes as the following quotation describes:

I don't have time for this, it's too much hassle so I will just go back to my day job and keep my head down (PM1).

Engeström's model is therefore very useful to help to identify some of the fractionality in professional identity (craft / team / social production) and the ensuing

locus of agency. However, the perhaps simplified concept of agency in this model will be troubled by performativity in chapter seven (section 7.5).

5.6 Is Our Organisation Working?

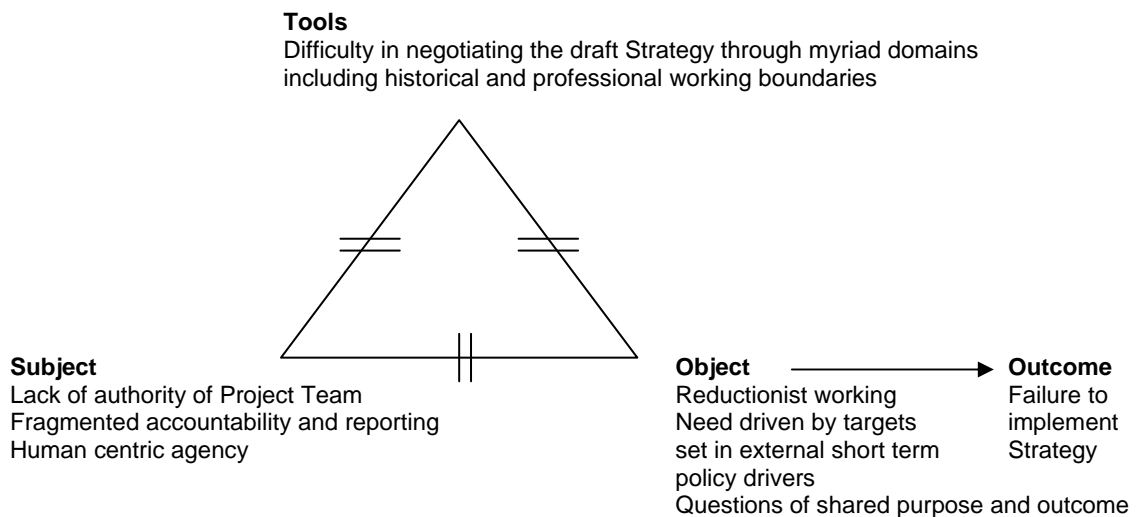
In chapter one it was acknowledged that, in 2001, although the organisation was structured around the three predecessor organisations, one of the founding principles was to ensure that this ‘did not leave the cross cutting function marginalized’ (SEHD, 2001: 21). Ten years later, in 2011, as demonstrated at the start of this chapter the current model of organisational working continues to aspire to achieve a flexible, connected infrastructure with a strong focus on achieving effective cross cutting functionality. For five of these years the draft strategy circulated through the organisation, and during this time a rich wealth of data was collected and analysed (chapter three) to produce an organisational activity system and three sub activity systems (chapter four - working, learning, and boundary crossing). In order to answer the main chapter question and thereby answer this section I will answer the call of CHAT and ANT to ‘follow the object’ (intended implementation of the strategy) through the system (organisation) from the specific perspective of organisational working. Although referencing both CHAT and ANT, the predominant focus in this chapter has been on a CHAT reading of organisational working. However, it is my intention throughout this study to challenge my initial preference for CHAT, by drawing on an ANT analysis to broaden and deepen my understanding of both, and to explore and exploit the differences each affords to a reading of the data. I will do this by firstly exploring a CHAT contradiction account, and secondly through an ANT translation account. Finally, it is my growing appreciation that CHAT contradictions

are excellent to identify areas of system tension, but, whereas CHAT offers a form of black boxed account, ANT pries open previously unexplored spaces by affording opportunities through relationality to ‘explore strange and heterogeneous links and follow surprising actors to equally surprising places’ (Law, 2008: 147).

5.6.1 Circulating the Draft Strategy: A Contradiction Account

In chapter four (section 4.6.1) I produced the organisational working sub activity system as a subset of the main organisational activity system, focusing on ‘subject’, ‘tools’, and ‘object’ (chapter four, section 4.4). I will now reproduce it here but subsequent to the discussion in the sections above, I will identify the inherent system contradictions within it.

Figure 12 Contradictions: Organisational Working Sub Activity System



The short double lines on the sides of the triangle represent areas of contradiction that are listed and self explanatory under each area heading, as a summary of the sections discussed above. I will repeat this process in chapter six (learning) and chapter seven (boundaries). In chapter eight I will read across all three subsystems to facilitate a composite exploration for the demise of the strategy, enable recommendations to NHSX, and suggest areas for further research.

5.6.2 Circulating the Draft Strategy: A Translation Account

In section 5.2.1 (above), Fenwick (2010: 113) argued that ANT:

...offers the most radical material challenge to understandings of learning, work, and organisation. When anyone speaks of a system or a structure ANT asks, how has it been compiled? Where is it? What is holding it together?

I believe these questions have been addressed above so it is in Fenwick's (2010: 114) additional question, 'where are the exclusionings?', and Law's (2004a; see chapter seven, section 7.2.1) 'collateral realities', that new insights may be surfaced into the working of the system and bring back into visible focus that which has been elided from view.

As before, in chapter four (section 4.8.2), the problematisation of the translation is the implementation of the circulating draft strategy with the obligatory passage point remaining sanction and approval by the Business Group. Intersement 'confirms the validity of the problematisation and the alliances it implies' (Callon, 1986b: 209-210) and selects which entities to include and which to exclude. How then were entities

selected and what were the processes for inclusion or exclusion? In 2005 there was a corporate decision to devolve the development of the strategy to the Medical Directorate, and to a general practitioner (GP) as the chosen strategy lead. This was partly because GPs were an influential professional group of independent contractors within community based healthcare and partly because it was anticipated that other GPs were more likely to engage in a strategy if it was led by them. As, according to a Senior Medic (PGD1):

If the strategy is not led by a GP then other GPs will not take heed of it, they will walk away and choose not to have a voice in its process.

If GPs did not engage with the content of the strategy then it was perceived as 'doomed to failure' (GP2) from the outset. The 'leadership' of the strategy was therefore corporately established, with the subsequent enrolment of the project team and key stakeholders as entities, and, through the process of mobilisation, the work of the strategy would become durable - except this did not happen.

So what went wrong? In order to explore this, it is the space between interestment and enrolment that I particularly wish to consider the ultimately failed attempt to enact mobilisation and achieve durability. To enable a contemporary view I wish to consider the 'translation' of the 1980-90s (as utilised in chapter four, section 4.8.2) with a more critical eye and growing awareness of the mess, disorder, and ambivalence associated with the material semiotics and collateral realities of 'post' ANT. As, according to Law (2008: 144):

...the most interesting places lie on the boundaries between order and disorder, or where different orders rub up against each one another.

In addition, as collateral realities focus on how work is 'held in place', Law (2009: 12) advises:

[That we] first attend to practices...Look for the gaps, the aporias and the tensions between the practices and their realities – for if you go looking for differences you will discover them.

Therefore, I will now return to explore the space between interessement and enrolment. Interessement should have been fairly straightforward. The Medical Directorate, having been given the corporate lead then sought to enrol key stakeholders to achieve the intended strategic outcome. But consider the multiplicity of domains in section 5.3 and the fracturing of authority in section 5.5. What appeared to be happening was a surface corporate agreement published in the Corporate Plan to develop and implement the strategy. But covertly, under the surface of NHSX was teeming with tensions, contradictions, ambiguities, and competition. Explicit enrolment was visible but tacit disagreement was palpable. What appeared to be surprising though was that whilst *every* interviewee was aware of these tensions, including those at the highest level in the organisation - and all were openly expressive in their verbal opinion - there seemed to be uniform acceptance that this was how the organisation worked. These tacit understandings at times surfaced in informal written communication (usually via e-mail) but were excluded from formal or corporate documentation thereby black boxing the openly accepted competitive

culture of the organisation into the marketed corporate identity outlined in section 5.1 of connectivity, integration, and openness, in order to work to a clear common cause. So if enactment was overtly agreed but covertly questionable, what about durability? Law (2008: 148-149) provides three non foundational ways to consider durability that may lead to relative stability: that is, material, strategic, and discursive. Each will be considered in turn below.

In relation to material durability, Law (2008, 148) states:

Stability does not inhere in materials themselves...it is the configuration of the web that produces durability.

Now this is interesting. If the 'web' is considered to be NHSX, then I have just demonstrated its lack of cohesion and it's myriad of conflicting realities. As an organisation it is stable (relatively speaking although this may change under a review of the Special Health Boards), but as a collective corporate intention it is full of destabilising influences.

Secondly, strategic durability in the organisation is governed through measuring achievement against the Corporate Plan and through the Annual Review process (chapter one, section 1.3). However, according to Law (2008: 148):

...equally important for network stability was the translation of strategies delivered in other networks.

As previously indicated, during the life of the strategy the Scottish Government Health Department was also set up in a silo structure with numerous dispersed lines of reporting and accounting. This external fragmentation therefore colluded with opportunities for internal confusion and competition.

Finally, discursive stability denotes different modes of ordering, as, according to Law (2008: 149):

Discourses define conditions of possibility, making some ways of ordering webs of relations easier and others difficult or impossible...every discourse sets limits to its conditions of possibility so it cannot recognise certain types of realities. But these realities exist and they have to be handled.

It would appear that although readily acknowledged, certain types of realities and orderings within the organisation were never explicitly handled and were therefore rendered invisible within corporate representation (see chapter eight, section 8.2 for further discussion regarding collateral realities and orderings).

In summary therefore, by using an ANT perspective I have revealed that NHS was full of partial working connections and that all three types of durability were unstable, questionable, and contestable. This reading of the data may not have been afforded by following a CHAT account alone.

5.7 Summary

The question at the beginning of this chapter was - how does the project team negotiate the circulating draft strategy through corporate working structures to

achieve the required objective? This chapter set out the current model of organisational working, taking cognisance of historical, professional, and geographical complexities. A situational context was provided by a brief overview of ANT and CHAT literature. Key categories resulting from the data analysis that were explored were in relation to a veritable myriad of professional domains, agency, and authority. To a partial extent these were summarised by using Engeström's model of dominant modes of coordination. The chapter was concluded by contrasting a CHAT subsystem of contradiction with an ANT translation account. Key themes emerging include the multiple partial connections and contestable durability and visibility of orderings within NHSX. The discussion and findings in this chapter have been artificially separated for ease of reporting from the following chapter regarding organisational learning. Many of the concepts overlap both, and, therefore, where they have been explored in this chapter in detail, they will only be briefly acknowledged within the following one to reduce duplication and length of reporting. Chapter eight will afford an opportunity to reunite the two concepts and facilitate a composite reading across both.

Chapter Six – How Does Our Organisation Learn?

Research Question - How do the rules (rules) affect the organisation's (community) ability to learn, develop, and implement educational strategy in an inter-professional context (object)?

6.0 Introduction

The following key categories of 'learning' data were identified in chapter three:

Learning
Vertical and horizontal
Language
Informal and formal
Historical
Attitudinal
Identities
Cultures
Different realities and epistemologies
Knowledge and information flows

The following questions represented areas of organisational learning in the semi-structured interviews:

- Describe any working that you are involved in with other directorates in the organisation around developing joint educational materials?
- Describe any successes or challenges in developing learning and / or education in an inter-professional context within the organisation?

- Describe how you access information regarding educational developments in the organisation?

As stated in chapter one (section 1.4) *Learning Together: the Education, Training and Lifelong Learning Strategy for the NHS in Scotland* (SEHD, 1999), signalled the intention to create an umbrella forum for educational support for all staff working within the NHS in Scotland. Part of the ethos for the inception of this new organisation was that ‘it would play a key part in helping NHSScotland adapt to the changes required to be a fully flexible learning organisation’ (SEHD, 2001: 1). In chapter one (section 1.6.1) I outlined the complex composition of the organisation and numerous professional groups that it represents and in chapter four (section 4.6.2) I modelled the organisational learning sub activity system and provided an outline of both overt and covert rules that influence it: with a particular focus on the apparently widely accepted covert rules that revolve around issues of professional language and identity, differing educational ethos and methods of working, differing expectations for the outcomes of the draft strategy and issues relating to knowledge flows. In chapter five I explored organisational working and its inherent structures, systems, and processes, and, as there is significant overlap in ‘working’ and ‘learning’, I explored some of the shared concepts (language, attitudinal, structural, methods of working). In this chapter I will focus on the remaining specific concepts regarding organisational learning as the second category distilled from the data in chapter three (section 3.3.2, Table 12). To begin with I will explore recent organisational models of learning, compare ANT and CHAT accounts of learning, and then focus on Engeström’s model of expansive learning and its inherent focus on contradiction in development work research. I will conclude by presenting and comparing a CHAT

contradiction and an ANT translation account to expose aspects that may otherwise remain hidden. Key areas of literature that will be briefly drawn on to inform the discussions in this chapter include material relating to learning environments, learning organisations, horizontal and vertical learning, and knowledge creation.

6.1 How Does our Organisation Model Learning?

In order to answer this question and the one heading this chapter, I will consider learning within NHSX with regard to organisational remit, organisational history, and two recent organisational models of inter-professional learning. For the purposes of this research I will continue to frame my investigation within an ANT and CHAT reading but wish to acknowledge the large degree of potential frameworks in studies of organisational learning. This complexity is highlighted in a recent overview and critique of workplace learning by Sawchuk (2010a: 165):

There are many challenges to considering organisational learning due to the inter-professional / inter-disciplinary nature of the organisation, the ubiquity and multi-dimensionality of human learning that demands a plurality of approaches, and a range of subtle and not so subtle conceptual, epistemological, and even ontological differences and preoccupations.

Therefore, I concede the limitations of my approach in such a vast research area, but contend that by adopting a socio-material analysis, such as is found in ANT and CHAT, some of the categories Sawchuk refers to may be opened up and explored in

their emergent and interconnecting ways. According to Fenwick (2010: 105) a socio-material analysis has:

...an ability to unsettle categories that have become problematic conventions in work-learning analysis, despite critique that by now is well-worn. Such categories include informal and formal learning, individual and collective learning, and workplace learning and organisational learning. These categories are unhelpful because they suggest such things exist as knowable and distinct, when research has struggled with the inseparability, uncertainties and fluidities of the phenomena which such categories are intended to describe (see also Henare, Holbraad, and Wastell, 2007: 4).

In addition, there is a limited amount of literature that has considered a dialogue between ANT and CHAT with regard to organisational learning. Therefore, it is my intention to add to this body of literature, and generate useful questions for areas of further research, by subjecting learning in NHSX to an ANT and CHAT interpretation. In order to do so I will briefly review and contextualize NHSX as a 'learning organisation'.

As has been previously stated, NHSX as an organisation is one of educational complexity. From its inception in 2001 to becoming operational in 2002, it combined the Scottish Council for Postgraduate Medical and Dental Education (SCPMDE), the Post Qualification Board for Health Service Pharmacists in Scotland (PQEB) and the successor body to the National Board for Nursing, Midwifery and Health Visiting in Scotland (NBS). Now, in 2011, the organisation has grown to represent more than

twenty separate professional groupings and has an employed staff of approximately 700 people. When it was set up the organisation had a remit as a Special Health Board to provide educational solutions to the NHS in Scotland. The current NHSX Corporate Plan 2010-2011 states the organisational intention:

Educational development and research activity is at the heart of our organisation. Throughout 2010 and 2011 we will support and promote joined-up working by developing a consistent approach to education and research governance, research and development, knowledge services and online resources. Our educational development will focus on supporting cross cutting programmes such as community healthcare education... We will develop our main educational philosophy drawing on best practice to build a consistent approach to education.

The Strategic Framework 2011-2014 states the organisational remit as:

We are a Special Health Board, responsible for supporting NHS frontline services delivered to the people of Scotland by developing and delivering education, training and workforce development for those who work in NHSScotland. Our business covers the undergraduate, postgraduate and continuing professional development continuum supported by effective research.

As introduced in chapter one (section 1.6.1), the organisational Strategic Framework 2010-2014 also contains many explicit references to education within the six themes and ten strategic objectives that have been corporately agreed:

The broad strategic themes:

- Education to create an excellent workforce
- Developing innovative educational infrastructure

The strategic objectives:

- We will provide integrated education to support models of care which are closer to people in their communities (theme 6)
- We will support education in partnership that maximises shared knowledge and understanding (theme 7)
- We will develop flexible, connected and responsive educational infrastructure which covers people, technology, and educational content (theme 8)
- We will improve the sharing of knowledge across our organisation (theme 10)

The stated corporate educational culture then is one of joined up working, consistent approaches, supporting cross cutting working, developing a main educational ethos, developing innovative flexible responsive educational infrastructure, and maximizing shared knowledge. However, as demonstrated in chapters four and five, NHSX as an organisation is full of internal boundaries – professional, hierarchical, and disciplinary. As such, workers have to apply their activity tools and skills drawing on

various sorts of genres and social languages from different professional cultures. Therefore, potential learning becomes spread across multiple activities and domains. Standard theories of learning are focused on processes where a subject (for example, an individual or organisation) acquires some identifiable knowledge or skills in such a way that a corresponding, relatively lasting change in the behaviour of the subject may be observed. It is a self-evident presupposition that the knowledge or skill to be acquired is itself stable and reasonably well defined. There is a competent 'teacher' who knows what is to be learned. The problem is that much of the most intriguing kinds of learning in work organisations violate this presupposition. People and organisations are all the time learning something that is not stable, not even defined or understood ahead of time. In important transformations of our personal lives and organisational practices, we must learn new forms of activity which are not yet there. They are literally learned as they are being created. There is no competent teacher. Standard learning theories have little to offer if one wants to understand these processes. In addition, there is a plethora of literature on learning, whether at individual or collective level, formal or informal, hard or soft, taught or self directed, experiential or incidental, to name but a few (for recent critical overviews of workplace learning see Sawchuk, 2010a, 2010b).

As indicated, learning is very complex and I have established that the organisation has a formal remit to develop and support education for all NHS staff, but how does the organisation itself learn? Within the life of the strategy numerous attempts have been made to support organisational learning through various projects encompassing 'learning organisations', 'learning environments', and facilitating 'learning networks'. As stated in chapter one, part of the ethos for the inception of NHSX was that 'it would play a key part in helping NHSScotland adapt to the changes required to be a

fully flexible learning organisation' (SEHD, 2001: 1). Prompted by this organisational aspiration and by being exposed to the organisational activity to become a learning organisation this became the focus of my initial Doctoral studies. Within the literature the term 'learning organisation' is often used interchangeably with 'organisational learning'. As such these appear to be concepts without agreed definitions but are instead used as umbrella terms with a multitude of meanings (Argyris, 2006; Budhwar et al, 2002; Senge, 1994; Yeo, 2006a). However, it would appear that the term 'organisational learning' is a collective entity which focuses on the *process* of learning, whereas 'learning organisation' refers to a *type* of organisation with particular characteristics and capabilities rather than a process (Lundberg, 1995; Senge, 1992; Yeo, 2003). The organisation that forms the 'community' that I am researching most certainly has a focus on both, that is:

- Process – the organisation designs, implements, and where appropriate commissions education
- Type – the organisation is a Special Health Board, the main remit of which is to provide educational solutions to all NHS staff. In addition, the corporate intention of the organisation is to become a learning organisation

However, as a professional consequence of undertaking this EdD, my ensuing temporal development, and from being immersed in the relevant literature, I contend that the notion of 'learning organisation' is not a theoretical concept that can serve as a unit of analysis (Engeström, 2009: 31) but is instead mainly concerned with practical support for practicing professionals as opposed to enriching academic theoretical argument.

NHSX is also currently developing the concept of the ‘learning environment’, a recent classification scheme of which has been produced by de Kock, Slegers and Voeten (2004). As Engeström (2009: 18) highlights in the following quotation, the notion of learning environment is usually presented with a characteristic attribute:

We have the *dynamic* learning environments (Barab and Kirshner, 2001), *innovative* learning environments (Kirshner, 2005), *powerful* learning environments (De Corte et al, 2003), *collaborative* learning environments (Beers et al, 2005; Järvelä, Volet, and Järvenoja, 2010), *networked* learning environments (Wasson et al, 2003), *smart* learning environments (Dodds and Fletcher, 2004), *real-life* learning environments (Järvelä and Volet, 2004), and *authentic* learning environments (Gulikers, Bastiaens and Martens, 2005; Hetherington and Oliver, 2000) (italics in original).

Other attributes in the literature include ‘stimulating’ (Cartwright, Scott and Stevens, 2001), ‘positive’ (Wright, 2006), and ‘flexible’ (Mackey and Livsey, 2006). As indeed the term ‘fully flexible’ was used in the NHSX corporate literature to describe its aspiration to learning organisation and environment. A common reading across this plethora of attributes is that they are positive, optimistic, promising and promotional. They seem to be designed to serve the selling of a wishful image of future learning in which all good qualities of human interaction come true. As Engeström readily criticises (2009: 18):

...in this sense they are thoroughly and blatantly ideological. It seems that the proliferation of positive promotional attributes is a logical counterpart of the

scarcity of substantive models and critical theoretical examinations of the notion of learning environment. When researchers miss a workable theory, there is temptation to replace it with positive catchwords.

Finally, when considering organisational learning, it is important to consider the corporate management perspective which emphasises the development of human assets, organisational commitment, flexibility and sustainable competitive advantage (Sawchuk, 2010b: 375) - the latter particularly in view of the uncertain future of the Special Health Boards and the current economic downturn. However, in a recent review, Sawchuk (2010a: 174) highlights a significant gap in research pertaining to the role of corporate leadership and organisational strategies that in their own terms seek effectively to manage learning and knowledge production ; as is strongly the case within NHSX. It is arguable that in this instance the learning challenge of the organisation could not be met by training individual practitioners to adopt new skills and knowledge, as the issue at stake appears to be organisational. Top-down commands and guidelines are of little value when the management does not know what the content of such directives should be. Recent theories of situated learning and distributed cognition tell us to look for well-bounded communities of practice or functional systems, such as task-oriented teams or work units, to become collaborative subjects of learning (Lave and Wenger, 1991; Wenger, 1998). But in the multi-professional field of NHSX during 2005-2010 there was no well-bounded work unit that could conceivably be the center of coordination. In each individual directorate, the combination of professional specialties and practitioners involved in the development of educational solutions was different, and it was seldom possible to name a stable locus of control as the leading subject role, and therefore agency, was

not fixed, but kept shifting. Therefore, the attempt to create and implement a multi-professional strategy had to encompass this complexity and negotiate its way across numerous spatial and temporal boundaries (see chapter seven). Following this particular object became very intricate and interwoven, as well as very fragmented and dispersed.

The above exploration has provided a brief contextual outline regarding organisational remit, culture, and recent models of organisational learning, that tend to favour a strong positivistic account of learning. In order to situate the data and open up some of the complexities I will commence by exploring learning from both an ANT and CHAT perspective reading across both to highlight similarities and differences and ‘trace the different knowledges that jostle together’ in the enactments of concepts, identities and practices (Fenwick and Edwards, 2010: 25).

6.2 Learning: An ANT and CHAT Account

In section 6.1, the complexity of studying organisational learning was acknowledged. According to Sawchuk (2010a: 165):

The field of workplace [organisational] learning research from the final quarter of the twentieth and into the twenty first century has demonstrated an accelerated expansion of conceptualizations, dissection, and even vivisection (by action and interventionist researchers).

I will narrow this field by turning to an alternative reading of organisational learning as provided by ANT and CHAT, which both conceptualise knowledge and capabilities as emerging. According to Fenwick (2010: 106) these emerge:

...simultaneously with material elements, identities, policies, practices and environment – in webs of interconnections between heterogeneous entities, human and nonhuman. Each illuminates very different facets of the socio-material that can afford important understandings related to conceptions of ‘learning’ and knowledge in work-based practice: about how subjectivities are produced in work, how knowledge circulates and sediments into formations of power, and how practices are configured and re-configured. Yet each perspective is itself a slippery, heterogeneous and contested site of inquiry.

Therefore, as the term ‘work’ in chapter five was cautiously defined so here is the term ‘learning’ as having no single definition that can adequately represent the numerous and disputed perspectives. I will now consider an ANT and CHAT account in turn.

6.2.1 An ANT Account: a Way of Intervening and Informing

ANT is not a unified theory but a relational sensibility through which knowledge and learning may emerge. According to Fenwick and Edwards (2010: 1):

ANT is not terribly familiar in the study of education... [I]t is a way of intervening in educational issues to reframe how we might enact and engage with them.

Again, according to Fenwick and Edwards (2010: 165) this affords:

...different forms of coexistence among multiple ontologies, and ways to act and think within non coherences.

Early ANT tended to be applied to education as a technology of representation by developing simplistic models that adhered, for example, to Callon's four moments of translation (see chapter two, section 2.3.4). Indeed my own early writings were premised on exactly that until I became more familiar with later ANT concepts and the apparently different but in many ways questionably similar concepts in CHAT (see chapter two, section 2.4). I therefore began to read between the two and appreciate the limitless affordances of each. ANT, like CHAT, takes the whole system as the unit of analysis, acknowledges the processes of boundary making, attends to the role of tools, artefacts, and technologies, and takes knowledge generation to be a joint exercise of relational strategies within networks that are spread across space and time and performed through inanimate as well as animate beings in precarious arrangements (Fenwick, 2010: 110-111). As such, ANT studies are particularly useful for tracing the ways that things come together, as, according to Fenwick (2010: 111), ANT:

...can show how things are invited or excluded, how some linkages work and others do not, and how connections are bolstered by making themselves stable and durable...ANT focuses on the minute negotiations that go on at the points of connection...In ANT nothing is given in the order of things but performs itself into existence.

ANT and CHAT also both trace interactions between human and nonhuman parts of the system. However, unlike ANT, CHAT in a similar way to situated learning, gives primacy to the human and to human participation, practices and cognition, in its framing of the role of the material in learning; whereas ANT affords a way to challenge learning as a process occurring in individuals conscious minds. Fenwick and Edwards (2010: 72) therefore criticise CHAT as:

...failing to give sufficient attention to the creative as well as participative aspects of practices, where there are opportunities for authoring [and] multiple identity enactments.

Critics of ANT as a theory of learning include Spinuzzi (2008: 186-187):

ANT is simply not a theory of learning. The closest ANT has come to addressing the issue is to note some cases of apprenticeship without exploring them in any appreciable detail. ANT tracks movements and associations, not learning.

In contrast, as CHAT, unlike ANT, uses anterior constructs, it has an extensively theorised and researched account of education and development based on dialectics – how people formulate and develop concepts, and how they assimilate and incorporate new knowledge and learning. This will be reviewed in the following section.

6.2.2 A CHAT Account: Horizontal and Vertical

In section 6.1 it was noted that the stated corporate learning culture was one of integration and joined up working. The view of learning that emerged from Vygotsky's thinking was always strongly based on the cultural nature of learning. Vygotsky tried to show that development and learning both depend on the way people interact and learn to share cultural tools. The structure and meaning of a tool (in this case the circulating draft strategy), in a community strongly influence the actions that people accomplish and, as such, the cultural tool is a strong semiotic determinant of the learning process (van Oers, 2008: 8). However, from the interview quotes the collective meaning of the 'tool' appears to be a site of contradiction (see section 6.3 following). Vygotsky and his colleagues believed education was a pathway to empowerment and freedom, allowing people to become conscious agents of their own, as well as their society's, development (Sawchuk and Stetsenko, 2008: 344). This early model was developed by Engeström into an understanding that the basic unit of human concept formation is a historically evolving system of object oriented societal activity (Kagawa and Moro, 2009: 178; Virkkunen, 2009: 146-147). Activities are delimited by their objects. The object of activity is both a given, that is something material or ideal, and also a special cultural interpretation and construction of that given. The generally available cultural means of understanding, interpreting, and transforming the objects of activities are seen as a bridging mechanism of local

activity systems (in this instance the individual directorates). Engeström therefore highlights the co-evolution and mutual determination of the elements of an activity system; revealing and exploring possibilities for emancipation and agency (see chapter five, section 5.4). Additionally, by supplementing Vygotsky's triangular model of mediation (see chapter two, section 2.2.2, Figure 1), with the three additional components of community, rules, and the division of labour, Engeström created a complex and systemic representation of collective human activity that articulates the structural composition of activity. This systemic representation enabled him to delineate more distinctly the societal and collective levels of the learning process, particularly in organisational changes in the workplace (Kawaga and Moro, 2009: 178), through a model of expansive learning (section 6.4 below). Emphasis is placed on the contradictions inherent within organisations, such as the common tension between emphasis on competency and control, and injunctions for innovation involving risk and experimentation. When these contradictions become sufficiently exacerbated or questioned through actors' negotiations, 'learning' occurs, and, where learning is viewed as collective there is 'expansion' of the system's objective and practices (Fenwick, 2010: 109). Within the system, learning is seen as involving a *vertical* dimension of development encapsulating a specific domain of expertise. Dominant approaches to cognition share a narrow and vertical view of expertise in which some have more knowledge than others (Cole and Gajdamashko, 2009: 139). Characteristically they distinguish between 'stages' or 'levels' of knowledge and skill, therefore, such a vertical image assumes a uniform, singular model of what counts as an 'expert' in any given field (Tuomi-Gröhn, Engeström and Young, 2003: 3). This vertical dimension is characteristic of learning within a uni-professional context and therefore within individual directorate settings such as exists in NHSX. But Cole and

Gajdamashko argue that a *horizontal* dimension of expertise also exists; experts are viewed as operating in, and moving between, multiple parallel activity contexts. These multiple contexts demand and afford different, complimentary but also conflicting, cognitive tools, rules, and patterns of social interaction. Criteria of expert knowledge and skill are different in the various contexts. Experts face the challenge of negotiating and combining ingredients from different contexts to achieve hybrid solutions. The vertical master-novice relationship, and with it in some cases the professional monopoly on expertise, is problematised as demands for more dialogical problem solving increase (Tuomi-Gröhn, Engeström and Young, 2003: 3). This variance in vertical and horizontal learning is particularly present within complex organisational settings. According to Engeström (2004):

Learning in co-configuration settings is typically distributed over long, discontinuous periods of time. It is accomplished in and between multiple loosely interconnected activity systems and organisations operating in divided local and global terrains and representing different traditions, domains of expertise, and social languages. Learning is embedded in major transformations, upheavals, innovations, implementations and movements. It takes place in heterogeneous patchworks and textures of small and large, unnoticeable and spectacular actions, objectifications, trajectories and trails.

NHSX as an organisation certainly has divided terrains representing different traditions, domains of expertise, and social languages. However, as indicated in section 6.1, NHSX also has a corporate intention to achieve cross cutting functionality and develop an organisational learning culture. Therefore, it is in horizontal learning

by experts across the multiple systems within the organisation that my particular interest lies.

In the following section I will explore the data from the unstructured and semi-structured interviews in relation to organisational learning. This data will subsequently be used to shape the subsystem contradictions and inform an ANT translation account of learning (section 6.6).

6.3 Collaborative Learning: A Fractured Story

In chapter five (section 5.3) I considered language, historical, attitudinal, and informal and formal effects with regard to organisational working, therefore, I will not duplicate the data in this section but will instead focus on the remaining categories of knowledge and information flows, differing realities, identity, culture, and structures. I also highlighted that organisational working and learning should be considered in conjunction with each other and not separated out as is the case in a lot of the literature (Sawchuk, 2008: 73) and as I have done here for ease of reporting. I will therefore rectify this in chapter eight with a combined read across all three categories (working, learning, boundary crossing). As stated in the previous section, horizontal learning is seen to occur across multiple parallel activity contexts but this involves conflicting cognitive tools, rules, and patterns of social interaction. The following presentation of data captured during the interviews provides a rich description of some of these conflicting areas. Finally, as was the case in chapter five, I have tried to limit my tidying up of the data into neatly bounded segments, in an attempt to reduce my mark as interpreter and to maintain the rich character of content.

Difficulties regarding knowledge and information flows, more specifically the lack of internal communication and information, were frequently cited during the interviews, the following quotations being typical of many:

A lot of it is poor communication, it is just the way the organisation works, I am loathe to say it but that's how it is (PGD1).

Internal communication is appalling (PGD1).

That is one of the tricks that is often missing from some of the things that I see happening, the fact that there is a lot of information gathering and then the things are done but there is no corporate communication of how we are joining this and this (PM4).

It's all about communication and connections, it works informally but formally it's a disaster (PGD1).

Poor communication was also seen to lead to duplication of and competition between, different educational project based activities, as indicated by the following:

I mean communication in its widest sense here because you could go away and start a project and you don't have to tell anyone that isn't in your directorate about that project at all, and there are loads of examples of projects doing the same thing - perhaps on purpose? (PM4)

You have got to speak to the right people, I stumble over all sorts of people doing all sorts of projects and it is purely because I go up to them and say oh I have never met you before and what are you doing? And they will say well I am doing this and you think oh heck I wish I had known about that before (PD1).

In addition, knowledge sharing was viewed as a contested area:

Knowledge doesn't flow - it gets stuck in the silos (Int19).

I think they [different directorate] could be a lot more inclusive in terms of sharing their knowledge and sharing their way of thinking about what they are really doing, not just what they say they are (Int13).

Geographical fragmentation and positioning of the directorates was seen as a key factor in knowledge sharing:

We do a lot of work with pharmacy, but that is much easier because they are physically here within the building (GP5).

Also, different directorates framed 'knowledge' differently:

A lot of true effort has gone into those things. Real blood, sweat and tears, and they are in my mind very good projects, but they still need more thinking about how they are going to link to learning that's needed out there in the real world (Int7).

This linking to the ‘real world’ concept was mentioned in various forms to reflect the real world, as represented by the individual professional, and was therefore demonstrative of the variance in epistemological framings. Educational ethos was also fractured across the directorates:

You need to go way back. It's about professional socialisation as much as anything else. Whether in 50 years time it might be easier because you have got people, you have got practitioners and educationalists that will have come through a much more modern and maybe much more multi-disciplinary type of training. But what you have got at the moment is probably a lot of people who are fairly traditional, have been through traditional types of training, where the multi-disciplinary bit was an add on or didn't happen at all. So you are trying to change mindsets and the way people see things, so that is quite hard (PD4).

The overall frustration in trying to understand and appreciate multiple organisational and professional perspectives and realities was summarised clearly:

Different directorates are on different planets (DP1).

The importance of acknowledging and working through different professional epistemological and ‘reality’ framings is captured in the following two quotations by Hennessy and Barad:

It is important to note that organisational learning practices should not merely draw from an array of disciplines but rather enquires into the histories of the

organisation of knowledges and their function in the formation of subjectivities. Making visible and putting into crisis the structural links between the disciplining of knowledge and larger social arrangements (Hennessy, 1993: 12).

What is needed therefore are respectful engagements with different disciplinary practices, not coarse grained portrayals that make caricatures of another discipline from some position outside it (Barad, 2007: 93).

In NHSX organisational learning practices arose from the multiple professional groupings but the structural links between the disciplining of knowledge and the larger social arrangements, although acknowledged, was not rendered corporately visible (see section 6.5.2). Also, within NHSX, the concept of ‘working outside’ of the individual directorates was viewed as challenging with regard to maintaining uni-professional identity and learning:

Cross cutting has a risk of losing professional identities and that is why people are reluctant to engage (Int4).

My impression is that there isn't a lot of encouragement. If you do not have to work outside your discipline then there is not a lot of encouragement to do so. And I think if you were to say to people, first and foremost what are you, I think that there are lots of people working here who would say, first and foremost I am a - and they would give their professional title before they would say, I am someone who works for the organisation on educational development, and my background is - whatever their profession is (PM2).

I think that if you are working on uni-professional projects within a uni-professional directorate then you don't have to look outside. I mean it could be useful if you did because you are not learning from what is going on in other areas necessarily, but there is no impetus for you to look outside (PM1).

Finally, vertical and horizontal structural issues were raised frequently as impeding opportunities to work and learn together:

The organisation is so rigidly structured it can't take the blinkers off to see all the exciting opportunities (PGD2).

We need a whole systems approach to learning - we need to work on integration (PGD1).

The directorate system limits learning from each other, I have to say that coming in from outside I found that quite strange. Having worked with organisations where the organisation has been combined, I found it very limiting and difficult here (PM3).

The above tensions, together with those identified in chapter five (section 5.3), and the covert and overt rules of the organisation combined to limit the progress of the strategy between 2005 and 2010. I will now briefly review Engeström's model of expansive learning before modelling the organisational learning sub activity system to include the above tensions (Section 6.6.1) and then consider the same sub system from an ANT translation perspective (Section 6.6.2).

6.4 Engeström's Model of Expansive Learning and Development

In *Learning by Expanding* (1987), as well as developing the concept of developmental work research, Engeström combined his CHAT approach (section 6.2) with the system theoretical work of Bateson (1972) on double bind situations and learning levels. This introduced the notion of contradiction, which was absent in Vygotsky's framework, thereby developing a model of 'expansive learning' (Engeström, 2008: 128-168; see chapter two, section 2.2.5, Figure 3).

Theories of organisational learning are typically weak in spelling out the specific processes or actions that encapsulate learning (Virkkunen, 2009: 145). One of the more interesting attempts to open up this issue is Nonaka and Takeuchi's (1995) framework of cyclic knowledge creation, based on conversions between tacit and explicit knowledge. This was one of the first models I studied for an early EdD assignment, alongside learning organisations, before I had even heard of either ANT or CHAT. Nonaka and Takeuchi's model posits four basic moves in knowledge creation: socialisation, externalisation, combination, and internalisation. Both Engeström's model of expansive learning and Nonaka and Takeuchi's model view knowledge creation as concept formation and highlight both horizontal and vertical dialogue within it, and the emergence of knowledge generation from dialectical contradictions (Sawchuk, 2010a: 174). Nonaka and Takeuchi emphasise the value of the connection between production and top management, that is through middle managers and front line supervisors, who serve as the human mediators of knowledge transfer, both upward and downward (but not across?) the organisation. However, a central problem with Nonaka and Takeuchi's model, and with many other models of organisational learning, is the assumption that the assignment for knowledge creation

is un-problematically given from above. In other words, what is to be created and learned is depicted as a management decision that is outside the bounds of the local process.

In contrast, a crucial triggering action in the expansive learning process discussed in this section, is the conflictual questioning of the existing standard practice. Actions of questioning and analysis are aimed at finding and defining problems and contradictions behind them. A further strategic action in expansive learning is modelling. Modelling is already involved in the formulation of the framework and the results of the analysis of contradictions, and it reaches its fruition in the modelling of the new solution, the new instrumentality, the new pattern of activity. This potential for expansion is best discovered by means of interventions that open up the zone of proximal development (ZPD), of the activity system. Therefore, the study of expansive learning in complex settings requires a longitudinal intervention approach that can be crystallised in the form of the following three methodological rules from Engeström (2009b: 327):

1. *Follow the objects* of activity in their temporal and socio-spatial trajectories
2. *Give the objects a voice* by involving the clients or users in dialogues where the object is made visible, articulated and negotiated
3. *Expand the objects* by organising intervention sessions and assignments where the producers and clients construct new shared models, concepts, and tools to master their objects (italics in original)

These methodological rules appear in part to be similar to ANT's call to 'follow the actors themselves' that Latour now refers to as 'somewhat irritating, the only viable

slogan' of ANT (2005: 227). However, this concept of following the actor(s) is not new and can be traced back to Garfinkel's ethnomethodology, 'although ANT-ish (symmetrical) notions of the actor are of a somewhat different order' (Fenwick and Edwards, 2010: 145).

So if we are to follow the ANT actor and the CHAT object – what is the difference?

With regard to ANT, in the context of educational evaluation, Fenwick and Edwards (2010: 128) suggest:

...tracking the emerging patterns among networks at play in activities intending to generate knowledge, drawing particular attention to what occurs in the background: the myriad fluctuations, subtle interactions, the series of consequences emerging from a single action...the emerging patterns and linkages that are forming, the mediations working upon them, as well as to its breaches and non-calculable spaces.

Section 6.5.2 will follow this guidance in considering an ANT translation account of organisational learning in NHSX.

With regard to CHAT, as discussed in chapter two (section 2.2.3) understanding the CHAT 'object' is vital as it is used in a very specific way. Rather than artefact or thing, it means the transformational focus of an ongoing activity (as in 'the object of the game' or 'the object of the exercise'), and may be polymotivated. Also, it is typically not a single entity but an assembly of material entities embedded in economic and social relationships. It is this understanding of the object as the transformational focus of collective dialectical development that leads us to CHAT's

account of developmental change: contradictions. Therefore section 6.5.1 will consider a contradiction account of organisational learning in NHSX.

In summary, by combining to follow the CHAT object(s) and the ANT actor(s) through a contradiction and translation account this study attempts a composite view of whether NHSX as an organisation is learning.

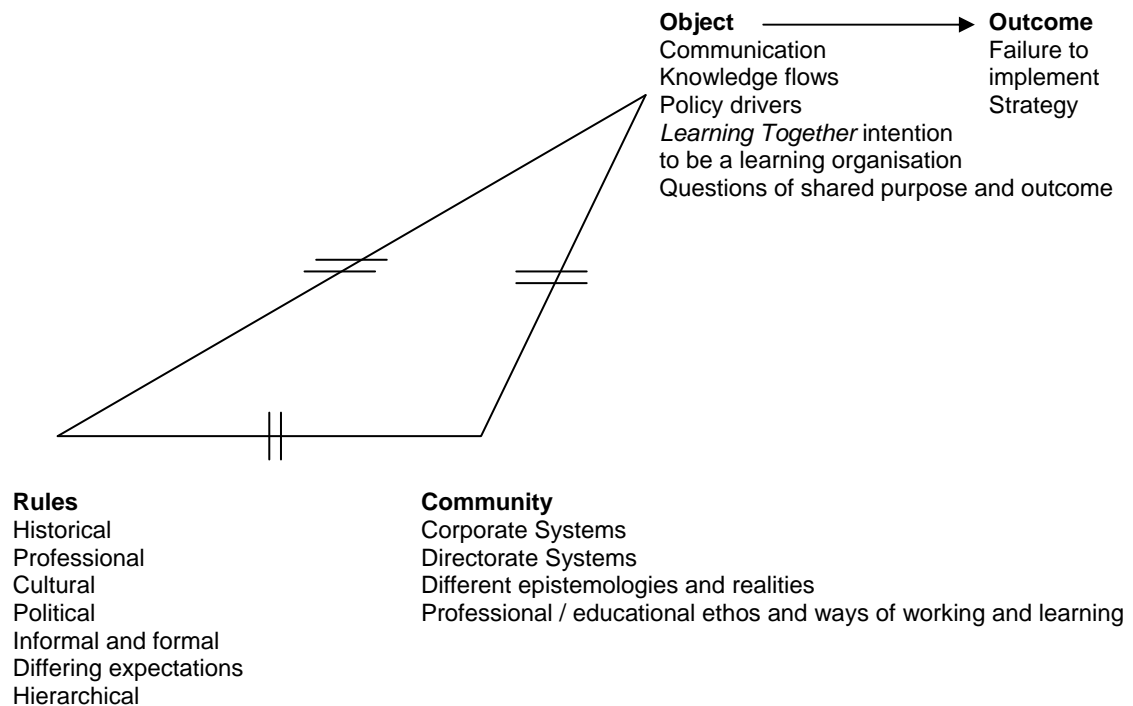
6.5 Is our Organisation Learning?

In chapter one (section 1.4) I indicated that *Learning Together* signalled the intention to create NHSX as a ‘fully flexible learning organisation’ and in section 6.1 of this chapter, I detailed the newly developed NHSX Strategic Framework for 2010-2014 with its broad strategic themes and objectives to strengthen the cross cutting functionality and promotion of a connected, integrated, organisational educational infrastructure. I will now contrast these corporate intentions with the following CHAT and ANT accounts of activity.

6.5.1 Learning: A Contradiction Account

In chapter four (section 4.6.2) I produced the organisational learning sub activity system as a subset of the main organisational activity system focusing on ‘rules’, ‘community’, and ‘object’. I will now reproduce it here identifying the inherent system contradictions as before represented by short double lines on the sides of the triangle. As anticipated from the data, there are many areas of overlap with the contradictions in the organisational working sub activity system (chapter five, section 5.6.1).

Figure 13 Contradictions: Organisational Learning Sub Activity System



As described in section 6.4 horizontal learning between multiple parallel activity contexts demands and affords conflicting cognitive tools, rules, and patterns of social interaction. The development of this subsystem was informed by Engeström’s call to follow the object, give it a voice, and expand it (section 6.4, above). The object(ive) was the intended implementation of the strategy, therefore the object was followed through the organisation and a voice was given to those who developed, supported, blocked, or were otherwise central or peripheral to its negotiation and development. However, because we are in an asymmetrical account a voice cannot be given to the strategy itself as it can in the following translation account. The object was expanded (or more literally shrunk) through the consultation events and through numerous project, reference group, and Business Group meetings. As before in chapter five (section 5.6.1) this sub activity system will be reunited with working and boundary crossing in chapter eight to inform overall conclusions and recommendations.

6.5.2 Learning: A Translation Account

As previously outlined, a translation account highlights contingencies, alliances, and multiplicity of meanings and therefore offers a potential counter narrative to the findings through a CHAT contradiction account. The implementation of the draft strategy was intended to change organisational working to strengthen 'horizontal' working and learning across the directorate system and pull together resources on a corporate basis to support educational development in community healthcare settings. In chapter four (section 4.8), I considered two translations, both from a fairly traditional early ANT perspective - the organisation coming into being and the journey of the draft strategy within it. In chapter five (section 5.6.2) I narrowed my focus to delve into the area between interessement and enactment to give an expanded view of organisational issues impacting on enrolment and durability. NHSX serves a dual function; that is to provide education through the uni-professional directorate system, and to develop an internal corporate learning culture. With regard to the former, knowledge can be seen as 'sedimented' as produced and set down in layers through ongoing professional development processes. With regard to the latter, knowledge is not 'solidified' within a 'well bounded' strategy document but rather is situated in the multiple connections of the organisation.

To unravel some of the connections in the organisation I wish to move slightly further along the ANT to post ANT continuum towards a material semiotic understanding of enactment. This understanding moves towards 'knowing as enactment, brought forth and made visible through circulations and connections among things' (Fenwick and Richards, 2010: 24). And, as knowledge 'cannot be viewed as coherent, transcendent, generalisable, and unproblematic' (Fenwick and Edwards, 2010: 35), what are the

organisational associations, from an educational context, that enable or constrain different points of view? As advised by Fenwick and Edwards (2010: 35):

...these associations may be exposed by tracing who have been rallied and mobilised to enact and uphold particular concepts, but also - perhaps more importantly – the associations that do not appear, the things that are not mentioned or are discredited.

Enabling associations within NHSX included the benefits of informal relational working between professional groups which was seen to '*promote creativity and innovation*' (PD1).

Some of the constraining associations were demonstrated in chapter five (section 5.6.2) in relation to organisational working where there appeared to be a dualism in overtly agreed but covertly questionable enrolment with the strategy. Another constraining association was in relation to the '*different planets*', and different '*real worlds*' as visualised by different professional groups that made it difficult to work and learn together. A key example of this was described in chapter one (section 1.6.2) in that during the early stages of the development of the strategy no consensus could be reached regarding a collective educational ethos across the organisation as different professions utilised different frameworks to represent their educational systems, methodologies and outputs. In traditional approaches to epistemology, the knowing subject is a conscious, self aware, self contained, independent, rational agent that comes to a knowledge project fully formed. But if knowing is to be understood naturalistically then it is clear that the relationship between the knower and the known does not follow a traditional philosophical model (Magee, 1978: 144). The knower cannot be assumed to be a self contained rational human subject (Schatzki, 2001: 10-

11). Rather, subjects (like objects) are differentially constituted through specific interactions. The subjects so constituted may range across some of the traditional boundaries (such as those between humans and nonhumans and between self and Other that get taken for granted in much of the literature). Knowing is a distributed practice that includes the larger material arrangement. To the extent that humans participate in practices of knowing, they do so as part of the larger material configuration of the world and its ongoing open ended articulation. Hence, knowing is not a play of ideas within the mind of a Cartesian subject that stands outside the physical world the subject seeks to know (Magee, 2001: 88).

A predominance of the professions composing the organisation are science based and there is a dominant positivistic culture to knowledge and the use of knowing through representations bound up, for example, in curricula, competency frameworks, capability frameworks, learning outcomes, and assessment tools, as knowledge to be traded (see chapter seven, section 7.3.1). In addition, within the organisation there is contested dominance of professional knowledge, much, but not all of it focused through the historical development of medicine and nursing. This led to comments like: *'the GP is king'* (DCEO), and *'nurses are no longer the handmaidens to doctors'* (PD3). Arguably there is also a contested dominance between professional and managerial knowledge which raises issues regarding power relations, politics, and conflicts of interest to shape skill and knowledge and learning in radical ways. This has led some researchers (Solomon, 2001) to look at 'cultural control' through workplace learning and investigate how the training of 'competencies' can render work more visible in order to be more controllable (Illeris, 2009; Townley, 1994; see also chapter five, section 5.3 regarding the use of competency frameworks in NHSX).

As indicated in chapter three (section 3.1) the circulating draft strategy, as a specific material practice, can be described as a catalyst through which semantic and ontological determinacy became enacted. Partly due to the growing educational research agenda there is recognition in NHSX, though still very limited, of the difference in epistemological and ontological perspectives, where the epistemological issues to do with knowing are bound up with the ontological issue of what exists (chapter three, section 3.1). Although ANT affords an opportunity to explore and unlock multiple ontological perspectives, and therefore affords a researcher this insight, this has been demonstrated to be a difficult organisational space to open up due to the prevailing opposing viewpoint. For example, there have been numerous attempts at collective inter-professional education meetings but they do not progress much further than identifying that there are many complex and at times entrenched viewpoints. And, although the current NHSX Strategic Framework espouses integration, innovation, and connection, the foregoing preference to maintain a transcendent single ontology rather than enroll multiple variant ones must raise a question as to whether the corporate level of the organisation has moved away from its initial aim of ‘reducing turbulence’.

Final consideration is to the associations that did not appear or that were discredited. The draft strategy was driven by the corporate intention to support the shifting the balance of care agenda, however parallel educational work streams were commenced with the sanction of the Business Group that had largely overlapping aspirations and educational and learning outcomes. But the inherent conflicts were rendered smooth and invisible from the corporate representation of integration denying (but increasing?) the competition and rivalry inherent within the directorate driven uni-professional groupings.

6.6 Summary

The question at the beginning of this chapter was - how do the rules affect the organisation's ability to learn, develop, and implement educational strategy in an inter-professional context? Therefore, this chapter set out how NHSX models learning taking cognisance of recent organisational attempts at collective activity regarding learning organisations, learning environments, and learning networks. A situational context was provided by considering both the ANT and CHAT literature with specific regard to organisational learning, with key categories from the data analysis being articulated to provide illustrative accounts of organisational learning in NHSX. Engeström's model of expansive learning provided a mechanism to view horizontal and vertical learning. It was noted that this model was informed by Bateson's learning levels and the concept of horizontal learning was briefly contrasted with Nonaka and Takeuchi's model of cyclic knowledge creation. The chapter was concluded by comparing a CHAT contradiction and an ANT translation account. Key themes emerging included the overt and covert organisational ordering and associations that enabled or constrained different points of view within the different realities inherent in NHSX. Finally, the discussion and findings in this chapter will be added to those of organisational working and boundary crossing to inform a collective analysis, conclusions, and recommendations in chapter eight.

Chapter Seven – Centres, Boundaries and Peripheries

Research Question - How does the organisation (community) support a cross cutting work stream (division of labour) to fulfil organisational objectives (object)?

7.0 Introduction

The following key categories of ‘boundaries’ data were identified in chapter three:

Boundaries
Vertical and horizontal
Language
Informal and formal
Historical
Attitudinal
Different planets
Professional
Cross cutting work
Silos
Spatial

The following questions represented areas of organisational boundaries in the semi-structured interviews:

- Describe any organisational cross cutting work streams you are involved in or know about?
- From your experience does cross cutting work happen formally or informally in the organisation? Describe some examples?

- Describe any successes or challenges you have had in participating in cross cutting work?

In chapter one I introduced the professional, geographical, and structural complexity of NHSX. In chapter two (section 2.2.5) I introduced the concept of boundaries and boundary crossing and highlighted that boundaries do not exist as objective single realities but are always defined from some relevant perspective, reflecting the constantly evolving multi-voiced and multi-layered nature of organisational activities. In chapter three (section 3.3.2, Table 12) I described my data analysis, part of which resulted in the table heading up this chapter. In chapter four (section 4.6.3) I modelled the organisational sub activity system with regard to boundaries and provided an outline of organisational history, the intention to prioritise cross cutting functionality, and a summary of horizontal and vertical organisational spaces through which the draft strategy had to negotiate and travel. In chapters five and six I explored organisational working and learning respectively, both of which overlap with this chapter to some degree regarding the prioritised organisational cross cutting remit. In this chapter I will follow the strategy as it negotiates through both relatively fixed and fluctuating organisational boundaries and barriers, as suggested by the work practices captured within the previous chapters, to explore what changes when sequential experiences are attached to one another in a spatial, rather than a temporal or reductionist framework. As work practices do not exist as independent entities, they will be considered within the broader context, both material, and historical / developmental, within which the work is mediated, shaped, and transformed over time. Finally, I will begin to trouble some of the previous chapters findings to begin to solve the riddle of who killed the Primary Care Strategy.

7.1 How Does our Organisation Achieve a Cross Cutting Function?

In order to answer this question and the one heading this chapter, I will consider the organisation with regard to history, structuring and restructuring, horizontal and vertical work streams and practices, and silos and spaces. As previously stated, educational systems in the organisation are heterogeneous with each directorate engaging in its own activity within its own boundary, but with the requirement at times to cross each others boundaries in order to work collaboratively with other directorates. Thus the circulating strategy had to be embedded in larger social and cultural processes which involved negotiation and persuasion across a diversity of different viewpoints; which may have increased the opportunity for conflicts, tensions, and contradictions. As stated by one interviewee directly involved in decision making regarding the draft strategy:

The organisation is not set up to work across the whole system, there will be trouble trying to get agreement on this and get it across (PD1).

Therefore, before exploring the concept of boundaries in detail, I will return to where they have often been demonstrated to reside – in the cross cutting functionality between the directorates of the organisation.

As indicated in previous chapters, the organisation is highly complex in regard to its geographical structure, systems and processes, and multiple professional cultures and identities. In 2005, there had been some attempt but limited success at developing cross cutting corporate work streams, with the strategy being among several launched under the organisational Corporate Objectives of 2005 (others included patient safety,

healthcare acquired infection, cancer care, and remote and rural healthcare). Each work stream was captured within a strategy document and most were aligned a non recurring annual budget. In an attempt to increase the inter-professional engagement, each was led by a named Director within a different organisational directorate. The mechanism for reporting and the endorsement of decision making was to the organisational Business Group, and, if required, to the Board. However, there was no predetermined structure for these work streams and most were driven by small teams, usually the project lead with only one or two support members attached, mainly in the form of an education project manager and / or project officer. More importantly perhaps, these work streams had no corporate responsibility to join together where there was overlap of purpose and therefore this created an opportunity for competition as well as collaboration. In chapter four (section 4.8.1) it was noted that during this time the Scottish Government was set up around numerous work streams also. This compounded the fragmentation of accountability, reporting, and decision making, and increased political competitiveness for each work stream to become the main driving force within its wider remit. For example, there was significant tension between work to support long term conditions and shifting the balance of care, both within NHSX and the Scottish Government, with each area of work claiming to be the overarching policy directive that the other one should be subsumed into. In 2005, when the draft strategy first came into being, there were four uni-professional directorates with a fifth being added late in 2009 with a specific remit to strengthen the organisational cross cutting function through taking the corporate lead for areas such as educational governance, educational research, and knowledge services (Education Development Directorate). These five directorates, together with the three remaining corporate

service directorates, therefore entailed eight different organisational vertical structures. In 2008 the strategy stated:

Any strategy will take place within existing NHSX structures and work *across* and *through* existing NHSX directorates (italics inserted).

The journey of the strategy was all but over by the end of 2009 so the spaces through which it travelled were mainly restricted to the initial four professional directorates with minimum exposure to one of the support directorates (finance). The other formal boundaries the strategy had to cross included the Business Group (for decision making) and the Board (for endorsement as required of Business Group decisions). Changing and moving informal boundaries and spaces to be crossed included geographical, representational, professional, and discursive.

Recently, in an attempt to broaden collective understanding of the concept of boundary, Mol and Law (2005: 637, italics in original), posed the following questions:

- How to find good *images* for boundaries?
- What is it to *cross* a boundary?
- What is a boundary when it is *blurred*?
- What happens when boundaries *move around*?
- Or when they *fold*?
- Or when they act as *semi-permeable membranes*?

These questions will serve as a useful aide memoire and underlying framework throughout this chapter to help prompt breadth of consideration and analysis. In order to situate the data and answer the research question that introduces this chapter, I will commence by exploring boundaries from both an ANT and CHAT perspective, as before reading across both to highlight similarities and differences.

7.2 Boundary Crossing: An ANT and CHAT Account

During its lifetime the draft strategy crossed boundaries which delineated ‘different worlds’ and ‘different realities’ within NHSX. In the following sections, the socio-material accounts of ANT and CHAT will be utilised to explore the concepts of boundaries and spatiality whilst striving to not exclude the ‘contingent and provisional nature of [their] production’ (Brown and Middleton, 2005: 696).

7.2.1 Current ANT: Collateral Realities, Multiple Ontologies, and Spatial Topology

In recent years, Law, among ANT’s founders, has been deeply involved in dialogues that have expanded its constituent concerns and sought to give shape to a post ANT with all the usual ambivalence over continuity and disjuncture with respect to a classical past (Callon and Law, 2004; Law, 2008; Law, 2009). Two such developing areas that will be considered below in some detail are with regard to ‘collateral realities’ and the corresponding notion of ‘spatial / multiple ontologies’.

Firstly, as indicated by respondents in chapters five and six, NHSX was perceived to consist of ‘multiple worlds’ and ‘different realities’. In recent work Law has used the

term ‘collateral realities’ to focus on the – often unacknowledged – assemblages that hold particular orderings in place, and has suggested that their significance is in direct proportion to their invisibility (Law, 2009). According to Law (2009: 1) collateral realities are done in practices:

Practices enact realities including collateral realities. This means that if we want to understand how realities are done or to explore their politics, then we have to attend carefully to practices and ask how they work. ..practices are detectable and somewhat ordered sets of material semiotic relations. To study practices is therefore to undertake the analytical and empirical task of exploring possible patterns of relations, and how it is that these get assembled in particular locations.

In chapters five and six I considered practices, their relations, and their assemblages within NHSX in regard to working and learning. From the analysed data it is interesting to note that the ‘orderings’ that kept these practices in place - although covertly accepted and openly acknowledged – appeared to be overtly denied and elided from corporate representation, and therefore remained corporately ‘invisible’ (for further discussion see chapter eight, section 8.2).

Secondly, largely in collaboration with Annemarie Mol, Law has played a leading role in setting spatiality and the spatial ontology of objects at the centre of ANT and allied debates through such definitive concerns as multiple ontology, topology and fractionality (Law, 2004a; Mol and Law, 2005). Whilst both ANT and CHAT literature make reference to ‘multiple ontologies’, unlike ANT, CHAT appears to take

the term ‘multiple ontologies’ as a given with little or no explanation (Allert, Markkanen, and Richter, 2006; Blunden, 2008).

So what are multiple ontologies? Ontology is the study of what exists and the nature of that existence (Magee, 2001:8), with the term ‘multiple ontologies’ referring to multiple constructed realities (Denzin and Lincoln, 2005a: 22). In *The Body Multiple*, Mol (2002) writes about a medical object, lower limb atherosclerosis, as it is enacted in a variety of sites or contexts: the examination room, the radiology room, the pathology department, and so on as a ‘method assemblage’ (Law, 2004a: 116-118). This study of the diagnosis and treatment of atherosclerosis works through the idea of ‘multiple ontologies’ at some length, as, throughout the hospital, there are many performances of atherosclerosis through different assemblages of people, instruments, and spaces. As suggested by the title, Mol’s ontological point is that atherosclerosis, the object itself, is multiple in both its ‘in here’ and ‘out there’ locations, with Law (2004a) noting the implication of at least half a dozen method assemblages. Yet, it is multiple in such a way that its singularity can remain also an object of faith to its medical practitioners. It ‘hangs together’ ‘more than one but less than many’, ‘multiple but not plural’ or in the word Law (2004a: 59-62) seems to prefer as a ‘fractional’ object. Therefore, it is not an object fixed by a single method assemblage, however internally complex, but an overlap and interference pattern of objects and assemblages in which some relations are coordinated, and some policed through Othering or deferral (Oppenheim, 2007: 484). This is not a cute metaphor of pointing towards various approaches to, or perspectives on, a singular atherosclerosis, a single patient, or a single body. This would be to think in terms of stable identities, external relations and discovery. Rather, they are various objects ‘enacted’ in practices. They are enacted in complexes of local relations, travelling as far as those relations can

sustain them. As new complexes come together so too are new atherosclerosis articulated (McGrail, 2008). Hence, we have in ANT a picture of the material which is thoroughly relational in that there is no reality independent of our interaction with it. From the foregoing, it would appear that, whilst at first sight mobilising similar terminologies, CHAT and ANT, in their ontological persuasion involve different forms of sense making that, according to I'Anson¹⁰ (2011):

...have some overlaps but lead in different directions. Different questions emerge if you assume reality is one – whereas rather interesting questions emerge if you begin to question this assumption and attend to how things are held in place and how things-in-relation produce certain understandings - which are of course political, since there is no privileged standpoint or ordering.

In chapter eight (section 8.2) this concept will be expanded to frame different questions and understandings of who killed the Primary Care Strategy.

Finally, recent ANT writings have focused on 'decentering the object' (Law, 2002) in that spatiality and ontology are thoroughly intertwined. Latour (2005:178) refers to a 'star shaped' metaphor of dimensionality, but Law, with fractionality, is painting a different picture - not of subjectifiers or objectifiers in star-like intersection but rather of 'a fuzzy zone of density produced by loosely overlapping lines as the configuration of fractional objects' (Oppenheim, 2007: 484). In earlier writings Mol and Law (1994: 643, 661) distinguish between different kinds of spatial topology; that is, between regions as boundary clusters, networks as ontologies based on connection rather than proximity, and fluids that flow viscously without either boundaries or the more

¹⁰ Personal communication with Dr J I'Anson, Lecturer, School of Education, University of Stirling on 31st May 2011.

structural and obligatory relations of co-productive force that the ‘network’ metaphor suggests. In *After Method*, Law (2004a) follows this up in continuing the exploration of the ‘problem of difference’ by scaling up from multiplicity to indefinite contours, fluid objects within a method assemblage that changed their form and shape.

Oppenheim (2007: 485) suggests we consider ANT *itself* as a fluid object ‘read through spatiality and in the shadow of concern surrounding the reification of ANT as a plug-and-chug ‘theory’ at the end of the 1990’s’. According to Oppenheim (2007: 485):

Latour (1999a), once an advocate of recalling ANT, is now willing to give each term his blessing *provided* that each be understood as infratheoretical and not substantive. It is not about a thing called a network, ANT is a sensibility to materiality, relationality, and process for monads in dimensional connection (*italics in original*).

Therefore, Law’s writings are in agreement with Latour but extend post ANT to the ongoing interweaving of fractionalities, mess, and multiplicity. This recognition for the need for increased dimensional connection was highlighted by one respondent (chapter five, section 5.3) who referred to the potential benefits of adopting vertical, horizontal, and *diagonal* working across NHSX as an organisational microcosm.

The above section has detailed that current ANT readings of boundaries are aligned to an appreciation of collateral realities, multiple ontologies, diffraction, and spatial topologies. Although both ANT and CHAT share the concepts of boundaries, boundary objects and boundary crossing these are afforded a different focus within

each body of literature. Therefore, in the next section, I will draw and discuss any similarities and / or differences between them.

7.2.2 Current CHAT: Borders, Boundary Objects, and Boundary Crossing

What Engeström calls the ‘third generation’ of CHAT theorises multiple interacting activity systems and boundary crossing and the related concepts of polycontextuality and knotworking (Spinuzzi, 2008: 188; see also chapter two, section 2.2.6; chapter five, section 5.4.1). ‘Boundary crossing’ refers to work and learning in which actors step outside their customary domains of authority and expertise - to find new ideas and solutions together with other actors - moving between multiple activities and systems (Engeström, 2009: 313-314). In addition, boundary crossing does not have to achieve mutually accepted interpretations across boundaries to be fruitful, with differences and contrasts by means of argumentation triggering ‘significant collective concept formations on one or both sides of the boundary’ (Engeström, 2009: 116). As such, boundary crossing typically entails risk and requires effort at building a shared language between actors (Yamazumi, 2009: 222). Tuomi-Gröhn (2003: 203) defines boundary crossers as:

...people who move from one activity system to another and work in two or more activity systems simultaneously, sharing the boundary object and the work based on it with some partners in the other activity system.

Finally, boundary crossing work is developmental in nature and according to Spinuzzi (2008: 80) is particularly suited to development work research (see chapter three, section 3.4) and learning.

The concept of 'boundary objects' evolved to understand what happens when different cultures and communities come into contact and the different understandings that emerge when people from these communities use the same artefacts (Emad and Roth, 2009: 22). Spinuzzi (2008: 145) describes boundary objects as:

...artifacts that serve as mutual reference points across different activities while retaining different meanings within these activities.

A more detailed definition of boundary objects is provided by Star and Griesemer (1989: 393) who describe boundary objects as:

...objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a constant identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. They may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them a recognizable means of translation. The creation and management of boundary objects is key in developing and maintaining coherence across intersecting social worlds (see also Emad and Roth, 2009: 20).

Boundary objects are therefore material links between two or more activities, functioning differently in each activity, providing a productive difference and often a coordinative role (Spinuzzi, 2008: 148). As such boundary objects can be seen as genres, according to Spinuzzi (2008: 145):

...the trajectory of which can be traced as they circulate through and build networks of human activity.

Boundary objects (which can be texts), are mediated by other representations, which often must accompany them on their journey across boundaries. So a boundary object is often an assemblage of related texts (inscriptions, genres) that collectively plays different roles in overlapping activities (section 7.3.3). These different roles allow boundary objects to support what Etienne Wenger calls 'boundary practices' which constitute 'a form of collective brokering' among domains (1998: 114).

As indicated, the concept of boundary crossing and boundary objects is common to both ANT and CHAT literature; the main difference being that ANT does not afford an acceptance that entities are prior to their representation, and, by upholding a symmetrical account, does not necessitate that boundary crossers have to be human.

In addition, the ANT concept of folding challenges the spatial metaphors of boundaries and boundary crossing (section 7.3). During the remainder of this chapter I will consider the strategy as a boundary object that travelled through numerous spaces but ultimately, from an ANT perspective, failed to mobilise and translate as it moved.

7.3 Boundary Objects, Blanks, and Genres

Boundary objects move around, therefore in the following section I will discuss knowledge as boundary object, strategy as blank object, and texts as genres before moving on to problematise the reality of policy and strategy through enactment, representation, and performance.

7.3.1 Knowledge as Boundary Object

During the life of the strategy educational developments and ways of working within NHSX were representative of linear and temporal constructions, and, as such, had great difficulty in representing and guiding horizontal and socio-spatial relations and interactions between professional groupings. An object of knowledge is held together by a network of connections that must be continually performed to make the knowledge visible and alive (Fenwick and Edwards, 2010: 24). Objects of knowledge ('epistemic objects') are, according to Knorr Cetina (2001: 181):

...characteristically open, question generating, and complex, they are processes and projections rather than definitive things. Observation and inquiry reveals them by increasing rather than reducing their complexity.

As discussed in chapter six (section 6.5.2) objects have a tendency to be regarded as closed boxes, tools, or goods that are ready at hand to be traded further. In contrast objects of knowledge appear to have the capacity to unfold indefinitely and therefore have a lack of 'object-ivity' or completeness of being (Knorr Cetina, 2001: 182). This lack of completeness of being is crucial, as, according to Knorr Cetina (2001: 182):

...objects of knowledge in many fields have material instantiations but they must simultaneously be conceived of as *unfolding structures of absences*, as things that continually ‘explode’ and ‘mutate’ into something else, and are as much defined by what they are not (but will at some point have become) than by what they are (italics inserted).

Therefore, the signifying force of epistemic objects resides in the pointers they provide to possible further explorations and unfoldings. If the draft strategy is viewed as an object of knowledge, then, as demonstrated in the previous chapters (five and six), the connections that surrounded it were, at best, tenuous. In addition, Knorr Cetina’s ‘unfolding structure of absences’ was smoothed away from external vision through corporate representation. Finally, giving a stable name to epistemic objects is not an expression and indicator of ‘stable thing hood’. Rather Knorr Cetina (2001: 184) equates naming as:

...a way to punctuate the flux, to bracket and ignore differences, to declare them as pointing to an identity-for-a-particular-purpose.

It is interesting to note that even in this regard the strategy had questionable stability, identity, and purpose, as, during its short lifespan, it was required to change its name twice as representative of the reactive stance of NHSX towards changing government policy.

7.3.2 Strategy as Blank Object

The travelling draft strategy can also be viewed as a blank object, an absence that gains a presence, undetermined by itself, taking on the values of those in its surrounding system. The concept of blank figure is illustrated well by this quotation from Serres (1991: 93):

I have given the name joker, or blank domino, to a sort of neutral, or rather, multivalent element, undetermined by itself, that can take on any value, identity, or determination, depending on the surrounding system it finds itself inserted in. I can say that the joker is a king, a jack, a queen, or any number...like the chameleon, they are determined by their surroundings, or by an external determination, or by the ensemble in which they are put to play.

The strategy started as a blank page put to play within the organisation as an ensemble to fulfil political and organisational targets and outcomes. As described in previous chapters the organisation is one of complex heterogeneity. According to Hetherington and Lee (2000: 17):

Blank elements can be seen in general to help tack heterogeneity together, to assemble what passes for a smooth homogeneity, and allow us in certain circumstances to ignore or override differences. They are figures of the between space.

As such, blank figures provide systems with flexibility of resource that can move through conditions that are topologically complex as is the case in NHSX (section 7.6.2). They can be seen as non representational figures that appear within the midst of representations as a source of absence that has become visible (section 7.5) and can reveal that social order is all about how heterogeneous elements come to be connected through relations (or don't, see chapter five, section 5.6.2 for issues regarding enrolment). Blank figures provide motility, that is, more than just mobility, in that according to Hetherington and Lee (2000: 176-177):

They provide an ability to change the context of movement and of ordering through the connections made...by being figures that are undetermined and motile *within* a specific set of conditions of possibility whose effects are uncertain and not entirely predictable (italics in original).

The travelling draft strategy started in 2005, arguably as a blank figure that connected to some extent across the organisation, and, although the intended overall effect was cast at the outset, the outcome remained unpredictable. Finally, a blank figure is a figure through which spatial connections can be made, 'it is as much a figure of the fold as anything else' (Hetherington and Lee, 2000: 182). According to Fenwick (2010: 51-52):

...folding can entail many different points of (dis)connection...there is also the possibility of unfolding...folding is three dimensional, where the boundaries are negotiable and not simply assumed to be at the edge of a context as container: boundaries and practices are made through the practices of foldings.

ANT's view is one of folding and unfolding: by contrast CHAT would appear to support the concept of activity systems as a series of containers between which subjects, tools, practices, and objects pass. Section 7.7 will explore where the boundaries of NHSX lie and how these differences in ANT and CHAT readings affect if and how they are crossed. In summary, this section has considered the strategy as a blank object; the following section will consider texts as genres. Chapter eight (section 8.2) will draw both together to ask whether the strategy remained sufficiently blank to achieve effective ordering or became too heavily inscribed and problematised by multiple sets of rules to be able to successfully negotiate across the diversity of required spaces.

7.3.3 Text as Genres

Genres typically function in assemblages as tool(s) in use (Spinuzzi, 2008: 17). In NHSX the text making up the strategy can be seen as a genre representing:

- Corporate level target and measurement objectives driven by the Scottish Government,
- The stated intention of NHSX to support educational development for community based healthcare, and
- An attempt to effect horizontal working and learning across NHSX

As such, the text within the strategy document circulated through all formal organisational spaces (directorates, Business Group, Board, and project steering and reference groups) and many informal ones (professional, discursive, expectational, cultural, attitudinal, political).

The word text comes from the word *textere*, meaning to weave together (Spinuzzi, 2008: 17) and the ANT and CHAT literature vary in how this weaving is effected. In ANT, genres as inscriptions play a vital role by transforming complex, unmanageable, immobile phenomena into manageable, transformable, combinable, mobile texts (Spinuzzi, 2008: 17). In CHAT, genres have been theorised extensively to explore historical development using mediation as a way to conceptualise the impetus for change. As stated in chapter two (section 2.3.3), ANT and CHAT view mediation in very different ways, that is, symmetrical and dialectical respectively. In ANT, mediation involves coming between two actants – whether human or nonhuman – and creating a relation between them. Every actant is also a mediator, therefore the strategy text itself can act as mediator, but in the process of consultation and development it may become an intermediary, that is, subject to change (Fenwick and Edwards, 2010: 140). ANT sees subjects and mediators as network effects, therefore subjects, objects, actants, and mediators *emerge* from the assemblage rather than pre-existing it. In CHAT, although all entities do have the power to influence or act, they are asymmetrical in regard to taking the initiative in the construction of associations, therefore in CHAT mediation comes between humans and their objects or communities as a dialectic that *changes* pre-existing entities.

So does the strategy as text emerge from the grouped assemblage or is it derived from changes to a pre-existing entity? In this situation it would appear that *both* may be applicable; that is, the strategy was an organisational construct, the intention of which pre-existed the combining of entities to effect its development (a CHAT account).

However, it entailed five years of negotiation through multiple assemblages some of which emerged as a result of it. I would therefore contend that *neither* framing is right

or wrong but rather that each is partial and combined together afford a deeper richness of understanding (see chapter eight, section 8.2).

In addition, ANT literature has a tendency to avoid developmental examination of artefacts in favour of examinations that emphasise infinitely interconnected intermediations. In CHAT the subject-object relation is a historical phenomenon, however in ANT, there is a general theory of association of forces, that is, a rhizomatic connection. Genres imply genealogies but the rhizome is an anti-genealogy (see chapter two, section 2.4, Table 6). In 1995, Latour had this to say:

...rhizomes and heterogeneous networks are thus powerful ways of avoiding essences, arbitrary dichotomies, and to fight structures. But ...their limit is to define entities only through association...*they become empty when asked to provide policy*, pass judgment or explain stable features (304, italics inserted).

CHAT framings would therefore appear to align to those of Ball (2000: 1837) who contended that despite its assemblage, policy is treated as a distinct object, that is, distinct textual representations which, although encoded and decoded in complex and continually contested ways, are nonetheless identifiable and singular. This is in direct contrast to ANT where policy would be viewed as multiple enactments of which the performance of the policy as text is only one.

In summary, genres tend to be stable but the text within them moves, and, as boundary objects, they mean different things and act differently at different nodes of a network or spaces of an organisation. In the sections that follow I will explore the boundary spaces and call into question the lack of stability indicated above from both ANT and CHAT and the views from enactment, representation, and performance.

7.4 Enactment, Representation, and Performance

As stated in chapter one (section 1.2.2), the corporate intention to create the draft organisational strategy was in direct response to the Scottish Government's policy drivers in *Delivering for Health* (SEHD, 2005) and *Better Health Better Care* (SGHD, 2007). From an ANT perspective, these policy texts can be seen to be important in enrolling the interests of others. However, policy initiatives in healthcare typically privilege the policy makers' reality and there is an assumption that service providers will adjust their work accordingly with a smooth acceptance that elides all political negotiations. Policy can be seen as being enacted through objects interlinked in everyday practice, and through multiple simultaneous performances: for example, as a textual representation, as networking across the organisation, and as a political consultation process. According to Barad (2003: 804):

Representationalism is the belief in the ontological distinction between representations and that which they purport to represent; in particular, that which is represented is held to be independent of all practices of representing. That is, there are assumed to be two distinct and independent kinds of entities – representations and entities to be represented.

The system of representation is sometimes explicitly theorised in terms of a tripartite arrangement: knowledge (representations), the known (that which is purportedly represented), and the existence of a knower (someone who does the representing). In other words this is a Cartesian epistemology and its representationalist structure of words, knowers, and things. When this happens it becomes obvious that

representations serve a mediating function between independently existing entities. Representation then would appear to sit well in the realm of CHAT.

In recent years performative approaches have provided an alternative to representationalism by focusing inquiry on the practices or performances of representing as well as on the productive effects of these practices and the conditions for their efficacy (Barad, 2007: 28). This move toward performative alternatives to representationalism changes the focus from questions of correspondence between descriptions and reality to matters of practices or doings or actions. In other words unlike representationalism, which positions us above or outside the world we allegedly merely reflect on, a performative account insists on understanding, thinking, observing, and theorizing as practices of engagement with, and as part of, the world in which we have our being.

A recent summary of five aspects of performativity is provided by Dewsbury (2000: 476-477):

- Connectivity – it connects with other things, digresses boundaries, instigating new ones, whilst rejecting, separating, and recomposing others. This has nothing to do with signification for via the performative the ruptures, folds, fissures, and ephemeral alliances sanctioned by discourses of identification are exposed
- Heterogeneity – immanent relations of proliferating couplings variant domains, capacities, objectives, and outcomes are assembled, offering up, opening, and unfolding alternative, more situated spaces

- Multiplicity – thinking the performative in this way is in seeing the enactment of a path between, and through, the theoretical questions of objectivism and subjectivism
- A stranger to any idea of genetic axis or deep structure – having multiple entryways being detached, reversible, susceptible to constant modification
- Assignifying ruptures – breaks, discontinuities: that is, an instigation of indifference to determinations

Although third generation CHAT is beginning to extend some of these through its developing concept of mycorrhizae, the notion of performativity would appear to be more central to, and aligned with, ANT's rhizomatic readings and affordances.

Finally, performativity also brings to the forefront important questions of ontology, materiality, and agency (see chapter three, section 3.1.1; chapter five, section 5.4; and this chapter, section 7.2.1 for further discussion).

7.5 Boundaries as Metaphors and Topologies

The above sections set out to consider boundary objects such as knowledge objects, blank objects, and genres from both a container and folding / unfolding perspective; the container type of 'boundaries' becoming a bit unstuck through a performative reading. The following three sections will complete alternative framings of boundaries (as metaphors, topologies, and material discursive practices) to inform the identification and analysis of the boundaries, boundary objects, and boundary crossing activity within NHSX.

7.5.1 Boundaries as Metaphors

There are many metaphors to describe boundaries including ‘container’, ‘spatial’, ‘temporal’, ‘container’, and ‘group’, (Fitzpatrick, 2001). Many of these conceptualisations of boundaries focus primarily on boundary forms as enacted in physical or virtual space. The dominant metaphor appears to be boundary as an edge condition or border or barrier. However, to use the term ‘boundary’ as an edge metaphor is to render invisible and unproblematic the very nature of the boundary itself and can arouse irrelevant imagery for social worlds (Strauss, 1993: 213). In a succession of case study vignettes, Fitzpatrick (2000: 115) provides a definition of work practice boundaries in terms of ‘borders, centres, and peripheries’. The notion of centres and peripheries gives rise to the effect of multiple boundaries by degrees and limits of commitment, communication, and / or participation with the work practice centre. In these vignettes, although work practice boundaries are interpreted in relation to the CHAT concept of the object of activity - and include the exploration of the inter relationship with other boundary forms such as spatiality - there still remains the need for an organisational or network centre. This is in contrast with current ANT material semiotics where according to Law (2008: 153):

...webs may be associated in endless different ways but the need for a center has gone.

Third generation CHAT is also beginning to disregard the need for a centre through its developing concept of mycorrhizae. In summary, boundaries may therefore be

afforded a spatial decentred analogy which will be considered in the following section in relation to 'topology'.

7.5.2 Boundaries as Topologies

Boundaries can be investigated through geometry or topology. Geometry is concerned with shapes and sizes whereas topology investigates questions of connectivity and boundaries. Although spatiality is often thought about geometrically, particularly in terms of the characteristics of enclosures, this is only one way of thinking about space and boundaries (Hetherington and Lee, 2000: 172; Thrift, 2000: 221-222). However, the view of space as a container pervades much of Western epistemology and Cartesian tradition (Kagawa and Moro, 2009: 178). Although lengthy, the following quotation from Barad (2007: 223) provides an excellent overview of changing topologies:

During a transatlantic flight from New York to London, at a cruising altitude of thirty-five thousand feet, a communications link between an Intel-based notebook computer, perched on a tray in front of the passenger in seat 3A of the Boeing 747, and a Sun workstation on the twentieth floor in a Merrill Lynch brokerage house in Sydney initiates the transfer of investment capital from a Swiss bank account to a corporate venture involving a Zhejiang textile mill. The event produces an ambiguity of scale that defies geometrical analysis. Proximity and location become ineffective measures of spatiality. Distance loses its objectivity – its edge – to pressing questions of boundary and connectivity. Geometry gives way to changing topologies as the transfer of a specific pattern

of zeros and ones, represented as so many pixels on a screen, induces the flow of capital and a consequent change in the material conditions of the Zhejiang mill and surrounding community. With the click of a mouse, space, time, and matter are mutually reconfigured in this cyborg ‘trans-action’ that transgresses and reworks the boundaries between human and machine, nature and culture, and economic and discursive practices.

In other words a Euclidean geometric imaginary of space will not do, instead what is needed is a form of ‘topological savage’, informed by different kinds of topologies that are, according to Thrift (2000: 223):

...based on communication and connectedness across divides between exclusive and disparate disparities. This is a *topologic savage* which cannot be fixed or frozen but can only keep on making encounters...in a world of constant questioning (italics in original).

This dynamic and contingent notion of spatiality opens up the shifting entanglement of relations in NHSX rather than reifying certain individual or collective practices into closed ‘container’ models of activity. Finally, spatiality is defined by Candea (2009: 2) as:

...simultaneity of terrains of actuality and potentiality and the intertopological movements that inextricably connect and collect them.

In other words, spatiality is ever present, ever changing, and multiple. In chapter two (section 2.3), I described ANT in relation to this multiplicity and connecting spatiality from its early beginnings through to its current focus on material semiotics. It would appear that CHAT is importing this spatial distribution within its third generation of multiple activity systems. Therefore I would counter that ANT has always had a topological focus and that CHAT is moving towards this also from a more geometric beginning. Chapter eight (section 8.1.2) will further explore this relationship between the geometric, the discursive (section 7.6, below), and the topological to facilitate pursuit of the strategy through the many organisational spaces and folds of NHSX.

7.6 **Material Discursive Nature of Boundary Drawing**

ANT and CHAT frame discursive practices from a nonhuman and human perspective respectively where meaning is made possible through specific material practices.

As such, discursive practices are specific material (re)configurations of the world through which the determination of boundaries, properties, and meanings are differently enacted. Therefore, to think of discourse as mere spoken or written words forming descriptive statements is to enact the mistake of representationalist thinking.

Discourse is not what *is* said, it is that which constrains and enables what *can* be said.

Discursive practices are boundary making practices that *produce* rather than merely *describe* the 'subjects' and 'objects' of practices.

Although ANT's concept of symmetry foregrounds an anti-genealogical stance (as opposed to CHAT's genealogical one), the rationale of non privileging the human prior to analysis would seem to accord more with ANT than with CHAT (see chapter two, section 2.4).

In summary, the concepts of boundaries, boundary crossing, boundary objects, spatiality, and topology are very complex. The following section will now attempt to apply these concepts to the intended cross cutting functionality of NHSX.

7.7 Where are our Boundaries and how are they Crossed?

NHSX is a complex healthcare organisation full of multifaceted spaces and boundaries. An analysis of such boundaries must acknowledge and maintain this complexity and resist the temptation to collapse any investigation into simplified demarcated areas with predetermined edges. According to Brown and Middleton (2005:695):

It is a truism that the analytic potency of spatial categories is, to say the least, ambiguous. None more so than the category of the boundary....the boundary is an impoverished, elusive kind of entity, scarcely there at all. But this elusive quality appears to be in direct relation to the analytical work that we demand of boundaries, for without the boundary there is no clear demarcation, no sorting out of this from that. If only we could measure better, calculate better; *see* better, restore the boundary to its proper place then order and clarity would ensue (italics in original).

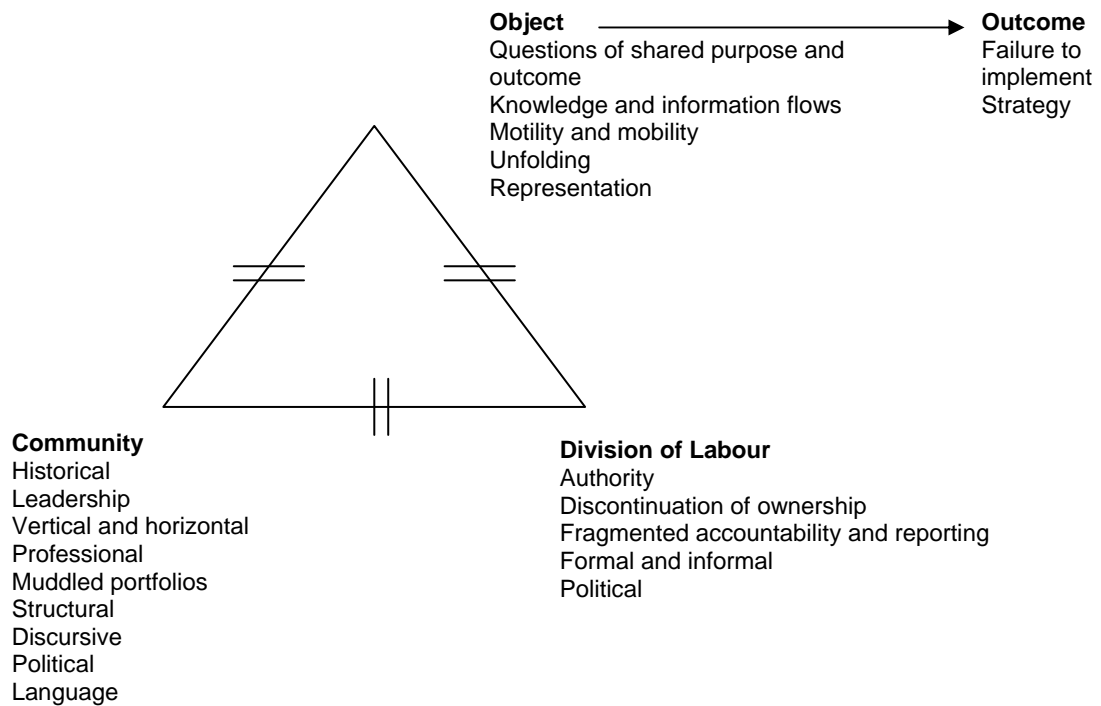
The foregoing sections have opened up some conceptualisations away from boundaries as distinct organisational, professional, or systems 'edges' that can be crossed - towards a spatial, folding account to facilitate an exploration of the 'elusive' quality described by Brown and Middleton (above). In the previous two chapters I

identified tensions and barriers to integrated organisational working and learning, many of which were spatial or temporal in origin. I will now, as before, subject my reading of the data to a CHAT contradiction and an ANT translation account to shake out as broad and deep an understanding that can be afforded from both.

7.7.1 Crossing Boundaries: A Contradiction Account

In chapter four (section 4.6.3) I produced the organisational sub activity system in relation to crossing barriers focusing on ‘community’, ‘object’, and ‘division of labour’ to draw out the horizontal and vertical spaces and boundaries through which the strategy had to cross. I will now replicate it in Figure 14 (below) but with the addition of system contradictions as informed by the discussion above. In chapter eight (section 8.1.1, Figure 15) I will integrate the above sub activity system with those in chapters five and six to provide a composite reading of the sub research questions and the identified contradictions in organisational working, learning, and boundary crossing.

Figure 14 Contradictions: Organisational Boundaries Sub Activity System



As before, I will now consider an ANT translation account to critique and challenge the above CHAT findings.

7.7.2 Crossing Boundaries: A Translation Account

According to Candea (2009: 1):

[ANT] rescues a more dynamic version of place from the premature foreclosure of approaches in which the relevant (political) actors and the relevant (political) issues are known in advance.

In Chapters five and six I followed a multiplicity of connections and traces centred on the 'actors' that followed the object(ive) and although the 'relevant' actors and issues were known and defined, and indeed acknowledged in advance at corporate strategic level, there appeared to be a covert groundswell of resistance to an integrated cross cutting approach. ANT allows a commitment to open-endedness and the possibility of alternative assemblages - so how might an ANT theory of place and space recast our understanding of the connections that are not made and the traces that are not followed? In an attempt to 'resist the temptation of running with connections that 'matter' at the expense of mere blanks' (Candea, 2009:7) and, as this is a symmetrical account, I will now focus on the strategy itself as a blank object (section 7.3.2) in an attempt to unravel its demise.

Throughout the life of the strategy, I undertook numerous interviews and on site participation in many of the formal and informal meetings regarding the proposed implementation of the strategy and witnessed many 'lumps' in the otherwise corporately black boxed flow of its development. According to Molotch (2009: 1):

...an object comes to be but, as always of course, with its own contingency; no black box, regardless of armour, is absolute.

The story began in 2005 with a multi-professional group sitting around a Boardroom table with a blank piece of paper, flipcharts, and notepads; tasked to produce an inter-professional educational strategy that would coordinate and connect the organisational intention to support a Scottish Government policy. This multi-professional group had no other connection to each other than to produce the strategy. The blank paper grew into a lengthy document that was sent for approval to the Business Group. Over the

five years the strategy existed it was submitted for approval no less than seven times. The only time approval was forthcoming was in 2008 when there had been so much text removed that the original 102 pages had been scythed down to 7 (chapter one, section 1.6.2), perhaps reflecting Moltoch's (2009: 13) call to 'change the stuff and see who assembles'. By changing the stuff (the contentious text) the Business Group assembled in tenuous support, partly driven by the organisational power of the Medical Directorate, and a perceived threat that they would '*walk away completely and therefore take the support of all medics with them*' (MD1), if the strategy did not finally receive endorsement.

So why was the text contentious and where did it go? Tracing through all written versions of the strategy and the associated Business Group meeting reports (as detailed in chapter three, section 3.3.1, Table 7), it is difficult or impossible to connect the two. The formal written reports from the Business Group make no reference to areas of contention with the following being typical of the documentation:

The Business Group was pleased to receive the draft strategy and thank the project team for their hard work on its development.

Corporately then, all contention was simply elided from view but not formally challenged - or directly resolved. Shortly after, in 2009, when the Project Lead left the organisation the following remark was made by a member of the Business Group:

The work that was started can continue but just don't ever mention that strategy to me by name again. It is completely dead (DN1).

In chapter eight I will attempt to trace across all the information and data from the activity systems to try to explain why.

7.8 Summary

The question at the beginning of this chapter was - how does the organisation support a cross cutting work stream to fulfill organisational objectives? This chapter built on the previous two chapters in relation to working and learning to further explore the organisational intention to achieve effective cross cutting horizontal working. This was informed by the ANT concepts of spatiality, fractionality, fluidity, and topology and the somewhat shared CHAT and ANT concepts of borders, boundary crossing, and boundary objects. Boundary objects, such as knowledge, blank figures, and texts as genres were considered in an attempt to move from a container towards a folding / unfolding account. The following section built on previous discussions regarding representation and troubled the concept through enactment and performativity, noting apparent alignments of ANT to performativity and CHAT to representation. The foregoing conceptualisation of boundaries was then enhanced by an appreciation of metaphors, topologies and the material discursive nature of boundary drawing. Finally, I modelled the third sub activity system to denote a CHAT contradiction account and as before contrasted it with an ANT translation account. A key finding was around the need for the strategy to lose contentious text in order to traverse across the multiple boundaries of NHSX. In chapter eight I will review all preceding chapters to explore: the dilemmas of mobilising the policy, justify my further disturbance of the boundaries of ANT and CHAT, attempt to solve the riddle of who killed the Primary Care Strategy, and conclude by identifying both the contribution

that this study has made to my personal and professional knowledge. Finally, I will identify significant implications and recommendations for further educational research.

Chapter Eight – Re-Entangling the Activity Networks: Conclusions, Contributions to Knowledge, and Further Research

8.0 Introduction

I wish to begin this chapter by acknowledging my indebtedness to a recent article by Clay Spinuzzi (2007), titled '*Who Killed Rex? Tracing a Message Through Three Kinds of Network*'. Spinuzzi starts by setting the scene of the crime. Rex was a dog living in a back yard in Texas. On a warm sunny day Rex's owner called his local telephone company to report a fault. A few days later a technician opened the gate to investigate the problem. Rex spurred on by fear, or the prospect of freedom, darted past the startled technician and into the street. Three blocks away he was then struck by a car. 'Rex's lifeless body landed in the neighbour's flower garden – and at the periphery of three overlapping networks' (2007: 46), which were described in terms of ANT, CHAT, and technology. Here, in this study, the networks in question are ANT, CHAT, and a complex healthcare organisation, but instead of a lifeless dog there is now a lifeless inter-professional education strategy. So who killed it? Before attempting to answer this question it is worth briefly reviewing how we arrived at this final chapter.

Chapter one set out the purpose of this case study - to use a main focus of activity systems analysis, derived from cultural historical activity theory (CHAT), to explore, understand and describe how systemic contradictions within a complex organisation affect the development of an inter-professional strategy document from construction to implementation. To enrich this interpretation, ANT, in its various iterations, has been

held in dialogic tension as a point of comparison, contrast, and critique. In chapter two I disentangled CHAT and ANT as activity systems by undertaking a literature review pertaining to the iterative development of both, articulating both their similarities and differences. Chapters three and four set out the data collection, management, and analysis taking cognisance of issues relating to agency, ontology, and triangulation. Chapters five, six, and seven further analysed and interpreted the data with respect to working, learning, and boundary crossing. In this final chapter I will attempt to re-entangle the networks and reassemble all of the foregoing to facilitate a reading across NHSX as a system in its multiplicity. To enable this composite reading I will explore the dilemmas inherent in mobilising the policy and further disturb the boundaries of my two supporting ‘theories’. By reading the composite analysis within the variance in these theories I will attempt to answer the riddle of who killed the Primary Care Strategy. This, in turn, will enable me to outline the contribution of this study to knowledge, together with recommendations for further research. Finally I will acknowledge my own developmental journey as intricately intertwined with that of both the strategy and of NHSX.

8.1 Dilemmas of Mobilising the Policy

The stated corporate organisational ethos is one of connectivity, integration, collective learning, and joint working. On the surface NHSX has an agreed intention to achieve this in the shape of its Strategic Framework and Corporate Plan. And, as indicated by one of the Directors during interview, many of the necessary components are visible within the organisation to facilitate this achievement:

I think that the benefit of the organisation is that we still have practitioners, we have got researchers, we have got policy people, and we have got service people. We have got people from all different perspectives that can help to contribute to something like this, so it is not just something that is seen as an educational thing or a service thing, it actually brings in all the perspectives and blends it together, because you have the people round the table, and they steer and develop it (GP2).

So in the case of the disappearing strategy - what went wrong? By tracing the strategy through its five year lifespan this study has opened up questions regarding how NHSX achieves its stated intention of cross cutting functionality and a corporate learning culture despite the multiple complexities, the ebb and flow of professional engagement, the lack of corporate modularity, the geographic spread, the dispersed organisational identity (both overt and covert), and the inherent fragmentation. Read together, these issues give rise to a multi-dimensional question - how should NHSX learn to support, manage, and coordinate future inter-professional education strategies?

As before, I will begin with a CHAT contradiction and an ANT translation account, only this time I will collate the three areas of working, learning, and boundaries together to create a whole systems analysis and perspective. Once each element (of ANT and CHAT) has been completed I will attempt to read across both, and through doing so, identify salient differences that further understanding, interpretation, and analysis of the data. It is my anticipation that it is within and between these 'boundary' areas that issues for further research will become apparent.

8.1.1 CHAT Contradictions

In chapter one I set out the central research question of this study - how can activity systems analysis be used to understand the systemic contradictions that affect the development and implementation failure of an inter-professional education strategy within a complex healthcare organisation? There were four main sub research questions; three of which are outlined below and the fourth in section 8.4 relating to ANT and CHAT literature:

- How does the project team (subject) negotiate the circulating draft strategy (tools) through corporate working structures to achieve the required objective (object)?
- How do the rules (rules) affect the organisation's (community) ability to learn, develop, and implement educational strategy in an inter-professional context (object)?
- How does the organisation (community) support a cross cutting work stream (division of labour) to fulfil organisational objectives (object)?

The above questions were three of a possible six that were generated through using an organisational activity notation (chapter four, section 4.5, Table 17). The remaining three questions whilst not being used directly to generate sub activity systems were used as a reference to facilitate breadth and depth of consideration and interrogation of the data, as follows:

- How do the organisational rules (rules) affect the project team (subject) in achieving their objective (object)?
- How does the changing composition (division of labour) of the project team (subject) affect the achievement of their objective (object)?
- How does the organisation (community) support the developing draft strategy (tools) to be implemented (object)?

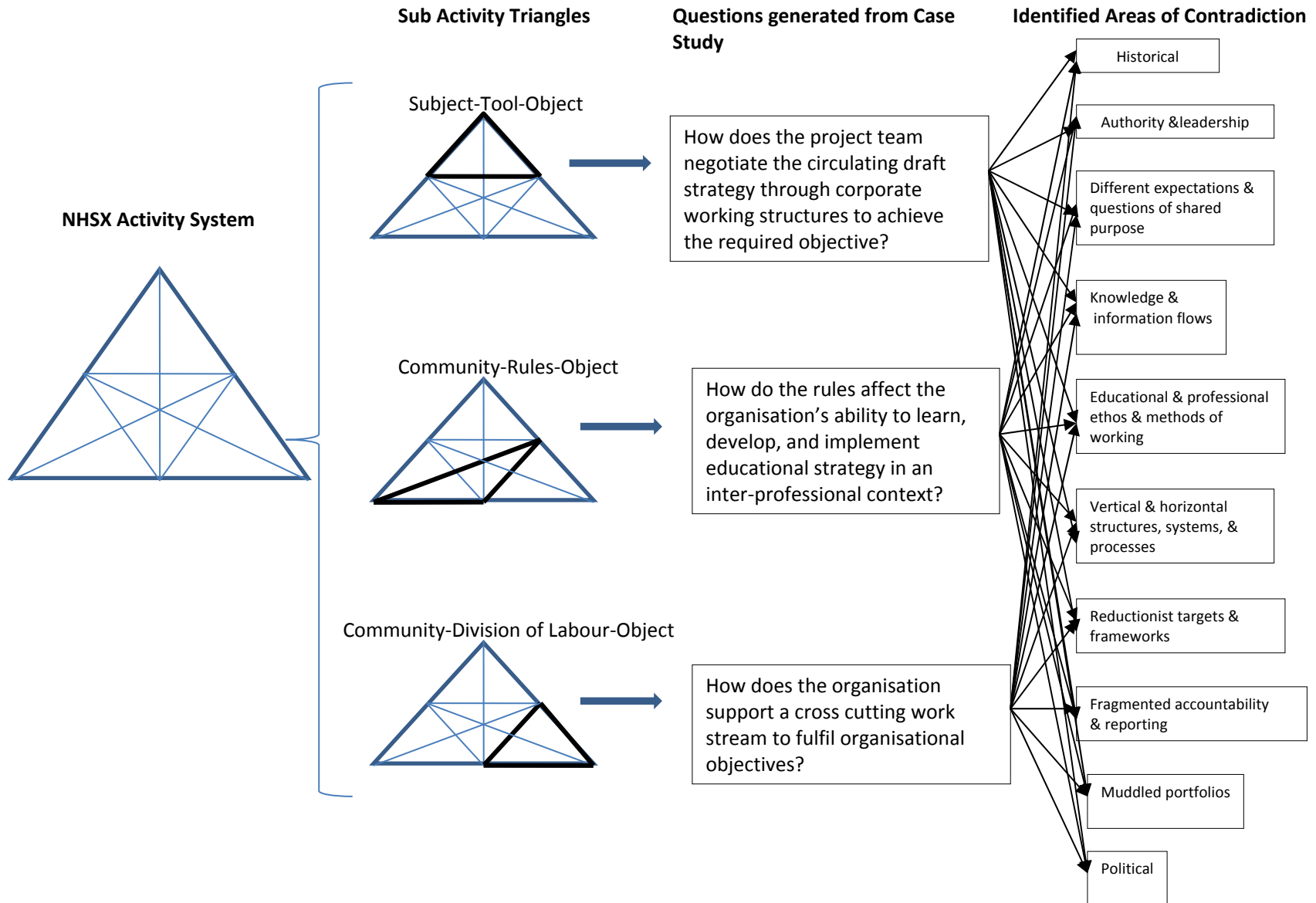
In chapter four (section 4.4) I identified and modelled the organisational activity system of NHSX, and, as this was very complex, I decomposed the system into individual organisational sub activity systems in relation to working, learning, and boundary crossing, guided by the questions set out above (section 4.6). Each of these subsystems was then reproduced in chapters five, six, and seven but with the addition of the CHAT contradictions identified from analysis of the data. Although in accordance with the rationale provided in CHAT literature - that this afforded smaller manageable units, and therefore an opportunity for more detailed investigation - I became increasingly aware that the boundaries were artificially imposed by me as researcher. So, although it was my initial intention when selecting this activity notation system to hold it as my main analytical focus, engagement with the ANT literature troubled this limited selection process and therefore pre and post ANT messiness and uncertainty began to creep fairly adamantly back into my neatly intended bounded analytical framing (see section 8.1.2). In this section, in order to read across the CHAT analysis and interpretation afforded by these subsystems I will employ an adaptation of Mwanza's (2001) model that maps the questions onto the activity systems and demonstrates the collective relationship between

the specified organisational sub activity systems, the generated questions, and the mesh of resultant contradictions (Figure 15, below). As Yamagata-Lynch (2010: 2) indicates:

Systemic contradictions exist beyond the instance of a single activity, and affect the interactions between components of the activity system

Therefore, although appearing more evident in some subsystems than others I have chosen to link each subsystem to all areas of contradiction into a veritable complex web of variant interconnectivity. By identifying and exposing these system contradictions this research has highlighted potential areas within NHSX for consideration, discussion, and / or further development.

Figure 15



8.1.2 ANT Translations: Flights and Folds

As stated in the previous section it was not my intention to incorporate ANT into my analysis, but the benefits became clearly apparent through immersion in the post ANT literature regarding fractionality, foldings, and mess. Also, CHAT mainly works within an assumption of anterior categories, which ANT is able to unsettle, therefore following the identified actors and entities through translation and post ANT accounts was key to pushing open an understanding of the data by revealing the fragmentation and partial connectedness of the strategy's narrativity (chapters five and six). In chapter seven I opened up the spaces through which the strategy travelled, and noted that spaces can be viewed in different ways with varying degrees of complexity; Euclidean, discursive, topological, as well as folded spaces of rhizomes and mycorrhizae that are uncertain in their assemblage (Due, 2007: 155-158). As Hetherington (2007: 200) states:

...spaces like texts are discursive. They can be read, and their effects of power and agency revealed.

In order to squeeze the widest level of analysis from the data and NHSX as an organisational system it is the relationship between the geometric, discursive, and topological, and the ways they are folded into time, place, and materiality that I want to focus my concluding ANT attention.

It should have been straightforward. NHSX delegated responsibility to the project team to create, develop, and implement the strategy. But it was more complex than that, for the

strategy to succeed it had to move through many complex spaces to enrol and mobilise support within the vertical silos and horizontal intentions and work practices of NHSX. As previously described, NHSX agreed the development of the strategy as a direct response to policy drivers from the Scottish Government. During the life of the strategy these policy drivers changed (*Delivering for Health, Better Health Better Care*) but the direction of travel towards enriching care within community healthcare settings stayed the same. This political drive was therefore detailed in the written ‘code’ of Scottish Government policy and reinterpreted and reflected in the written ‘code’ within NHSX corporate documents and the draft strategy.

What sense may be made of this code? It was certainly a narrative about time and place, that is, the iterative focus on community based healthcare as a shift away from the dominance of acute care settings. To some extent the previous chapters have looked at the interpretation of this coding and the dominant representations of the intention and outcome for the strategy that were signalled within NHSX Corporate Plans and Strategic Frameworks; for example, in chapters five, six, and seven, by contrasting the stated intentions of NHSX (integration, joint working, efficient cross cutting functionality) with some of the lumpiness within the analysed data (muddled portfolios, different expectations, fragmentation, reductionism). As such, NHSX, no longer a neutral space, was defined by a narrative that had been coded into corporately agreed statements and intentions. But, as demonstrated in previous chapters, this single narrative was complicated through its folding with various organisational subplots. In addition, these subplots were frequently subjected to multiple decoding that was mostly elided from formal corporate representation.

Even so, this is still thinking in terms of the Euclidean geometric space of NHSX organisational structures in which the materiality and agency of the strategy remained largely mute. Chapter seven highlighted that employing an ANT interpretation to compliment my geometrically aligned CHAT reading, could, according to Hetherington (1997: 205):

...open up lines of flight down which can be pursued topological connections between time, space, place and things that do not have a simple narrative or a simple spatiality.

In this study I have artificially restricted this flight to between 2001 and 2011, that is, from organisational inception until the present day although the main flight path would be between 2005 and 2009 (the life of the strategy).

The creation of the draft strategy can be thought of as a 'preface' to an inter-professional work stream that sat within a heterogeneous organisation that was required to make a place for it that was not previously there. The temporary space made within NHSX was, however, tumultuous and contested and the strategy was soon squeezed back out of it again. Other parallel work streams jostling for a place had similar prefaces all of which were arranged around the discourse of 'shifting the balance of care' in an attempt to align corporate objectives externally to Government policy (but questionably not internally with each other). Viewed through ANT, the travelling strategy had the power to rupture the representation of the smooth linearity of NHSX corporate development as it slipped between time and space down lines of flight that might not otherwise be apparent. In addition, as it started as a blank object the strategy brought into view the process of

'ordering' into static views of order. This included, for example, the project group, the Business Group, the directorates, and external partners (such as the Scottish Government), who, although all proposing collective overt intention, had covert and varying expectations regarding the effects of the strategy. This blankness as an object allowed for the introduction of an unintended topological folding effect into an intended organisational Euclidean space. And, by tracing the strategy document, some of these topological folds within NHSX became visible. According to Hetherington (1997: 214):

Folds weaken the fabric of the space allowing new, yet unfixed and more partial, perspectives to come to view.

The space of NHSX was full of folds, of multiple and partial connections continually pulling in many directions at once with no apparent centre of authority and leadership. Since the demise of the strategy NHSX has created the Education Development Directorate with the specific corporate intention to strengthen effective cross cutting functionality. However, the contribution of this directorate remains contested by the more established uni-professional structures. Finally, NHSX is a heterogeneous organisation that aims - in specific circumstances - to perform homogeneity in horizontal corporate identity and function. In this particular case, the strategy as object performed a level of homogeneity by creating folds in the edges of the many vertical silos but it never penetrated effectively into their centres.

The preceding section has provided a composite reading of some of the dilemmas inherent in mobilising the policy. The next section will go back to considering ANT and CHAT as part of a range of conceptual and methodological framings that employ socio-

material analyses to disturb further the boundaries of both theories and finalise my composite framing of who killed the Primary Care Strategy.

8.2 Solving the Riddle: Who Killed the Primary Care Strategy?

The answer to this question may be found by following three intersecting lines of inquiry:

- Who killed the strategy?
- Why and how was it killed?
- What were the conditions that would have allowed it to be a success?

With regard to the first of these, neither ANT nor CHAT is especially good at holding individuals responsible. In ANT, networks can be filled with traitors, but these traitors are not accountable for individual deceit or betrayal, as, according to Spinuzzi (207, 54):

...none can be condemned for their treachery because they are all seen as actants pursuing their own interests; there is no totalitarian centre by which to judge them, so there is no one with a special authority to demand accountability (italics inserted).

Similarly, CHAT is filled with contradictions, cultural-historical tensions that cause actors to flux, oppose each other, and change their practices. But such contradictions are seen as happening at the level of cultural-historical activity *as group movements* rather than at the level of individual responsibility. So how do we identify the culprit? In a

CHAT reading, we would look to the list of contradictions assembled in chapters five, six, and seven as depicted collectively in Figure 15 (section 8.1.1, above). And, as CHAT as a developmental account allows for multiplicity - we may point to the lack of central leadership, the lack of authority of the project team, the muddled portfolios and reporting, the historical structure and associated uni-professional ethos and methods of working, and the corporate rules and politics as having a hand in the demise of the strategy. To stop here would provide NHSX with a solution of sorts, and multiple areas to consider reviewing, in order to facilitate the effective creation and implementation of current and future inter-professional education strategies.

In an ANT reading, we would remove the privileged corporate standpoint, ordering, representations, and anterior categories, to expose a teeming mass of incoherencies, precarious and / or failed connections, and multiple oscillating allegiances and identities all of which continue to strive to enrol entities into their own activity systems to sediment their own particular world views in a vast complex mesh of partially interconnecting mess. Both CHAT and ANT would therefore arrive at an indictment of sorts – but one that is messy, ambivalent, and ambiguous – and not at the level of any individual.

So if no *individual* was responsible for the demise of the strategy was there a *collective* liability? The following quotation from Law (2009: 12) suggests a helpful and facilitative structure to explore collective activity:

Look to see what is being done. In particular, attend empirically to how it is being done: how the relations are being assembled and ordered to produce objects, subjects and appropriate locations. Second, wash away the assumption that there is a reality out there beyond practice that is independent, definitive, singular, coherent,

and prior to that practice. Ask, instead, how it is that such a world is done in practice, and how it manages to hold steady. Third, ask how this process works to delete the way in which this sense of a definite exterior world is being done, to wash away the practices and turn representations into windows on the world (emphases in original).

In chapter seven I explored the concepts of collateral realities (section 7.2.1), blank objects (section 7.3.2), and ontological difference (section 7.2.1). I will now reconsider them in turn, guided by the quotation above, in order to explore whether they can shed further light on why or how the strategy died.

As indicated in chapter four (section 4.8) the strategy lost its Champion (PL2) in October 2009. Additional strategy champions within the silos may have supported effective implementation but at best this was patchy and at worst non-existent. This may partly have been due to the competing ‘multiple worlds’ and tensions between the silos in NHSX and the collateral realities that held these respectively in place. In chapter seven (section 7.2.1) I suggested that the significance of these collateral realities, and their associated assemblages and orderings may be in direct proportion to their invisibility (Law, 2009). In NHSX - although covertly accepted and openly acknowledged - these orderings appeared to be overtly elided from corporate representation, therefore remaining ‘invisible’ and difficult to challenge explicitly through the formal decision making systems and processes. In addition, it would appear that politics, in various forms, had a central role to play. NHSX intended the strategy to fulfil priorities emerging from Scottish Government policy by aligning education towards health professionals based

within community settings. However, within NHSX, through the orderings and assemblages indicated above, the strategy became contested by the politics of the real – the various interpretations that different professional groupings placed on, for example, education, learning, and professional methods of working (see section 8.1.1, Figure 15 for a more detailed summary of areas). Multiple and competing realities and practices in NHSX were being performed but were collectively rendered singular, definitive, and coherent through corporate representation. This resulted in an inherent tension for the strategy in that it had to contend with parallel singular and multiple enactments of organisational systems.

In section 8.1.2 it was noted that the strategy as *blank object* revealed multiple foldings and partial connections in NHSX, but was the strategy blank enough to successfully traverse across silos or did it become tangled in a web of numerous conflicting inscriptions? Hetherington and Lee (2000) propose that blank objects are at the very heart of social ordering; they are the essential elements that allow for breaks and transitions between established series. They draw on Serres (1991) description of blank dominoes as artefacts which allow a series of actants to be halted or transformed, just as the blank piece in a game of dominoes allows a new series of pieces to be brought into play. Serres (1982: 225-226) provides the following analogy with a rugby match:

A ball is not an ordinary object, for it is what it is only if a subject holds it. Over there, on the ground, it is nothing; it is stupid; it has no meaning, no function and no value.

This is further interpreted by Brown and Middleton (2005: 708) as follows:

The ball by itself is nothing. It garners no meaning. But the ball in flight, the ball passed from hand to hand ‘weaves the collective’. It organises the bodies that move in relation to its anticipated path. To be a member of this collective is to make oneself become something in relation to the ball in flight, or to make oneself into an attribute of the passing ball.

As was the case with Serres rugby ball, the NHSX strategy as a blank object by itself was nothing – a mere bundle of papers with no meaning. But unlike the Serres rugby ball that was able to weave the collective, the strategy was not *sufficiently blank* to be able to successfully traverse across the uni-professional silos. Instead it quickly became inscribed and problematised by multiple sets of rules that constantly changed and challenged its passage and turned it into a place holder for complications.

As previously discussed, NHSX as a highly structured multi-professional space, has a corporate tendency to privilege ‘scientific’ positivist knowledge within a representational economy, albeit characterised by fragmented and multiple different ways of professional knowing. Therefore, it would appear that the strategy was also *insufficiently multiple*, in that although there were many performances of the strategy, through numerous different assemblages of people, text, and spaces, *ontological divergences and difficulties* became apparent when it tried to negotiate the different ways of knowing demonstrated across the many professional groupings. In a forthcoming article, I’Anson and Jasper (2011: 16) write about varied ordering practices and the resultant different kinds of knowing that become possible in different contexts and ask ‘what are the limits as regards approaches

that are open ended and emergent?’ This challenge is beginning to be felt within NHSX by the developing organisational educational research agenda that questions the historically accepted corporate forms of knowing (see section 8.3, below).

So, in summary, what may have been the conditions for the strategy’s success? The different ways of knowing in NHSX need to be acknowledged, supported, nurtured and developed out with a totalising relation of positivistic dominance. The realities within NHSX, whilst remaining multiple, could be assembled differently. Also, attention needs to focus on the negotiations, identifications and practices of those who move between different organisational, political, and educational spaces.

Finally, then, we must return to attempt to answer the riddle that headed this section – who killed the Primary Care Strategy? Like Rex, the strategy lay at the centre of three overlapping networks, in this case - ANT, CHAT, and NHSX. But, unlike in the case of Rex, there was no individual that could be held as culpable. Instead, from the foregoing discussion, it would appear that the blame did indeed sit at a collective level – in that it was the *ontological difference* of NHSX that killed the Primary Care Strategy.

8.3 Contributions to Knowledge and Practice

There are three key issues in the application of this study to developing knowledge and practice within NHSX that are adaptable to other complex healthcare organisations, that is, an awareness of the tensions and difficulties associated with:

- effective organisational change
- inter-professional collaboration and working
- implementation of educational initiatives in a complex health care environment

With regard to NHSX, the focus and contribution of these have threefold implication. Firstly, the findings of this study will be shared at Business Group level to facilitate informed discussion regarding strengthening the desired corporate intention to achieve effective horizontal working and learning. There is an immediate practical application for this in that NHSX are currently in the early stages of developing an Education Strategy with the intention to ‘provide an integrated framework to develop, support, deliver and evaluate education and workforce developments throughout NHSScotland.’ This thesis highlighted many issues and challenges that may be inherent to the effective development and implementation of this new strategy (summarised in section 8.1.1, Figure 15, page 247). Therefore, the following recommendations have already been acknowledged and agreed:

- increase collective accountability across the uni-professional systems
- challenge assumptions in language use
- acknowledge difference in professional logics and epistemologies
- build and nurture connections
- increase the opportunity for dialogue across professions

In addition, it is recognised that this is an iterative and incremental step process towards implementation and that corporate tensions will continue to challenge progress.

Secondly, the findings of this research will inform the development of organisational learning culture by contributing a different perspective to the current strategic debate regarding learning environments. This work has already commenced in various ways including:

- a scoping exercise of key corporate documents for use of language relating to learning. For example, 'learning environment', learning organisation', 'learning network', 'team learning', 'collective learning', 'workplace learning', '(in)formal learning', 'inter/intra-professional learning', 'inter/intra-disciplinary learning'. The resultant data is being utilised to generate discussion to explore the variant understandings and logics that different professional groups associate with the terms. This outputs from this discussion will inform the development of the Education Strategy.
- NHSX supports the development of online communities of practice in response to professional, workforce, or service priorities. This thesis will expanding the extant body of literature currently being reviewed within the organisation regarding the efficacy of communities of practice and will inform and support the exploration of potential alternatives.

Thirdly, the research methodology and theoretical frameworks that were adopted will be subject to peer scrutiny and review by being presented at an NHSX research seminar. The presentation and outcome from the seminar will be included in the NHSX developing educational research portfolio. NHSX has already adopted the CHAT based organisational activity model to inform inter-professional discussion regarding clinical supervision. Two workshops are scheduled (December 2011 and February 2012) with

representatives from NHS Territorial Boards to work through an activity based analysis in an inter-professional and inter-disciplinary context.

In addition, the findings from this study, although not generalisable to other complex organisational settings, expand the existing literature in a fairly innovative way to increase understanding of the complexities of inter-professional working within a complete system, as opposed to being limited to the artificial constructs of ‘working’ or ‘learning’.

Finally, although the above recommendations are focussed on a practical application within NHSX they are transferable to help illuminate and explore the three key concepts listed at the start of this section within other complex healthcare organisations.

8.4 Disturbing the Boundaries of Theories: Recommendations for Further Research

In chapter one (section 1) the fourth sub research question of this study was:

- How does ANT and CHAT literature contribute to an understanding of organisational activity systems?

Throughout the lifetime of this study I have found myself polarised towards ANT and then to CHAT and then back again repeatedly but with some respite sitting in the middle and trying to align to both. I now admit that I hold neither ANT nor CHAT as right or wrong, rather I see them both as partial. Also, by bringing the networks together, entangling them, and oscillating between them I have attempted to leverage the

differences between the theories without trying to resolve them or collapse them together; in order to reap the benefits of drawing on both fields. This was intended to enrich rather than reduce and simplify my analysis, as, according to Fenwick and Edwards (2010: 144):

Research methods are often designed to smooth away and simplify the messy lumpishness and most interesting complications of the world, in well intentioned efforts to *know* them and make things clear (italics in original).

In addition, again according to Fenwick and Edwards (2010: 156), an ANT researcher must be willing to:

...not only notice ambivalence, but to dwell within it throughout the analysis process. This means suspending a need for explanation and resisting desires to seek clear patterns, solutions, singularities, or other closure in the research.

However, all research studies must have some artificially imposed boundaries to enable a researcher to delineate the area of study and by 'cutting' around it there will be unavoidable Otherings and exclusionings. In order to give due consideration to what these may be and provide recommendations for undertaking further research we need to go back to the starting point of this study and the central research question - how can activity systems analysis be used to understand the systemic contradictions that affect the development and implementation failure of an inter-professional education strategy within a complex healthcare organisation?

I believe that the detailed methodology provided by the CHAT derived model that was used to identify the main activity system of NHSX , the associated subsystems, and the resultant contradictions is transferable to mapping other complex organisations, whether relating to healthcare or not. This initial mapping activity provides a focus for the study and suggests trails (contradictions) to follow. As acknowledged in previous sections, both ANT and CHAT in some of their iterations have a call to follow the actors / objects. But given the preceding quotations should this now include a call to follow the mess as well? By combining - but not collapsing - an ANT and CHAT reading of the data I believe I have achieved a productive tension that has added greatly to the ensuing analysis and understanding of both the mess and the ‘order’ of the system studied. Much of the literature still refers to early ANT and CHAT polarised ‘models’ and ‘theories’.

It is useful to acknowledge and understand these differences as being anchored within the genesis of both theories. However, as demonstrated throughout this study, both ANT and CHAT have not remained static but have continued to develop in recent years, arguably becoming increasingly similar in their most recent iterations. Therefore, it is in the current developing collective multiple CHAT activity systems, and the material semiotics of current ANT systems, with their increasingly blurry edges and tentative shared concepts that I wish to focus my attention and recommendations for further research.

I would therefore recommend that further research into complex organisational activity systems considers adopting Mwanza’s Eight Step Model (chapter three, section 3.4, Table 13), to identify initial activity systems and subsystems. This oversimplification would then be followed by the consideration of ANT material semiotic concepts of multiplicity, fluidity, mess, and openness to trouble boundaries and deepen and enrich

understanding, synthesis, and analysis of organisational data. In this way I believe that ANT and CHAT can provide a composite framing that encompasses constructive challenges to many representationalist framings currently being employed within the very broad area of organisational studies.

8.5 A Personal Note Revisited: The Author Translated Through Time and Space

At the beginning of this study (chapter one, section 1.2) I outlined my professional and academic profile alongside my evolving bias and assumptions as learner, participant, and researcher. This study has stretched over five years (2006-2011) during which I believe I have travelled (hurtled forward?) in all three roles, with ever changing intellectual conceptions of the material studied. I will therefore briefly review and situate my development within all three categories. Firstly, with regard to learning, this study has been framed around ANT and CHAT as socio-material forms of analysis but on commencing this EdD in 2006 I had never heard of either of them before in any context. Therefore as described in chapter six, I began an iterative development towards them, starting at the knowledge creating companies of Nonaka and Takeuchi, and the learning organisations of Senge, then onto learning networks and environments, and finally arriving through the door of ANT. ANT then became the main focus of my learning as I structured the early drafts of this study carefully around it. However, at the same time I became aware of CHAT literature and began to question my early ANT based assumptions. So the research focus, questions, and analysis became heavily dominated by CHAT. However, as my knowledge and understanding of both increased and I became more influenced by Law's material semiotics and Barad's performativity, I decided to

read across both and hold them in productive tension to create a ‘new’ reading of the data. Thus I arrived at this chapter and my summary regarding disturbing both theories (section 8.2) and the alternate readings they provide for solving the riddle of who killed the strategy (section 8.3). It is accurate, therefore, to say that from 2006 to 2011, I have been on a mental (in both senses of the word) rollercoaster between learning, adopting, and justifying new but completely alien concepts to me and discrediting and abandoning others. This notion of temporal development is succinctly demonstrated by Candea (2009: 2):

...this is perhaps where the question of *temporality* most clear comes to the fore. As fieldwork progresses, earlier connections disappear and avenues are foreclosed just as new ones open.

Secondly, as participant within NHSX and now as a member of the new Educational Development Directorate, I am in a position to put forward proposals to influence corporate decision making and priority setting based on the findings of this study (see section 8.3 for examples of directly related activity).

Finally, as researcher I have travelled from almost complete naivety to a level of skill and expertise I would not have thought possible or indeed probable in 2006. Starting as a positivist, and therefore similar to most of my professional colleagues, I have had to challenge my previous assumptions and argue with myself in relation to my reaching towards a post-humanist alternative. As stated in section 8.3, NHSX has a growing research identity and expertise and this has been invaluable in providing support, challenge, and opportunity for debate from a peer development group. Finally, a wealth

of patience, support, and understanding has been supplied by my doctoral Supervisor which has been a huge stimulus to continue my personal quest in learning.

8.6 Concluding Summary

The purpose of this case study was to use activity systems analysis, derived from cultural historical activity theory (CHAT), to explore, understand and describe how systemic contradictions within a complex organisation affect the development of an inter-professional strategy document from construction to implementation. By supplementing this CHAT reading with an ANT account it is my hope that these intentions have been realised in this study.

References

Ackroyd S, Batt R, Thompson P, and Tolbert PS (2005) [Eds] *The Oxford Handbook of Work and Organization* Oxford University Press Oxford

Ahearn L (2001) Language and Agency *Annual Review of Anthropology* 30, 109-137

Allert H, Markkanen H, and Richter C (2006) *Rethinking the Use of Ontologies in Learning*. Proceedings of the 2nd International Workshop on Learner-Oriented Knowledge Management and KM-Oriented Learning (LOKMOL 06), in conjunction with the First European Conference on Technology-Enhanced Learning (ECTEL 06) 115–125

Argyris C (2006) *Reasons and Rationalization: The Limits to Organizational Knowledge* Oxford University Press Oxford

Atkinson P and Delamont S (2005) Analytic Perspectives. In Denzin NK and Lincoln YS [Eds] *The Sage Handbook of Qualitative Research* (3rd edition) Sage Publications London 821-840

Auditor General (2009) *Scotland's Public Finances: Preparing for the Future* Auditor General for Scotland Edinburgh

Bakhtin MM (1982) *The Dialogic Imagination: Four Essays by M M Bakhtin* University of Texas Press Austin

Ball SJ (2000) What is Policy? Texts, Trajectories and Toolboxes. In Ball SJ [Ed] *The Sociology of Education: Major Writings and Key Debates (Major Themes in Education)* Routledge-Falmer London 1830-1840

Barab SA, Barnett M, Yamagata-Lynch L, Squire K, and Keating T (2002) Using Activity Theory to Understand the Systemic Tensions Characterizing a Technology Rich Introductory Astronomy Course *Mind, Culture, and Activity* 9 (2), 76-107

Barab SA and Kirshner D (2001) Guest Editors Introduction: Rethinking Methodology in the Learning Sciences *The Journal of the Learning Sciences* 10 (1), 5-15

Barad K (2003) Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter *Journal of Women in Culture and Society* 28 (3), 801-831

Barad K (2007) *Meeting the Universe Halfway; Quantum Physics and the Entanglement of Matter and Meaning* Duke University Press London

Beeby M and Booth C (2000) Networks and Inter-Organizational Learning: A Critical Review *The Learning Organization* 7 (2), 75-88

Beech N and Huxham C (2003) *Cycles of Identity in Inter-Organisational Collaboration* Working Paper N0 2003-10R University of Strathclyde Business School Glasgow

Beers PJ, Boshuizen HPA, Kirshner PA, and Gijssels WH (2005) Computer Support for Knowledge Construction in Collaborative Learning Environments *Computers in Human Behavior* 21 (4), 623-643

Blackler F (1993) Knowledge and the Theory of Organizations: Organizations as Activity Systems and the Reframing of Management *Journal of Management Studies* 30 (6), 863-884

Blackler F (2009) Cultural-Historical Activity Theory and Organization Studies. In Sannino A, Daniels H, and Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 19-39

Blunden A (2008) Social Movements, Science and History: A Response to Eugene Matusov. Available at <http://home.mira.net/~andy/works/matusov.htm> (last accessed 7th June 2011)

Bodker S (2009) Past Experiences and Recent Challenges in Participatory Design Research. In Sannino A, Daniels H, and Gutierrez [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 274-285

Brown SD and Middleton D (2005) The Baby as Virtual Object: Agency and Difference in a Neonatal Intensive Care Unit *Environment and Planning D: Society and Space* 23, 695-715

Buckler B (1998) Practical Steps towards a Learning Organization: Applying Academic Knowledge to Improvement and Innovation in Work Process *The Learning Organization* 5 (1), 15-23

Budhwar P, Crane A, Davies A, Delbridge R, Edwards T, Ezzamel M, Harris L, Ogbonna E, and Thomas R (2002) Organizing / Theorizing: Developments in Organization Theory and Practice *Management Research Review* 25 (8), 1-193

Callon M (1980) Struggles and Negotiations to Define What is Problematic and What is Not. In Knorr K, Krohn D, and Whitley R [Eds] *The Social Process of Scientific Investigations: Sociology of Sciences* (4), 197-219 Dordrecht Reidel

Callon M (1986a) The Sociology of Actor Network: The Case of Electric Vehicle. In Callon M, Law J, and Rip A [Eds] *Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World* MacMillan London 19-34

Callon M (1986b) Some Elements of a Sociology of Translations: Domestication of the Scallops and the Fishermen of St Brieuc Bay. In Law J [Ed] *Power, Action and Belief: A New Sociology of Knowledge?* Routledge and Keegan Paul London 133-161

Callon M (1991) Techno-Economic Networks and Irreversibility. In Law J [Ed] *A Sociology of Monsters? Essays on Power, Technology and Domination* Routledge London 132-161

Callon M and Latour B (1981) Unscrewing the Big Leviathans: How Do Actors Macrostructure Reality? In Knorr-Cetina K and Cicourel AV [Eds] *Advances in Social Theory and Methodology: Toward an Integration of Micro and Macro Sociologies* Routledge London 277-303

Callon M and Law J (1982) On Interests and Their Transformation: Enrolment and Counter Enrolment *Social Studies of Science* 12 (4), 615-625

Callon M and Law J (1995) Agency and the Hybrid Collectif *South Atlantic Quarterly* 94, 481-507

Callon M and Law J (2004) Introduction: Absence – Presence, Circulation, and Encountering in Complex Space *Environment and Planning D: Society and Space* 22 (1), 3-11

Callon M, Law J, and Rip A (1986) How to Study the Force of Science? In Callon M, Law J, and Rip [Eds] *Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World* MacMillan London 3-18

Campbell T and Cairns H (1994) Developing and Measuring the Learning Organization: From Buzz Words to Behaviours *Industrial and Commercial Training* 26 (7), 10-15

Candea M (2009) *Don't Go There! A Space for Absence in Anthropological Engagements with Place* Position Paper for the Panel 'After Networks: Spatio-

Temporal Analytics; Materialising the Subject: Phenomenological and Post-ANT
Objects in the Social Sciences CRESC International Conference, University of
Manchester, 26th-27th February 2009

Cantle F (2000) What is a 'Learning Organization' in General Practice? A Case Study
Health Services Management Research 13, 152-155

Cartwright P, Scott K and Stevens J (2001) *A Place to Learn: Developing a
Stimulating Learning Environment* Lewisham Arts and Library Services London

Casper MJ (1994) Reframing and Grounding Nonhuman Agency: What Makes a
Fetus an Agent? *American Behavioral Scientist* 37 (6), 839-856

Cole M and Engeström Y (1993) A Cultural Historical Approach to Distributed
Cognition. In Salomon G [Ed] *Distributed Cognitions: Psychological and
Educational Considerations* Cambridge University Press Cambridge 1-46

Cole M and Gajdamashko (2009) The Concept of Development in Cultural-Historical
Activity Theory: Vertical and Horizontal. In Sannino A, Daniels H, and Gutierrez KD
[Eds] *Learning and Expanding with Activity Theory* Cambridge University Press
Cambridge 129-143

Collins C (2008) 'Discourse' in Cultural-Historical Perspective: Critical Discourse
Analysis, CHAT, and the Study of Social Change. In van Oers B, Wademaker W,

Elbers E, and van der Veer R [Eds] *The Transformation of Learning; Advances in Cultural-Historical Activity Theory* Cambridge University Press Cambridge 242-272

Cordella A and Shaikh M (2006) *From Epistemology to Ontology: Challenging the Constructed 'Truth' of ANT* Working Paper Series No 143 Department of Information Systems, London School of Economics and Political Science London

Cresswell JW (2007) *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* Sage Publications London

Daniels H (2001) *Vygotsky and Pedagogy* Routledge-Falmer London

Daniels H (2008) Reflections on Points of Departure in the Development of Sociocultural and Activity Theory. In van Oers B, Wardekker W, Elbers E, and van der Veer R [Eds] *The Transformation of Learning: Advances in Cultural-Historical Activity Theory* Cambridge University Press Cambridge 58-75

Davies HTO and Nutley S (2000) Developing Learning Organisations in the New NHS *British Medical Journal* 320 (7240), 998-1002

de Corte E, Verschaffel L, Entwistle N and Merrienboer (2003) *Powerful Learning Environments: Unravelling Basic Components and Dimensions* Pergamon Amsterdam

de Kock A, Slegers P, and Voeten MJM (2004) New Learning and the Classification of Learning Environments in Secondary Education *Review of Educational Research* 74 (2), 141-170

de Laet M (2000) Patents, Travel, Space: Ethnographic Encounters with Objects in Transit *Environment and Planning D: Society and Space* 18 (2), 149-168

de Laet M and Mol A (2000) The Zimbabwe Bush Pump: Mechanics of a Fluid Technology *Social Studies of Science* 30 (2), 225-263

Deleuze G and Guattari F (1987) *A Thousand Plateaus: Capitalism and Schizophrenia* University of Minnesota Press Minneapolis

Denzin NK and Lincoln YS (2005a) Introduction: The Discipline and Practice of Qualitative Research. In Denzin NK and Lincoln YS [Eds] *The Sage Handbook of Qualitative Research* (3rd edition) Sage Publications London 1-32

Denzin NK and Lincoln YS (2005b) Paradigms and Perspectives in Contention. In Denzin NK and Lincoln YS [Eds] *The Sage Handbook of Qualitative Research* (3rd edition) Sage Publications London 183-190

Dewsbury DJ (2000) Performativity and the Event: Enacting a Philosophy of Difference *Environment and Planning D: Society and Space* 18, 473-496

Diez M, Soler C, Sureda M, and Visauta B (2004) Exploring the 'Learning Organization Model' in Multinational Companies: Preliminary Results According to the Perception of Spanish Managers *Journal of European Industrial Training* 29 (4), 292-311

Dodds P and Fletcher JD (2004) Opportunities for New 'Smart' Learning Environments Enabled by Next Generation Web Capabilities *Journal of Educational Multimedia and Hypermedia* 13 (4), 391-404

Due R (2007) *Deleuze* Polity Press Cambridge

Edwards A (2007) Relational Agency in Professional Practice: A CHAT Analysis *Actio: An International Journal of Human Activity Theory* 1, 1-17

Edwards A (2009) From the Systemic to the Relational: Relational Agency and Activity Theory. In Sannino A, Daniels H, and Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 197-211

Eisenberg JM (2000) Continuing Education Meets the Learning Organization: The Challenge of a Systems Approach to Patient Safety *Journal of Continuing Education in the Health Professions* 20 (4), 197-207

Engels F (1954) *Dialectics of Nature* Foreign Languages Publishing House Moscow

Engeström Y (1987) *Learning by Expanding: An Activity-Theoretical Approach to Developmental Research* Orienta-Konsultit Helsinki

Engeström Y (1992): *Interactive Expertise: Studies in Distributed Working Intelligence*.
University of Helsinki Department of Education Research Bulletin 83.

Engeström Y (1993) Developmental Studies of Work as a Test Bench of Activity Theory.
In Lave J and Chaiklin S [Eds] *Understanding Practice: Perspectives on Activity and Context* Cambridge University Press New York 64-103

Engeström Y (1996a) *Developmental Work Research as Educational Research: Looking Ten Years Back and Into the Zone of Proximal Development* Nordisk Pedagogik 16 (3), 131-143

Engeström Y (1996b) Interobjectivity, Ideality, and Dialectics *Mind, Culture, and Activity* 3 (4), 259-265

Engeström Y (2001) Expansive Learning at Work: Toward an Activity-Theoretical Reconceptualization *Journal of Education and Work* 14 (1), 133-156

Engeström Y (2004) New forms of learning in co-configuration work *Journal of Workplace Learning* 16 (1-2), 11-21

Engeström Y (2005) Knotworking to Create Collaborative Intentionality Capital in Fluid Organisational Fields. In Beyerlein MM, Beyerlein ST, and Kennedy FA [Eds] *Collaborative Capital: Creating Intangible Value* Elsevier Ltd Oxford 307-336

Engeström Y (2006a) Development, Movement and Agency: Breaking Away Into Mycorrhizae Activities. In Yamazumi K [Ed] *Building Activity Theory in Practice: Toward the Next Generation* Center for Human Activity Theory Kansai University Osaka 1-43

Engeström Y (2006b) Values, Rubbish and Workplace Learning. In Sawchuk P, Duarte N, and Elhammoumi M [Eds] *Critical Perspectives on Activity: Explorations across Learning, Work and Everyday Life* Cambridge University Press Cambridge 193-207

Engeström Y (2007) Putting Vygotsky to work: The change laboratory as an application of double stimulation. In Daniels H, Cole M, and Wertsch JV [Eds] *Cambridge Companion to Vygotsky*. Cambridge University Press Cambridge 363-382

Engeström Y (2008) *From Teams to Knots: Activity-Theoretical Studies of Collaboration and Learning at Work* Cambridge University Press Cambridge

Engeström Y (2009a) From Learning Environments and Implementation to Activity Systems and Expansive Learning *Actio: An International Journal of Human Activity Theory* 2, 17-33

Engeström Y (2009b) The Future of Activity Theory: A Rough Draft. In Sannino A, Daniels H, Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 303-328

Engeström Y, Engeström R, Karkkainen M (1995) Polcontextuality and Boundary Crossing in Expert Cognition: Learning and Problem Solving in Complex Work Activities *Learning and Instruction* 5, 319-336

Engeström Y, Engeström R, and Kerosuo H (2003) The Discursive Construction of Collaborative Care *Applied Linguistics* 24 (4), 286-315

Engeström Y, Engeström R, and Vähäaho T (1999) When the Center Does Not Hold: The Importance of Knotworking. In Chaiklin S, Hedegaard M, and Jensen UJ [Eds] *Activity Theory and Social Practice* Aarhus University Press Denmark 345-374

Engeström Y, Miettinen R, and Punamaki RL (1999) *Perspectives on Activity Theory* Cambridge University Press

Escandon A (2010) *Agency and Vygotskian Theory*. Video footage of a talk given in September 2010. Available at <http://www.vimeo.com/groups/39473/videos/15209886> (last accessed 23rd March 2011)

Fenwick T (2010) Re-Thinking the 'Thing': Sociomaterial Approaches to Understanding and Researching Learning in Work *Journal of Workplace Learning* 22 (1/2), 104-116

Fenwick T and Edwards R (2010) *Actor-Network Theory in Education* Routledge Oxon

Fitzpatrick G (2000) Centres, Peripheries, and Electronic Communication: Changing Work Practice Boundaries *Scandinavian Journal of Information Systems* 12, 115-148

Fontana A and Frey JH (2005) The Interview: From Neutral Stance to Political Involvement. In Denzin NK and Lincoln YS [Eds] *The Sage Handbook of Qualitative Research* (3rd edition) Sage Publications London 695-727

Foucault M (1979) *Discipline and Punish: The Birth of Prisons* Vintage New York

Gaskell J and Hepburn G (1998) The Course as Token: A Construction of / by Networks *Research in Science Education* 28 (1), 65-76

Geertz C (1973) *The Interpretation of Cultures* Basic Books New York 3-31

Gregson N and Rose G (2000) Taking Butler Elsewhere: Performativities, Spatialities and Subjectivities *Environment and Planning D: Society and Space* 18, 433-452

Gulikers JTM, Bastiaens TJ and Martens RI (2005) The Surplus Value of an Authentic Learning Environment *Computers in Human Behavior* 21 (3), 509-521

Hakkarainen K (2003) Can Cognitive Explanations be Eliminated? *Science and Education* 12, 671-689

Hanks W (1996) *Language and Communicative Practice* Westview Press Boulder

Haraway DJ (1991) *Simians, Cyborgs and Women: The Reinvention of Nature* Routledge New York

Helle M (2000) Disturbances and Contradictions as Tools for Understanding Work in the Newsroom *Scandinavian Journal of Information Systems* 12, 81-114

Henare A, Holbraad M, and Wastell S (2007) Introduction: Thinking Through Things. In Henare A, Holbraad M, and Wastell S [Eds] *Thinking Through Things: Theorising Artefacts Ethnographically* Routledge Oxon 1-31

Hennessy R (1993) *Materialist Feminism and the Politics of Discourse* Routledge New York

Herrington J and Oliver R (2000) An Instructional Design Framework for Authentic Learning Environments *Educational Technology, Research and Development* 48 (3), 23-48

Hetherington K (2007) Museum Topology and the Will to Connect *Journal of Material Culture* 2, 199-218

Hetherington K and Law J (2000) After Networks *Environment and Planning D: Society and Space* 18 (2), 127-132

Hetherington K and Lee N (2000) Social Order and the Blank Figure *Environment and Planning D: Society and Space* 18 (2), 169-184

Hong J, Yang N, and Cheng L (2007) Current Situation and Future Development of Activity Theory in China *Actio: An International Journal of Human Activity Theory* 1, 115-131

I'Anson J and Jasper A (forthcoming) 'Religion' in Educational Spaces. Knowing, Knowing Well, and Knowing Differently *Arts and Humanities in Higher Education* 1-19

Illeris K (2009) *International Perspectives on Competence Development* Routledge London

Ilyenkov E (1982) *The Dialectics of the Abstract and the Concrete in Marx's Capital* Progress Publishers Moscow

Järvelä S and Volet S (2004) Motivation in Real-Life, Dynamic, and Interactive Learning Environments: Stretching Constructs and Methodologies *European Psychologist* 9 (4). 193-197

Järvelä S, Volet SE, and Järvenoja H (2010) Research on Motivation in Collaborative Learning: Moving Beyond the Cognitive-Situative Divide and Combining Individual and Social Processes *Educational Psychologist* 45 (1), 15-27

Kagawa S and Moro Y (2009) Spinozic Reconsiderations of the Concept of Activity: Politico-Affective Process and Discursive Practice in Transitive Learning. In Sannino

A, Daniels H, and Gutierrez KD [Eds] *Learning and Expanding with Activity Theory*
Cambridge University Press Cambridge 176-193

Kaptelinin V (2005) The Object of Activity: Making Sense of the Sense Maker *Mind, Culture, and Activity* 12 (1), 4-18

Kaptelinin V and Nardi BA (2006) *Acting with Technology: Activity Theory and Interaction Design* MIT Press Cambridge

Kemmis S and McTaggart R (2005) Participatory Action Research: Communicative Action and the Public Sphere. In Denzin NK and Lincoln YS [Eds] *The Sage Handbook of Qualitative Research* (3rd edition) Sage Publications London 559-604

Kirshner PA (2005) Learning in Innovative Learning Environments *Computers in Human Behavior* 21 (4), 547-554

Knorr Cetina K (2001) Objectural Practice. In Schatzki TR, Knorr Cetina K, and Savigny EV [Eds] *The Practice Turn in Contemporary Theory* Routledge London 175-188

Lantolf JP and Genung P (2002) I'd Rather Switch Than Fight': An Activity-Theoretic Study of Power, Success, and Failure in a Foreign Language. In Kramsch C [Ed] *Language Acquisition and Language Socialization, Ecological Perspectives* Continuum London 175-196

- Latour B (1988) Drawing Things Together. In Lynch M and Woolgar S [Eds] *Representation in Scientific Practice* MIT Press Cambridge 19-68
- Latour B (1992) One Turn After the Social Turn. In McMullin E [Ed] *The Social Dimensions of Science* University of Notre Dame Press Notre Dame 272-294
- Latour B (1993a) Ethnography of a 'High-Tech' Case: About Aramis. In Lemonier P [Ed] *Technological Choices: Transformation in Material Cultures Since the Neolithic* Routledge New York 372-398
- Latour B (1993b) *We Have Never Been Modern* Harvester Wheatsheaf Hertfordshire
- Latour B (1994) On Technical Mediation: Philosophy, Sociology, Genealogy *Common Knowledge* 3 (2), 29-64
- Latour B (1995) Social Theory and the Study of Computerized Work Sites. In Orlikowski W, Walsham G, Jones M, and DeGross J [Eds] *Information Technology and Changes in Organizational Work* Chapman and Hall London 285-307
- Latour B (1996) *Aramis: Or the Love of Technology* Harvard University Press
London
- Latour B (1999a) On Recalling ANT. In Law J and Hassard J [Eds] *Actor Network Theory and After* Blackwell Oxford 15-25

Latour B (1999b) *Pandora's Hope: Essays on the Reality of Science Studies* Harvard University Press Cambridge

Latour B (2005) *Reassembling the Social: An Introduction to Actor-Network- Theory* Oxford University Press Oxford

Lave J and Wenger E (1991). *Situated Learning: Legitimate Peripheral Participation* Cambridge University Press Cambridge UK

Law J (1986) The Heterogeneity of Texts. In Callon M, Law J, and Rip A [Eds] *Mapping the Dynamics of Science and Technology; Sociology of Science in the Real World* Palgrave MacMillan 67-83

Law J (1992) Notes on the Theory of the Actor Network: Ordering, Strategy and Heterogeneity *Systems Practice* 5 (4), 379-393

Law J (1994) *Organising Modernity* Blackwell Oxford

Law J (2002) *Aircraft Stories: Decentering the Object in Technoscience* Duke University Press Durham

Law J (2004a) *After Method: Mess in Social Science Research* Routledge Oxon

Law J (2004b) *Matter-ing: Or How Might STS Contribute?* Online paper published by the Centre for Science Studies Lancaster University Lancaster. Available at

<http://www.comp.lancs.ac.uk/sociology/papers/law-matter-ing.pdf> (last accessed on 25th June 2011)

Law J (2008) Actor Network Theory and Material Semiotics. In Turner BS (Ed) *New Blackwell Companion to Social Theory* Wiley-Blackwell London 141-158

Law J (2009) *Collateral Realities* Version of 29th December 2009. Available at <http://heterogeneities.net/publications/Law2009CollateralRealities.pdf> (last accessed on 23rd June 2011)

Law J and Hassard J (1999) [Eds] *Actor Network Theory and After* Wiley-Blackwell Oxford

Law J and Singleton V (2005) Object Lessons *Organisations* 12 (3), 331-355

Lee NM and Brown SD (1994) Otherness and the Actor Network: The Undiscovered Continent *American Behavioural Scientist* 37 (6), 772-790

Lektorsky VA (2009) Mediation as a Means of Collective Activity. In Sannino A, Daniels H, and Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 75-87

Leont'ev AN (1977) Activity and Consciousness. In *Philosophy in the USSR: Problems of Dialectical Materialism* Progress Publishers Moscow 180 – 202.
Available at <http://www.marxists.org/archive/leontev/works/1977/leon1977.htm>
(last accessed on 16th January 2011)

Leont'ev AN (1978) *Activity, Consciousness, and Personality* Prentice Hall
Englewood Cliffs

Leont'ev AN (1981) The Problem of Activity in Psychology. In Wertsh JV [Ed] *The Concept of Activity in Soviet Psychology: An Introduction* M E Sharpe New York 37-71

Ludvigsen S, Lahn LF, and Havnes A (2003) Workplace Learning across Activity Systems: A Case Study of Sales Engineers. In Tuomi-Gröhn T and Engeström Y [Eds] *Between School and Work: New Perspectives on Transfer and Boundary Crossing* Pergamon Press Boston 291-310

Lundberg CC (1995) Learning in and by Organizations: three Conceptual Issues *International Journal of Organizational Analysis* 3 (1), 10-23

Machiavelli N and Bull G (2003) *The Prince* Penguin Classics London

Mackey D and Livsey S (2006) *Transforming Training: A Guide to Creating a Flexible Learning Environment, The Rise of the Learning Architects* Kegan Page
London

Magee B (1978) *Talking Philosophy* Oxford University Press Oxford

Magee B (2001) *The Story of Philosophy* Dorling Kindersley Limited London

Makoni SB and Pennycook A (2006) Disinventing and Reconstituting Languages. In

Makoni SB and Pennycook A [Eds] *Disinventing and Reconstituting Languages*

Multilingual Matters Clevedon 1-41

Marken J (2006) An Application of Activity Theory: A Case of Global Training

Performance Improvement Quarterly 19 (2), 27-50

McGrail R (2008) Working with Substance: Actor Network Theory and the Modal

Weight of the Material. *Researching Philosophy and Technology* 12 (1) Available at

<http://scholar.lib.vt.edu/ejournals/SPT/v12n1/> (last accessed 5th June 2011)

Miettinen R (1997) *The Concept of Activity in the Analysis of Heterogeneous*

Networks in Innovation Process CSTT Workshop Paper 'Actor Network and After'

July 1997. Available at <http://communication.ucsd.edu/MCA/Paper/Reijo/Reijo.html>

(last accessed on 25th September 2010)

Miettinen R (1998) Object Construction and Networks in Research Work: The Case

of Research on Cellulose Degrading Enzymes *Social Studies of Science* 28 (3), 423-

463

Miettinen R (1999) The Riddle of Things: Activity Theory and Actor Network Theory as Approaches to Studying Innovations *Mind, Culture, and Activity* 6, 170-195

Miettinen R (2005) Object of Activity and Individual Motivation *Mind, Culture, and Activity* 12 (1), 52-69

Miettinen R (2006) Epistemology of Transformative Material Activity: John Dewey's Pragmatism and Cultural Historical Activity Theory *Journal for the Theory of Social Behavior* 36 (4), 389-408

Miettinen R (2009) Contradictions of High-Technology Capitalism and the Emergence of New Forms of Work. In Sannino A, Daniels H, and Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 160-175

Mol A (2002) *The Body Multiple: Ontology in Medical Practice* Duke University Press Durham

Mol A and Law J (1994) Regions, Networks and Fluids: Anaemia and Social Topology *Social Studies of Science* 24 (4), 641-671

Mol A and Law J (2005) Boundary Variations: An Introduction *Environment and Planning D: Society and Space* 23 (5), 637-642

Molotch H (2009) *Objects and the City* Paper for the Panel 'After Networks: Spatio-Temporal Analytics; Materialising the Subject: Phenomenological and Post-ANT Objects in the Social Sciences. CRESC International Conference, University of Manchester, 26th-27th February 2009

Morgan G (2006) *Images of Organisations* Sage London

Mwanza D (2001) *Where Theory Meets Practice: A Case for an Activity Theory Based Methodology to Guide Computer System Design*. In Proceedings of INTERACT 2001: Eighth IFIP TC 13 Conference on Human-Computer Interaction 9-13 July 2001, Tokyo, Japan

Nardi BA (2005) Objects of Desire: Power and Passion in Collaborative Activity *Mind, Culture, and Activity* 12 (1), 37-51

Nardi BA, Whittaker S, and Schwarz H (2002) NetWORKers and Their Activity in Intensional Networks *Computer Supported Cooperative Work* 11 (1-2), 205-242

NES (2009) *Corporate Plan 2009-10* NHS Education for Scotland Edinburgh

Nonaka I and Takeuchi H (1995) *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation* Oxford University Press Oxford

Oppenheim R (2007) Actor Network Theory and Anthropology after Science, Technology, and Society *Anthropological Theory* 7 (4), 471-493

Prawat RS (1999) Social Constructivism and the Process – Content Distinction as Viewed by Vygotsky and the Pragmatists *Mind, Culture, and Activity: An International Journal* 6 (4), 255-273

Rhodes RAW (2007) Understanding Governance: Ten Years On *Organization Studies* 28 (8), 1243-1264

Richardson L and St. Pierre EA (2005) Writing: A Method of Inquiry. In Denzin NK and Lincoln YS [Eds] *The Sage Handbook of Qualitative Research* (3rd edition) Sage Publications London 959-978

Rousse J (2001) Two Concepts of Practices. In Schatzki TR, Knorr Cetina K, and Savigny EV [Eds] *The Practice Turn in Contemporary Theory* Routledge London 189-198

Sawchuk P (2008) Lifelong Learning and Work as ‘Value’ Production: Combining Work and Learning Analysis from a Cultural Historical Perspective. In Livingstone DW, Mirchandani K, and Sawchuk P [Eds] *The Future of Lifelong Learning and Work: Critical Perspectives* Sense Publishers Rotterdam 73-83

Sawchuk P (2010a) Researching Workplace Learning: An Overview and Critique. In Malloch M, Cairns L, Evans K, and O’Connor B [Eds] *The International Handbook of Workplace Learning* Sage London 165-180

Sawchuk P (2010b) Reading Across Workplace Learning Research to Build Dialogue
Frontiers of Education in China 5 (3), 365-381

Sawchuk PH and Stetsenko A (2008) Sociological Understandings of Conduct for a
Noncanonical Activity Theory: Exploring Intersections and Complimentarities *Mind,
Culture, and Activity* 15, 339-360

Schatzki TR (2001) Introduction: Practice theory. In Schatzki TR, Knorr Cetina K,
and Savigny EV [Eds] *The Practice Turn in Contemporary Theory* Routledge London
1-14

Schieffelin EL (1998) Problematizing Performance. In Hughes-Freeland F [Ed]
Ritual, Performance, Media Routledge London 194-207

Scotland Act (1998) available at

http://www.uklegislation.hmso.gov.uk/acts/acts1998/ukpga_19980046_en_1

(last accessed on 4th July 2009)

Seaman J (2008) Adopting a Grounded Theory Approach to Cultural-Historical
Research: Conflicting Methodologies or Complimentary Methods? *International
Journal of Qualitative Methods* 7 (1), 1-17

SEHD (1999) *Learning Together* Scottish Executive Health Department Edinburgh

SEHD (2001) *A New Special Health Board for Education in NHS Scotland: Consultation (November 2001)* Scottish Executive Health Department Edinburgh

SEHD (2004) *NHS Service Reform (Scotland) Act*. Explanatory notes available at http://www.opsi.gov.uk/legislation/scotland/acts2004/en/aspn_20040007_en_1 (last accessed on 5th August 2005)

SEHD (2005) *Delivering for Health* Scottish Executive Health Department Edinburgh

Senge PM (1992) Building Learning Organizations: The Real Message of the Quality Movement *Journal of Quality and Participation* 15 (2), 30-36

Senge PM (1994) *The Fifth Discipline: The Art and Practice of the Learning Organisation* Doubleday London

Serres M (1982) *The Parasite* John Hopkins University Press Baltimore

Serres M (1991) *Rome: The Book of Foundations* Stanford University Press Stanford

Serres M and Latour B (1995) *Conversations on Science, Culture and Time: Michel Serres Interviewed by Bruno Latour (Studies in Literature and Science)* University of Michigan Press

SGHD (2007) *Better Health Better Care* Scottish Government Health Department Edinburgh

SGHD (2010) *Collective Assessment of NHSScotland Special Health Boards* Scottish Government Health Department Edinburgh

Sharma B (2005) Local Government Organization on its journey to Becoming a Learning Organization *Business Process Management Journal* 11 (4), 388-402

Simpson B and Carroll B (2005) 'Role' as Boundary Object in the Identity Construction Process Working Paper series, Paper No 2005-06 University of Strathclyde Business School

Solomon N (2001) Workplace Learning as a Cultural Technology *New Directions for Adult and Continuing Education* 92 (Winter), 41-51

Sørensen E (2007a) The Time of Materiality *Qualitative Social Research* 8 (1)
Available at <http://www.qualitative-research.net/index.php/fqs/article/view/207> (last accessed on 12th April 2011)

Sørensen E (2007b) STS Goes to School: Spatial Imaginaries of Technology, Knowledge and Presence *Critical Social Studies* 2, 15-27

Spinuzzi C (2003) *Tracing Genres Through Organisations: A Sociocultural Approach to Information Design* MIT Press Cambridge

Spinuzzi C (2007) Who Killed Rex? Tracing a Message through Three Kinds of Networks. In Zachry M and Thralls C [Eds] *Communicative Practices in Workplaces*

and the Professions: Cultural Perspectives on the Regulation of Discourse and Organizations Baywood Publishing Company New York 45-66

Spinuzzi C (2008) *Network: Theorizing Knowledge Work in Telecommunications* Cambridge University Press New York

Stake RE (2005) Qualitative Case Studies. In Denzin NK and Lincoln YS [Eds] *The Sage Handbook of Qualitative Research* (3rd edition) Sage Publications London 443-466

Star SL (1991) Power, Technologies and the Phenomenology of Conventions: On Being Allergic to Onions. In Law J [Ed] *A Sociology of Monsters? Essays on Power, Technology and Domination* Sociological Review Monograph Routledge London 22-56

Star SL and Griesemer JR (1989) Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39 *Social Studies of Science* 19 (4), 387-420

Stetsenko A and Arievitch IM (2004) The Self in Cultural-Historical Activity Theory: Reclaiming the Unity of Social and Individual Dimensions of Human Development *Theory and Psychology* 14 (4), 475-503

Strauss A (1993) *Continual Permutations of Action* Aldine Transaction New York

Stronach I, Corbin B, McNamara O, Stark S, and Warne T (2002) Towards an Uncertain Politics of Professionalism: Teacher and Nurse Identities in Flux *Journal of Education Policy* 17 (1), 109-138

Swidler A (2001) What Anchors Cultural Practices. In Schatzki TR, Knorr Cetina K, and Savigny EV [Eds] *The Practice Turn in Contemporary Theory* Routledge London 74-93

Taylor JR (2009) The Communicative Construction of Community: Authority and Organising. In Sannino A, Daniels H, and Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 228-239

Thorne SL (2000) *Beyond Bounded Activity Systems: Heterogeneous Cultures in Instructional Uses of Persistent Conversation*. The Proceedings of the 33rd Hawaii International Conference on Systems Science. New York: IEEE Press Available at http://language.la.psu.edu/~thorne/Thorne_HICSS2000.pdf (last accessed on 13th March 2011)

Thorne SL (2004) Cultural Historical Activity Theory and the Object of Innovation. In van Esch K and St John O [Eds] *New Insights into Foreign Language Learning and Teaching* Peter Lang Frankfurt Germany 51-70. Available at <http://language.la.psu.edu/~thorne/Thorne2004.pdf> (last accessed on 13th March 2011)

Thorne SL (2005) Epistemology, Politics, and Ethics in Sociocultural Theory
The Modern Language Journal 89 (iii), 393-409. Available at
http://language.la.psu.edu/~thorne/Thorne_MLJ89_2005.pdf (last accessed on 13th
March 2011)

Thorne SL and Lantolf JP (2006) A Linguistics of Communicative Activity. In
Makoni S and Pennycook A [Eds] *Disinventing and Reconstituting Languages*
Multilingual Matters Clevedon 170-195

Thrift N (2000) Afterwords *Environment and Planning: Society and Space* 18, 213-
253

Timpson J (1998) The NHS as a Learning Organization: Aspirations Beyond the
Rainbow? *Journal of Nursing Management* 6 (5), 261-274

Townley B (1994) *Reframing Human Resource Management: Power, Ethics and the
Subject at Work* Sage Publications London

Tsoukas H (2003) New Times, Fresh Challenges: Reflections on the Past and Future
of Organisational Theory. In Tsoukas H and Knudsen C [Eds] *The Oxford Handbook
of Organizational Theory* Oxford University Press Oxford 607-622

Tsoukas H and Knudsen C (2003) [Eds] *The Oxford Handbook of Organizational
Theory* Oxford University Press Oxford

Tuomi-Gröhn T, Engeström Y, and Young M (2003) From Transfer to Boundary Crossing between School and Work as a Tool for Developing Vocational Education: An Introduction. In Tuomi-Gröhn T and Engeström Y [Eds] *Between School and Work: New Perspectives on Transfer and Boundary Crossing* Pergamon Boston 1-15

Turner S (2001) Throwing Out the Tacit Rule Book: Learning and Practices. In Schatzki TR, Knorr Cetina K, and Savigny EV [Eds] *The Practice Turn in Contemporary Theory* Routledge London 120-130

van der Vere R and Valsiner J (1991) *Understanding Vygotsky: A Quest for Synthesis* Blackwell Oxford

van Oers B (2008) Learning and Learning Theory from a Cultural-Historical Point of View. In van Oers B, Wardekker W, Elbers E, and van der Veer R [Eds] *The Transformation of Learning: Advances in Cultural-Historical Activity Theory* Cambridge University Press Cambridge 3-12

Virkkunen J (2009) Two Theories of Organizational Knowledge Creation. In Sannino A, Daniels H, Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 144-159

Viveiros de Castro E (1998) *Cosmological Perspectivism in Amazonia and Elsewhere*, Four Lectures delivered 17th February-10th March at the Department of Social Anthropology, University of Cambridge. Quoted in Henare A, Holbraad M,

and Wastell S (2007) [Eds] *Thinking Through Things: Theorising Artefacts*
Ethnographically Routledge Oxon 9

Volosinov VN (1986) *Marxism and the Philosophy of Language* Harvard University
Press Cambridge

Wang CL and Ahmed PK (2003) Organizational Learning: A Critical Review *The*
Learning Organization 10 (1), 8-17

Wasson B, Ludvigsen S and Hoppe U (2003) *Designing for Change in Networked*
Learning Environments: Proceedings of the International Conference on Computer
Support for Collaborative Learning 2003 Kluwer Academic Dordrecht

Wegerif R (2008) Reason and Dialogue in Education. In van Oers B, Wardekker W,
Elbers E, and van der Veer R [Eds] *The Transformation of Learning: Advances in*
Cultural-Historical Activity Theory Cambridge University Press Cambridge 273-286

Wenger E (1998) *Communities of Practice: Learning, Meaning, and Identity*.
Cambridge University Press Cambridge

Wenger E (2003) Communities of Practice and Social Learning Systems. In Nicolini
D, Gherardi S, and Yanow D [Eds] *Knowing in Organizations: A Practice Based*
Approach Sharpe New York 76-99

Wertsch JV (1991) *Voices of the Mind: A Sociocultural Approach to Mediated Action*
Harvard University Press Cambridge

Wertsch JV (1995) The Need for Action in Socio-Cultural Research. In Wertsch J, del
Rio P, and Alvarez A [Eds] *Sociocultural Studies of Mind* Cambridge University
Press New York 56-74

Wilson TD (2006) A Re-examination of Information Seeking Behaviour in the
Context of Activity Theory *Information Research* 11 (4) Available at
<http://informationr.net/ir/11-4/paper260.html> (last accessed on 11th November 2010)

Winsor D (2007) Using Texts to Manage Continuity and Change in an Activity
System. In Zachry M and Thralls C [Eds] *Communicative Practices in Workplaces
and the Professions: Cultural Perspectives on the Regulation of Discourse and
Organizations* Baywood Publishing Company New York

Woolgar S (1995) Representation, Cognition, and Self: What Hope for an Integration
of Psychology and Sociology. In Star SL [Ed] *Ecologies of Knowledge: Work and
Politics in Science and Technology* State University of New York Press New York
154-179

Wright D (2006) *Classroom Karma: Creating Positive Learning Environments in
Primary Schools* David Fulton London

Yamagata-Lynch LC (2010) *Activity Systems Analysis Methods: Understanding Complex Learning Environments* Springer New York

Yamazumi K (2007) Human Agency and Educational Research: A New Problem in Activity Theory. *Actio: An International Journal of Human Activity Theory* 1, 19-39

Yamazumi K (2009) Expansive Agency in Multi-Activity Collaboration. In Sannino A, Daniels H, and Gutierrez KD [Eds] *Learning and Expanding with Activity Theory* Cambridge University Press Cambridge 212-227

Yeo R (2002) Learning Within Organizations: Linking the Theoretical and Empirical Perspectives *Journal of Workplace Learning* 14 (3), 109-122

Yeo R (2003) Linking Organizational Learning to Organizational Performance and Success: Singapore Case Studies *Leadership and Organisation Development Journal* 24 (2), 70-83

Yeo R (2005) Revisiting the Roots of Learning Organization: A Synthesis of the Learning Organization Literature *The Learning Organization* 12 (4), 369-382

Yeo R (2006a) Implementing Organizational Learning Initiatives: Integrating Three Levels of Learning *Development and Learning in Organizations* 20 (3), 10-12

Yeo R (2006b) Learning Institution to Learning Organization: kudos to Reflective Practitioners *Journal of European Industrial Training* 30 (5), 396-41

Appendix 1 Ethical Considerations

Ethics was subject to the University of Stirling, School of Education, research ethics scrutiny and the BERA¹⁴ (British Educational Research Association) code of ethics practice was adhered to. Ethical implications included:

1. Informing participants

All participants were informed of the intended aim of the study, the research questions and the process of the research. All participants signed a written consent form prior to interview and received a copy of their completed form. In addition, consent was discussed and agreed verbally immediately prior to interview. With regard to potential complaints – participants were informed of their rights and the process to follow.

2. Offers of confidentiality

All interview data has been rendered anonymous, and all potentially identifying information has been changed to protect identities.

3. Right to withdraw

All participants were informed of their right to withdraw from the study at any time and the right to refuse inclusion of their data.

¹⁴ BERA Revised Ethical Guidelines for Educational Research (2004) available at <http://www.bera.ac.uk/files/guidelines/ethical1.pdf>

4. Data storage

All data was stored in compliance with the Data Protection Act 1998¹⁵

5. Outputs

Participants will not be identifiable to external sources but may be able to identify any transcribed data regarding themselves. All participants were made aware of this and consented to inclusion of their data.

¹⁵ Guide to the Data Protection Act 1998 available at http://www.ico.gov.uk/for_organisations/data_protection/the_guide.aspx