Actors’ inter-organisational information system use within buyer-supplier relationships: cases from UK retail

Thesis

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ACTORS’ INTER-ORGANISATIONAL INFORMATION SYSTEM USE WITHIN BUYER–SUPPLIER RELATIONSHIPS:
Cases from UK Retail

PhD
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Abstract

As companies focus on core activities, inter-organisational relationships assume greater importance. This places new demands on cross-boundary, inter-organisational relationships. It is often argued that information and communication technology enables the seamless and efficient flow of information between market-facing organisations and their suppliers. Moving beyond simple market mechanisms based on price, the efficiency and effectiveness of inter-organisational networks can be improved through information sharing. However, theory development has been driven largely by organisational-level, single-respondent surveys which have focused on testing competitive performance benefits. Less attention has been paid to how actors' practical inter-organisational information system usage may itself reshape buyer-supplier relationships. The purpose of this research is to extend theoretical and practical understanding through a fine-grained exploration of this phenomenon.

This study investigated the micro-dynamics of inter-organisational information system use in buyer-supplier relationships in four retail supply networks. This involved a detailed study of operational level behaviour in sixteen organisations. A novel combination of research methods was devised to gather data. A form of social change theory was used to analyse the relationship between agency and the use of technological artefacts. The series of accounts which were generated enabled comparison of actors' behaviours under different buyer-supplier conditions.

This thesis contributes to knowledge by highlighting how operational actors' creative and selective inter-organisational information system use contributes to system-level supply relationship patterns. Three types of adaptation behaviours were identified. These were labelled as patching ploys, local plots and collaborative conspiracies. Then, at a system-level, four modes of inter-organisational information system use were classified: conformist competition, system utilisation, creative collaboration and competitive innovation. An explanation of the conditions under which actors tend to adopt and engage in one mode rather than another is offered. Finally, the implications for management practice, for theory and for future research are discussed.
Preface

This thesis draws on work carried out by the author at The Open University Business School, under the supervision of Professor John Storey from October 2004 to July 2009. I declare that this thesis has not been submitted for any other qualification to this or any other university. The material is original, except where reference is made to other sources.

Accounts of some parts of this work have been published in the following papers:


- ‘Re-connecting supply networks: an alternative lens for the study of actors’ inter-organisational information system use in competitive inter-organisational learning’ paper presented to the Organisational Learning, Knowledge and Capabilities Conference, 26-28 April 2009 Vrije Universiteit, Amsterdam, The Netherlands.

- ‘Learning difficulties: collaborative inter-organisational information system use within UK retail supply networks’ developmental paper presented in the inter-organisational relations stream to the British Academy of Management Conference, 9–11 September 2008 at the University of Leeds, Harrogate, UK.

- ‘The politics of simulation: actors’ use of inter-organisational information systems’ paper presented to the Organisational Learning, Knowledge and Capabilities Conference, 28 - 30 April 2008 at the Danish School of Education, Copenhagen, Denmark.

- ‘Negotiating the inter-organisational information systems space’, paper presented to the Organisational Knowledge, Learning and Capabilities Conference, 20-22 March 2006 at the University of Warwick, Coventry, UK.


- ‘Acting outside the box: constructing and working with boundary-spanning information systems’ developmental paper presented in the knowledge and learning stream to the British Academy of Management Conference 12–14 September 2005 at the University of Oxford, UK.
Acknowledgements

Although it is my name that appears at the front of this work and, as such, I am clearly responsible for its limitations, this research would not have been possible without the financial support of the Economic and Social Research Council (ESRC) and the altruistic collaboration of an extensive network of industrial partners, academic colleagues, family and friends.

For the purpose of confidentiality, the names of the industrial participants from the sixteen organisations that gave so generously of their time have been anonymised. I hope that I have managed to communicate something of these individuals' expertise, professionalism and the sophisticated nature of their practice. I learnt a lot.

This thesis is the culmination of both formal and informal conversations with fellow students and academic colleagues at the Open University and beyond. My thinking has been shaped by insightful comments of faculty at the British Academy of Management (BAM) doctoral symposium (2005) and Advanced Institute of Management (AIM) International doctoral schools held at the University of Trento (2006) and Manchester Business School (2005). Mention need also be made of all those who took the time to engage with my emerging ideas as reviewers, discussants and round-table audiences. Attendance and comments at BAM and OLKC conference presentations encouraged, challenged and stimulated me. Special thanks go to members of BAM SIGIOR at the 2008 annual conference for allowing me the opportunity to test out and refine my ideas as this period of my research drew to a close. Last, but by no means least, I shall remain indebted to John Storey for his clear-sighted guidance.

Stephen knows I could not have travelled this far without his support. Daniel and Owen may not, although they have also provided me so much. My friends and wider family have demonstrated continued patience and forbearance. Also, thanks are due to the professional services of an array of school, child-care and nursery-care providers. Thank you all.
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Chapter 1  Setting the Scene

1.1 Introduction

The aim of this thesis is to deepen understanding of actors' inter-organisational information system use within buyer-supplier relationships. The particular focus will be upon retail organisations and their suppliers, but many of the general principles extend also into other sectors.

Inter-organisational relations have become an issue of increased importance for a number of reasons. With the rise in outsourcing the need for inter-organisational co-ordination has increased. During the past two decades it has been noted that many companies have focused their energies and resources on core activities while outsourcing perceived subsidiary activities (Kirchmaier, 2003; Richter, 1997; Ruigrok et al., 1999). This then inevitably necessitates more cross-boundary working. Where this extends over an extensive range of activities the resulting organisational form may be described as a 'network resourced organisation' (Gulati, 2007). Large, complex, retailing organisations have in a sense led the way in developing this form as they tend to rely heavily on a very large array of external sources and their relationships with them have become more complex and sophisticated in recent years. Moreover, retailers have also pioneered practice in the use of inter-organisational information systems as a means to gain value from these relationships. But, the nature of the resulting relationships in practice at the operational level is very much under explored.

On the one hand, it is argued that inter-organisational information system use enables the seamless and efficient flow of information, and improves responsiveness, profitability and competitive advantage (Barlow and Li, 2005; Ferdows et al., 2004;
Golden and Powell, 2004; Hadaya and Cassivi, 2007; Sahin and Powell Robinson, 2005). On the other hand, the idea that such arrangements would present difficulties in managing these 'clusters of firms or specialist units co-ordinated by market mechanisms instead of chains of command' was predicted by Miles and Snow (1992, p. 53). The use of information systems to enable co-ordination can be problematic. Even in intra-organisational settings, research suggests that information system use may be challenging (Mangan and Kelly, 2004; Newell et al., 2001; Schultze and Orlikowski, 2004; Vaast and Walsham, 2005).

I suggest that two features in particular require examination. The first is the nature of the technology and its use. The second is the kind of behaviours required to make such inter-organisational relations work.

With regard to technology, inter-organisational information systems have been defined as:

Information and management systems that transcend organisational boundaries via electronic linkages with trading partners to share data, information and business applications, provide the capabilities of electronic transactions including buying and selling products and services and facilitate communications and decision-making. (Eom, 2004, p. 4)

As Eom points out, technology provides ‘capabilities’ through the sharing of information; the actual use made of such capabilities in a cross-boundary working context is the focus of my interest. Most of the literature has attended to the potential benefits. Information sharing, it is argued, facilitates inter-organisational co-ordination and can improve the efficiency and effectiveness of inter-organisational relationships (Rabinovich et al., 2003; Wang and Seidmann, 1995). Their development, it has been argued, helps construct ‘strategic supply partnerships’. However, more critical studies have argued that many accounts within the strategic supply partnership literature tend to over-play the importance of good inter-personal relationships and down-play the difficulties of managing competing interests (Boddy et al., 1998, Boddy et al., 2000).
Some commentators have gone so far as to suggest that in retail the movement of information is as important as that of product (Burt and Sparks, 2003). Initiatives such as ‘Quick Response’, ‘Efficient Consumer Response’, ‘Continuous Replenishment Planning’ and ‘Collaborative Planning Forecasting and Replenishment’ suggest extensive movement towards more co-operative, buyer-supplier relationships. This is based on the premise that suppliers and retailers can derive shared benefits through collaborative action on cost reduction, efficiency savings and customer service improvements (Cooke, 1999; Giunipero et al., 2001). Such cooperative learning cannot, however, be taken for granted. For example, Whiteoak (1994) notes that ‘despite increasing willingness to work together, there remain many attitudes, prejudices and corporate cultures to be changed, and hidden agendas to be exposed, if the full range of possibilities are to be explored’ (p. 33). For instance, in clothing retail, two distinct potential change trajectories, one based on *ad hoc* and the other on *co-partnership* relationships, have been identified (Bruce and Moger, 1999). Much of the literature continues to suggest that inter-organisational network co-ordination has become a key source of competitive advantage, that the network is a strategic asset, and ‘organisational learning’ a critical means by which an individual firm may improve or consolidate its position (Gereffi et al., 2005). Increased codification which enables data exchange is an important feature of these inter-organisational change processes (Gereffi et al., 2005; Wrigley and Currah, 2006).

Advocates stress the need for retailers and suppliers to share consumer data. Improved planning, replenishment, promotional activities and customer service are anticipated as a result (McDonnell et al., 2005). Sophisticated analytic models it is argued offer the path to sustainable competitive advantage (Davenport and Harris, 2007). Such techniques rely upon ‘data-driven insights’ and a belief in ‘scientific retailing’ (Accenture, 2001). Yet a Department of Trade and Industry report found that in practice ICT use in the UK had generally failed to deliver the relative productivity improvement expected (DTI,
The authors speculate that this may be due either to a time lag between ICT-implementation and benefit realisation, or to as yet unidentified 'other reasons'. There have been calls for research that penetrates beneath the large-scale surveys and informal conversations to lift the 'unusually tight veil of secrecy' that surrounds inter-organisational information system use in large, public companies (Johnston and Lewin, 1996; Wrigley and Currah, 2006, p. 350).

Given the combination of extensive information technology use and an apparent under-realisation of the expected benefits it is perhaps surprising that, with the notable exception of a study of programmatic change within the German retail sector (Mouzas and Araujo, 2000) such scant attention has been paid to how actors use the inter-organisational information systems designed to underpin collaborative ventures. I suggest that insight into the actual use of such technology requires empirical investigation. The 'innovation' which occurs is not necessarily of a kind which promotes competitive advantage for all the firms involved in the exchange. I will show that multiple outcomes are possible and some of them are decidedly suboptimal.

With regard to the second of the factors referred to above, the 'behaviours required' have often been simply speculated about – and often in idealistic terms. Since the seminal work of Sako (1992) 'trust' has figured large in research related to inter-organisational relationships. But, the extent to which trust is actually a defining feature of inter-organisational information system use in competitive retail supply networks is far from evident (Webster, 1995). As we will see in the literature review in the following chapter, there have also been a growing number of studies exploring the behavioural aspects which reveal the complex political facets of such relationships. The nature of the dynamics requires empirical investigation. The research reported here will explore how power underpins the inter-firm 'networks' that emerge from 'the politics of the marketplace' (Thorelli, 1986, p. 38). Network forms are subject to competition (e.g. from different
vertical distribution systems) and to external shocks and cyclical development as the most
powerful participants attempt to bring more of the network under their control. Extensive
information system use between interdependent organisations for the purposes of co-
ordination is challenged by reputational concerns and the result can be a range of
unanticipated consequences.

A key question concerns the extent of conformity to a 'given' pre-designed system
versus relative degrees of creative adaptation, avoidance or even rejection. I suggest and
show that under different circumstances each of these behaviours will be evidenced.
Modes of adaptation include 'patching ploys' to make up for shortcomings in the formal
system through various forms of what Mars (1983) terms 'fiddling', and through to
creative adaptations of the system. A second dimension concerns the degree of co-
operation versus competition between actors who work for different firms but whom also
can gain joint benefit by working together across conventional organisational boundaries. I
draw upon Hamel's (1991) distinction between the ideal types of co-operative and
competitive collaboration, specifically the difference between 'value creation' and 'value
capture'. Central to Hamel's thesis is the concept of a 'collaborative membrane', that is, an
ongoing process of collaborative exchange. According to Hamel, partners' skills and
capabilities flow through access to people, facilities, documents and other forms of
knowledge. The extent to which and the direction in which this membrane is permeable, he
argues, determines relative learning. These collaborative membranes are particularly
permeable at the operational level of individuals' day-to-day interactions. This prompted
my determination to examine operational relationships.

Also focusing on the collaborative end of the spectrum, Knight and Pye (2005) use
a case study from health services to illustrate how buyers and suppliers can learn jointly to
innovate in a manner that impacts a network. Thus Knight and Pye, like Hamel before
them, emphasise the collaborative, joint-learning mode. I argue that, while this is certainly
one mode of inter-organisational behaviour, there are others which under different circumstances are more likely to prevail. These include, for example, opportunism and local plots in order to enable value capture.

Using these two cross-cutting dimensions of (a) co-operation through to competition and (b) from conformity to a given system through to creative change of that system, it is possible to draw the two-by-two figure shown in Figure 1. This figure uses the cross-cutting dimensions to help locate types of responses. As the thesis develops I will use the framework to reveal modes of inter-organisational behaviours, including, for example 'patching ploys', 'local plots' and 'collaborative conspiracies'. I will also show how the four buyer–supplier networks which were studied locate on this map.

![Cross-cutting Dimensions Diagram](https://example.com/cross-cutting-diagram.png)

Figure 1.1 The cross-cutting dimensions of co-operation versus competition and conformity/adaptation to a given system versus creative change of that system.

My purpose in this thesis is to describe and analyse inter-organisational behaviours in relation to this map of possibilities. I will show that the co-operative network learning mode described by Knight and Pye (2005) is just one type and that it is by no means a representative one. Having mapped and described how buyers and suppliers interact along these two dimensions of co-operation/competition and conformity/innovation, I will
illustrate and closely examine each of the patterns before moving on to explaining under what kinds of circumstance each mode tends to arise. The contribution of this thesis therefore is the creation, illustration and explanation of a model of behaviour patterns.

1.2 Research Questions

In seeking to tackle the above agenda my research study was constructed around three main research questions. These were:

- Within individual, interdependent buyer and supplier organisations, how did actors respond to and use inter-organisational information system artefacts that were, at least in part, 'given' to them?
- Between organisations, what new, creative, joint use did buyer and supplier actors make of these inter-organisational information systems?
- How did these sets of attitudes and behaviours begin to reshape supply relations and networks more widely – and with what consequences?

In order to tackle these three main questions I had to design a study that while ambitious enough to allow exploration of these themes and issues was also constrained enough to permit bounded data collection. The next subsection describes the scope of the study.

1.3 The scope of this new empirical work

The study was confined to the retail sector. Although the inter-organisational information systems I was researching allowed international network relations, for research purposes I restricted the scope of enquiry to the UK. This ensured that I could have direct access to relevant parties for interview and observation. I developed the study in a way which allowed me to examine issues of process and outcome at the individual, group and inter-organisational network level.
I designed the study to permit insight into a variety of domains. In the end I settled on food retail, timber, fashion and general merchandise retailing. I placed further boundaries on the scope of the project by selecting four main retailers as focal points — one each to reflect these four product domains. Sixteen interdependent buyer and supplier organisations were researched as part of these four networks. These were carefully selected so as to permit investigation of a number of key dynamics in buyer–supplier relationships: category development, collaborative planning forecasting and replenishment, web-enabled ordering, and in-store merchandising.

What is distinctive about this thesis is that, rather than assuming that inter-organisational information system use displayed only positive aspects, and that actors engaged either in co-operation or competition, it examines multiple behaviours of people working with, and in, such systems. The thesis identifies, describes, illustrates and classifies different types of inter-organisational buyer–supplier relations which use information system support. It also offers an explanation of the circumstances under which these types of behaviour emerge. It will show how actors at times compensate for failings and gaps in the systems: they make the system ‘work’ despite itself. At other times, their behaviours effect changes in the workings of the system to such an extent that they, in effect, create an alternative system.

In summary, people within organisations are situated within what appear to be relatively concrete and fixed systems – technological and organisational. But, on many occasions and in many ways, they do not blindly conform to, and simply enact given roles. The variety of responses is especially rich within the inter-organisational world of retail. The research investigates how actors — both buyers and suppliers — use inter-organisational information systems in practice.

This is a particularly important area of inter-organisational research for three reasons. Firstly, there have been calls in the strategic management literature for closer
examination of the underlying processes involved in the increasing integration of specialised value chain capabilities (Holcomb and Hitt, 2007). Secondly, the large-scale survey research methods favoured in the strategic inter-organisational relations literature have led to a relative neglect of the micro-dynamics of sociopolitical change. Thirdly, whilst economics-based models of inter-organisational exchange have produced valuable theoretical insights, they have also been the subject of particular critique. For instance, there has been a tendency to focus upon a narrow range of actors' inter-organisational behaviour, particularly opportunism (Williamson, 1985) on the one hand and trust (Sako, 1992). The objective of this thesis is to provide deeper insights into the micro-dynamics of actors' inter-organisational information system use. It seeks to identify types of behaviour and to help explain the use of these types and their consequences.

1.4 Organisation of the thesis

In Chapter 2, I review the literature to discover what is already known about inter-organisational information systems and also to consider the range of perspectives which have been brought to bear upon the identified research questions. I focus particularly upon more recent, empirical information system studies that suggest a more interpretive, grounded and critical view of information system use may be valuable. I use the literature to highlight some of the key epistemological problems faced by a study of socio-technical change.

Chapter 3 explains the combination of research tools and the analytical frame used to investigate the micro-dynamics of actors' inter-organisational information system use. This chapter discusses the research methods which I considered and how and why I chose the method which I eventually adopted.

Chapters 4, 5 and 6 present the findings. Chapter 4 reveals the various ways in which individual users filled in the gaps when inter-organisational information systems were incomplete so as to allow these systems to work. Chapter 5 identifies a behaviour
type, which I classify as a ‘collaborative conspiracies’. Here, I report on research which showed how inter-organisational buyer and supplier users conspired with each other creatively, sometimes for reasons of expediency and at other times to correct for system failures and gaps. In Chapter 6, the extent to which these individual and collective practices contributed to reshaped network relations is explored.

Chapter 7 synthesises the findings from the three preceding chapters. Three types of adaptation behaviour (patching ploys, local plots and collaborative conspiracies) are discussed and a behavioural typology presented. Case evidence in support of four system-level modes is reprised and an explanation of the conditions under which actors engage in one mode rather than another is offered.

Chapter 8 presents a summary of the key findings and discusses the implications for management practice, for theory and for future research.
The previous chapter described the need for new empirical work to investigate actors' inter-organisational information system use within buyer-supplier relationships. It also identified my three main research questions, namely:

- Within individual, interdependent buyer and supplier organisations, how did actors respond to and use inter-organisational information system artefacts that were, at least in part, 'given' to them?

- Between organisations, what new, creative, joint use did buyer and supplier actors make of these inter-organisational information systems?

- How did these sets of attitudes and behaviours begin to reshape supply relations and networks more widely – and with what consequences?

In this chapter I review literature relevant to these questions. The study of inter-organisational relations is concerned with 'the character and pattern, origins, rationale, and consequences' of relations between organisations (Cropper et al., 2008, p. 4). My thesis attends to inter-organisational relationships of a particular type: those vertical relationships between buyer and supplier organisations characterised by, it is claimed, relational commitment and trust which support relatively long-term decision-making horizons, strategic planning and information sharing. To support exploration of actors' inter-organisational information system use within these relationships, I draw upon key studies, books and reports from the supply management, organisational politics, and information
systems domains to evaluate which approaches and which knowledge can usefully be adopted for my purposes.

This chapter is organised in four parts. In the first part of this review I contextualise strategic supply partnerships within a wider discussion of different approaches to the study of supply management within the field of inter-organisational relations. I locate my approach in relation to alternatives such as transaction cost analysis, relational governance, interactional perspectives and the resource- and knowledge-based views. In so doing, I consider how inter-organisational relationships between a firm, its upstream suppliers and its downstream markets and customers have been conceptualised, and examine the implications of this for my unit of analysis.

Secondly, I review the research stream that explores co-operative and competitive inter-organisational processes. Here, I discuss the distinction Hamel (1991) draws between 'co-operative' and 'competitive' collaboration. I then turn to Ebers' (1999) development of this model and to more recent work relating to co-operative 'network learning' by Knight and Pye (2004, 2005, 2007). I argue that while this literature draws attention to co-operative inter-organisational relationship behaviour within networks, important questions remain relating to the range of behaviours actors may adopt, individually and collectively.

To develop my argument, it is necessary to examine the organisational politics literature. Following a review of key works in the development of this field, I focus particularly upon more recent empirical, information system studies which suggest that a more interpretive, grounded and critical view of information system use may be valuable. Further, I show that whilst a great deal of attention has been paid to the politics of information system development, actors' behaviours related to inter-organisational information systems use have received less research attention. Finally, I use the literature to highlight key epistemological issues involved in a study of socio-technical change.
2.1 Strategic supply partnerships in context

In the first part of this review I contextualise strategic partnerships in relation to different approaches to the study of supply management. From its roots in consumer marketing, the buyer–supplier relationship literature has evolved into the supply relations literature; with a commensurate shift in focus towards inter-organisational-level relations between customers and suppliers (Johnsen et al., 2008). It has long been known that supply relationships are inherently political and dynamic (Thorelli, 1986). In their comprehensive review, Grandori and Soda (1995) identify the combination of individually strong, distributed components and parties with largely opposing unilateral interests as a defining characteristic. Despite these somewhat problematic features, there has been increasing interest on the part of both academics and practitioners in the development, often selective, of a more collaborative approach to supply relations (Claro et al., 2006; Cousins and Spekman, 2003; Macbeth, 2002; Min et al. 2005; Mohr and Spekman, 1994; Mundambi and Helper, 1998; Yilmaz et al. 2005; Zhao and Cavusgil, 2006).

In addition to popular texts which set out the rhetoric of collaboration, often with a weak evidence base, there is an extensive empirical literature relating to this theme. In the main, strategic supply ‘partnerships’ are conceptualised as those vertical relationships between organisations premised upon commitment and trust. These relationships exhibit characteristics such as relatively long-term decision-making horizons, joint strategic planning and information sharing. Although the cosy connotation of the term has been questioned (Lamming, 1993), ‘partnership’ development is viewed by some as a change initiative within which the barriers to achieving effective and sustained implementation are waiting to be unpacked (Boddy et al., 1998; Cousins and Spekman, 2003; Stuart and McCutcheon, 1996). Yet empirical studies have found that even within exemplary cases, collaboration coexists alongside more ‘adversarial’ behaviours.
These tensions between competition and co-operation could be described as a distinctive feature of collaborative supply. For example, even in the US automotive industry, a sector whose practices have been held up as an exemplar of supply management, Mudambi and Helper (1998) found persistent, anti-collaborative behaviour, namely the exploitation of competitive weaknesses to achieve short-term gains, a desire to minimise dependency, and evidence of opportunistic switching to cheaper sources. Despite board-level support and the development of the prerequisite collaborative skills, price competition was still a significant threat to the management and development of supply initiatives. The operation of these relationships therefore merits further study.

As Figure 2.1 illustrates diagrammatically, the supply management domain is a fragmented one, made up of a number of perspectives with different units and levels of analysis. These range from dyadic relations, through supply chains to supply networks, which have been described as 'interconnected entities whose primary purpose is the procurement, use, and transformation of resources to provide packages of goods and services' (Harland et al., 2001, p. 22). To date, the predominant focus within much of the literature has been at the inter-organisational level (Cropper et al., 2008). According to this view, organisations behave as unitary, decision-making entities that rationally weigh the costs and benefits of alternative, organisational actions. There are a growing number of studies, however, that take a different approach. Notably, the work inspired by the Industrial Marketing and Purchasing group (IMP) that I review in section 2.1.3 offers an alternative conceptual framework. Here, buyers and suppliers are conceived as individual, sociopolitical actors. My study develops this perspective in relation to actors' inter-organisational information systems use and I say more about this in the next chapter. First, however, in order to elucidate the rationale for an enhanced approach in the subsections that follow, I appraise some of the most influential and perhaps more obvious theoretical
alternatives, including transaction cost analysis, relational governance, and resource- and knowledge-based views of the firm.

![Diagram of units of analyses within the supply management literature in the inter-organisational relations field.](image)

**Key**
B-S Buyer–supplier  
C-S Customer–supplier  
KBV Knowledge-based view  
IMP Industrial marketing and purchasing group  
RG Relational governance  
TCA Transaction cost analysis

**Figure 2.1** A diagrammatic representation of units of analyses within the supply management literature in the inter-organisational relations field.

### 2.1.1 Transaction cost analysis

The roots of transaction cost analysis lie in Coase’s (1937) work on ‘The nature of the firm’. The legal defaults, sanctions and procedures that govern the distinction between commercial and employment transactions produce a ‘constructive’ definition of the firm (Masten, 1988). The development of a distinction between market and hierarchical governance arrangements was proposed by Williamson (1981). Each form has its own
costs and benefits. Williamson’s work provides a basis upon which different exchange types may be linked to appropriate governance mechanisms. Specifically, Williamson distinguished between the direct costs of managing relations and the opportunity costs of an inferior governance decision. It is the interaction between these behavioural and transactional dimensions that accounts for the running costs of the system (i.e., transaction costs).

Williamson’s theory is predicated upon two types of behaviour, bounded rationality and opportunism. Behaviourally, it is assumed that organisational decisions-makers ‘have constraints on their cognitive capabilities and limits on their rationality’ (Rindfleisch and Heide, 1997, p. 31). Further, these decision-makers may act unscrupulously in the service of their own self-interests, what Williamson (1985) describes as ‘self-interest seeking with guile’ (Williamson, 1985, p. 45). This opportunism may be active and passive, ex-ante or ex-post. It includes lying, stealing, and cheating. It also refers to the deliberate, incomplete or distorted disclosure of information, breaking of contracts and renegotiating the terms. These behavioural dimensions are complemented by two transactional dimensions, namely asset specificity and uncertainty. Asset specificity refers to the extent to which the value of specific assets is limited outside the focal relationship. Uncertainty is subdivided further into behavioural uncertainty, where performance cannot easily be verified ex-post, and environmental uncertainty, which relates to the difficulties of specifying in advance the circumstance around an exchange.

Critics of transaction cost theory have questioned, among other aspects, the sharp distinction drawn between the ‘firm’ and the ‘market’, the assumption of equality between firms, the neglect of the link between opportunism and value and the analytic focus on an individual transaction (Cousins et al., 2008; Powell, 1990; Rindfleisch and Heide, 1997). I consider the latter two of these in more detail. Although transaction cost analysis does not assume that actors always behave opportunistically, there have been calls for the proper
labelling of relationship behaviours and for determination of the specific consequences of competing behavioural assumptions (Rindfleisch and Heide 1997). For example, these authors call for further research into the ‘types’ of opportunism and suggest that, in the absence of pre-existing norms, incentives may need to be developed that produce a ‘similarity of selfish interest’ (MacNeil, 1981 cited by Rindfleisch and Heide, 1997, p. 48). These behavioural aspects are matters of central concern to this thesis. A focus on the individual transaction, however, ignores the serial nature of strategic supply relations. This limitation makes transaction cost analysis an unsuitable framework for my study.

To better understand the interplay between these social and economic factors, it is necessary to incorporate understanding of the broader social architectures within which inter-organisational relations are conducted (Bradach and Eccles, 1989). To an extent, these aspects have been considered under the auspices of relational governance, so it is to that literature that I now turn.

2.1.2 Relational governance

Relational governance refers to those forms of social exchange facilitated by norms of flexibility, solidarity and information exchange (Poppo and Zenger, 2002). Relational approaches have been combined with transaction cost analysis to explain developments in vertical inter-organisational relations. These ‘hybrid’ forms range from contractual provision and equity arrangements to informal mechanisms, such as information sharing and joint planning (Rindfleisch and Heide, 1997). In the supply management literature, discussions of social exchange are couched often in terms of ‘trust’.

For example, building upon her seminal comparative research of customer–supplier relationships in Britain and Japan, Mari Sako (2000) suggests that trust may be viewed as an informal control mechanism. Sako identifies three different forms, namely contractual trust, competence trust and goodwill trust. Of these, it is goodwill trust which is considered
the most advanced. Goodwill trust rests on an open-ended commitment to take the initiative for mutual benefit while refraining from unfair advantage-taking. It is based upon consensus and on the principle of fairness. Relational governance forms based upon trust, so the argument goes, are more effective than contracts because they facilitate transaction cost reduction and enable continuous innovation and learning. Thus, high trust relations enable partners to exploit opportunities for mutual benefit. They act as a positive motivational force, driving efficiencies through joint problem solving, quality improvement and cost reduction, and through innovative production and management methods. These benefits are produced from what Sako describes as 'learning-by-transacting' (ibid., p. 93) and are facilitated by extensive interaction. The absence of opportunism is a necessary, if insufficient, precondition.

Sako suggests a number of ways in which trust may be improved. These include gift exchange and credible commitments. A customer can demonstrate such a commitment by providing its suppliers with technical assistance, knowledge and skills, particularly if it is not fully paid for these. Of particular relevance to my thesis, such credible commitments include information exchange. As Sako notes, 'sharing information facilitates co-ordination between organisations. But disclosing proprietary or confidential information to the other party exposes one's vulnerability. In this situation, a two-way flow of information reduces information asymmetry and, it is argued, reduces scope for opportunistic behaviour' (ibid., p. 101). Sako presents comparative, cross-national survey research evidence that tests the relationship between customer opportunism, competence distrust, goodwill trust and fairness (the basis of goodwill trust). Her findings show an independent, significant effect between credible commitments, enhanced trust and reduced opportunism. Specifically she states, 'It is the customers' provision of information, regardless of whether suppliers provide information to customers or not, which matters for enhancing trust, while
two-way information sharing (which can be interpreted as a credible commitment) is what matters for attenuating opportunism' (Sako, 2000, p. 105).

Two points in particular seem worthy of note here. While Poppo and Zenger (1998), in their study of information services, suggest that transaction cost analysis can be expanded beyond economics to include aspects of social interrelationships, as they acknowledge, a survey methodology fails either to capture the dynamics or, in their case, to distinguish the nature of this trust. Sako’s (2000) study goes some way towards addressing this second point yet her findings are also based upon a single-respondent survey-based questionnaire methodology and provide therefore a unilateral and one-dimensional view of relationship trust. There would appear also to be a curious conflict between the ideas of trust-based relational governance and the opportunistic behaviours depicted earlier in the chapter (s. 2.1.1). Indeed, a small number of more qualitatively inclined studies have begun to explore this dichotomy.

A study by Tsutomu and Goto (2005), for example, suggests that even in the Japanese context, co-operative inter-organisational relationships have characteristics which promote a shift to competitive relations and inter-organisational change. These authors argue further research is needed into the processes of co-operation and competition in inter-organisational relationships. In particular, the need for multi-level, process-oriented studies has been highlighted (Mollering, 2006). A more recent study carried out in the UK at the interface between the public and private sector found relational governance mechanisms characterised by interpersonal trust and amenable to management control (Zheng et al., 2008). Significantly, trust followed a fragile and incremental path that could weaken as well as strengthen. There is thus a need to widen these insights into the range of behavioural adaptation at organisational interstices.

Of course, dyadic-based theories such as transaction cost analysis and relational governance present a simplified view of inter-organisational relations. The interconnected
activities involved in the production of particular goods or services requires attention to supply networks

2.1.3 Interaction within ‘industrial’ supply networks

As others have commented, understanding inter-organisational relations and networks requires an appreciation of their distinct social and behavioural characteristics (Gulati, 1998; Powell, 1990). Industrial networks differ from social networks in that the links between social actors, their activities and their resources require equal weight (see for example, Gadde and Hakansson, 2001). These authors conceive of the network as a number of different entities which range from a single transaction, through buyer–supplier relationships, as a series of transactions with a particular supplier over time, to all the transactions a buying firm conducts with its supply base. Although the relative emphasis placed upon descriptive or more practical, managerial outcomes differs, these studies share a common unit of analysis and highlight the importance of information exchange for activity co-ordination (Gadde and Hakansson, 2001; Lamming et al., 2000).

The industrial network literature tends towards the descriptive and explanatory (Araujo and Easton, 1996). Extensive research by the Industrial Marketing and Purchasing group has shown buyer–supplier relationships to be both more durable and more dynamic than neoclassical economic market theories predicted (Ford, 1990; Gadde and Hakansson, 2001; Hakansson and Snehota, 1995; Hakansson and Waluszewski, 2004). These authors argue that changes in ‘the pattern of resources ... have been combined and embedded in highly integrated structures that stretch beyond the borders of companies and organisations’ (Hakansson and Waluszewski, 2004, p. 253). Unlike transaction cost analysis, the interaction model they propose enables the complex, multi-layered patterns of conflict, co-operation, power and dependence, through which buyer–supplier relationships are constructed over recurrent transaction episodes, to be examined (Hakansson and Snehota, 1995; Hakansson and Waluszewski, 2004). Again, these authors identify the
crucial role of informal and formalised information system links through which inter-organisational information flows (Gadde and Hakansson, 2001). Inspired by the interactional model, a second stream of literature adopts a more prescriptive, managerial perspective.

Authors of empirical studies influenced by this school have suggested a 'systematic approach' to the development and active management of multiple actors’ interests (see for example, Boddy et al., 1998). Suggestions include deliberate attempts to engineer supply relations to appropriate value (Cox, 1996) and, in similar vein, Christopher and Juttner (2000) suggest that differences in project management practices may explain some of the variability in strategic supply partnership success. Another, more extensive empirical study based on a mix of small-scale survey and semi-structured interview data identifies the nature of information and knowledge sharing as the most evident difference between inimitable, 'innovation-unique' and 'functional' supply network relations (Lamming et al. 2000).

In this study, those product networks classified as innovation-unique exhibited a high degree of information secrecy, which inhibited the exchange of information and knowledge. In complex functional networks, information management was difficult for reasons of scale. Investments in information technology were made in order to co-ordinate material flows. In these more 'mature' functional supply networks, cost transparency, shared staff, shared know-how and product technologies were evident. Regardless of network complexity, these authors claimed that in functional networks, the use of information technology was generally unproblematic – especially where complexity was low. In every network category, power was identified as an important factor in the extent of focal firm influence, with actors either 'managing' or, in circumstances where there were a number of large, evenly balanced firms, 'coping'. More recently, evidence of the coexistence of collaboration and competitive behaviour has been highlighted (Zerbini and
Castaldo, 2007). This has led some to voice scepticism about the level and the extent to which even strategically important supply network relations may be 'managed' (Golletto et al., 2007).

In particular, then, as in the relational governance literature, the importance of information exchange in supply networks is highlighted. Significantly, this literature explicitly identifies the coexistence of co-operative and competitive behaviour and, given complex organisational interrelationships, underlines the need for a cross-sectoral unit of analysis that goes beyond that of the inter-firm dyad (Gadde and Hakansson, 2001; Harland et al., 2001; Lamming et al., 2000). Questions are also raised about the possibilities of different types of political inter-organisational information system use, a subject to which I return. On the one hand, while the interaction perspective recognises the role individual actors play in network activities, this is limited to the control over resources.

2.1.4 From a resource- to a knowledge-based view

Knowledge-based theories of the firm regard specific 'human assets' such as those embedded in firm-specific routines, languages and skills as critical to firm performance (Barney, 1986). Such theories extend capability-based explanations for the boundaries and existence of firms. Particularly, they focus on how boundary choices influence the formation and transfer of capabilities and knowledge. For example, contrary to a transaction cost economic viewpoint, knowledge-based theorists argue that firm boundaries are determined not by the damage asset specificity does to market efficiency but by the improvements offered by hierarchy under these conditions. When valuable knowledge can be generated through the formation of firm-specific language and routines, so the argument goes, hierarchy is preferred. Although at least one of these authors has developed his views
since, Poppo and Zenger (1998) claimed that if the firm specificity of an activity was increased, managers were more likely to integrate. Others theorise that inter-organisational routines and linked value-creating capabilities extend beyond the firm (Holcomb and Hitt, 2007; Zollo et al., 2002).

Holcomb and Hitt (2007) argue that by linking value chain activities through intermediate markets, firms may gain access to valuable specialised capabilities and accrue value beyond that predicted by transaction-based governance models. Their approach combines transaction cost analysis with a resource-based view of the firm. These authors highlight two factors in particular that distinguish this ‘strategic outsourcing’ from arm’s-length strategic purchasing. Firstly, in strategic outsourcing, resources are transferred or exchanged with firms in intermediate markets, and secondly, it is through linkages with these exchange partners that access to specialised capabilities is provided.

While Holcomb and Hitt’s model of strategic outsourcing is appealing it is again focused predominantly at the inter-firm level. The assumption underlying their approach seems to be that the decision-makers within firms operate as homogeneous entities making rational (if bounded) production decisions. This is a relatively common supposition in the supply management literature and one which has been criticised (Emberson and Storey, 2006b). Moreover, Holcomb and Hitt (2007) suggest that it is the processes underlying specialised capability integration that warrant further examination to discover how firms integrate these specialised capabilities along the value chain.

It is necessary at this point to interject a note of caution. For, Miles and Snow (1992) warned that extension failures may occur in dynamic networks if organisational expertise becomes too narrow and an organisation’s role is assumed by other firms. Similarly, they suggest that network modification failures occur where exclusive relationships are formed with a limited number of suppliers. In other words, while

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1 See Nickerson and Zenger (2004).
competitively advantageous, strategic outsourcing may be of more benefit to one party than to the other. Despite these caveats, exploration of the possibilities of inter-organisational value creation through the formation of firm-specific language and routines would, as Holcomb and Hitt (2007) suggest, seem to present a particularly fruitful avenue for this research. In the next section of my review, therefore, I turn my attention to the wider inter-organisational literature related to inter-organisational processes, specifically the differentiation between value creation and value capture.

2.2 Co-operative and competitive inter-partner collaboration

Here, I review the research stream that explores the differences between co-operative and competitive inter-organisational learning processes. Specifically, I focus on the distinction Hamel (1991) draws between 'co-operative' and 'competitive' collaboration. I then turn to Ebers' (1999) development of this model and to more recent work relating to co-operative 'network learning' by Knight and Pye (2004, 2005, 2007). I argue that while this literature draws attention to the importance of individuals' co-operative engagement in operational-level inter-organisational relationship behaviour within networks, important questions remain relating to the range of behaviours actors may adopt, individually and collectively.

The dynamics of co-operation literature theorises the social processes and organisational behaviour that underlie alliance evolution (Bell et al., 2006; Brass et al., 2004; Ebers, 1999; Gulati, 1998). In this literature, these social and behavioural dynamics of collaborative inter-organisational processes are couched in terms of organisational learning. Specifically, the distinction between learning processes within 'competitive' and 'co-operative' collaborations provides useful insight into the possibilities of and distinctions between value creation and value capture.

In contrast to a more traditional concept of co-operation, Hamel's (1991) study introduces the idea of 'competitive collaboration'. In competitive collaboration, the internalisation of partners' skill is seen as the primary benefit. This occurs through two
basic inter-organisational learning processes: value creation and value appropriation (or capture). According to Hamel, the extent of value creation depends, firstly, upon whether or not the venture is sound, and secondly upon its efficacy – that is, on how well partners combine their complementary skills and resources to perform joint tasks. Within the bounds of particular trading agreements, Hamel suggests that access to partners’ skills and capabilities through the collaborative membrane of people, facilities, documents and other forms of knowledge facilitates the flow of skills and capabilities between organisations. Significantly, it is at the operational level of individuals’ day-to-day interactions that this collaborative membrane is permeable. Specifically, and as I now go on to explain, Hamel’s ideas relating to the relative permeability of the collaborative membrane seem to indicate that actors’ inter-organisational information system use may play an instrumental part in these processes.

Hamel lists three ways in which value may be created, namely: through transactional efficiency, through improving one’s competitive position, and through quasi-internalisation. Quasi-internalisation refers to partners trading access to each other’s skills and this becomes the mechanism by which partners’ skills and capabilities are acquired; an outcome Hamel describes as ‘de facto internalisation’. Although jointly the relationship is to an extent strengthened, one organisation is weakened with respect to another. While value is created, the prime concern is ‘value capture’ by one party. This appropriation of value may be achieved either through bargaining over economic benefits or through internalising partners’ skills.

In competitive collaboration, it is changes to individual organisational bargaining power and competitiveness that demonstrate the success, or otherwise, of inter-organisational learning processes. While changes to structure and form are the hallmark of value creation, value capture is characterised by unilateral change. This asymmetric learning alters relative bargaining power. These changes may modify the basis of the
original bargain and lead to unilateral, rather than bilateral, dependence. Partners that understand the link between inter-partner learning, bargaining power and competitiveness will, Hamel suggests, tend to view inter-organisational alliances as a race to learn.

Drawing upon the work of Burgelman (1983), Hedberg (1981) and Nystrom and Starbuck (1984), Hamel argues that inter-organisational learning cannot take place without unlearning. Two issues in particular may make this difficult. Firstly, past behaviour may have led to success, and secondly, a lack of organisational ‘slack’ can frustrate learning. In his ensuing discussion he draws a distinction between direct changes to individuals’ cognition and behaviour and changes to patterns of behaviour that are ‘hard-wired’, for example in structures, in information systems and in incentive schemes.

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Figure 2.2: Distinctive attributes of a theory of competitive collaboration (adapted from Table 4, Hamel 1991, p. 101)

Hamel’s theory provides a useful means to distinguish between the ideal types of ‘co-operative’ and ‘competitive’ inter-organisational collaboration. Further, it raises the question of whether actors’ behaviours may differ in co-operative and more competitive collaborative circumstances, and if so, how. This is a subject that lies at the heart of my enquiry and I shall return to it in subsequent chapters. First, however, I go on to discuss how Ebers’ (1999) development of Hamel’s theory offers a means by which these types of collaboration may be identified empirically.
Ebers (ibid., p. 40) defines inter-organisational relationship change as 'a significant variation in the content and/or the form of the relationship [and] an extension or reduction of the jointly performed tasks'. He develops a conceptual model which attempts to explain when, why and how the content and form of competitive inter-organisational relationships shift and transform. Particularly, he distinguishes between 'pooled' and 'symbiotic' inter-organisation relationship types. In pooled relationships, organisations bring similar resources and capabilities to the relationship, whilst in symbiotic relationships different but complementary resources and capabilities are combined. In symbiotic relationships, inter-organisational relationships may be undermined and either dissolved or taken over as organisational resources become more similar. Ebers argues that the development trajectories and relationship outcomes of inter-organisational change rest on the relative ease with which the resources and information which partners bring to the relationship can be measured and transferred.

Micro-level inter-organisational ties are described in terms of these information and resource flows. This, Ebers suggests, is the result of 'the exchange or joint utilisation of codified knowledge that can be converted into standardised processes or fairly easily measured' (ibid., p. 48). Like Hamel (1991), Ebers argues that learning becomes a race. The learning processes of understanding, revaluation and adjustment – are underpinned by three preconditions: first, that the resource or information base of at least one of the partners is altered; second, that the motivation for the design or outcome is changed; and finally, that at least one partner is willing and has the capacity to learn from or adjust to these changed circumstances. The possibilities of different change trajectories, predicated upon either single or double loop learning, are identified. Where partners perceive it is too costly to change, initial conditions become a more important predictor of relationship content and form. The extent to which such factors are a consideration as buyers and suppliers develop
and use technological artefacts to codify and support the co-ordination of supply network co-ordination activities remains a matter of conjecture.

Empirical research within the English National Health Service has also explored co-operative learning processes. Knight and Pye (2005) define 'network learning' by a group of organisations functioning as a group. This concept, they suggest, may aid description of organisational life and provide a means by which network capability and performance might be influenced and developed. In their model, the development of shared meanings, commitments and methods is linked recursively to changes in network practices, changes to network structures and changes to network interpretations (Knight and Pye, 2005). Network learning is distinguished from rational accounts of change.

Knight and Pye suggest that the behavioural and cognitive outcomes of network learning, rather than arising from a stewarding or directorial notion of change, which they argue fails to account for complex social and political landscapes, arise from inter-organisational processes that occur at the system level 'below' the network. Further, it is through the initiation and development of these system-level adaptations that new industry recipes may first be seen. Although beyond the current scope of this thesis, this insight raises interesting questions concerning how such adaptations may relate to evolving institutional structures (Jacobides and Winter, 2005).

Locating their work within Rajagopalan and Spreitzer's (1997) 'learning perspective', Knight and Pye distance themselves from accounts of how sets of actors (typically senior and hierarchical) shape or manage change. Instead, they cite Evans and Easterby-Smith (2003), who state: 'we find that, at the level of the network, the notion of 'managing' or even 'leading' strategic change breaks down' (Evans and Easterby-Smith, 2003, p. 484). As a result, it is unlikely that there will be any one 'unitary authority' with a mandate to plan or control the network. A focus on inter-organisational learning processes therefore, they maintain, enables a richer understanding of network development over
extended periods of time (Knight and Pye, 2007). Notably, their account emphasises the role of the individual within what they term social, political, situated and practice-based learning processes. Specifically, they argue:

Network actors are neither merely adapting to changing exogenous factors, nor managing change. Rather they are seen here as interpretative agencies whose situated reflections, exchanges and relations cumulatively influence changes to network practices, structures and interpretations. (Knight and Pye, 2004, p. 485)

Like Hamel's work, this approach clearly develops the notion of learning in networks beyond that of organisational-level actors following a path-dependent trajectory. Further, these authors introduce a clear conceptual demarcation between individual and network learning processes (Knight and Pye, 2007); however, their model provides little purchase on the mechanisms by which these stratified levels might interact. Similarly, while they acknowledge Cook and Yanow's (1993) insight that learning does not necessarily produce change (and vice versa), no account is offered of the processes by which more stable relationship configurations are reproduced. Questions are also raised regarding whether or not learning in networks, particularly those characterised either by co-operative or more competitive inter-organisational learning processes, always results in the development of shared meanings, commitments and methods or whether there is potential for a wider set of outcomes. Such concerns are of central interest in this thesis.

2.3 The politics of information system use

In this section I examine the organisational politics literature. I show that whilst a great deal of attention has been paid to the politics of information system development, actors' behaviours relating to use have received less research attention. Political factors are central to the formation and co-ordination of networks (Swan and Scarbrough, 2005). A political process perspective promises insights into these network dynamics (Hardy, 1996; Tushman, 1977). While definitions vary, 'organisational politics' is recognised by two
common characteristics: a divergence from formal organisation and an underlying assumption of conflict (Drory and Romm, 1990). Political models of organisational behaviour include deception (Schein, 1976), information secrecy (Feldman, 1988) and ‘non-bureaucratic’ procedures (Inzerilli, 1979; Tushman, 1977). As such, they depart from an assumption of actors as purely rational, techno-economic goal-oriented agents. Indeed, Gerald Mars (1983) has constructed a typology of such politically inspired, informal working practices.

Mars proposes an occupation-based typology. He argues that the nature, opportunities and motivation for what he terms ‘fiddling’ can be classified according to a role’s relatively strong or weak group and grid position. The group dimension emphasises collectiveness among people who meet face to face. Closely specified roles are located ‘up grid’ and those occupations which are characterised by greater autonomy are placed in ‘weak’ grid positions. Four classes of occupational roles are differentiated, namely: hawk, wolf, vulture and donkey. Hawks are those individual entrepreneurs who operate within bureaucratic structures. Wolves act in close-knit, well-defined packs, vultures are organised as part of looser working groups. Donkeys are isolated and subordinated individuals in closely defined occupations. In recent (2008) work, Mars argues that increasingly individualistic cultures favour the occurrence of deviant workplace behaviour (Mars, 2008, p. 11). Indeed, as Buchanan and Badham (1999) point out, agents may deploy informal, political behaviour simultaneously to achieve both personal and organisational objectives. Whether or not such informal behaviours may extend into the inter-organisational information system space, and if so with what consequences, is of particular interest to this thesis.

For the deeply political nature of information technology development and use has long been recognised (Knights and Murray, 1994). According to one view, information technology may be conceived in terms of ‘complex layers of objectified intentions that
embody the lessons of experience or science into various sorts of artefacts’ (Kallinikos, 2005, p. 186). Researchers have found however that information and communication technology (ICT) use does not emanate solely from designers’ intentions, but rather is an ongoing process of negotiation between multiple actors and their technological choices within changing work and social contexts (Constatinides and Barrett, 2005). Within networks, the politics of information system appropriation during information technology development has been explored by others (Hislop et al., 2000). Technology ‘in use’, however, has received far less research attention. Indeed, there have been specific calls for further political process research to examine ‘how people form and co-ordinate networks and how networks coalesce around particular interpretations’ (McLoughlin and Badham, 2005, p. 835).

Political change process perspectives highlight the potential for and the importance of interaction between the ‘social’ and the ‘technical’ (see McLoughlin and Badham, 2005 for a comprehensive chronology). Dawson’s principles of ‘process change’ are relevant here. Unlike an ‘emergent’ change approach, a process orientation does not equate a specific situation with a particular change trajectory. Rather, in contrast to both rational and emergent positions, this perspective draws attention to ‘the political activities of consultation, negotiation, conflict and resistance which occurs at various levels within and outside an organisation during the process of managing change’ (Dawson, 2005, p. 393). The core assumption is that ‘organisational consequences are products of choice and negotiation by powerful individuals and groups’ (McLoughlin and Badham, 2005, p. 836). Process-oriented technical change analyses therefore seek to portray the richness and complexity of organisational change (McLoughlin and Badham, 2005) and thus provide insight into processes of continuity and reshaping over time.

So, this literature supports the contention that sociopolitical factors are as important as rational, economic and technical aspects in enabling us to understand the outcomes of
inter-organisational information system implementation (Kumar and Dissel, 1996). Indeed, this research suggests that it is in sequential relationships where mutually reliant partners work collaboratively on consecutive activities that the greatest potential for conflict is produced. Klein et al. (2004) coined the term ‘network information management’ to encompass the managed alignment of structural, institutional and human (behavioural) aspects of inter-organisational information systems within inter-firm networks (ibid., p. 28). They suggest that the use of inter-organisational information systems in these circumstances is a ‘strategically promising and organisationally precarious arrangement which call[s] for systematic management’. Research which has explored the political processes within ICT co-ordinated networks has already identified the potentially productive and constraining relationship between innovation and political resources, meanings and process power (Boonstra and Vries, 2005; Swan and Scarbrough, 2005). As I go on now to explain, this political process approach, however, is limited analytically.

Although Dawson (2005) and Knight and Pye (2005, 2007) draw on Pettigrew’s context, content, process model as an analytical framework (which Dawson enhances with an additional category related to organisational history and culture), neither set of authors adequately addresses how these facets interrelate. Further, both acknowledge the practical difficulties of identifying the start and end point of any given learning episode (Knight and Pye, 2004) or change program (Dawson, 2005). Given the temporal, event-specific ‘before, during and after’ framework Dawson advocates, this would appear a fairly fundamental problem. A more integrated, multi-level framework is required. This is a matter to which I return in the next chapter. First, however, it is worth exploring briefly some alternative conceptions of information systems that, in themselves, raise interesting questions in relation to the extent to which actors may accommodate their behaviours to these information systems or adapt these systems for their own purposes.

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2 NIM addresses the network’s structural, institutional and human capabilities to process information, in contribution to network performance.
In the organisational learning literature, information systems have been theorised by some as a mode of systemic power. Such systems are seen, firstly, as a means of discipline, where the costs and benefits associated with actors' actions are altered. Secondly, they are viewed in terms of domination through restricting the range of actions that are available to actors (Lawrence et al., 2005). Thus, it is argued that 'they [information systems] can institutionalise innovations in a quick and stable manner' (Lawrence et al., 2005, p. 187). The extent to which this theorisation may apply within, let alone beyond, organisational boundaries is open to question. Whilst ICT-artefacts may enable time and space to be reconfigured (Suchman et al., 1999), empirical studies provide somewhat contradictory evidence regarding the relative ease with which the procedures and rules underpinning actors' existing work practices may be replaced by the imposition of information technology – at least in any straightforward or unproblematic way.

For example, in a study of the introduction of Lotus Notes, Hayes and Walsham (2000) concluded that 'the structures of signification and legitimation that were present prior to the introduction of Lotus Notes were reproduced in a more subtle guise' (Hayes and Walsham, 2000, p. 63). Similarly, actors' use of email for 'virtual politicking' demonstrates how actors exploited the speed, multiple addressability, processing and routing features of email systems to enhance their political potency (Romm and Pliskin, 1997). This deliberate and purposeful behaviour went against managers' intentions. As Kang (2006) notes, previous studies exploring organisational learning and information system use have failed to explore the dynamics of these processes. Despite their different epistemologies and theoretical perspectives, taken together, these studies suggest that there is more for us to learn about the subtle changing interactions, even interpenetrations (Sassen, 2002) between the 'social' and the 'technological'.
2.4 Conceptualising socio-technical change

In this final part of my review, then, I use the literature to highlight some of the key epistemological issues faced by a study of socio-technical change. I consider some current, popular theoretical approaches in the information systems domain and identify their relative strengths and weaknesses for my purposes. This section concludes with a call for an alternative analytic frame.

Information systems research is dispersed across disparate domains of study, notably computer science, with its sub-fields of social informatics, computer-supported collaborative work and human–computer interaction, as well as the information systems, management, organisational studies and psychology domains, and the sociology domain, where boundary-spanning relationships, the sociology of technology and science and technology studies have produced relevant literature. Each offers the promise of relevant insights, although each has its own foci of enquiry and preferred theoretical frameworks. Differences in the object of analysis are summarised in the taxonomy shown in Figure 2.3.

In the first part of this section I attempt a broad classification of these wide ranging literatures according to their underlying treatment of, first, the nature of the information technology ‘object’, on a spectrum from independent of human interaction to immutably entwined, and, second, a level of analysis that ranges from a focus on individual-level relations to a focus on societal-level relations.

There are significant, if not incommensurable, differences in how social and technical interactions are theorised across these literatures. For example, the human–computer interaction and social informatics literatures both ask questions relevant to inter-organisational information systems use, though from very different perspectives. Human–computer interaction studies explore human–machine relationships at an individual level (see e.g. the ethnomethodological studies of Suchman, 2007), whilst in the social informatics literature attention is focused on how society and technology are
mutually shaped, for example through innovation and diffusion processes (Boczkowski, 2004). These two literatures represent the opposite ends of a larger socio-technical literature whose different branches seem to have relatively little contact with one another.

Within this research area, a small, discrete inter-organisational information systems literature draws upon the concepts and theories of neoclassical strategic management to predict the effects of inter-organisational information system implementation. These studies pay scant attention to the historic structural and cultural fabric from and into which information technologies are propelled. Rather, this 'impact' literature takes a macro view of a plastic social structure. Exemplary case study findings are generalised through large-scale, quantitative surveys. Some of the limitations of single-organisational respondent survey questionnaires have been highlighted already in the context of the relational governance literature (s. 2.1.2). The key points are reiterated again here. These methods
fail to capture multiple-actor perspectives or behavioural dynamics. They tend to focus on
the use of a single, objectified technology, for example electronic data interchange. For this
reason, analytic generalisability is limited and partner companies are not always (or
equally) represented. Others within the inter-organisational information systems field have
recognised the need to move beyond these simple social and technologically deterministic
research frameworks (Fedorowicz et al., 2004).

Some of the proposed alternatives raise their own epistemological problems. Fedorowicz et al. (2004) propose an ecology lens for the study of information system sharing practices. Their modification of co-evolutionary ecology theory, however, suffers from two weaknesses. Firstly, as with studies within the inter-organisation relations and inter-organisational information systems domains, the primary actors are structural organisational units, and secondly, predictable outcomes are assumed. Alternatively, complex adaptive systems theory has been coupled with concepts from actor-network theory to chart the co-evolution of software systems and organisations in practice (Kim and Kaplan, 2006). This approach mixes predictive and descriptive theory to produce an epistemologically confused position. These, and other, problems have led to a general call for a new theoretical approach to the relationship between social and economic institutions and technological change (Barrett et al., 2006).

Discourse analytic approaches are widely advocated. Critical of rationalist, humanist and contingency theories, and of planned, emergent, first- and second-order change typologies, on account of their technological determinism, Barrett et al. (2006) suggest that a discourse-analytic perspective may provide new insights. In this vein, André Spicer (2005) draws on Latour and Woolgar’s (1979/1986) work on technological inscription, the material construction of actors’ assumptions and interests, to argue for a path-dependent, if contested and resisted, view of technological inscription. Spicer’s study explores the use of an Australian public broadcasters’ website. He argues that as
technological inscriptions are ‘fixed’ subsequent options for reinscription become more limited and social actors find themselves forced to accept ‘locked-in’ inscriptions which previously they had contested. With the absence of agency, such accounts seem strangely resonant of earlier, deterministic ‘no choice’ discourses (McLoughlin and Badham, 2005).

Johnston et al. (2006) suggest Giddens’ social structuration theory (Giddens, 1984) may be used to address questions about network characteristics, interactions, structure and their dynamics. Although an influential body of interpretive information systems research has drawn on structuration theory (Orlikowski and Robey, 1991; Robey and Boudreau, 1999; Schultze and Orlikowski, 2004), a study of actors’ inter-organisational information systems use within Giddens’ framework raises both epistemological and methodological issues relating to the conceptualisation of information technology. This approach can be criticised for the rather arbitrary conceptual distinction it draws between technology during its design and technology later, in use. During the design stage the social is given prominence over a pliable technological artefact, whilst in use the technical object is considered fixed, with social fit the primary interest (Orlikowski, 1991). Orlikowski has since revised her approach.

As I noted in Chapter 1, I wished to explore the practical everyday use of inter-organisational technology. More recently, Orlikowski (2000) has advocated a practice-based theory for the study of technology in use which incorporates both materiality and agency. This approach, she suggests, addresses her critique of the information system studies domain – that insufficient attention has been paid to theorising material artefacts (Orlikowski and Iacono, 2001). Distancing herself from ideas about user appropriation (de Sanctis and Poole, 1994), Orlikowski conceives ‘technology in practice’ as enacted, embodied and ‘emergent’. Overall, she suggests, technology has suffered from being seen as singular rather than multiple and unified rather than fluid. Orlikowski incorporates ideas from actor-network theory to support investigation into the materiality of technology.
Described as the 'semiotics of materiality' (Law, 1999, p. 4), actor-network theory has emerged as an increasingly popular conceptual frame in the information systems field. Latour (1993, 2005) argues for the symmetrical treatment of human and non-human actants. This 'theory' has two main tenets: first, all entities are produced in relationships, known as 'relational materiality' (Law, 1999), and second, entities are performed in, by and through these relationships, a phenomenon known as 'performativity'. Sometimes these performances become durable; at other times, rather mysteriously, things might be otherwise. Processes and technologies may change – or they may not. The consequences and degrees of change are left open. While sensitive to individual agency, significantly, such an approach precludes examination of actors' non-use of artefacts and is therefore problematic for my purposes.

Actor-network theory, then, whilst it provides a strong purchase on intentionality and reflexivity, is a flat topology with little explanatory power (Preda, 2000). The adoption of this methodological frame produces kaleidoscopic configurations of atemporal social and technical quasi-objects. Attempts to explain how and why the observed socio-technical changes are produced – and, at least as importantly, why things are not otherwise – continue to prove conceptually problematic. In sum, these debates reflect continued unease with current theoretical conceptions of information system use and their capacity to explain socio-technical change. I argue, therefore, that an alternative analytic frame is needed.

Conclusions

I have argued that while the field of inter-organisational relations is united by its focus on relations between separate, independent organisations with autonomous interests, the co-operative and collaborative aspect has received most attention. Moreover, relations at the inter-organisational level have also been the main focus. Among the individual works that have been surveyed from the inter-organisational relations field, it is Hamel's theory of inter-partner learning (Hamel, 1991) that provides the most relevant theoretical perspective
for my study. Hamel’s approach is appropriate for three reasons. Firstly, it recognises the differential power of relationships that underpin supply networks. Secondly, it provides a means of differentiating between predominantly co-operative and more competitive inter-organisational learning processes with their associated distinctive value outcomes. Thus, the possibilities of mutual trust-based co-operation and more opportunistic, self-interested behaviours are accommodated equally. Thirdly, its operational-level focus on ongoing, processes of exchange through the collaborative membrane of people, facilities, documents and other forms of knowledge provides a means of conceptualising the operational dynamics of individual actors’ information system use within inter-organisational supply networks.

I have also considered and ruled out the use of a number of alternative and perhaps more obvious perspectives from the supply management domain. These include transaction cost analysis, relational governance, interactional models and organisational-level resource and knowledge-based views. Whilst each of these theories has its merits, for my purposes each also presents particular and severe drawbacks. Among other limitations, the single transaction as the unit of analysis is perhaps the most problematic feature of transaction cost economics. Sako’s (2000) construct of ‘mutual trust’ rests upon the assumption that trust and opportunism are mutually exclusive. While work by Poppo and Zenger (2002) suggests that transaction cost and relational approaches may act as complements, still this underplays the apparent conflict between co-operation and competition that it is claimed is a defining characteristic of political and dynamic buyer–supplier relationships (Grandori and Soda, 1995; Powell, 1990). Explanatory and prescriptive interaction-based models provide useful insights into both the importance of information flow and the serial, dynamic nature of supply relations. The supply network provides an appropriate unit of analysis. Behaviour differentiated solely on the basis of operational characteristics or the
scope of resource control offers limited analytic traction for a study of the micro-dynamics of actors' inter-organisational information system use.

From the information systems domain, I have also evaluated the relative merits of the neoclassically-inspired strategic management literature relating to the 'impact' of inter-organisational information systems and various other, alternative theoretical lenses, including ecology, discourse analysis, structuration, and actor-network-theory-based 'technology-in-practice'. For the purposes of my study, however, each of these perspectives presented difficulties. The analytic generalisability of an objective technology such as electronic data interchange is too limiting a comparator in circumstances where supply network actors may embrace distinctive, even bespoke inter-organisational information system 'solutions'. Ecology theory favours organisational actors as its level of analysis, whilst a path-dependent discourse analytic perspective seems overly deterministic in a way that seems to neglect the possibility of a multiplicity of unanticipated outcomes (Orlikowski, 2000). The epistemological underpinning of even popular and well-established perspectives for theorising information technology, such as structuration and actor-network theory-based approaches, also presents particular problems.

When used within the information systems domain, structuration theory has been applied in such a way that an arbitrary analytic distinction is created between the treatment of information technology during its design and in its subsequent use. And, whilst actor-network theory provides a means of paying attention to social and technological 'actants', as Latour acknowledges, actor-network theory is a descriptive methodology rather than an explanatory theory of change. For these reasons, I argue that an alternative conceptual lens is necessary if new and deeper insights into, firstly, the nature of the technology and its use and, secondly, the kind of behaviours required to make these inter-organisational relations work, are to be gained.
As mentioned, Hamel (1991) points to two types of inter-organisational learning processes: co-operative and competitive collaboration. Further, Ebers' (1999) distinguishes between 'symbiotic' inter-organisational relations, where organisational partners bring complementary resources to the relationship, and 'pooled' inter-organisational relationships, where organisational partners' resources overlap. Changes to the nature or scope of buyer and supplier organisational relationships may therefore be used as an indicator of either co-operative value creation or value appropriation by one party at the expense of the other. This division permits comparative examination of actors' behaviours between these two ideal types.

But, above all, from the review in this chapter it has been noted that, in order to answer the three research questions posed at its start, those studies which focus on an interactionist perspective and which allow for both co-operation and competition between actors at the operational level seem the most promising. As will be seen, this kind of perspective can be developed to provide useful insights using a practical knowledge perspective.
Chapter 3  Research Methods

In this chapter, I explain the research method options which I considered, and how and why I chose the method I eventually adopted. As I identified in the previous chapter, popularly-used theoretical perspectives within the information systems domain presented particular epistemological problems for my study. Here, I present an alternative analytic frame that supports investigation of actors' practical information system use. This chapter is organised in four parts.

First, I describe my theoretical framework and the case-study-based approach I adopted. In the second section I explain the rationale for case selection and describe each supply network setting. In the third section, I introduce the inter-organisational information systems I researched. Finally, I outline the multiple methods used to collect data, my approach to analysis and evaluate these methods in relation to issues of naturalistic data collection, talk-in-interaction and my role as a researcher.

My study findings follow in Chapters 4, 5 and 6.

3.1 Theoretical perspective and research design

As I described in the previous chapter (s. 2.4), the epistemological foundations of widely used theoretical perspectives in information system studies, notably practice-based adaptations of Giddens' structuration theory (Giddens, 1984) and Latour's actor-network theory (Latour, 1993, 2005), preclude a satisfactory theoretical account of the relationship between ICT-use and agential change. Here I describe an alternative analytic frame that makes such a distinction possible.
3.1.1 The analytic frame

Archer’s morphogenetic theory (1995, 1996, 2000) accommodates the analytic separation and recombination of structure, culture and agency to produce temporally phased narratives within changing or stable network conditions. The recognition of individual actors, emergent from groups with collective agency situated in particular, conditioned and reconditioned logics, stands in contrast to both predictive and mutually constituted practice-based theories. Mutch (forthcoming) argues that Archer’s theory provides a better epistemological frame for information system study than structuration-based alternatives. Unlike with practice-based theories (see for example Orlikowski, 2000), every outcome is not equally possible. Further, in contrast to mainstream inter-organisational relations theory, this framework enables a multi-level analysis that goes beyond the structural reification of organisational-level actors. This approach provides two, significant benefits.

Firstly, these conceptual foundations enabled me to clarify the ‘within case’ conditions that existed between particular buyer and supplier partners, and secondly, this form of analysis enables analytic generalisability and cross-case comparison. In my study, then, rather than analysis of heterogeneous organisational groupings (companies) it is a focus upon homogeneous stratified entities (structures, cultures and people) that provides the analytical traction needed to investigate how individual, group and organisational levels interact. Like process change theories (e.g. Dawson, 2005), Archer’s framework enables the incorporation of multiple viewpoints. Here, unlike in Dawson’s approach, cultural ideas (and the properties that emerge from their logical interrelationship) are integrated fully into analysis.

According to this view, people take on social roles in network organisations where distinct ideas already circulate. Archer’s (1995, 1996) analytic dualism enables exploration of network stability and change through examination of the interactions between people, structures and cultures (ideas) with which they are engaged. Structural entities are
dependent upon physical and material resources (e.g. goods, stores, factories). Distinct, homogeneous social roles emerge (e.g. buyers and suppliers). Ideas like competition and collaboration stand in logical relationship to one other. Agents’ viewpoints and interests become the focus of attention. Over time, actors’ actions can alter structural and cultural configurations, and agency. Margaret Archer offers a graphic metaphor of social change as ‘a wild zigzag as social groups struggle to wrest the wheel from one another, often taking them where no one wants to go’ (Archer, 1995, pp. 81–2). A relational, multi-level analysis is accommodated. Although agency is conditioned, actors remain free to do otherwise.

Archer’s (1995, 1996, 2000) morphogenetic3 theory of social change provides, therefore, a suitable framework to support multi-level analysis and cross-case comparison (Eisenhardt, 1989; Gummesson, 1988; Locke, 2001). Relationship changes between buyer and supplier entities may be adduced. As I now go on to elaborate, stratified interactions between structural, cultural and agential properties produce emergent first-, second- and third-order effects that create distinctive situational logics. Collective agency is both conditioned by these logics and, in turn, reshaped by individual social actors’ actions (Figures 3.1, 3.2).

<table>
<thead>
<tr>
<th>Structural configuration</th>
<th>Structural emergent properties</th>
<th>Situational logic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necessary complementarities</td>
<td>Integration. Necessary and internal linkages between systemic structures, where institutions are mutually reinforcing</td>
<td>Protection</td>
</tr>
<tr>
<td>Necessary incompatibilities</td>
<td>Compromise. Necessary and internal linkages, but marked by incompatibilities</td>
<td>Correction</td>
</tr>
<tr>
<td>Contingent Incompatibilities</td>
<td>Competition. Society is an open system and no formation is hermetically sealed against external influences</td>
<td>Elimination</td>
</tr>
<tr>
<td>Contingent Compatibilities</td>
<td>Differentiation. An open system, no effective barriers which can be erected against the incursion of contingent relationships which may prove highly compatible within the interests of particular groups</td>
<td>Opportunism</td>
</tr>
</tbody>
</table>

Figure 3.1 Structural emergent properties and their situation logics

3 Morphogenetic/morphostasis cycles are ‘those processes which tend to elaborate or change a system’s given form, structure or state or, for morphostasis, those processes in a complex system that tend to preserve the above unchanged’ (Archer, 1995, p. 75).
Structural institutional properties emerge from complementary and contradictory relationships (Figure 3.1). These may be external or contingent (two or more entities exist without one another) or necessary and internal (where entities are interdependent). Likewise, cultural emergent properties surface from logical interactions between different ideas (Figure 3.2). These depend upon whether or not ideas (A and B) are contradictory or complementary, as well as on whether they are dependent or independent. Where ideas are logically inconsistent, constraining contradictions emerge. Actors are conditioned to manipulate others so that logical inconsistencies remain unrecognised and unvoiced (Archer, 1995, p. 231). Where A and B are complementary and internally related, concomitant complementarities exist. If ideas cannot both be upheld simultaneously, there is logical inconsistency and competitive contradictions result. Unlike with constraining contradictions, here there is no necessary relationship. Rather, contradictions are produced solely through social interaction. Finally, from contingent complementarities a range of independent, complementary opportunities may emerge.

<table>
<thead>
<tr>
<th>Cultural configuration</th>
<th>Cultural emergent properties and situational logic</th>
<th>Agential behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraining contradictions</td>
<td>Correction, Syncretism (the attempt to sink differences and link contradictory elements) leads to correction</td>
<td>Containment through manipulation of other people to prevent realisation or voicing of logical difficulty</td>
</tr>
<tr>
<td>(Necessary Contradiction)</td>
<td></td>
<td>Repair through reinterpretation of B</td>
</tr>
<tr>
<td>Concomitant Complementarities</td>
<td>Protectionism, Systematisation (strengthening of pre-existing relations and/or extension and additional relationships among the parts)</td>
<td>Problem-free, Felicitous facilitation</td>
</tr>
<tr>
<td>(Necessary complementarities)</td>
<td></td>
<td>Discourages alterations from A or B</td>
</tr>
<tr>
<td>Competitive contradictions</td>
<td>Elimination – plurality of ideas what Archer (1995, p. 241) describes as a ‘battleground of ideas’</td>
<td>Bonuses associated with conflict ‘conditioned to make the worst of it’ p241</td>
</tr>
<tr>
<td>(Contingent incompatibilities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingent complementarities</td>
<td>Opportunism or choice, Free to make what they will of B</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3.2 Cultural emergent properties and their situational logics

Structural and cultural configurations position agents in distinct situational logics. These logics condition (but do not determine) actors’ subsequent social behaviour (as
shown in Figures 3.1, 3.2). Archer identifies four possible resultant effects of these stratified interactions: syncretism, pluralism, systematisation and specialisation. As the figure indicates, syncretism refers to actors’ attempts to sink the difference between contradictory elements. Pluralism confronts actors with the need to make a social choice. Systemisation reinforces or extends existing relations while specialisation opens the way for a range of distinct, new opportunities. Further definition of each of these terms is given in the glossary. Whether or not any one of these configurations produces social change depends upon the relationship between these structural and cultural ‘parts’ (what Archer calls ‘systemic interaction’) and observed relationships between people. Systemic relationships may be necessary or contingent, contradictory to or complementary with pre-existing conditions (both structural and cultural). The propensity for either sociocultural stability or change depends upon the relative orderliness or disorderliness of these emergent institutional properties in combination with the interests and agency of individual social actors and the collective organisational groupings from which they emerge.

Although Archer’s analytic histories extend over centuries, morphogenetic/static processes also operate in more localised settings (Archer, 1995, p. 274). I use these concepts, therefore, to adduce the distinct situational logics conditioning dyadic buyer-supplier relations between network partners. Relevant interview transcripts were coded to identify structural positions, roles and circulating ideas (an illustrative extract is provided in Appendix A). How Archer’s morphogenetic lens can be elaborated to investigate actors’ inter-organisational information system use is described next.

3.1.2 Inter-organisational information systems as cultural artefacts

A morphogenetic approach to information system study has received sustained support and development (Mutch, 2002, 2005, forthcoming). The theorisation of information technology within this frame, however, has been epistemologically problematic.
Specifically, Mutch (2002) has suggested that the concepts of inscription and irreversibility can be used to explore the properties which emerge from actors' use, support or rejection of information systems. Mutch's account, however, is theoretically unsatisfactory to the extent that structure and agency collide within the subjectivity of material inscription. Here I argue instead that Archer's later work on cultural artefacts (Archer, 2000) provides a more coherent conceptual separation. According to this view, material culture emerges from actors' artefact use.

Archer's conception of material culture can therefore be deployed to explore how the use of inter-organisational information systems may extend and/or limit agential powers. As Archer puts it,

there are causal properties between things (or parts of things) which cannot be reduced to the ideas maintaining between people ... these are built into their shape and form, their juxtapositioning and interlinkages ... artefacts become independent of their makers because practical meanings are carried by the objects themselves and their causal powers are built into them and [these] may have been unrealised, or only partially realised, but their first inventor. (Archer, 2000, pp. 167–8; my italics)

Whether or not actors choose to use them, information systems are cultural artefacts which possess particular, if unanticipated, material properties. They offer the extensibility of the human senses. One informant (SS1D1) referred to being 'blind' without her sales information.

These extensions to bodily or mental powers may produce far reaching effects. Emergent material culture becomes a property of relationship changes between people and the artefacts they use in their (organisational) environments. This culture may complement or contradict ideas that exist between people (i.e. the cultural system, as discussed in s. 3.1.1). Clearly, information systems are within the scope of the physical artefacts Archer describes. She states: 'the artefacts involved eventually encompass productive machinery, modes of transport, science laboratories, television and so on' (Archer, 2000, p. 167). Thus, this analytic frame can recognise and explain both actors' use and non-use. It enables
the re-configuration of practical knowledge to be identified (Emberson and Storey, forthcoming). Also, it allows novel theory to be generated. I turn now to my rationale for the case-study-based research approach I adopted.

3.1.3 The case study method

The need for more multi-level, process-oriented studies to complement existing single-respondent survey-based questionnaires has been highlighted already (ss. 2.1.2, 2.1.3). I used a multiple, interpretive case study method to explore process and multiple stakeholder considerations (Larsson, 1993). I chose ethnographic case study methods so as to enable multiple viewpoints to be garnered in a naturalistic manner. For example, targeted ‘shadowing’ gave my research greater immediacy and generated a situational relevance that, on their own, interview schedule-based qualitative studies lack.

To avoid the inherent difficulties of longitudinal studies in relatively unstable and unpredictable supply networks, I adopted a ‘partial ethnography’ approach (Alvesson and Deetz, 2000). In contrast to other forms of ethnographic research, which investigate entire cultural systems, partial ethnographies explore specific situations. This allowed me to focus on those transient instances which comprised actors’ inter-organisational information system use within the supply networks selected. Detailed, descriptive empirical material is coupled with a greater analytic emphasis. Alvesson and Deetz (2000) argue these characteristics produce several distinct advantages. First, this methodology provides real insight into the micro-processual aspects of social relations. It enables the researcher to describe (and subsequently analyse) naturally occurring events. Secondly, empirical material has depth and precision. Readers can draw their own conclusions about the materials presented. Finally, as a researcher I was able to divide my time between data collection and creative analysis.

Action research and a more discursive approach to data analysis were also considered initially. This method was ruled out owing to the difficulties sustaining access
to supply network partners beyond the medium term. Further, I realised early on that a discourse analytic perspective would not provide me with the methodological robustness I required. In particular, the opaque connections between actors’ talk-in-interaction and their interpretations of their own and others’ actions clearly demonstrate what Alvesson and Karreman (2000) describe as the ‘loose coupling’ of politicised organisational discourse. This is a subject to which I return at the end of this chapter. First, however, I explain in some detail the design adopted.

My research activities focused on actors’ inter-organisational information system use within four distinct UK retail supply networks. The localised and piecemeal nature of ICT-based programmatic change enables a synchronic research design (Barley, 1990). Synchronic studies of technological change have been used to compare social structures around old and new technologies. Although within each case the technology was identical, I collected across-space data to compare multiple instances of actors’ use in different buyer–supplier relationship settings. I took a flexible approach to cross- and within-case research design to secure access to multiple, interdependent network partners (whose organisational characteristics are outlined in Figure 3.1). These empirical cases operated as ‘functioning specific’ examples of the object of investigation (Stake, 2000). Within each case, I negotiated access to the buyer and the supplier and observed how individuals used these systems to co-ordinate routine supply activities, independently and, where this was appropriate, together. Wherever possible, I studied these information systems in as different relationship contexts as possible to extend theoretical saturation.

In view of its advanced use of inter-organisational information systems for routine supply co-ordination, recent industry-wide collaborative, ‘programmatic’ change initiatives and high levels of pre-existing competition (discussed in s. 2.3), the UK retail sector promised to provide access to a range of suitable cases, as I now go on to describe.
3.2 The research setting

I focused my study on UK retail sector actors’ operational use of inter-organisational information systems in the co-ordination of their supply activities. In total, I researched four discrete supply networks within grocery, timber, own-brand clothing and prêt-a-porter branded fashion retail. The principal activities of these organisational networks were diverse; as were the information system artefacts designed for inter-organisational co-ordination. Two criteria were relevant to case selection: first, that at least some actors were using these inter-organisational information systems actively, and second, that there was an opportunity to compare practice – either between actors in different parts of the same, partnering organisations or among different organisational partners within the same network.

To preserve confidentiality, codes are used to identify each network, buyer and supplier organisation and individual (Figure 3.3). These codes indicate the network to which a particular organisation belonged (i.e. C for own-label clothing, G for grocery, S for branded fashion retail and T for timber) and whether these organisations were the buyer (B) or supplier (S) partner. (When there was more than one buyer or supplier, a numeric code is added, i.e. Bx or Sx.) I have given organisational-level actors alphanumeric pseudonyms and individual actors fictitious names (listed in Appendix B). Where more than one person who held the same role was involved in my research, I have given each person a separate numerical identifier (M1, M2, M3, etc., referring to different individual merchandisers). This coding system is used throughout the thesis.
<table>
<thead>
<tr>
<th>Network</th>
<th>Clothingnet</th>
<th>Grocernet</th>
<th>Storenet</th>
<th>Timbernnet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational-level network</td>
<td>CB1 Multiple Retail Co*</td>
<td>GB1 Grocer Co*</td>
<td>SB1 Department Co*</td>
<td>TB1 National Co Co*</td>
</tr>
<tr>
<td></td>
<td>CS1 Clothing Co.</td>
<td>GS1Box Co</td>
<td>SS1 Contemporary Co</td>
<td>TB2 Regional Co Co</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GS2 Can Co</td>
<td>SS2 Modern Co</td>
<td>TB3 Specialist Co</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GS3 Glass Co</td>
<td>SS3Occasion Co</td>
<td>TB4 Fabricator Co</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GS4 Wrap Co</td>
<td></td>
<td>TS1 Timber Co*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organisational pseudonyms</th>
<th>CB1 Multiple Retail Co*</th>
<th>GB1 Grocer Co*</th>
<th>SB1 Department Co*</th>
<th>TB1 National Co Co</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary operations of organisational participants (UK-based organisations)</td>
<td>CB1 Global buying operations of International Clothing Multiple Retailer</td>
<td>GB1 UK Buying operations of national subsidiary of US Grocer</td>
<td>SB1 National Department Store Co-operative</td>
<td>TB1 National Timber Merchant</td>
</tr>
<tr>
<td>Buying organisations/Supplying organisations</td>
<td>CB1 Multiple Retail Co*</td>
<td>GB1 Grocer Co*</td>
<td>SB1 Department Co*</td>
<td>TB1 National Co Co</td>
</tr>
<tr>
<td>CS1 Design, commercial &amp; planning operations of International contract clothing group</td>
<td>GS1... GS4 Sales &amp; marketing subsidiaries of International FMCG manufacturers</td>
<td>SS1...SS3 Retail merchandising &amp; allocation operations of International Fashion houses</td>
<td>TS1 Sales &amp; marketing subsidiary of International Timber processor</td>
<td></td>
</tr>
</tbody>
</table>
Retail cases were identified partly on the basis of theoretical saturation and partly through serendipity. A project brief (Appendix C), distributed for comment to previous research partners, led to research access in the first, timber case. This study was conducted as a pilot (i.e. a heuristic case in which research methods could be tested by trial and error). Notably, the sequence of observation and participatory research methods were reversed for later cases (as described in s. 3.4). Although participants used different information systems, in each case these inter-organisational information systems were used to coordinate routine activities between buyer-supplier network partners.

In the Timbernet case, customer ordering and delivery practices were the focus of inter-organisational information system use. At Clothingnet, a system was used to support collaborative planning and despatch activities. Across Grocernet, actors’ electronic data sharing supported category development activities, whilst in the Storenet case electronic point-of-sale data were captured and used to plan in-store merchandise space. In every setting, I researched multiple instances of system use between organisations to enable ‘literal replication’ (Yin, 2003) and practical comparison. Within-case comparator selection was made so as to stretch the distinctions between data collection sites, as advocated by theoretical sampling (Alvesson and Deetz, 2000; Eisenhardt, 1989; Glaser and Strauss, 1967; Pettigrew, 1988; Yin, 2003). Supply partners included active, lapsed, successful and less successful organisational users as defined by the study participants. For each network, buyer and supplier organisational characteristics, activities and spans of control are detailed in the four subsections that follow.

3.2.1 Clothingnet

This study explored buyer-supplier relationships between Multiple Retail Co. and Clothing Co., one of Multiple Retail Co.’s top five suppliers. Multiple Retail Co. was a leading retailer of own-branded clothing, food and home products. With over 700 owned and franchised stores around the globe, its retail operations were UK-focused. Clothing Co.
designed sourced, manufactured and shipped products from manufacturing locations around the globe into Multiple Retail Co.'s UK distribution centres. Traditionally, Multiple Retail Co. had used this 'full service vendor' model for all its global clothing supply. Over the past decade, however, and with the shift of supply networks away from the UK, an increased proportion of merchandise was sourced through Multiple Retail Co.'s own, regional sourcing offices (Figure 3.4).

<table>
<thead>
<tr>
<th>Organisation</th>
<th>CB1* Multiple Retail Co</th>
<th>CS1* Clothing Co</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle activities</td>
<td>Retailers of clothing, food and home products</td>
<td>Manufacture and sale of hosiery, underwear, shirts, tailored outerwear and dyeing and finishing of garments</td>
</tr>
<tr>
<td>Group headquarters</td>
<td>London</td>
<td>Nottinghamshire</td>
</tr>
<tr>
<td>Retail stores</td>
<td>701</td>
<td>None</td>
</tr>
<tr>
<td>Logistics and supply chain activities</td>
<td>UK, Bangladesh, China, Hong Kong, India, Morocco, Sri Lanka, Turkey</td>
<td>UK, Cambodia, Columbia, China, Indonesia, Lithuania, Mauritius, Morocco, Sri Lanka, Turkey, Vietnam</td>
</tr>
<tr>
<td>Relative turnover</td>
<td>128</td>
<td>1</td>
</tr>
<tr>
<td>Employees (000s)</td>
<td>46</td>
<td>4</td>
</tr>
<tr>
<td>Focal Subsidiaries</td>
<td>General Merchandise Buying (UK)</td>
<td>Hosiery</td>
</tr>
<tr>
<td>Stores</td>
<td>486</td>
<td>None</td>
</tr>
<tr>
<td>Turnover (~% group sales)</td>
<td>86%</td>
<td>Not published</td>
</tr>
</tbody>
</table>

Figure 3.4 Clothingnet buying and supplying organisations

Multiple Retail Co. had sourcing offices in China, the Far East, South East Asia, Eastern Europe and North Africa. No longer reliant on UK-based agents, by 2005 these offices bought around 20 per cent of clothing and home merchandise direct. Despite these changes, full service vendors continued to lead product and process innovation and supplied the majority of goods.

A newly incorporated company, Clothing Co. supplied primarily own-label goods into three Multiple Retail Co. buying groups (womenswear, menswear and kidswear).

*C = Clothingnet, B = buyer, S = supplier, n = organisational indicator (Figure 3.3).
Though Clothing Co. was still only 1/128th the size of Multiple Retail Co. in turnover terms, a merger had secured its position as a top-five supplier. The Clothing Co. group was subdivided into three discrete, product-oriented divisions. Design, technical, purchasing and planning activities were managed by multi-functional teams. Each team was responsible for the management of own-produced and -sourced product supply into the UK. As well as sources in Turkey, Sri Lanka, China, Indonesia and Cambodia, Clothing Co. owned factories in Northern Ireland, Morocco, Sri Lanka and Mauritius. It had no consumer retail interests. Multiple Retail Co. and Clothing Co.'s working practices were closely aligned. In the early 2000s, Clothing Co. and other full service vendor suppliers developed an ICT-based artefact to improve stock management across the supply chain, discussed further later in this chapter (s. 3.3.1). My second case study was in the grocery sector.

3.2.2 Grocernet

Grocernet organisations were all large, profitable and growing companies. The global turnover of the smallest supplier researched was in excess of £5 billion. Yet Grocer Co.'s group turnover remained almost five times the size of that of the largest of these suppliers. The Grocer Co. account was an important route to market. For instance, Grocer Co. group sales accounted for 15 per cent of Box Co.'s sales turnover. These organisations concentrated on category-specific brand development, marketing and supply. Over the past ten years three of the four suppliers had increased their global presence and brand portfolios through the merger and/or acquisition of complementary brands. Each supplier separated category-specific, 'demand'-led, activities into dedicated, UK market-facing organisations. In three of these organisations, UK markets were supplied from pan-European manufacturing activities (Figure 3.5). Here again, none of these supply partners had retail interests.
<table>
<thead>
<tr>
<th>Organisation</th>
<th>GB1* Grocer Co</th>
<th>GS3* Glass Co</th>
<th>GS2* Can Co</th>
<th>GS4* Wrap Co</th>
<th>GS1* Box Co</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary activities</td>
<td>Global retail store operator</td>
<td>Production distribution and marketing of premium drinks</td>
<td>Production and dealer of all kinds of beers, drinks and foodstuffs</td>
<td>Development, production, distribution and marketing of branded foodstuffs</td>
<td>Development distribution and marketing of superior FMCG brands</td>
</tr>
<tr>
<td>Headquarters</td>
<td>USA</td>
<td>UK</td>
<td>Belgium</td>
<td>US</td>
<td>US</td>
</tr>
<tr>
<td>Retail stores</td>
<td>6,100</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Relative turnover (2006)</td>
<td>17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3.8</td>
</tr>
<tr>
<td>Logistics and supply chain activities</td>
<td>14 countries</td>
<td>5 Countries</td>
<td>30 countries</td>
<td>2 Countries</td>
<td>80 countries</td>
</tr>
<tr>
<td>Focal subsidiaries</td>
<td>UK</td>
<td>Europe</td>
<td>UK</td>
<td>Europe</td>
<td>Western Europe</td>
</tr>
<tr>
<td>UK store locations</td>
<td>315</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Turnover (% group sales)</td>
<td>9%</td>
<td>40%</td>
<td>27%</td>
<td>Not published</td>
<td>23%</td>
</tr>
<tr>
<td>Employees (approx %)</td>
<td>10</td>
<td>n/a</td>
<td>15 (Western Europe)</td>
<td>25</td>
<td>25 (Western Europe)</td>
</tr>
</tbody>
</table>

Figure 3.5 Grocernet buying and supplying organisations

Founded in the mid-1960s, Grocer Co.'s US parent was a general store discounter. This US retailer entered the UK market in 1999, when it acquired an established national retailer. With over 300 retail outlets across England, Scotland, Wales and Northern Ireland, further outlet development was planned. In the early 2000s, consecutive retail industry awards for 'best value UK retailer' demonstrated the UK success of its 'everyday low pricing' strategy. Central to the founders' vision was an emphasis on supply partnerships, supported by the development of extensive and innovative data-sharing. There was no evidence of any takeover or encroachment by this organisational buyer into its suppliers' activities. Rather, with the UK introduction of Grocer Co.'s Categoriesales system, these market-oriented global brand holders appeared well placed to capitalise on data-sharing opportunities, as described in section 3.3.2. Next, I turn to my third case, which explored prêt a porter branded fashion retail.

* G = Grocernet, B = buyer; S = supplier; n = organisational indicator (Figure 3.3).
3.2.3 Storenet

The Storenet study comprised four organisations: Department Co., Contemporary Co., Modern Co. and Occasion Co. The principal activities of these organisations are summarised in Figure 3.6. Unlike the organisational actors at Grocernet, these retail brand holders were channel competitors. Contemporary Co. was part of an international retail group with an extensive brand portfolio. It was previously a UK-oriented concession-led brand, and its recent sales growth had come from aggressive international and 'solus', a solo branded, standalone store, development. 'Contemporary’ branded outlets had almost doubled in the two years to 2006. The Contemporary brand was synonymous with co-ordinated, capsule collections of knitwear, woven garments and leather accessories. Designed in-house, product was sourced from own and third-party manufacturers across Europe and the Far East. The Contemporary brand was important to Department Co., since it accounted for the single largest proportion of branded fashion sales. Modern Co. had also grown its business through solus store development. It agreed its first concession distribution deal with Department Co. in 2005. Already, sales densities (sales per linear foot) vied with those of Contemporary Co.

Unlike those of its competitors, Occasion Co.’s sales densities were in the bottom half of the Department Co. profitability league. Operational ‘wastage’ figures (e.g. stock take discrepancies, returns) were high. Occasion Co.’s products were designed in the UK, with collections sourced through buying offices in Hong Kong. New, capsule collections were launched every two weeks. Occasion Co.’s brand business was built upon wholesale stock distribution to small stockists. A network of over 100 independent outlets was supplemented by an equivalent number of mixed retail branches (solus and department stores), which included those of Department Co. Whilst each of these branded fashion retailers distributed through other department stores, supply relationships with Department Co. were unique.
<table>
<thead>
<tr>
<th>Organisation</th>
<th>SB1* Department Co</th>
<th>SS1* Contemporary Co</th>
<th>SS2* Modern Co</th>
<th>SS3* Occasion Co</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle activities</td>
<td>Retailing</td>
<td>Production, sale and distribution of fashion goods</td>
<td>Design and retail of clothing, footwear and leather goods</td>
<td>Wholesalers and Retailers of clothing</td>
</tr>
<tr>
<td>Headquarters</td>
<td>London</td>
<td>London</td>
<td>London</td>
<td>London</td>
</tr>
<tr>
<td>Retail stores (group)</td>
<td>109</td>
<td>818</td>
<td>93</td>
<td>4</td>
</tr>
<tr>
<td>Logistics and supply chain activities</td>
<td>Great Britain</td>
<td>Ireland, Far East, Italy, Portugal, UK</td>
<td>Brazil, Eastern Europe, Far East, Hong Kong, Iceland, Ireland, Middle East, Norway, Singapore, UK</td>
<td>China, Ireland, Hong Kong, UK</td>
</tr>
<tr>
<td>Employees</td>
<td>64,000</td>
<td>n/a</td>
<td>883</td>
<td>210</td>
</tr>
<tr>
<td>Relative turnover (subsidiary)</td>
<td>324 (112)</td>
<td>23</td>
<td>4.2</td>
<td>1</td>
</tr>
<tr>
<td>Focal subsidiary</td>
<td>Department Stores</td>
<td>‘Contemporary’ brand team</td>
<td>As above</td>
<td>Retail Division</td>
</tr>
<tr>
<td>Stores</td>
<td>26</td>
<td>40 solus</td>
<td>70 solus</td>
<td>4 solus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160 stockists</td>
<td>48 concessions</td>
<td>250 stockists</td>
</tr>
<tr>
<td>Turnover (% group sales)</td>
<td>~20%</td>
<td>84%</td>
<td>As above</td>
<td>Not published</td>
</tr>
</tbody>
</table>

Figure 3.6 Storenet buying and supplying organisations

Department Co. lacked the scale to develop further its own-brand offer or the sales space to justify brand concession overheads. Instead, it offered a wide choice of ready-to-wear brands through ‘pooled’ relationships with a changing portfolio of branded fashion retailers. Sales floor areas were allocated to selected brand partners, though merchandised by Department Co. staff. Department Co. purchased stock at point of sale. Until then, stock ownership and accounting responsibilities remained with the fashion brand (although, above a threshold level, discrepancies became Department Co.’s liability). These sale-or-return contracts, though common practice in fashion retail, represented only a small proportion of Department Co. branch sales. The information systems created to support these arrangements are described in section 3.3.3. This brings me to my fourth and final case, that of Timbernet.

*S = Storenet, B = buyer, S = supplier, n = organisational indicator (Figure 3.3).
3.2.4 Timbernet

Timbernet organisations supplied and distributed timber and timber-related products into the UK market. The largest organisation in the network, Timber Co. was a forestry and wood product group which traded, processed and distributed timber in the UK. These activities accounted for 16 per cent of group sales. With no retail interests, its channels to market were diverse. There were three discrete market segments: DIY retailers, fabricators and trade merchants. In contrast to previous cases, these buying organisations had significantly smaller turnovers than Timber Co. They were also structurally dissimilar; in terms of organisational size, scale and (with the exception of National Co.) territorial reach (Figure 3.7).

<table>
<thead>
<tr>
<th>Organisation</th>
<th>TS1* Timber Co</th>
<th>TB1* National Co</th>
<th>TB2* Regional Co</th>
<th>TB3* Specialist Co</th>
<th>TB4* Fabricator Co</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary activities</td>
<td>Forestry and wood products industry</td>
<td>Distribution and supply of construction materials and services</td>
<td>Agents in building materials</td>
<td>Sawmill, plane, impregnation wood and agents in building materials</td>
<td>Other manufacturing non-store retail sales</td>
</tr>
<tr>
<td>Group headquarters</td>
<td>Finland</td>
<td>USA</td>
<td>Edinburgh</td>
<td>London</td>
<td>Hertford</td>
</tr>
<tr>
<td>Retail stores</td>
<td>None</td>
<td>4650</td>
<td>9</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Logistics and Supply Chain activities</td>
<td>20 Countries</td>
<td>28 Countries</td>
<td>Scotland</td>
<td>South East England</td>
<td>England</td>
</tr>
<tr>
<td>Employees</td>
<td>28,844</td>
<td>65,223</td>
<td>217</td>
<td>&lt;100</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Relative turnover</td>
<td>232</td>
<td>95.4</td>
<td>1</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Focal subsidiary</td>
<td>UK</td>
<td>UK</td>
<td>Scotland</td>
<td>London</td>
<td>Hertford</td>
</tr>
<tr>
<td>(region)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnover (% group sales)</td>
<td>16</td>
<td>20</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>UK Stores</td>
<td>None</td>
<td>1858</td>
<td>9</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Employees (approx %)</td>
<td>9</td>
<td>21</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 3.7 Timbernet buying and supplying organisations.

At one end of the spectrum National Co., the subsidiary of a US conglomerate, distributed Timber Co.’s products to the construction trade. This well-known brand had an

---

*T = Timbernet, B = buyer, S = supplier, n = organisational indicator (Figure 3.3).
established trade customer base serviced by a network of over 1,800 outlets. Regional and Specialist Co. were quite different organisations. Each serviced a limited geographical region. Regional Co. operated nine general merchant outlets across Scotland, while Specialist Co. was a small, specialist timber merchant in East London. Similarly, Fabricator Co. was a small, garden building manufacturer which sold locally and via the internet.

The negotiating strength of small, regionally based merchants such as Regional Co., Specialist Co. and Fabricator Co. was relatively weak. The mature market-place of small, independent trade merchants offered Timber Co. limited growth potential. Timber Co.’s business interests were skewed towards larger national and regional accounts. By 2005, trade merchant sector sales had shrunk to 40 per cent of Timber Co.’s turnover. Changes to Timber Co.’s market-facing structures reflected the dwindling importance of the sector. Do It Yourself and trade retail segments were combined. National Co.’s relative negotiating strength was strengthened by this move since Timber Co. wanted to develop key account management relationships with its centralised buying operations (conventional practice among major, DIY retailers). In comparison, buying relationships between Timber Co.’s regional sales offices and merchant branches of Regional Co. and Specialist Co. looked resource-intensive and unproductive. Timber Co. had already reduced its merchant portfolio by nearly 75 per cent and, in 2000, sought to alter the nature of those merchant relationships that remained. Timberorder, a web-based, ICT-based artefact, was introduced, as described in section 3.3.4. In the next section, then, I introduce each of the inter-organisational information system artefacts, on the use of which my study focused.

### 3.3 Inter-organisational information system artefacts

It was the largest organisational actors, Multiple Retail Co., Grocer Co., Department Co. and Timber Co., which instigated the inter-organisational information systems I researched, although, as Figure 3.8 shows, these artefacts were designed and used for
different activities. This section describes each of these four information systems. The
history and rationale of these developments are outlined and similarities and differences
explored.

<table>
<thead>
<tr>
<th>Buyer-supplier network</th>
<th>Clothingnet</th>
<th>Grocernet</th>
<th>Storenet</th>
<th>Timbernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational pseudonyms</td>
<td>CB1 Multiple Retail Co*</td>
<td>GB1 Grocer Co*</td>
<td>SB1 Department Co*</td>
<td>TB1 National Co</td>
</tr>
<tr>
<td></td>
<td>CB1 Clothing Co</td>
<td>GS1 Box Co</td>
<td>SS1 Contemporary Co</td>
<td>TB2 Regional Co</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GS2 Can Co</td>
<td>SS2 Modern Co</td>
<td>TB3 Specialist Co</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GS3 Glass Co</td>
<td>SS3 Occasion Co</td>
<td>TB4 Fabricator Co</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GS4 Wrap Co</td>
<td></td>
<td>TS1 Timber Co</td>
</tr>
<tr>
<td>Artefact (pseudonym) Stockplan</td>
<td>Category sales development</td>
<td>Store space</td>
<td>Timber order</td>
<td></td>
</tr>
<tr>
<td>Focal activity</td>
<td>Collaborative planning, forecasting and replenishment</td>
<td>Department Co. store merchandising</td>
<td>Merchant ordering</td>
<td></td>
</tr>
</tbody>
</table>

* Organisational actor that initiated network artefact development

Figure 3.8 Organisation-level actors, artefacts and focal activities

3.3.1 Clothingnet: collaborative planning with Stockplan

Stockplan was a bespoke, web-based software development, jointly specified by Multiple Retail Co.’s central information management team, seconded representatives from Multiple Retail Co. buying departments and invited suppliers. It was designed to support collaborative forward planning between Multiple Retail Co. and its general merchandise suppliers; demand and supply information was shared for joint analysis. This information included recent product sales and future production forecasts. Sales responsiveness could be improved, it was argued, through careful inventory and production schedule management. Stockplan used a structured, web-based graphical user interface (similar to a spreadsheet). Data relating to recent retail sales and current stock-holdings (in stores, retail distribution centres and supplier warehouses), as well as sales and production forecasts, was available. Multiple Retail Co. assigned user identification codes to control access and
data views. These data were a mix of user-entered fields input by Multiple Retail Co. and supplier personnel as well as categories populated by data from other, Multiple Retail Co. management information systems. Some screens included performance metrics generated by system-prescribed mathematical formulae.

In the early 2000s, Stockplan was rolled out across Multiple Retail Co.'s three non-food-buying groups and respective suppliers. Each buying department held cross-supplier meetings. Working practices were discussed and agreed for each product type. Collaborative planning milestones were incorporated into product development, and average replenishment lead times were settled, as were target stock and availability levels. Multiple Retail Co. buying teams agreed potential sales volumes, production patterns and initial colour/size breakdown on a style-by-style basis with each supplier. Stockplan use was intended to facilitate stock management of products with a relatively long selling season (i.e. over twelve weeks). For collaboratively managed products, the Stockplan system gave contracted suppliers access to detailed, actual and forecast, sales information. The system allowed Multiple Retail Co. and its suppliers to model changes to sales forecasts and future production schedules at store, distribution centre and finished goods stock levels. Weekly sales forecasts and future production rates were entered and updated by Multiple Retail Co. and supplier personnel respectively.

Contractual details, such as delivery dates, quantity per colour, sizes and size ratios, were agreed and entered by Multiple Retail Co. staff on to their contract management system. In addition to these contracts, Stockplan gave suppliers access to retail sales plans, current stock holdings and actual sales. Anticipated in-store display space, store launch dates and promotional events were included. This unusually detailed data was updated by designated Multiple Retail Co. personnel. Once products were on sale, weekly sales histories for each style/colour/size permutation were updated from electronic point of sale (EPoS) data. In turn, suppliers uploaded forward production plans. As production
progressed, the timing and quantities of finished goods produced were entered. Analysis was supported by various system-defined ratios. These ratios were used by both Multiple Retail Co. and supplier personnel to assess whether production plans supported forecast sales; stock was on target and surplus, end-of-season stocks avoided. For example, stock cover deviations were identified at style-colour-size level. As one Multiple Retail Co. employee (CBM1) explained, 'it kinda builds the made up stock that we have back to our targets. So as soon as you have a deficiency, it means that something on Stockplan isn't quite working as it should be.' Yet, as I shall go on to discuss in section 6.2, Multiple Retail Co.'s move to direct, purchase-order buying had unforeseen implications for Stockplan use.

3.3.2 Grocernet: deploying Categorysales for Category development

Categorysales was a relational database. Developed by Grocer Co.'s American corporate parent, this bespoke, data warehouse enabled retail sales data to be shared between Grocer Co. and its suppliers. Probably the largest proprietary repository of sales-related retail data in the world, Categorysales was unrivalled in terms of the granularity and time span of the product-related sales data held. Each supplier had access to the sales histories of its products. A user group, run by Grocer Co.'s US development team, consulted on further system development. As well as Grocer Co. personnel, this group included representatives from larger UK suppliers. Categorysales was pre-configured to support a number of specific, system-defined roles. Tailored log-in screens enabled targeted information to be presented to particular role holders, both within Grocer Co. and across its supply base. Opening screens prescribed users' system data views, as my field notes written at the time indicate.

4 'Deficiency' was a system-generated comparison of the stock required by the retailer against the stock predicted from the supplier. The system took the previous week's Supplier Actual Stock or Predicted Supplier Stock (if there were no Actuals) plus any Planned Production for that week minus the retailers' requirement. The field was calculated in Stockplan and was read-only for all users (company documentation).
[Having entered details of his personalised log-in and password,] he showed me a summary screen that popped up giving instant access to this year/last year accounts by product type. Very 'in your face' accounting information. In the centre of the screen were a number of links. The first provided a 'count' of products where there was less than 98.5% availability. There were 11 items listed. You could drill down into this screen by product and by store. [Glass Co. Analyst] showed me the next screen which had stock levels/store for about 5 items, 3 of which were negative, one seriously so (-1319). [Glass Co. Analyst] explained this deficit as a delivery that had not been booked in, but was being sold. It was a multiple of the volume of that product on a pallet. The smaller negatives (-1, -2) were where goods had been returned. No further call would be placed until these negatives were cleared. There was one product listed, with only one item on shelf. (field notes, 31.1.2006)

From a computer in a university cafeteria, this Glass Co. business analyst (GS3A1) assessed tailored category data relevant to his company and role. From this remote location, he monitored and interpreted data related to in-store goods receipt at a remote Grocer Co. store. Such standardised, role-specific screen views were supplemented by predetermined report formats.

Preformatted reports simplified data extraction, exception identification and analysis. Standardised reports were generated to provide category-specific data snapshots for Grocer Co. personnel. Replicable by period, category-specific data enquiries enabled data trends to be spotted and interpreted. An example of a category sales report is shown in Figure 3.9.

Figure 3.9 Weekly sales report produced by Can Co. for a Grocer Co. category team.
Weekly sales reports were produced. Grocer Co. category teams – and senior management – used this information to monitor key trends. For instance, sales variances year on year were commonly calculated. Whilst every supplier could generate Category sales reports for its own products, selected suppliers had cross-category sales data access. This meant access to competitors' sales data. These suppliers' ‘category advisors’ were selected to develop Grocer Co.-specific market insights across the category. This new role and the changes to buyer–supplier relations it produced are discussed further in section 6.6.

3.3.3 Storenet: sales space allocation with Storespace

In 2002, Department Co. introduced an electronic data interchange (EDI) system, Dailysales, to simplify the flow of ‘sale or return’ sales data to its eighteen branded fashion partners. The Department Co. information systems development team devised an EPoS process to capture and send product identification and price data to the appropriate brand owner. Product identification barcodes, recorded on product ticketing, were scanned through Department Co.’s tills and an aggregated, data transmission sent overnight (via electronic data interchange) for upload into its brand partners’ systems. This move away from separate, brand-specific terminals reduced Department Co. administration. A manual, item-level, paper-based stock management system was retained to tally stock movement (deliveries, sales and returns) between each brand owner and Department Co. branches. As well as balancing sales receipts, these branches’ finance and administration teams oversaw item-level reconciliation of stock deliveries and transfers. The electronic data interchange of sales took days out of sales-report generation and replenishment lead times. A three-day stock-replacement cycle was achieved for larger, London-based stores and further improvements were planned.
In 2006, Department Co.’s womenswear department led a local initiative to boost sales and profitability. Introduced to manage sales-space allocation across the business, the Storespace system employed diffusion curve analysis to allocate space on the basis of past brand-sales performance (Figure 3.10). As one Department Co.’s employee explained, ‘effectively this tool takes the sales profit and sales data and gives you a sort of optimum space to achieve optimum sales profit’. Within branded womenswear, the ready availability of historic ‘linear square footage’ data made this category an attractive system-trial choice. Historic floor plans were compared with brand-specific sales and profitability data. On the basis of previous seasons’ gross profitability, a predictive model was produced.

![Figure 3.10 Illustration of Storespace analyses](image)

At a branch level, system diffusion curves were used to forecast the theoretical sales and profitability uplift from an increase (or reduction) in each brand’s linear square footage. The Storespace tool recommended the selling floor space to allocate to each brand to achieve optimum Department Co. profitability. In limited store trials, profitability increases had been impressive. More was believed possible. Given branded fashion partners support, reduced stock-holding and improved sales/profit per square foot performance were anticipated. In each Department Co. branch, brand selling space was recalculated. Targeted sales densities and allocated linear square footage were provided for
each brand owner. Department Co. expected its partners to manage branch allocation and stock levels to achieve the targeted sales. These changes produced somewhat unanticipated results, which I discuss later (s. 6.3).

3.3.4 Timbernet: self-service ordering with Timberorder

This case focuses on the development by Timber Co., an innovator within the timber industry, of an internet-enabled ordering system, which I refer to as Timberorder. Timber Co. had exchanged order and delivery information via electronic data interchange with its largest DIY retail customers since the mid-1990s. Similarly, an XML automated ordering system was developed for medium-sized customers, unable to afford the cost and complexity of electronic data interchange implementation and maintenance. To complete this suite of options, Timberorder was developed as an internet-based solution for smaller merchant customers. It was originally conceived for the UK market, and development began with a local, UK software developer; however, a group enterprise resource planning system implementation created problems. Data interchange between this bespoke customer interface and the group's new, core management reporting system proved difficult to support. Timber Co. representatives joined the group steering committee and a Europe-wide customer interface project was conceived. In partnership with a leading enterprise resource planning system vendor, Timber Co. designed Timberorder as a direct link between its enterprise resource planning system and the high volume of small orders, entered by merchant customers. A fully integrated, internet-enabled customer interface was designed and built.

This self-service facility would, Timber Co. believed, provide merchants with secure, round-the-clock ordering. Also, customers could access stock availabilities, prices, delivery status and schedules online. Administration cost reduction and service-level improvements were anticipated. Registered merchant customers would browse customised Timber Co. product catalogues, select products and check availabilities according to
predetermined, delivery schedules Orders and deliveries were logged automatically in an online order history. Customer credit worthiness was checked and order requirements uploaded instantaneously into Timber Co.'s enterprise and resource planning system. Timber Co. was to pilot the implementation on behalf of the group. Merchants were invited to presentations about the system. On-site demonstrations were organised. Merchant employees were trained. Yet, despite the success of electronic data interchange and XML, this technologically sophisticated, bespoke solution was all but ignored by the merchant buyers it was designed to support. The reasons for this are explored further in section 6.1. Next, I move on to detail the multiple research methods I employed.

3.4 Data collection, analysis and evaluation

Flexible, multi-modal methods enabled the views and experiences of different groups to be researched (Dawson and Buchanan, 2005). Case analysis and theory development were conducted in parallel. This theorising process could be described as an 'alternate templates strategy' (Langley, 1999). Evaluation of my research methods highlighted the 'loose coupling' between participants' talk and the diverse meanings individuals (including myself) recognised in their and others' actions. These aspects of my research are discussed further in the three sections that follow.

3.4.1 Observational and participatory methods

I required hermeneutic methods that would enable me to focus on actors' understandings. So, I used a mix of observational and participatory methods, which included participants' documentary review. Core activities included non-participant observation and semi-structured interviews (captured by audio, digital and digital video camera recording), as well as informant review of company documentation (including computer-generated reports, technical specifications, training and procedural documentation). This primary data was supplemented by publicly available company data. Since my research involved
multiple, and in some cases competing, supply network partners, this approach raised
ethical issues beyond gaining individuals' informed consent (Appendix D). A summary of
the research methods used in each case is provided in Figure 3.11.

<table>
<thead>
<tr>
<th>Method</th>
<th>Observational</th>
<th>Participatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>System Overview</td>
<td>System-use</td>
</tr>
<tr>
<td>Clothingnet</td>
<td>4 demonstrations (video recorded)</td>
<td>10 head office meetings</td>
</tr>
<tr>
<td>Grocernet</td>
<td>2 overviews (1 audio recorded)</td>
<td>2 demonstrations (audio-recorded)</td>
</tr>
<tr>
<td>Storenet</td>
<td>2 overviews (audio recorded)</td>
<td>2 demonstrations (video recorded)</td>
</tr>
<tr>
<td>Timbernet</td>
<td>1 overview (audio recorded)</td>
<td>5 demonstrations (video recorded)</td>
</tr>
</tbody>
</table>

Figure 3.11 Primary data collection methods

Firstly, I observed individual actors' information system use and then prompted actors to explain to me what it was they were doing (a method inspired by cognitive walkthrough-techniques within the human–computer interaction domain (Wharton et al., 1994). I recorded video sequences, during which key informants talked me through how and why they used these systems. I trained the camera lens on the computer screen to record the movement of the cursor, rather than the features of my informants. This minimised reactivity. In the main, I found audio transcripts and still images more useful analytically than cursor movement sequences; although on occasion this data supported analysis. For instance, I reviewed video recordings to check which data fields informants
referred to in audio transcripts. Visual data is widely used in ethnography and selected images are married to my textual case analyses in Chapters 4, 5 and 6 (Banks, 1995). However, despite their apparent transparency, these images are also by their nature constructed (Fischer and Zeitlyn, 2003) and subject to issues of subjective interpretation and participant reactivity, like other ethnographic data sources.

Secondly, I shadowed meetings in which actors drew upon inter-organisational information system artefacts. As each case progressed, I underwent some limited form of socialisation. I was exposed to current business concerns and was able to capitalise on this during the semi-structured interviews that followed (see s. 3.4.2). I shadowed a series of scheduled, face-to-face meetings between buyer and supplier personnel. Non-participant observation placed fewer direct demands on company resources. With participants' agreement, I took digital stills of these meetings. I used these 'snaps' to capture and present non-verbal 'gesture' data (Becker, 1974) and to show actors' use of technological artefacts and documentation (e.g. strewn across a table). Also, I observed informants individually as they completed remote, asynchronous preparatory work. I discussed my observations with these participants afterwards (for an illustration, see Appendix E). These discussions also provided an opportunity to collect other forms of data.

Interviews were used to explore informants' perspectives and understanding of specific events observed during meetings. Here, I prompted informants to offer an account of their, and others', actions. I asked them to describe how they had been using documentary artefacts at precise points in their conversations. In addition to these reflections on their practice, I also encouraged individuals to tell me about the history of information system development and use. While they proved useful in the identification of different individual perspectives, these 'recollections of management action' (Partington, 2000) were treated with some scepticism, since actors might gloss versions for any number of reasons.
As my interview approach developed (a copy of my initial interview schedule can be found in Appendix F), I drew on critical incident and protocol analysis (Easterby-Smith et al., 2001) and embraced the concept of drilling (Alvesson and Deetz 2000), whereby the researcher in the research process learns more and more about the case study object and that this learning may facilitate the transcendence of norms and scripts that otherwise may guide interview statements. (ibid., p. 197)

Drilling, coupled with the use of observational data to generate practice-relevant questions, enabled me to probe beneath conventional accounts and gain deeper understanding of informants’ interests and positions. I was able to extend, explore and, on occasion, challenge interviewees’ accounts. These accounts, even of the same events, often differed. Indeed the identification and exploration of apparently consensual or conflicting interpretations was intrinsic to my study. These differences were used (sensitively) as probes for further information. This approach helped me to balance what Walsham (1995) refers to as the twin dangers of excessive passivity and over-direction. Interview data sensitised me to competing logics and possible points of contention. Interviewees were regarded as ‘politically conscious’ actors (Alvesson and Deetz, 2000).

3.4.2 Case analysis

After each meeting or interview I typed up substantive field notes, reviewed company documentation and indexed my audio and digital video recordings. I recorded analytical notes and adduced relationships in my research journals. These techniques supported and encouraged an overlap between data collection and analysis (Easterby-Smith et al., 2001; Eisenhardt, 1989; Van Maanen, 1988). As part of this process, I wrote up individual case studies and presented my work at conferences (Emberson, 2009; Emberson and Storey, 2006a, 2007, 2008a;b). Paper writing helped me to make sense of my data (Eisenhardt, 1989), explore alternative theoretical perspectives and develop my ideas. I drew a distinction between the empirically real and bounded settings of data collection sites and
my analytical narratives, which Knight and Pye (2007) refer to as ‘empirical’ and ‘analytical’ cases.

Analytic narratives of eight buyer–supplier relationships (two from each network) were constructed and compared. As Bessant et al. (2005) before me, I draw upon Greenwood and Hinings’ (1993) work on organisational archetypes to argue that ideal types provide models against which organisations can compare themselves. Indeed my categorisations offer even greater comparability since in each case it was I who made the judgement, supported in my task by primary data, in the form of the personal testimonies of current organisational actors obtained during semi-structured interviews, and secondary data, which included long-term trends in published company reports. As I now go on to explain, I used this evidence to classify the predominant inter-organisational learning processes in each case (Figure 3.12). For, according to Hamel’s (1991) work developed by Ebers, inter-partner learning may be recognised by competitive collaboration, learning and bargaining power and shifts in symbiotic and pooled resources.

<table>
<thead>
<tr>
<th></th>
<th>Clothingnet</th>
<th>Grocernet</th>
<th>Storenet</th>
<th>Timbernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of similar resources and capabilities</td>
<td>Global logistics</td>
<td>None evident</td>
<td>Retail store management, especially visual merchandising</td>
<td>None evident</td>
</tr>
<tr>
<td>Initial form of collaboration</td>
<td>Competitive</td>
<td>Co-operative</td>
<td>Co-operative</td>
<td>Competitive</td>
</tr>
<tr>
<td>Underlying learning processes</td>
<td>Value Appropriation</td>
<td>Value Creation</td>
<td>Value Creation</td>
<td>Value Appropriation</td>
</tr>
<tr>
<td>Initial relationships</td>
<td>Symbiotic</td>
<td>Symbiotic</td>
<td>Pooled</td>
<td>Symbiotic</td>
</tr>
<tr>
<td>Resultant relations</td>
<td>Pooled</td>
<td>Symbiotic</td>
<td>Pooled (scope increase)</td>
<td>Symbiotic</td>
</tr>
<tr>
<td>Inter-organisational relationship change</td>
<td>Significant</td>
<td>Significant</td>
<td>Limited</td>
<td>Limited (branch-level rupture)</td>
</tr>
</tbody>
</table>

Figure 3.12 Inter-organisational changes: an overview

Competitive collaboration occurs whenever two partners seek to extract value in the same form from their partnership – whether this is the benefits of inter-partner or of short-term economic bargains. In these cases there is likely to be friction between managers. As I found, at Timbernet both Regional Co. and Timber Co. were interested in
maximising the short-term benefits from Timberorder use (described in s. 7.4.2). Furthermore, Specialist Co. exploited the potential of Timberorder to capitalise on fluctuating market prices and thus attempted also to secure a short-term bargaining advantage. For these reasons, I classified Timbernet as exhibiting predominantly competitive collaboration. I gave Clothingnet the same classification, though for slightly different reasons.

At Clothingnet, although managers were less obviously troubled by arguments over value appropriation, Multiple Retail Co. was clearly pursuing a learning agenda while Clothing Co. seemed, like Specialist Co., intent on maximising its short-term earnings. As Hamel notes, in such a relation, one party, Clothingnet in this case, risks becoming ever more dependent upon the other. As is explicated in section 7.2.1, whilst in the main the relationship between the two companies remained predominantly symbiotic, there was already pooling of global logistics and evidence of an increasing overlap in capabilities and resources in new product development and offshore sourcing (these aspects are discussed in detail in s. 6.2). Despite its relatively weakened negotiating strength, at the time of my research Clothing Co. remained an important Multiple Retail Co. supplier.

Although the scope had increased (see s. 6.3), supply relations between Department Co. and its prêt-a-porter branded fashion suppliers had remained pooled. Despite the operational difficulties described and explicated in sections 7.2.3 and 7.3.1, I classified supply relations in the Storenet case as predominantly co-operative. Department Co. continued to provide its branded fashion suppliers with a share of its prime retail sales space in return for a relatively risk-free percentage profit-share arrangement of Department Co.-based sales. Indeed, although suppliers introduced their own staff into selected Department Co. stores, these changes were intended to create and increase joint value. There were similar changes to structure and form at Grocernet.
Here, buyer-supplier relations had changed significantly. The nature of these changes was again indicative not of value appropriation, but rather of Grocer Co.'s intent to create more value. Drawing upon Ebers' (1999) typology, we can say that Grocer Co.'s relationships with its suppliers were consistently symbiotic. Though innovative, these buyer-supplier relations may thus be characterised as consistently co-operative (as discussed further in ss. 6.4, 6.5, 6.6, 7.3.3). Indeed, as at Storenet, the changes to form and structure evident are in line with the determinants of success for co-operative collaboration identified by Hamel and shown in Figure 2.2. Turning to the final section of this chapter, I now evaluate key aspects of my research design.

3.4.3 Evaluation

The in-depth nature of my research study brought a number of research issues to the fore. I found the collection of 'naturalistic' data problematic. My experiences led me to question whether analysis of 'talk-in-interaction' could provide the insight I desired. Finally, I had mixed success in the role of an 'independent observer'. In the Clothingnet case, previous social roles helped me negotiate access, and gain rapport and enabled participants to speak frankly, yet here I faced emotional challenges as I struggled to maintain my research self. I consider each of these areas in turn.

As I started to observe meetings, I explored the effect of my presence – and absence – on these 'naturally occurring' interactions. On one occasion, as I had shadowed the participants already, I asked them to self-record another of their meetings. I hoped this might reduce reactivity. On the contrary, it seemed to increase it. During the meeting, participants addressed comments to me via the recording equipment. (An annotated transcript of the first part of their exchange is attached as Appendix G.) I was interested in meaning-making beyond that produced by talk-in-interaction. And, since I was not present at the meeting, my capacity to produce a meaningful ethnographic account was limited. As
my study progressed, I was faced with further cause to reflect on this apparent ‘loose coupling’ (Alvesson and Karreman, 2000) between what was being said and what was being done.

Participants’ interpretation of what happened in meetings could be radically different from mine. This was the case in one routine weekly meeting between Bryn, a Clothing Co. supplier merchandiser (CSM3), and Sally, a Multiple Retail Co. buyer (CBM3). I made a note to discuss an interaction midway through the meeting about a delivery failure. This three-minute exchange seemed to provide a telling illustration of the problems of offshore production for new time-critical fashion products (a transcript of the extract can be found in Appendix H). Following the meeting, I sat with Bryn and went through the incidents I had marked up, one by one. When it came to this particular example, he explained, Sally was a new member of staff who had joined Multiple Retail Co. eight months previously. She did not yet have a good grasp of the figures. He had exploited this to ‘buy time’.

My initial interpretation of this discussion was very different: both from the surface discursive meaning inter-subjectively constructed during the meeting and from Bryn’s subsequent account. This insight highlighted a number of theoretical issues for me. From a discursive standpoint, reading this ‘naturally occurring’ interaction as a piece of social text failed to explain how language was related to issues of meaning and practice. Much discourse analytic research is vulnerable to this criticism (Alvesson and Karreman, 2000). The use of language in the corporate management world is sophisticated and politically conscious, separate from or loosely coupled to meaning (Jackall, 1988, cited by Alvesson and Karreman, 2000). This point is well demonstrated by Bryn and Sally’s conversation. The hermeneutic method I employed, specifically self-review of critical incidents in which the participants were involved, gave my interpretations a methodological depth that stands
in stark contrast to reliance on analysis of naturally occurring, digitally recorded and meticulously transcribed talk (Hammersley, 2003).

As my ideas about relevant structural entities, cultural ideas and agential groupings crystallised, indexed interviews and other documents were reviewed and selected extracts transcribed. This iteration between data and analysis informed subsequent data collection, preparation and case analyses and continued throughout this write-up. My findings relating to organisation-level networks were composed from semi-structured interviews, company documentation and secondary sources available in the public domain, whereas I draw principally on primary data to describe what I believe are the relevant structures, ideas and agential groupings in contrasting situations, selected from each case. How I could use Archer’s analytic framework (described in s. 3.1) to adduce the emergent relationships’ properties in each case did not emerge fully until the second draft of this thesis.

My analytical and theoretical perspective altered during this research. I wished to give weight to technological artefacts and their human ‘users’ whilst avoiding determinism. So, during initial case and company analyses I experimented with actor-network theory (Latour, 1993, 2005), routine theory (Becker, 2004, 2005; Feldman, 2000, 2003); soft-systems methodologies (Checkland and Holwell, 1998) and information systems as simulacra (Baudrillard, 1993, 1994). The retrospective adduction that underpinned the final narrative provides analytic (rather than statistical) generalisability across cases. These analytical narratives were not constructed as definitive accounts of the ‘way it really happened’ (Dawson and Buchanan, 2005). They were instead careful, analytical constructions: prepared for subsequent cross-case analysis and in order to make a contribution to knowledge. Other narratives have been constructed for other purposes. Company reports proved a particular challenge, given that I was party to confidences from interconnected commercial partners. I found that the ethical model of medical research and its principle of minimising harm to the individual offered only limited guidance.
In general, my approach to the research role resembled that of Gummesson’s researcher as ‘analyst’ (1988), a position theoretically congruent with case study research (Benbasat et al., 1987). I felt it important for both practical and theoretical reasons to attempt a degree of impartiality. This research was conducted across dyads of interdependent companies. My research work took me into what felt, at times, like opposition camps. I needed to be as impartial as possible with each ‘side’. In the field, I tried to maintain the role of ‘outside observer’ (ibid.) and preserve a research identity distinct from the organisations I researched.

My role was conditioned by the case and by the level of rapport established with case informants. In contrast to those of an involved researcher (Junkers, 1960, cited by Hammersley and Atkinson, 1995), the disadvantages of this ‘observer-as-participant’ stance (in terms of limited access to certain organisational areas and company data) were less significant, owing to my partial ethnography approach. I was often surprised at the freedom of access I was granted. Some of the discussions I heard when I shadowed meetings opened my eyes to what was judged acceptable practice. Perhaps as a woman researcher I was considered less of a threat. But that is speculation on my part. Whatever my intentions or persona, my research identity in the Clothingnet case was different.

I had had previous research links with organisational actors, and with some of the informants, in every case except Storenet. In the case of Clothingnet, however, I found that the role of outside observer presented emotional challenges. Five years previously I had worked alongside several of these informants. I grappled with this identity shift in interviews, when I shadowed meetings and during the night. These difficulties are reflected in my research journal, interview transcripts and field notes. I wrote the extract which follows after my second visit to a Clothing Co. site:
I am in a whirl after this meeting. More old faces. And I am conscious that my presence will probably not go unremarked. Hence, I've just fired off emails both to [ex-colleague and Finance Director], since I'm trying to operate 'officially' and 'under the radar' at the same time. [ex-colleague and Production Director] was in reception. [Ex-colleague 1] and [name?] I presume were at an island of desks we walked past. 'The jobs have got quite administrative' [ex-colleague], sitting next to [ex-colleague]. Also, [ex-colleague 2] - who I walked past the first time - ‘You didn’t recognise me, did you?’ I hadn’t. [From ex-colleague 3], a brief hello. It’s like a dream – a room crowded with people you know, but haven’t seen for ages, all coming at you at once! (field notes, 13.10.2005)

In this setting it was hard to reposition myself as an ‘outside observer’. On more than one occasion my interviewees started their answers with ‘You know, Caroline ...’ . I noticed myself resort to an ‘As a researcher …’ mantra as I made the effort to re-establish the independence of my position. These experiences lend support to the analytical distinction Archer (1995) draws between persons and the roles we inhabit from which our social identities emerge.

**Conclusions**

This chapter has described and discussed a theoretical frame that, for the purposes of my study, overcomes the deficiencies evident in more common, alternative epistemological perspectives, notably structuration and practice-based approaches. Archer’s morphogenetic social change theory enables inter-organisational information systems to be conceptualised as cultural artefacts and thus supports investigation of changes to individual buyer and supplier actors’ behaviours and their use of information systems over time. Further, as Hamel (1991) also points out, in contrast to more hypo-deductive survey-based research designs, the case-based research design that I selected enables a fuller range of cooperative and competitive collaborative practices to be investigated than is permitted by a narrower, hypothesis-testing approach.

My four supply network settings indicate the diversity of buyer-supplier relations and inter-organisational information systems artefacts evident in UK retail. This novel combination of observation and participatory research methods, including an adapted form
of cognitive walkthrough, were devised to reveal any gap between the designers of these systems intentions and other actors' unanticipated use, or indeed their non-use. In the three chapters which follow, I lay out my findings in relation to the cross-case analysis of actors' behaviours described here. Specifically, I examine the range of actors' behaviours, the extent to which actors adapted their behaviours to the system, and the extent to which they adapted the system.
Chapter 4 Patching Ploys and Local Plots

In this chapter, I seek to answer the first of my main research questions:

- Within individual, interdependent buyer and supplier organisations, how did actors respond to and use inter-organisational information system artefacts that were, at least in part, 'given' to them?

Actors’ use of inter-organisational information systems was highly selective. In the majority of buyer-supplier relationships studied, many primary network actors reportedly made no use at all of these artefacts, others made only partial use of them, and others again sought to adapt the system to their own use.

In the previous chapter, I laid out the context of my research and described the four retail supply networks that provided my study setting. I also detailed the inter-organisational information systems used in each of these networks. In this, the first of my three findings chapters, I report on my research findings as they relate first to individuals’ and secondly to intra-organisational groups’ partial use of, and unilateral adaptations to, these systems.

The data presented in this chapter focus on two particular types of adaptation, which I refer to as ‘patching ploys’ and ‘local plots’ (Figure 4.1). By ‘patching ploys’ I mean the various ways in which individual users filled in the gaps when inter-organisational information systems were incomplete so as to allow these systems to work. By ‘local plots’ I mean the practices of small groups of individuals within an organisation who worked together to adapt either the way they worked with the system or the way the system itself worked.
These patching ploys exhibited a number of distinctive features. These adaptations were the result of individual action. The adaptations made were frequently hidden. These changes were not obvious, either to other inter-organisational users or even, in some cases, to more senior actors within the same organisations.

These individual activities were unofficial and unilateral, and rarely co-ordinated with the actions of other network actors. In some cases, these actions were instigated for personal gain. In others, actors’ motives were more altruistic, and centred on doing a good job and facilitating organisational and inter-organisational processes.

Many of these ploys were undertaken by users with a relatively limited span of managerial control. As these users’ inter-organisational autonomy and authority increased (e.g. for those who held positions as buyers), so too did the tendencies for expedient system use, for example the opportunistic exploitation of system weaknesses, in the pursuit of personal and organisational gain.

Local plots, the second type of adaptation discussed, included pre-mediated modifications to the information system artefacts themselves as well as limited, if routine, co-ordinated actions. These actions were, tacitly or explicitly, kept secret among small numbers of individuals within a single organisation.

This chapter is organised in two parts. Illustrations of patching ploys are presented first, followed by examples of local plots. In each case, the distinguishing features and outcomes are traced. Five examples of patching ploy adaptations drawn from the four supply networks I researched are presented here. These adaptations demonstrate ‘patching ploys’ in terms of substituting system data, delivering the plan, farming the data, staying in control, pre-empting price negotiations and dodging delivery cut-off times. Three examples of local plots are presented, namely, defining success on the sales floor, constraining system limits, and levelling schedules.
<table>
<thead>
<tr>
<th>Behavioural type</th>
<th>Features</th>
<th>Examples (case)</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| I Patching ploys | Hidden data inaccuracies  
Individul action  
Actions invisible to other inter-organisational actors | Falsifying system data (S) | Allows system to work  
Leaves fundamental shortcomings unaddressed |
|                  | Altruistic, sense of obligation and personal reluctance  
Long-standing practice | delivering to plan (C) | Covered up difficulties  
Chance discovery |
|                  | Synthesis between individual expertise and relevant data,  
Discrete system use congruent with individual interests and goals | Farming the data (G) | Mutually-beneficial, efficient allocation of product from this producers perspective |
|                  | Impulsive individual actions to maintain personal power and position | Staying in control (C) | Short-term, individual benefit |
|                  | Exploitation of unanticipated system features  
High compatibility between newly available data and personal interests  
Unilateral gain | Pre-emptive price negotiations (T) | Unanticipated threat to strong, inter-personal trading relations |
|                  | Expedient use for personal gain.  
Exploitation of intrinsic design feature. | Dodging delivery cut off times (T) | Apparent worsening of suppliers’ delivery schedule adherence. Greater buyer leverage |
| II Local plots   | Localised, co-ordination  
Secrecy within the group explicit  
Recurrent, deeply ingrained nature of individual/organisational ‘solutions’ | Levelling schedules (C) | Appearance of level production  
Surplus stock hidden |
|                  | Premeditated, unilateral concealment designed into the artefact itself | Constraining system limits (T) | None specifically identified |
|                  | Trying to do a good job  
Exploitation of tools/mechanisms within one’s personal control  
Informational counter-plots | Defining success on the sales floor (S) | Targets become a self-fulfilling prophecy  
Conflict between aggregated brand and bestselling product focus  
Dissatisfaction of higher-sales potential brands |

Figure 4.1: Summary table of actors’ patching ploys and local plots

### 4.1 Type I Patching Ploys

In this section I describe the patching ploys evident across my study. Five examples of patching ploys are presented.
4.1.1 Falsifying system data

This first example, from the Storenet case demonstrates unilateral action on behalf of administrative employees in the buying organisation, Department Co. To remedy accuracy problems in the collection of electronic point of sale data, this organisation’s clerical staff routinely supplemented and amended the product data transmitted to their branded suppliers. From a Department Co. perspective, if the correct product price was transmitted, file transmission error reports could be processed and branded sales and stock values reconciled. For the branded fashion suppliers who received this data, however, hidden product data inaccuracies meant stock records drifted, sold inventory went unreplenished, and future product development based on historic sales trends was misguided.

Electronic point of sale data were captured at Department Co. tills and transmitted overnight, via electronic data interchange\(^5\) (EDI) to the relevant brand supplier. At the till point, Department Co. sales assistants identified products by brand and linked them to a particular supplier, first by scanning the ticket on the product and then by selecting and scanning the appropriate supplier barcode from a prepared sheet (Figure 4.2). Carol, the Department Co buyer (SB1B1), described the process to me as follows:

The sales data is collated and transmitted to the brands at the end of the day through the EDI link. Now that was always a quick fix for the [group] in terms of how we transfer that data, because there are some issues, operationally, because we don’t hold supplier stock files in our system. We’ve had to find a fix in order to read the supplier barcodes.

At the end of each day, Department Co. stores sent Dailysales data relating to sale-or-return products to their own head office and to the relevant branded fashion suppliers via electronic data interchange. Carol described the processes used to capture and transfer this data as ‘a quick fix’.

\(^5\) As described earlier, I refer to this EDI system as ‘Dailysales’.
Department Co. did not use standard identification labels on the sale-or-return products supplied by its branded fashion partners. These products were marked instead with supplier identification details. These supplier identification numbers however were not held by Department Co. So, there was no validation of product identification or price at the till point. As Roger, Department Co’s electronic point of sale manager (SB1M9), explained,

The biggest issue we have with sale or return is they are labelled - I wouldn’t say with a ticket - but there is a label on them with some information and a barcode. That barcode, it doesn’t appear to be a standard. All [our] point of sale systems are geared up to an EAN [European Article Number] standard linked up to a price file and that’s all the information you need. For sale or return, we don’t have that capability.

From a Department Co point of view, the barcodes of sale or return products were incompatible with their existing system standards. Significantly, this meant that there was no means of confirming the relationship between a particular product and its price. As I show, there was good reason to suspect that the link between what was sold and what was recorded as sold was not robust.

Figure 4.2: Till barcode scanning sheet Department Co.

At any one time, Department Co. stores stocked around 350,000 lines. Supplied from around twenty different and changing supplier sources, sale-or-return products were a small proportion of these lines. The unusual nature of sale-or-return till processes, coupled
with a high degree of supplier-product complexity, made product identification at the till point complicated for Department Co. sales employees. Department Co. sales assistants regularly mis-keyed product or price information and identified brands incorrectly. On my visits to stores, sales assistants and managers explained to me the difficulties they had identifying products where tickets were missing or had been swapped by customers. For example, I noted the following after a discussion with one Department Co. department manager:

Tills ask for both [supplier] and [product] barcode entry. In the past, used to override the barcode request (i.e. press Enter). Now sales personnel are asked to enter barcodes for everything. The first scan off the board [Figure 4.2] could be wrong; there may be no [product] barcode. (field notes, Department Co. brand B01 visit, 13–14.9.2006)

Overriding the product barcode request had been common practice. This omission meant that only the brand supplier and price were recorded. During my fieldwork I observed Department Co. sales assistants scanning both ticketed garments and various barcode sheets (Figure 4.2). Mis-scans at the till point were a regular occurrence. In combination, these problems eroded the relationship between physical sales and Dailysales reports. As Carol, the Department Co. buyer (SB1B1), confirmed, ‘That’s pretty fraught with errors’.

So, limited product and price validation, combined with a non-standard, poorly designed and executed double-scanning process, meant Dailysales sales data were unreliable. EDI pre-transmission checks revealed missing product details, values and brand identification. These inconsistencies produced product mismatch transmission errors. Once the customer and the product had left the store, however, verification of the product was impossible. Department Co. clerical staff therefore substituted ‘best guess’ brand, product or price details to enable data to be transmitted. No one, least of all geographically and organisationally remote branded fashion merchandisers, was able to identify what differences might exist between these Dailysales data reports and physical product sales.
These data amendments were significant since Storespace’s elegant mathematical modelling was based entirely on historic Dailysales figures. Not only that, but these electronic point of sale data errors produced faulty stock records, triggered inaccurate replenishment and led to financial irregularities (a point that is elaborated in s. 5.4). As was common across the industry, product sales histories were also a central component of product and range development, as Andrea, head of merchandising at Occasion Co. (SS3M1), explained to me:

When I first started, there was a collection, and I got it out in the shops and I’d sell ten of them [pointing to garment] and five of them and three of them and 35 of them. I’d pick on that 35 and say, designers, do that again. Get rid of anything that only sold three units and let’s move on. OK. That didn’t work, let’s build on what did work. And then we started building, and lo and behold, a couple of years later we had an Occasion-wear business on our hands. That’s how it all started. And we were known, before I even came to [Occasion Co.], it was known for knitted dressing. It was very much soft dressing. Suddenly we started doing devoré dresses and silk shirts.

Andrea joined the Occasion Co. business from a large multiple retailer. She was an experienced merchandiser, used to reading sales figures and modifying her collections as a result. At Occasion Co. she deployed these skills to reorient the business from one focused primarily on knitted products to one embracing a broader range of products. Her actions demonstrate the centrality of historic sales analysis to the direction of future product and range development. Suspect sales figures directly affected future design choices.

This example demonstrates how the mundane substitution of data to facilitate electronic data interchange transmissions by individual Department Co. clerical staff served to allow the system to work; in the sense that electronic data interchanges could be transmitted successfully. Clearly, however, other, unintended consequences arose from these clerical substitutions. Inaccurate product sales data were transmitted and fundamental weaknesses in the collection of till point data were left unaddressed. Significantly, the extent of these hidden practices was invisible to other network actors. Furthermore, these
inaccuracies had particular practical repercussions. They affected the accuracy of Department Co.'s own sales and stock recording (stock loss was a particular concern) and had implications for its supply network partners’ ongoing replenishment, and new product and range developments. My second example comes from the Clothingnet case and shows another, this time more altruistic, pattern of individual patching ploy behaviour.

4.1.2 Delivering the plan

As with the previous example, this illustration from the Clothingnet case demonstrates the hidden and surreptitious nature of actors’ patching ploy practices. In addition, rather than personal gain this extract reveals the more altruistic sense of obligation that led to the continuation of these unofficial practices. Specifically, in this instance I explore how a Clothing Co. administrator overstated figures in routine, weekly stock declarations. Although in this part of the Clothing Co. business this practice, known as stock ‘forecasting’ (i.e. declaring stock as present in the warehouse prior to its arrival), was officially frowned upon, this administrator actively, if reluctantly, engaged in this activity, apparently to bolster the appearance of Clothing Co.’s conformance to expected supply performance.

Multiple Retail Co. required Clothing Co.’s merchandisers to declare the quantity of finished goods stock held in the UK on a weekly basis. These stock declarations were subject to two golden rules: firstly, ‘Thou shalt not forecast’, and secondly, ‘Thou shalt declare everything in the warehouse’ (David, CSM1). Store replenishment requirements were then calculated by Multiple Retail Co. systems and relayed as store-specific, despatch instructions.

As goods were received into its UK warehouses, administrators at Clothing Co. collated details of the products received by style, colour and size. The weekly predicted production rate and the actual amount of finished goods stock available were then
compared before a finished goods stock figure was transmitted to Multiple Retail Co. This check was to ensure that predicted production levels had been achieved.

Since there was a short time delay between this stock notification and the time of the first despatches to store, if there was a shortfall between production and finished goods stocks Clothing Co. administrators were able to include goods receipts for imminent deliveries in their warehouse stock figures on the assumption that these goods would arrive before despatches to store were needed. This practice was known as ‘forecasting’.

Though it was frowned upon officially by both Clothing Co. and Multiple Retail Co. managers, forecasting allowed administrators to achieve the best possible match between predicted production rates and available stock. Clothing Co. managers claimed that this practice had reduced; however, although such intricate data management could be perilous, my findings show evidence of its continuation. Annette, a Clothing Co. administrator in the menswear team (CSA3), told me about the following, rather extreme, incident:

I got to the stage where I'd forecasted and forecasted and forecasted and forecasted. And I knew exactly where I was going. And then all of a sudden one of the vehicles was stolen with all the contents. And I'd already forecasted it, hadn't I? ... You think, how do I get out of this one? I think we made up every single lie that you could possibly do. And then you can go for ages and ages and you're perfectly OK. I mean, it's very, very difficult. We got to the stage where we weren't supposed to forecast at all and then it slips. I mean at the end of the day, it's worse for me.

Annette described to me how in the past she had claimed routinely that finished goods stock was present in the warehouse before it had arrived. The cumulative, week-on-week effects of this subterfuge required careful data handling. Each week’s planned production had to be balanced against what had been declared previously and what stock Multiple Retail Co. had called already. Although for some time the practice had been eradicated at Clothing Co, Annette was under pressure from both Multiple Retail Co. and Clothing Co. to ensure that promised production schedules were met. This form of
forecasting was one of the few means she had at her disposal of satisfying these mutual expectations.

Annette made every effort to ensure finished goods stocks agreed with the predicted production plans held on Stockplan - even when this meant she had to include stock not yet received safely. Further, she engaged in this time-consuming data manipulation against her better judgement. Clearly, she felt obliged to engage in this finagling of the figures. It was not something that she entered into with enthusiasm. As she explained, personally she felt it made her job ‘worse’.

Despite Annette’s sustained success at forecasting, as the above illustration demonstrates the reality of the theft intruded to reveal the extent of her deception. Were it not for this freak occurrence, Annette’s reluctant though sustained manipulation of the data would have continued to go unnoticed. Whilst it was possible to distinguish between Annette’s fictitious figures and the reality of finished goods stock held by Clothing Co., one had first to have reason to suspect that there might be a difference.

In addition to reflecting characteristics in common with previous examples, the patching ploys behaviour in this case demonstrates a number of distinctive features. When compared with the earlier example, this case seems to demonstrate a more altruistic sense of obligation coupled with some personal reluctance. Also, there seems to be evidence here of the re-emergence of deeply ingrained ‘solutions’ to recurrent, unresolved inter-organisational problems. The chance discovery of this long-standing practice shows how actors may cover up operational difficulties without detection for quite long time periods. Although the theft that brought the systematic nature of this patching ploy to light was an out-of-the-ordinary occurrence, as I go on to discuss in a later example (s. 4.2.1) these deep-seated routines had become something of an art form in other parts of the Clothing Co. organisation. My next illustration explores the somewhat more positive outcomes of
individual actors' systematic patching ploy adaptations. This time the example is taken from the Grocernet case.

4.1.3 Farming the data

Some actors had developed the ability to interpret information system data in order to identify, and take action to resolve, problems congruent with their remit but outside their 'normal' organisational jurisdiction. Derek, a new Glass Co. analyst (GS3A1) in the Grocernet case, discovered that Categorysales data could be used to analyse and prioritise Glass Co. supplies to Grocer Co. stores. Through careful, ongoing monitoring of store-level Categorysales data, Derek was able to ensure that available Glass Co. stock was delivered to those stores where it would sell most effectively. Thus, through unilateral action he was able to use the preferential access he had to Categorysales data to amend store-level sales forecasts and ensure that Glass Co. sales rates at Grocer Co. grew.

It was staff changes at Glass Co. which led, in 2003, to Derek stepping into the analyst role. His store-level analysis of Categorysales data revealed opportunities beyond the production of routine reports. As Derek explained, targeted store replenishment enabled him to maximise sales at times of peak demand:

It's only when I got hooked on the thing and realised what it could do ... that we exploited a much bigger play on what we could get from it. Not least of all, maximising Christmas, in what we could do by getting the right stock in the right place and keeping it there.

Derek saw advantages for Glass Co. if Categorysales data could be exploited to target supplies and improve Grocer Co. products' in-store, on-shelf availability, particularly over the peak Christmas trading season. These supply-focused interventions were well received by Grocer Co. During the run-up to peak trading and range change periods, Derek began to spend two or three days a week at Grocer Co.'s head office. He was included in trading team away-days. His job objectives and performance appraisals
were jointly agreed between Sophie, Glass Co.'s category manager, and the Grocer Co. buyer.

As one of only a dozen advising supplier personnel authorised to write his own 'scripts' (order forecasts), Derek found himself in a rather privileged position. As he said, 'it's a big thing really'. Derek explained to me how, though this was subject to formal approval by a Grocer Co. supply analyst, he could adjust order forecasts over a three-week forward horizon. Indeed, sales analysts often accepted these suggested 'collaborations' without further query. I asked Derek whether or not he first checked Glass Co.'s capacity to meet these new plans prior to suggesting them on the Categorysales system. He replied, 'Well, I'm not going to shoot myself in the foot.' I acknowledged the naivety of my question (field notes, 31.1.2006).

This case illustration demonstrates how, on occasion, a synthesis could be achieved between individual expertise and access to relevant data. Through discreet adjustments to Grocer Co.'s order forecasts, Derek was able to align Grocer Co.'s needs with Glass Co.'s interests and capabilities. This close integration of supply capability and demand profile produced a highly effective and efficient store-level allocation of this producer's resources.

Buyers, however, were not always so amenable to suppliers' suggestions. Indeed, as the next example taken from the Clothingnet case shows, some buyers used information systems to demonstrate the superiority of their authority. Such actions may be seen as an attempt to rebalance power relationships that might otherwise be seen to have tipped too far in the suppliers' favour.

4.1.4 Staying in control

Despite the tightly coupled nature of ordering and despatch routines already discussed in the Clothingnet case (s. 4.1.2), where sales proved slow and stock built up Multiple Retail Co. buyers cancelled confirmed orders unilaterally. This shows the superior power of the
buyer. Multiple Retail Co. merchandisers’ performance was assessed on their ability to manage production. This was a competitive assessment, with only those top-performing merchandisers receiving a bonus. Merchandisers who were prepared to demonstrate a certain ruthlessness gave themselves a personal performance advantage.

Stockplan was a critical component in Multiple Retail Co.’s supply control. Multiple Retail Co. merchandisers’ and suppliers’ performance was measured in terms of their ability to maintain agreed in-store and finished goods stock levels. If sales rates fluctuated, contracted stock could drop or build rapidly. If Stockplan data showed higher than planned stocks, Multiple Retail Co. merchandisers looked for ways to reduce their contracted commitment. If David was seen to deviate from agreed production plans, Clothing Co. could be punished by order cancellations. In a separate interview, Paul explained:

Well, put it like this, if there was a product that was really, really slow and that we had loads of commitment on, if [Multiple Retail Co.] have a chance to cancel any of that they will, because it’s no longer our problem and it transfers the issues back to the supplier. Obviously, the supplier doesn’t like that. Umm. If it was something that was ridiculously fast, you see, what is the point of cancelling it? (Paul, Multiple Retail Co. merchandiser (CBM1))

Though distancing himself personally from the practice, Paul acknowledged that Multiple Retail Co. merchandisers would cancel confirmed system orders on slow-moving product lines. As he explained to me, order cancellations were a buyer prerogative. This penalty could be applied or withheld at the merchandisers’ discretion.

As in the Grocernet example described previously, Paul’s description highlights how, despite clear evidence of tightly integrated and systematic co-operative behaviours, more competitive, opportunistic behaviours did on occasion intrude. Despite these competitive behaviours the supplier, Clothing Co., and the Multiple Retail Co. merchandiser continued to collaborate actively. This is not to say, however, either that these more adversarial behaviours were unnoticed by supplier actors, or that they did not
refine their use of the Stockplan system as a result. I discuss the nature and implications of these active, collective adaptations further in the next chapter (s. 5.1). As the next example reveals, Timber Co. sales managers’ concerns that merchants might use Timberorder for independent gain were to some extent vindicated, as the next example, also drawn from this case, reveals.

4.1.5 Pre-empting price negotiations

Timber Co. regional sales managers were keen to develop close contacts with merchant buyers. Unfortunately, these managers found that those few merchants who used Timberorder did so in such a way that these strong, regional relationships were threatened. This was particularly evident where commodity timber products were traded. As in the Grocernet case illustration described previously (s. 4.1.3), certain – in this case unanticipated – aspects of Timberorder data proved highly compatible with the interests of some merchants who used the system for their own, unilateral advantage.

In Timber Co.’s newly combined DIY and trade merchant team, Timberorder use was at best tangential to dominant ideas about how to develop new business. Key account management practices were in favour. Among independent merchants, timber purchases were, in the main, the responsibility of regional branch buyers. Timber Co. sales managers, therefore, aimed to build up strong interpersonal relationships with the branch managers in their area. Conversations – and relationships – were built around order-taking. This mechanism enabled Timber Co.’s regional sales managers and their merchant contacts to share local market intelligence. One Timber Co. regional sales manager explained:

It’s still a ‘people’s’ trade – they don’t want to lose contact and they perhaps see that if you go on to EDI or on to some form of e-trading, you lose that personal contact. We don’t just talk to our customers about prices, we talk about market capacity, what’s happening to our suppliers, and advance warning that there may be shortages coming up, whatever the issues are. It’s a whole business relationship rather than just prices as such. (Stan, Timber Co. regional sales manager (TSR1))
Stan was adamant that the merchant buyers he dealt with wanted personal contact with Timber Co. sales staff. Timber Co.'s relationships with these buyers extended beyond price. Stan itemised a list of relevant aspects. This included discussion of market capacity, changes to the supply base, and advance warning of shortages or other potentially significant business issues.

This emphasis on the personal relationship, rather than just an impersonal system, is important. Timber Co. sales managers needed to develop and sustain intimate business relationships with their customers to keep abreast of the market. Timberorder use threatened these carefully constructed local relationships. Even worse, Timberorder use seemed actually to distance those few merchants who chose to use it for traded timber products.

Merchants' Timberorder use was a particular problem where commodity products were traded. Customer and practice dictated that trade prices were negotiated verbally. The system, however, contained customer-specific product listings, each with a pre-published price. Timberorder use, therefore, undermined Timber Co. sales managers' established methods of price negotiation. Without direct customer contact, Timber Co. sales managers could neither construct nor respond to market rates. Indeed, Timber Co.'s managers believed that a published price weakened their relative negotiating position. To this extent the inter-organisational information system was seen as a hindrance and an obstacle to effective trading. As Stan explained to me:

The big problem with that is, you take away the contact, and we actually found, because we are a traded product you've got somewhere on the internet where your quote is filed. Because it's a market product, they'll still phone other people and take that as your price — that's Timber Co, we'll phone around the others — and we actually found, I actually believe it cost us business, particularly with the Independent trade.

Stan's personal view was that Timberorder use had a direct and negative impact on sales performance. Since Timber Co. was dealing with a traded product, a quote that was
filed electronically and universally accessible was a disadvantage when negotiating. It gave merchants the option to review Timber Co.’s price without verbal contact, while continuing their negotiations with other suppliers.

Traded timber prices fluctuated on a day-to-day basis. The daily price depended upon whether or not anticipated container shipments had docked and what local supplies remained available. If, on the day, Timber Co.’s price on Timberorder looked too high, merchants simply screened Timber Co. sales managers out of any further negotiation. Stan’s suspicions were confirmed by data I obtained from a telephone survey designed to ascertain the views of a wider sample of casual merchant users of Timberorder.

Ken, the branch buyer at Specialist Co. (TBM1), was one of the few independent timber merchants who placed orders using the system. This gave him ready access to the trade price lists for all Timber Co. products. Timberorder was constructed as a purchase order pro forma. The merchant selected or entered the reference number of the product he required. He was then invited to enter the quantity of this product he required. As he confirmed these details, the system retrieved and displayed a detailed description of the product, its unit price, and an automatic calculation of the total order cost. During my survey, I asked Ken which aspects of the Timberorder system he found most useful. He explained he used the system for ‘looking up plywood prices, to see if competitive or not’ (summary of participants’ comments, merchant telephone survey, August, 2005). Although they could do little about it, other Timber Co. regional sales managers were also aware of his practice. As Denise (TSR4), a key account manager at Timber Co.’s northern office, explained to me:

What he does have a habit of doing is to go in and place dummy orders to check out our sheet material rates as well.

When I asked Denise if she could tell me why Ken entered these dummy orders into the system, she elaborated:
Well, rather than phone us, he'll go online and find out what our pack rates are for certain sheet materials, and then he'll go out to the market and have a laugh, because obviously our pack rates on the internet are quite high.

Denise's account confirms Stan's suspicions. Merchants made use of Timberorder to price-check certain traded items such as sheet materials prior to trawling the market. The price of plywood and other sheet materials listed on Timberorder were pre-negotiated list prices. These, as Denise intimated, might well be higher than the negotiated day-to-day rate on the open market. Although Timberorder contained a full list of Timber Co.'s product prices, it had not been designed as the trade price list that Ken found so useful.

As the above case illustration shows, merchants were able to exploit an unanticipated yet highly compatible match between the new price data made available to them via Timberorder and their personal interest in negotiating the most favourable market price. Although this was certainly not what Timber Co. managers had had in mind when they designed the system, some merchant actors made effective use of Timberorder by factoring it into their market negotiations. I come now to the final example in this chapter, drawn again from the Timbertnet case. Here again, actors' inventive use of Timberorder's inherent characteristics is evident. This time, however, merchant buyers found a way to exploit a design weakness to their advantage.

4.1.6 Dodging delivery cut-off times

Merchant orders placed via the Timberorder artefact were allocated a system-prescribed delivery date. Rather than manufacturing plans, these delivery forecasts were based on standard distribution schedules. If products were unavailable, Timberorder assumed a two-week replenishment cycle. Order data from Timberorder were uploaded into Timber Co.'s enterprise resource planning (ERP) system. One Timber Co. sales manager explained:
The product planning department don’t use the Timberorder system to plan what they’re running and when they’re running it. So, because Timberorder is all worked out on planning tables, you can input an order today and say you want it on Wednesday. And we’re maybe manufacturing that product on Wednesday. [It] will accept that order and say that’s OK, because that customer wants that product on Wednesday and we’re running it on Wednesday. But that product may not be running in [production location] until the nightshift. (Denise, Timber Co. key account manager (TSR4))

Detailed daily production schedules were planned independently of Timber Co.’s ERP system; Timber order did not discriminate between different times of day. Yet, products manufactured for delivery on the same day might be unavailable at the required despatch time. When merchant buyers placed orders over the telephone, Timber Co. sales administrators identified these ‘close shaves’ and more realistic delivery slots were negotiated. Indeed, one merchant reported that he used Timberorder specifically to avoid these enforced order cut-off times. Ironically, this merchant buyer describes one of the most useful features of the Web-order system as one of its technical shortcomings. He explained that ‘it doesn’t tell you you’ve missed the cut-off time’, and therefore he was able to exploit this loophole to achieve an advantage, to the disadvantage of the supplier. If this order had been placed by telephone at this time of day, it would have been refused. Merchants’ Timberorder use displaced order entry tasks. These changes had direct, if distinctive, repercussions for Timber Co. and Regional Co.’s micro-bargaining positions.

Use of this sort had not been anticipated either by Timberorder’s creators or by those sales managers involved in its specification. As with the previous examples of actors’ Dailysales and Stockplan use, these merchants’ patching ploy adaptations of Timberorder created a new means by which established ordering routines could be subverted. These actions were not based on any desire to keep the system working, nor was there any reluctance on the part of these actors to engage in this behaviour; rather, this illustration demonstrates expedient system use for personal gain. Indeed, actors exploited an intrinsic design weakness of the system.
A second example from the Storenet case demonstrates potential conflicts between how different actors compensated for weaknesses in the information systems available to them. This time, my illustration focuses on the behaviours of middle-ranking Department Co. store and Modern Co. area managers. Department Co. store managers' performance was measured at least in part by their ability to meet pre-defined, system-generated sales targets. Similarly, Modern Co. area managers were responsible for maximising sales of their brand across the Department Co. group. The uncoordinated nature of the behaviours these actors adopted to supplement inter-organisational information system use and achieve their sales expectations is now discussed.

4.2 Type II Local plots

In this second part of the chapter I discuss the series of 'local plots' that emerged relating to actors' inter-organisational information system use. The term 'local plots' refers to the practices of small groups within an organisation who worked together to adapt either the way they worked with the system, or the way the system itself worked. Three examples of such local plots are presented.

4.2.1 Levelling schedules

My first example of local plotting comes from the Clothingnet case. This example illustrates how a small team of actors at Clothing Co., consisting of a supplier merchandiser and administrator, ensured that finished goods stock figures matched plans that were produced so as deliberately to give the impression of even production rates. This was to give the impression of a manufacturing operation that was under control and thus avoid the penalties Multiple Retail Co. inflicted for late production.

For many contracts, Clothing Co. merchandisers submitted predicted weekly production rates (or 'flows'). In a comment that typifies how merchandisers used
Stockplan to construct these forward plans, David (Clothing Co. merchandiser, CSM1) explained his approach as follows:

I tend to work, if it's something large like this, nice multiples of 25. If it's something that doesn't sell a lot, then I might want to work in units of ten or five, but I'm not going to put in a flow of 182. By the time you start adding figures, it's just easy when you're sense-checking information with Multiple Retail Co. and yourself, well, yes, it looks right, if it's in multiples of five, ten, 25 or whatever.

I've heard it a long time ago when I was planning in factories, when we made it all, let's declare it, let's offer it, let's get it through, and there's one guy, he was the manager, and he goes, if we do it gradually, 130 a week, it looks like we're in control. If you do it 200 this week, and 50 next week, goes back to 130, does it look like you're slightly out of control? Yeah. So I've learnt. I mean, I can't believe anybody sits in [Multiple Retail Co.] and thinks that we, on every product, ship the right amount to achieve very flow, every week [laughs].

David had developed a range of system adaptation methods dependent upon contract size. For large contracts, he presented his production plans in multiple units of twenty-five. When dealing with smaller contracts, he calculated predicted production flows in smaller units, for example multiples of five or ten. It is clear that regardless of the contract size, under no circumstances did David consider entering single unit rates. Inevitably, therefore, Stockplan data failed to represent product realities. The reason for this behaviour was that it made co-operative sense-checking activities with Multiple Retail Co. merchandisers much easier.

David had learnt that even flows indicated control. Drawing on his past experiences as a factory production planner, he believed that an even flow demonstrated he was in control, while flow rates that fluctuated week by week made it look as if he did not know what he was doing. Indeed, he voiced his disbelief at the very idea that anyone at Multiple Retail Co. might take these smoothed representations for the reality of supply. These fictitious plans meant Clothing Co. administrators had to make further, system adjustments.
In this case, one particularly notable feature of Stockplan use was the routine manipulation of system-held data. The full extent of this adaptation of the system became evident from non-participant observation of a Clothing Co. administrator, Sandra (CSA2). Suppliers were expected to declare fully the finished goods stocks that they held in their UK warehouses to Multiple Retail Co. merchandisers. Here, Sandra described to me how she prepared her figures for this weekly declaration (Figure 4.3):

The CPF [Customer Position to Flow document] is ‘the key to doing availabilities’. Produced weekly, by style and colour (no size here), the columns deserving attention are ‘free stock’ (in the building, ready to avail) and ‘cumulative production’ ‘all stock received (multi-season) – stock called). [This is a ‘theoretical figure’, balanced against flow]. These two figures are used to work out what to declare. There is a decision point here. If there is too much stock in the warehouse, then stock is ‘held’. (field notes, 16.11.2005)

Figure 4.3: Sandra, a Clothing Co. administrator, calculating weekly availabilities

As I watched Sandra work, she explained to me how she used a document called the ‘Customer Position to Flow’ to check Clothing Co. stock build against theoretical cumulative production plans over the lifetime of a contract to ensure that Clothing Co.’s finished goods stock declarations consistently matched its stated production figures. This sometimes meant concealing stock that had arrived too early.
Sandra flouted one of Multiple Retail Co.'s golden rules: 'Thou shalt declare everything in thy warehouse'. These adaptations of the system, however, were deliberate routines not inadvertent errors. As the occasion demanded, Clothing Co. merchandisers either exaggerated the finished goods stock quantities entered into Stockplan or reduced stock declarations to demonstrate their smooth production control. As I show in the next chapter (s. 5.6), at times Multiple Retail Co. staff colluded in this subterfuge. But why was such a close match to a fictitious plan so important?

Any mismatch between predicted and actual production figures might mean Multiple Retail Co. merchandisers cancelled the balance of the order. Regardless of whether or not sales had been adversely affected, Multiple Retail Co. merchandisers might seize on this supplier failure to administer a penalty. This was a point of some contention. David explained:

I could miss a flow for three weeks running, but have I affected your sale? Should I be penalised for it, if I haven’t affected your sale? If there’s still enough stock to sell? (David, Clothing Co. merchandiser (CSM1))

It was David’s responsibility to maintain production rates to flow. If stock levels dipped, he risked incurring a penalty. This motivation tended to produce a stock-rich pipeline. Regardless of the effect on sales, Clothing Co. and Multiple Retail Co. merchandisers worked together to maintain the internal integrity of the Stockplan data model and avoid theoretical ‘deficiencies’ or ‘over-commitment’. Actors’ attempts to improve their bargaining positions were not limited to this somewhat arduous manipulation of the data. The next example, drawn from the Timbernet case, demonstrates how actors’ local plots could be premeditated to the extent that they were encoded within the information system artefact itself.
4.2.2 Constraining system limits

Given the nature of buyer–supplier trading relationships in this competitive sector, Timber Co. sales teams were concerned that if merchants had access through Timberorder to a product price and sight of (potentially high) finished goods inventories, they would use this information to negotiate a discounted price. To secure their position and negate such tactics, Timber Co. sales managers demanded that an upper and lower order quantity limit be set to prevent merchants using the Timberorder system to deduce current Timber Co. stock levels. From the perspective of merchant and other users, there was no indication that any such restriction was designed into the system.

Timberorder development began as a small-scale, local project to enable small UK merchants to view Timber Co. products, enter purchase order quantities and book deliveries. As the project's scale and significance increased, a new technological platform was developed so that order entry might be interfaced automatically with Timber Co.'s enterprise resource planning system. At this point, Timber Co. regional sales managers became involved in the redevelopment process.

In one of my first meetings at Timber Co., Jake, an ex-sales manager and current Timberorder project analyst (TSA), demonstrated the Timber Co. system to me. He showed me how, when merchants placed an order on Timberorder, the system checked the unallocated stock within Timber Co.'s enterprise resource planning system to confirm that the required delivery quantities could be supplied. The Timberorder artefact, however, had been constructed deliberately so as to restrict the maximum and minimum order quantities that merchants could enter into this quantity field. Timber Co. sales managers had requested this limitation to prevent merchants interrogating the system to discover how much finished goods stock Timber Co. held. Jake explained: 'to stop people logging in and trying to find out the stock, we've got a “min” and “max” on it. It stops them putting a million items in.'
Curious about this somewhat paradoxical feature built into a system conceived to provide merchants with online information about availability, I asked why this was. Peter, Timber Co.'s programmer (TSP1), elaborated:

Well, it was one of the things they [sales teams] requested right at the beginning.

These constraints had been designed into the Timberorder system at the request of Timber Co. sales managers. Jake, himself an ex-sales manager, added:

It's just sales being paranoid. So what if you've got 75,000?

Timber Co.'s sales managers worried that merchants might enter fictitious order quantities in an attempt to deduce their stock levels. For traded goods, merchants could use high stocks as a reason to negotiate lower prices. Timber Co. sales managers had stipulated upper and lower control limits to prevent such practices. My final example from the Storenet case demonstrates how one Department Co. store manager adapted her behaviour to compensate for weaknesses in the system and ensure that she and her team were seen to be doing a good job.

4.2.3 Demonstrating success on the sales floor

In this case, Jennifer a Department store manager (SBM1), used Storespace profitability targets to refocus her departmental sales resources. Through comparison of future targets with what she knew of past store performance, she was able to interpret Storespace targets and deploy her limited departmental resources to give the best chance of meeting departmental sales performance targets. With a high degree of inter-store competition, Jennifer focused on an overall store ranking. These practices continued despite the provision by Modern Co. merchandisers of regular 'best-seller' information – which Department Co. managers seemed conditioned to ignore.
Department Co. store managers like Jennifer (SB1M1) were responsible for meeting targets for sales and stock. Prior to the introduction of Storespace, Jennifer had set these targets herself. Now, Department Co. space planners used the Storespace model to extrapolate predicted sales from optimum profitability curves (as described in s. 3.3.3).

Unlike that of Occasion Co. and Modern Co. merchandisers, Jennifer’s sight of Dailysales data was limited. Indeed, once Storespace had been used to allocate a specific store’s sales area, Jennifer used aggregated brand-sales histories and comparative store performance tables to direct the sales effort. Jennifer compared her current brand sales performance with that of the previous season and sales in other, similar stores. If sales elsewhere seemed higher, Jennifer rang these store managers to find out where ranges were positioned and which garments were on sale and then contacted the relevant supplier to obtain similar stock.

Jennifer told me, ‘What we’re looking for is really [sales] turnover, and are we doing what’s expected of us, are we able to achieve it within the area it’s sitting in’. Jennifer used Storespace targets to allocate her resources. Department Co. store staff focused their attention on those brands in relation to which a previously good performance suggested that further, planned sales increases would be difficult to achieve. Also, particular attention was paid to those brands that underperformed against the plan. Jennifer’s main objective was to ensure that Storespace’s predicted sales targets were achieved:

When we’ve got our estimates, we look at previous year’s sales. We do that ourselves. You can see, we’ve had horrendous sales this year, so we can see the department as a whole where we’re perhaps not performing. We look at where we put good increases on last year, because we know that’s where we’ll struggle and we also use the information to look where we had really poor weeks and look how we can maximise our sales out there on the floor in the weak times.

Jennifer was responsible for the branded womenswear Department Co. team. Among other responsibilities, she managed sales staffing levels. It was Jennifer who
decided and arranged what levels of staff cover were needed at different times. Here, her decision-making was constrained both by her overall staffing budget and by the need to provide at least minimum cover over all the six days on which the store was open. Jennifer used a 'like-for-like' department sales comparison between the previous year and estimates for the current period to help her decide where and when to focus her sales efforts. The comparison between the current and the previous year's sales made it obvious, even to a novice like me, why Jennifer referred to her current sales as 'horrendous'. The reasons for this performance difference were, however, not so clear.

While Jennifer acknowledged that this might have been due to the underperformance of her department, she pointed to a number of possible contributory factors. For instance, where last year's sales were particularly strong, extra effort was required to maintain these levels. Also, sales fluctuated on a week-by-week basis. Jennifer considered these fluctuations when she decided her staffing levels. Equally, there were known 'weak' times where special efforts had to be made to maximise sales. So, while the Storespace model produced sales targets against which Jennifer and her department's performance were judged, these were based upon theoretical sales predicted from allocated selling space and bore little relationship to the day-to-day, week-to-week fluctuations with which she had to contend. This aggregated approach to sales target setting was markedly different from that employed by Department Co.'s branded fashion suppliers.

As was usual practice for Modern Co.'s own standalone stores, Wilma, Modern Co.'s merchandiser (SS2M1), sent each Department Co. store a weekly 'best-seller' product analysis of Dailysales data. The existence and availability of this data were, however, no guarantee of its use. During an initial visit to another Department Co. store, Hillary (SB1A1), an experienced, Modern Co.-dedicated Department Co. sales assistant, explained to me that she needed this best-seller information to merchandise her stock (B01 visit, 13–14.9.2006). With only limited space it was vital that the fastest-selling styles were
replenished quickly. Sales success meant Modern Co. would allocate her further replenishment stock. Hillary, however, seemed unaware of the best-seller data Wilma sent through. So, on my second visit, I asked Chris, the Department Co. manager responsible for womenswear in this store (SB1M1), if she had a copy of Modern Co.'s best-sellers' listing. Though happy to print one for me, Chris had not previously looked at this email, nor passed it on to Hillary (field notes, 10.11.2006). Hannah, Modern Co.'s area manager (SS2M2), was scathing about what she saw as this lack of commerciality across the Department Co. group. In Modern Co. stores, she told me, 'you would be fired for not knowing your best-sellers'. That Department Co. and Modern Co.'s patching ploy practices were so opaque to each other is evidenced by the incomprehension surrounding the relative significance and importance of 'best-seller' product information.

So, this Storenet illustration underlines the potentially tacit nature of local information system 'plotting'. Jennifer's interpretation of Storespace data was central to the way she ran her department. Given her limited control over which stock she received or how much space each brand was allocated, the main mechanism by which she could influence her achievement of these sales targets was through considered allocation of her sales staff. Sales targets became something of a self-fulfilling prophecy. Brands that 'over-performed' were not a priority; rather, sales staff tended to focus on those areas where sales were languishing. Modern Co. staff, on the other hand, expected store sales staff to engage with best-seller listings to make the system work. Where the provision of these best-seller listings failed to prompt any Department Co. behavioural change, branded fashion suppliers' area managers expressed their dissatisfaction. Indeed, some of these suppliers took matters further, as is discussed in the chapters that follow (s. 5.4).

**Conclusions**

In this chapter, I have presented and discussed two different types of individual actors' system adaptations: firstly, illustrations of 'patching ploy' behaviours, and secondly, 'local
plots’. By a patching ploy, I mean the various ways in which individual users filled in the gaps when inter-organisational information systems were incomplete to allow these systems to work or to improve the position of the organisation for which they worked, or for their own personal gain. Five modes of patching ploys were illustrated: falsifying system data, delivering the plan, farming the data, staying in control, pre-empting price negotiations and dodging delivery cut-off times.

In the second part of the chapter, intra-organisational groups’ partial use of and unilateral adaptations to these systems were discussed. These behaviours I termed ‘local plots’. The three local plots presented show evidence of co-ordinated intra-organisational co-ordination and secrecy within the group. Complicit agreement to remain silent about the illicit practices required for the smooth running of these systems was at times explicit, as in the Clothing Co. and Timber Co. cases, and at other times tacit, as at Department Co. In every case, the nature of these practices appeared deeply ingrained. As the Timber Co. illustration demonstrates, these plots were even reconstructed within information system artefacts for other actors’ use. A summary table detailing the key features and outcomes from each of these examples of use is shown at the beginning of this chapter (Figure 4.1).

Patching ploys seemed to occur when actors had a more limited span of control. Those in such relatively powerless organisational positions seemed to rely on these behaviours to extend what limited scope there was for internal and inter-organisational influence. In some cases, as a result of these hidden practices fundamental system shortcomings remained unaddressed. Indeed, such local plots seemed to have the potential to obscure organisation and inter-organisational problems for some considerable time.

In other instances, the benefits were more positive. In either case, individually and collectively actors within the same organisations made secretive and discreet adaptations to the parts of the system under their control, congruent with their individual and organisational interests and goals. Though this was not always the case, some of these
outcomes were beneficial to other network parties. In other cases, practical problems arose as mismatched plots and counterplots clashed with one another. Whilst it was through these individuals’ actions that these patching ploys and local plotting behaviours were effective, actors exploited actively the reconfigurable nature and the design limitations of the information system artefacts they used.
Chapter 5  Collaborative Conspiracies

In this chapter I seek to answer the second of my main research questions:

- Between organisations, what new, creative, joint use did buyer and supplier actors make of these inter-organisational information systems?

In the previous chapter I reported on findings from the research which showed how individuals made partial use of and unilateral adaptations to the information systems that were in part given to them through engagement in patching ploys and local plots.

In this, the second of my three findings chapters, I report on research which showed how buyer and supplier users 

\textit{conspired} with each other across organisational boundaries, sometimes for reasons of expediency and at other times to correct for system failures and gaps. These actors' behaviours exhibited a range of features and distinctive outcomes (Figure 5.1).

On occasions, shared interpretations of information system data enabled ongoing, creative joint problem solving and action. More insidiously, some actors 'passed off' others' commentaries as their own. The precise nature of the contribution made by actors' data analysis in these frequently suboptimal adaptations was opaque, complicated by mismatches between buyer-supplier power and the location of expertise. Inter-organisational relations were confused further by a lack of transparency and what had in some cases become a double game of deception.

These creative conspiracies exhibited a range of distinctive features. Sometimes already fictitious system data was amended upon demand. There were ongoing localised negotiations to redress system deficiencies. Temporary 'data-sharing' coalitions were formed between actors from groups with some element of common interest. Actions were
agreed and taken, sometimes at a relatively superficial level, to clarify and redress particular system failures while leaving other, deeper issues unaddressed. Data categories were manipulated to alter the appearance of personal and organisational performances.

<table>
<thead>
<tr>
<th>Type III Collaborative conspiracies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features</strong></td>
</tr>
<tr>
<td>Conspiracy to amend already fictitious figures</td>
</tr>
<tr>
<td>Ongoing, localised negotiations to redress system deficiencies</td>
</tr>
<tr>
<td>Multiple groups with conflicting interests Expedit centralised collaboration, temporary advantage and internal tensions</td>
</tr>
<tr>
<td>Superficial action Financial focus</td>
</tr>
<tr>
<td>Overlapping, complementary interests Creative collusion to manipulate data categories</td>
</tr>
<tr>
<td>Collusion Differential power Personal performance metrics</td>
</tr>
<tr>
<td>Regular meetings Shared interpretations Ongoing, creative interventions</td>
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<tr>
<td>Highly influential, individual data interpretations Routine, remote interactions Time-poor, pressured buyers</td>
</tr>
<tr>
<td>Temporary strategic alliances Strategic alignment Significant category expertise and resources</td>
</tr>
</tbody>
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Figure 5.1: Summary table of actors' collaborative conspiracies

Collaboration was not always positive. The outcomes of these collaborative conspiracies were often suboptimal and locally negotiated. For example, collective practices included the reinforcement of existing practices; disguised problems and potential
system failures (e.g. stock-outs, irregular supply). There were instances of ruptured relationships and vacated roles. In some cases financial problems and compensatory claims in particular received priority attention, although in other cases there was evidence that these figures were manipulated. Indeed, system use enabled actors to conceal the relative importance of some aspects of performance whilst others were highlighted.

Nine examples of conspiratorial collaboration drawn from across the four supply networks I researched are presented here. These collaborations demonstrate how actors engaged in working around the system, correcting for system failures and gaps, informing on working practice change, apportioning blame, concealing superior performance, making the system work, trading data for expertise and resources and appearing to use data for category growth. As in the previous findings chapter, the organisation of this chapter traces in turn the distinguishing features and outcomes of these nine examples.

5.1 Working around the system

This first example of collaborative inter-organisational information system use is taken from the Clothingnet case. A Clothing Co. supplier merchandiser, Bryn (SCM3), responded to demands from a Multiple Retail Co. merchandiser that he revise the way he entered planned production flows on to the Stockplan system. From a Multiple Retail Co. perspective, the merchandiser demonstrated her superior power and authority over the supplier by dictating the procedure to which she required him to adhere. Bryn, the supplier, acquiesced to her demands so readily partly to demonstrate compliance and partly since, as the production rates he entered on to the Stockplan system were fictitious anyway, changing these figures made no material difference to the realities of supply.

This extract is taken from observation of Bryn. As Bryn’s experience reveals, the Multiple Retail Co. merchandiser desired an even product flow:
There was a row I had about a Children’s style we do and I put it in to Stockplan’s suggested production to work it, to manage it from a stock point of view. Essentially it’s managing all the stock in the system for their benefit so they haven’t got excessive stock or they haven’t got too low stocks. So I just basically put in what was suggested and there was a 2–3–4-week gap before the next drop came in and we were sitting there and she said:

Look at the state of that flow.

And I said:

Look on Stockplan, the information’s there. It manages your stock.

[She said] I like to see straight line flows.

[I said] OK, no problem.

So what I did was, I went away and the big dollop I was getting at the front, all I did, I just divided it out by four, y’know, and split it out no problem.

Initially, Bryn apparently used the Stockplan system in the way that it had been designed to manage finished goods stocks, although, as with the illustration in the previous chapter (s. 4.1.2), these figures bore little resemblance to actual deliveries. Bryn matched his finished goods stock plan to the minimum additional stock requirements Stockplan indicated were necessary to maintain the required stock cover. The Multiple Retail Co. merchandiser, however, was dissatisfied with this approach. More used to seeing smoothed production flows, she demanded that Bryn show a level production rate. This illustration demonstrates the superior power and authority of the buyer merchandiser. She influenced the inter-organisational routines Bryn adopted when using the Stockplan system even when these flew in the face of those the system had been designed to enforce.

This extract is more curious when considered from a Multiple Retail Co. perspective, for, while the supplier merchandiser was happy to conspire with the retailer to show the figures that she wanted to see, there was little benefit to the retailer in showing these artificially inflated levels of stock. One explanation for this is the merchandiser’s lack of experience and limited understanding of inventory management principles. Although the supplier merchandiser clearly recognised the implications of this shift, he
was not in a position to press the point and for reasons of his own acquiesced to her demands. These smoothed representations of predicted future production were disconnected from the realities of manufacturing. A second example, also from the Clothingnet case, shows how actors conspired to make informal arrangements as a supplement to official plans to correct for system failure.

5.2 Correcting for system failures and gaps

This second extract is taken from a work meeting between two kidswear merchandisers, one from the buyer Multiple Retail Co. and the other from Clothing Co. the supplier. Here, Janet, the Multiple Retail Co. merchandiser (CBM2), and Marion, her Clothing Co. opposite number (CSM2), discuss sales forecasts and production plans at the start of a new season. Again, their interaction demonstrates a conspiratorial pattern of Stockplan use, this time coupled with the evident need for some level of additional informal, negotiated co-operation to remedy system deficiencies.

This extract is taken from part of a meeting that followed a discussion and indicative agreement of purchase order quantities. Marion had already entered production quantities she had anticipated on the basis of schedules she had discussed with her manufacturing units. Janet's Multiple Retail Co. budgets and contracts for the new season, however, were not yet finalised. Janet was anxious to ensure that her residual stock and forward buying levels remained in line with Multiple Retail Co. departmental budgets. As end of season sales slowed, her 'man sum' (a system-generated document that provided a management overview of bought merchandise) showed she was over-committed. Each further Multiple Retail Co. order represented a definitive financial commitment in excess of her budget. She was therefore obliged to delay placement of any new orders. She explained to Marion:

I have to manage my stock commitments because I have to report bottom line man sum, which I'm doing here at the moment. At the moment, I'm overcommitted with stock, so I really ought to be slowing down POs.
Janet had two interrelated priorities. The first was to manage her stock so that she kept within the overall stock limit against which her performance was judged. The second was to slow down the rate at which new purchase orders were raised. These objectives, however, were in conflict with her need to place timely orders for new season production. Janet wanted to stay within her budgeted inventory allowance. Slower sales meant lower stock turn, so any further order placements at this point meant she would exceed her financial stock targets. These problems did not bode well for her plans at the start of this new season.

At this early stage of the season, however, Stockplan did not yet show Janet forward sales estimates. Janet therefore had no sales forecasts against which to compare Marion’s system-entered quantities and delivery dates. In these circumstances, the Stockplan system proved of limited use for forward stock modelling. At several points during this meeting, Janet referred to problems she had ‘buying blind’. These problems limited severely her ability to place orders, sense-check production against forward sales estimates or model future stock. Janet could neither use the artefact to calculate when deliveries were required nor, even if she had financial leeway, enter purchase orders since the system prevented her from raising an order until contracts had been formalised.

Contractual delays, however, pushed out delivery dates and risked future stock shortages. Any postponement in the issue of purchase orders meant belated deliveries. The dates entered on to the Stockplan system would have to be moved. This point is well-illustrated by Marion’s response to Janet later in the meeting:

the factories will get all signed up with a date, that if you don’t confirm by such and such a date then you’re going to lose that capacity and your POB [purchase order buying] date’s going to move out to another week
Marion's responsibilities extend as far and only as far as ensuring that her factories met the delivery date to which they signed up. Janet would lose production capacity and face supply delays if she failed to place her purchase orders swiftly.

Janet and Marion had worked together previously under full service vendor supply terms. In the past, as Bryn's actions in the previous example (s. 5.1) demonstrate, Marion had phased her finished goods stocks according to the production plan agreed with the buyer merchandiser. This meant stock might be delayed in the suppliers' warehouse and brought into the retailers' distribution chain only when stock cover levels permitted. Now, with offshore consolidation and no UK supplier warehousing, distribution operations were organised rather differently when buying free on board. Janet observed:

before we went POB [purchase order buying], we had this area where you could say you're going to have x thousand singles coming through to you next week, but we'll sit on them for a couple of weeks till I bring it forward. But you suppliers don't have that holding facility and I certainly don't have that holding facility, so we're not quite sure how it's going to work.

Now, there was literally nowhere to secrete stock. This left the buyer's merchandiser, Janet, in something of a quandary.

Janet was keen to review and renegotiate 'fixed' delivery dates. She was left with little choice but to negotiate either to part-ship some orders or to expedite deliveries by air to improve her supply position. For this, she had to rely on verbal agreements and Marion's goodwill rather than the system. Janet summarised this rather awkward position towards the end of the meeting as follows:

I am sitting on POs at the moment because I should be slowing them down because sales aren't picking up, but I can't slow them down at the moment. Again, I think that's a case of just for me to feel happier if something could be brought forward, or part-shipped again, but we've said that for everything.

Janet was caught on the horns of a dilemma. She was faced either with committing herself to too much stock now, and therefore failing to stay within the budgetary limits

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stipulated by her management reporting targets, or, if she delayed the placing of purchase orders further, having too little stock to service forecast sales later in the year.

This case then, demonstrates how buyer and supplier actors engaged in localised negotiations to redress system deficiencies. These localised negotiations were, however, not always agreed between only two parties. As the next example, taken from the Timbernet case shows, such negotiation work could be complex and involve multiple actors with conflicting interests.

5.3 Informing on working practice change

This Timbernet example shows again how localised adaptations of buyer-supplier relations could arise, for a time at least, from co-operation in support of inter-organisational information system use. In this case Regional Co.'s commercial director and Timber Co.'s internet sales manager constructed complementary relations that enabled Timberorder use between the two businesses to be nurtured.

Additional, inter-organisational purchase order history reporting was introduced between Timber Co. and the commercial director at Regional Co.'s head office. James, the buyer, gained from this co-operative behaviour since he was able to negotiate and secure an additional rebate incentive on Timber Co. products, while Kim, the internet sales manager, found these supply relationship changes useful since they helped boost her success regarding the numbers of merchants who converted to the Timberorder web-based ordering service.

James, Regional Co.'s commercial director, used the sales analyses Kim provided to interrogate Regional Co. branch managers. Telephone orders reduced Regional Co.'s rebate. Buyers who failed to take advantage of internet trading were reprimanded. Douglas, Timber Co.'s regional sales manager (TDR2), explained:
we have to report to them at the end of the month the value of orders that have been placed by them over the internet and the value of orders that have been placed by them over the phone and then that branch then gets their backside kicked.

Timberorder use had fragmented previously cohesive relations between Timber Co. sales teams and Regional Co. Whereas Timber Co. sales teams had focused on developing personal relation at branch level with Regional Co. buyers, Timberorder use introduced a new dynamic within Regional Co. Now, with a price rebate at stake, James, Regional Co.'s commercial director, took a personal interest in which branches used the system to order Timber Co. products and which did not. From Douglas's point of view, this disrupted the normal business of merchant–Timber Co. sales team business relations.

Indeed, one Regional Co. branch manager severed his links with Timber Co. entirely. As Douglas explained, 'What [branch location] do is, they give their business to a competitor'. Whatever contracting arrangements had been agreed between central buyer and supplier management personnel, these plans were undone by the actions of a single Regional Co. branch buyer.

Similarly, Kim (TSM2), the national internet sales manager appointed to train merchant personnel and promote Timberorder use, left Timber Co. shortly before my research began. Kim had a national, rather than regional, remit. Although she worked alongside regional sales colleagues, she dealt solely with merchants’ Timberorder use. This national focus, and a tendency for merchants to contact her rather than members of the regional sales teams, caused friction, which one regional account manager, Denise, described to me as follows:

We did have an internet manager. Without bad-mouthing her now she’s left, she did go round all the customers giving them all the benefits and she did see that as her job, which it was, but after that she didn’t and they got her name and they would phone her and ask her if they had a problem and they should really have been phoning us. And we couldn’t really work together. (Denise, Timber Co. key account manager (TSR4))
Denise’s remarks reflect the more complex and conflictual internal relationships that Kim’s appointment as a national Internet sales manager had produced. Previously, each key account manager provided a clear point of contact for each merchant branch. Kim’s use of Timberorder challenged these arrangements. Some merchant buyers began to use Kim as their main Timber Co. contact – bypassing key account managers such as Denise entirely. From Denise’s perspective, these new relationships between the buyer and the supplier were entirely unsatisfactory. If a merchant had a problem or a query they should phone her.

Given the importance Timber Co. regional sales teams ascribed to building buyer relationships, there were clear contradictions between the need to develop a close working relationship with each regional merchant and Kim’s role, which led her to seek to get as many merchants as possible to place their orders via Timberorder. As Denise commented, the two ‘couldn’t really work together’. Something had to give. In this instance, it was Kim who left the business.

This example, again, demonstrates how actors devised a new, localised form of mutually beneficial centralised buyer–supplier relations for their temporary advantage. Further, there is clear evidence here of the internal tensions in both companies that this created. At Regional Co. this contributed, at least in part, to one branch buyers’ decision to terminate his supply relationship with Timber Co. entirely. Similarly, at Timber Co. the conflict between the desire to have a national point of contact for internet sales and the aspirations of Timber Co.’s regional sales teams led eventually to the resignation of the Timber Co. internet sales manager. She was not replaced.

While the above example demonstrates some of the temporal difficulties actors experienced maintaining these localised conspiracies, the next illustration demonstrates how these actors’ activities rarely went beyond more than superficial engagement with operational practices, leaving fundamental operational problems unresolved.
5.4 Apportioning blame

This example from the Storenet case demonstrates how a focus on primarily financial performance aspects meant only superficial action was taken to redress more deep-seated operational deficiencies. A number of Department Co. head office personnel, senior store management and representatives from Contemporary Co. engaged actively with sales reports created from the Department Co. Dailysales data that underpinned Storespace sales floor allocations. While these actors were aware that there were underlying problems with data collection, there was, it seemed, no one authority with the jurisdiction to resolve satisfactorily the practical operational issues that arose. Rather, these actors’ attention was focused on apportioning the resulting financial loss fairly.

Contemporary Co. experienced recurrent issues with Department Co. sales assistants scanning its products and entering a lower price than that indicated on product labelling. Although this was a ubiquitous occurrence, Contemporary Co. was the only branded fashion supplier in my study whose systems were capable of identifying and recovering this financial loss; which it did by invoicing Department Co. for the difference in stock value. This led Department Co.’s assistant buyer to circulate an email to all Department Co. store managers and administrators. In the example that follows, the Department Co. head office assistant buyer remonstrates with Department Co. store managers for their failure to adhere to sale-or-return procedures. Specifically, it is the adverse effects upon financial reconciliation (of which accurate stock management formed a part) that appear to be of most concern. A failure to register sales against the correct price point led to financial loss for Department Co. There was irrefutable evidence that such losses were incurred, coupled with the embarrassment of suppliers invoicing Department Co. for compensation. Regardless of the difficulties Department Co. store staff might face in the accurate recording of sales (see s. 4.1.1), there was no apparent desire here to investigate and resolve the reasons for these aberrations, only an edict for the situation to
be remedied. Likewise, with no managerial authority over Department Co. sales assistants, Contemporary Co. representatives could resort only to invoicing for its financial loss. That the substitution of different product barcodes with the same price might continue is implicitly acknowledged. An extract taken from the email is reproduced below:

Under no circumstances should the barcode of an item with a different price be used to put through a sale. The supplier will always invoice according to the price of the barcode scanned NOT the price keyed into the register. There will be financial and stock loss implications if this procedure is not followed correctly. E.g. [Contemporary Co.] have recorded a total of x hundred pounds in discrepancies for just 1 week in 1 branch – this loss will be invoiced. (internal email, Department Co. Stock Administration Branch 3, 24.7.2006)

The email lays out a set of normative expectations. Barcode tickets with different prices should not be used. In future, suppliers would always invoice the barcoded price, not the keyed price. If Department Co. stores failed to act on this information, further financial and stock losses would occur. Already, there was evidence of significant malpractice in particular branches. The clear implication here was that as this financial loss was visible to Department Co. head office management, it was this aberration that had to be resolved. Invoices would be cross-charged back to those stores which continued to offend.

So, this example shows how a focus on compensatory financial claims failed to resolve more deep-seated, dysfunctional inter-organisational operations between Department Co. and its branded fashion suppliers. While the relative sophistication of Contemporary Co.'s financial reconciliation provided a degree of visibility, the more widespread problem remained unaddressed. The next example, while demonstrating similarly submerged practices, illustrates how actors might deliberately rather than inadvertently negotiate information system use for presentation purposes.

5.5 Concealing superior performance

In the Grocernet case, the Can Co. business analyst colluded with Grocer Co. buyers to modify Categoriesales data reporting categories. These adaptations had the effect of
concealing the category leaders’ dominance whilst also giving the appearance that the diversification into smaller, niche brands led by Grocer Co. buyers was successful as a strategy for category growth.

Helen, the Can Co. analyst (GS2A2), used different measures to present data relating to Can Co.’s relative market growth to her internal account team colleagues and members of the Grocer Co. buyers’ trading team. In Grocer Co. presentations, Helen downplayed the overall contribution of Can Co. products to category growth. Although Can Co. supplied many of the leading brands, Helen ensured other growing brands were always included in her data commentaries. This was to obviate any perception on Grocer Co.’s part that she favoured Can Co. She explained:

If [brand] is driving a particular product area, I will say [brand] is driving this much and the second SKU [stock keeping unit] that also drives it is this one; even if it’s not desperately noteworthy. Because I want Grocer Co. to know that I’m category focused and I’m not always banging on about [own brand] and [another own brand]...I’m very careful to always give them multiple examples of what’s driving anything. So that they know that I’m focused not on my own brands, because my own brands pay my wages.

Helen had developed a rational approach in order to demonstrate her category focus. She aimed always to include at least two different brands when discussing the drivers of category growth with Grocer Co. At a deeper level, however, she was aware that it was her own, Can Co. brands that paid her wages.

Helen diluted the primary contribution Can Co. made to category growth through the inclusion of secondary products. This category orientation was supported by a careful definition of ‘growth’. Here, Helen describes how she measured product contribution to category growth in *differential* rather than *absolute* terms,
I'm always looking for the contribution to category growth. So what that does is level the playing field, so that smaller brands, if they've got good growth look better. They're punching about their weight. So that's something that allows me to be more category-focused, because I'm talking about genuinely something that drives the category forward and I'm able to pitch, look at things at a more equal footing – because it's harder to be category-focused when you've got the number one brand.

Helen's job was made easier when smaller brands did well. The success of these smaller category competitors did nothing to threaten Can Co.'s dominant category position, and yet they provided an effective counterfoil against which Helen could 'pitch' the relatively small additional contribution Can Co.'s own category growth appeared to provide. This masked the significance of Can Co. brands.

This is the equivalent of talking about a percentage, rather than a value increase. Gains in the category contribution of smaller brands looked impressive, while category value improvement of Can Co.'s market-leading products was obscured. Whilst at first sight Helen's practices might seem somewhat duplicitous, as it turned out it was Grocer Co. personnel who had requested this growth-metric change. Helen explained:

I used to always say sales are driven by [own brand pack type] because it's the biggest one. And Grocer Co. picked me up on it – it's not driving sales, it's not. We've put new SKUs [stock keeping units] in and we see those doing really well. Might not be to the same scale, but that's what we're interested in, we're interested in how everything plays together, which is why I started using contribution to growth.

In the past, Helen had routinely presented Can Co.'s single largest-selling produce as the driver of category growth. Grocer Co. buyers, however, were dissatisfied with this approach. Rather, they were keen for their advisors' analysis to highlight the success of the new stock-keeping units introduced into the category. To meet these demands, Helen altered the way she measured category growth contribution.

Grocer Co.'s trading team wanted to show the success of its buying initiatives. As is discussed later in this chapter (s. 5.8), Helen's reports fed directly into Grocer Co.'s weekly, pyramid management information meetings. Every Monday morning, salient
features from this, and other, advisors' category-specific reports were extracted, amalgamated and fed up the management hierarchy to the Grocer Co. board. Advisors' category reports had to provide evidence that Grocer Co. buyers were doing well.

Here, the conjunction of two actors' different interests produced a mutually beneficial change to the measurement of category growth. Helen wished to downplay the significance of her category-leading brands in order to appear 'more category-focused'. Grocer Co. buyers were keen to demonstrate the success of their product range change initiatives. Though not commensurate, these intentions were complementary and both were achieved through a redefinition of the category growth metric. The Clothingnet case provides further illustrations of buyers' and suppliers' creative manipulation of information system data, this time to give the appearance that inventory levels were under control.

5.6 Colluding for the appearance of control

Merchandisers from the supplier, Clothing Co., and Multiple Retail Co., the buyer, together collaborated to manipulate the end-of-year stock figures. The Multiple Retail Co. merchandiser gained because he was able to appear to meet his end-of-year departmental targets, which were tied to his performance bonus. The supplier merchandiser co-operated because this behaviour helped present him, at least in the short term, as a 'good' supplier. Paul, the Multiple Retail Co. merchandiser (CBM1), explained:

We have targets that we have to hit in terms of made-up stock and the calculation for that is, what's my opening stock and what's my current position ... I deduct from that what I'm going to sell and add on to that what I'm going to make. And that comes out with our closing stock. And on a monthly basis, at a departmental level, to be fair, does that hit the targets that I've signed up to? Yes or no ... Therefore it's crucial from an accountancy point of view, for want of a better term, that they produce what they said they would.

Paul describes how he 'signed up' to cumulative, department stock targets. His success, or otherwise, in achieving these targets was gauged through management reports
generated from Stockplan figures. In what was a highly competitive corporate culture, Paul was under significant pressure to be seen to be performing as well if not better than his Multiple Retail Co. departmental peers. This is why Clothing Co.’s adherence to plan was so ‘crucial’.

Paul managed the stock commitments shown on Stockplan very carefully. Data within the Stockplan model became the reference against which Departmental merchandisers’ and suppliers’ performance was judged. If actual sales and production rates matched those that had been predicted, agreed stock targets were met. Paul summarised this in asking, ‘Does that hit the targets that I’ve signed up to? Yes or no?’ As I now go on to show, Clothing Co. merchandisers co-operated with Multiple Retail Co. merchandisers to make sure that these stock commitments were achieved as closely as possible.

I observed the bi-weekly work meeting from which the following extract is taken at Multiple Retail Co.’s London head office just before Christmas 2005. Paul, a Multiple Retail Co. merchandiser (CBM1), and David, a Clothing Co. merchandiser (CSM1), met as usual to run through sales and supply figures. In the first part of their meeting they discussed the timetable for stock declarations over the Christmas and New Year period. Paul asked David:

OK. And you’re not declaring the week before New Year, are you?

Paul queried whether or not David planned to declare any stock in the final week of the year. David replied that he planned to make his final stock declaration in week fifty-two. He also expressed some concern. He was uncertain whether or not he would have enough stock to meet the predicted production rates for this style:

No. Week 52 is the last week I’ll declare. Hopefully I’ll build up enough stock to cover it.
Given Multiple Retail Co. merchandisers’ propensity to cancel orders if suppliers failed to meet their predicted production rates, David’s initial unease was perhaps understandable. As soon became evident, however, Paul had a rather different problem. In the extract below he informs David that he may well provide him with a product list showing some stock selected to delay until the next financial period:

OK. I might have to give you some selected lines not to declare in Week 50 as well. Just put it into Week 1 or something.

Paul is more interested in holding stock off prior to the year end. This would ensure that he met year end stock targets. On this occasion, however, he shows no interest in cancelling the order. Rather, he asks for David’s help in ‘hiding’ the stock by adjusting the suppliers’ finished goods stock figure held within Stockplan. This figure fed directly into Multiple Retail Co. internal management reports (see s. 5.2). David responds:

Yeah, yeah, yeah. I haven’t got a problem with that.

That the Clothing Co. merchandiser acquiesced to this request demonstrates beyond doubt the superior power and authority of the buyer merchandiser. Paul not only had the authority to cancel orders if flows were not achieved, but also, it seems, was able to withhold this punitive measure should he so wish. Here, he permitted (some might say colluded with or coerced) David to alter Stockplan stock declarations. Having resolved the matter to his satisfaction, Paul moved the meeting on:

Cool. OK. Next.

The preceding sequence reveals how buyers and suppliers collaborated to amend the system. Their ‘fix’ had implications for the wider supply network in that it affected the working capital position of Multiple Retail Co. It also affected the position of Clothing Co. in terms of its ability to continue as a supplier, for whilst in the short term acquiescing to Multiple Retail Co. demands to manipulate stock might gain favour, as I show in section

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6.2 In the longer term it served to undermine the reputation of suppliers as trustworthy and had a negative impact on their financial position. In tandem, these factors underscored the impression widely held across Multiple Retail Co. that, by and large, the supply base was incapable and not to be trusted. Next, I present a further example from the Clothingnet case that shows how at times these conspiratorial inter-organisational routines could become deeply embedded. The illustration shows how buyer and supplier merchandisers used the Stockplan system to demonstrate they had everything under control.

5.7 Making the system work

Multiple Retail Co. and some Clothing Co. merchandisers collaborated with each other on a routine basis. For example, in full service vendor mode, Multiple Retail Co. and Clothing Co. merchandisers met regularly. In these meetings, Stockplan was used to record and to agree future production plans. Forecast sales were also discussed. These discussions facilitated joint action and active, creative interventions on the part of these actors to keep the system working.

These regular, bi-weekly meetings were held between these Multiple Retail Co. and Clothing Co. merchandisers. These merchandisers used Stockplan – and the reports produced from it – as an integral part of their discussions. This is shown in the photograph I took (Figure 5.2) during one regular work meeting between Paul, a Multiple Retail Co. merchandiser (CBM1), and David, the Clothing Co. supplier merchandiser (CSM1).

Figure 5.2 Photograph of Stockplan use in a bi-weekly work meeting between Paul, a buyer merchandiser (CBM1, left), and David, a supplier merchandiser (CSM1, right)
Paul, the buyer, issued orders for suppliers’ production to ensure stocks met retailer-defined financial targets. Each Clothing Co. product was discussed in turn. Stockplan data was used to identify and support discussion about sales and production issues. Deviations from plan received particular scrutiny. Each merchandiser noted any adjustment necessary either to sales forecasts or to production plans. This suggests that through these operational interactions, these merchandisers were able to co-ordinate the supply tasks for which they were individually responsible and thereby increase their effective span and scope of control. This managerial scope extended across time and geography, as the following illustration demonstrates.

Stockplan use enabled Paul and David to identify and resolve future stock and remote availability problems. The following excerpt (Figure 5.3) was recorded during a regular work meeting at which Clothing Co.’s commercial director, Kate, was also present. This extract shows how these individuals’ information system use played a role in facilitating co-operative value creation and inter-organisational learning. To this extent, the given inter-organisational information system was an influential factor in shaping the relationship.

In this extract, Paul starts with a numerical product code. This identifies the product he wishes to discuss. In his response, David states the additional contract quantity required to maintain production and stock levels in line with the sales forecast. After a brief pause he queries an unanticipated fall he has noticed in the store-stock figure. Immediately, Paul provides an explanation. This is simply a mismatch between the stores’ physical stock count and the computerised stock figure. This seems to be something that Paul has known about for some time. He describes how, finally, retail store personnel have updated the Stockplan system. It is this update that has caused the unexpected change in store-stock levels that David has spotted.
Paul: [Product number] yep
David: 100 dozen (...) Now one thing I did notice on this
    [Yep
Paul: two weeks ago, it was over 800 dozen
    [you know your store stock,
David: yes
Paul: and it’s dropped to 470 odd
david: Ah. Now that will be because Lincoln’s store.
Paul: Lincoln’s store?
David: It’s been overstated for many a long time
    [Ah
Paul: and they had a count in their
    system of about 4,500 singles, does that equate to what you’ve just said?
David: (tapping on calculator) that would be about 375 odd dozen
Paul: yep. So I think they’ve finally [corrected themselves
Kate: [corrected themselves
David: You should have said I’m not far from Lincoln; I could have gone in and
    helped them count it.
Paul: It was all on one size as well, how funny is that?
David: So it was never really there?
Paul: It was never there.
Kate: Ah. But it doesn’t affect us.
David: It does
Kate: It does?
David: because it’s on the system, so it’ll be on the Stockplan figures. So when you
    do a cut [    
Kate: [Oh, god
David: Don’t cut that size, we’ve got 375 dozen’s worth thank you very much]
    [ahhh
Paul: So it does. When there’s a big
Kate: [unclear]
Paul: It’ll be the one that we’re missing and that we have serious deficiency
    on
Kate: [cor, that’s alright then
David: Well, it says, on Stockplan, we’ve only got 1 dozen UFR
Kate: You haven’t got hardly any UFR, but it might be that down the line]
David: [Yeah they
chaven’t cut any for a number of weeks. Well, the [product number] the one
    that the size 25/26 is 25% UK sale
Paul: Right
David: Worldwide, its 40 odd percent. So we add a bit extra on, because it looks like
    you’ve got loads of stock, but it’s all offshore]
Paul: [unclear]
David: so you never have enough in the UK. (...) So, umh might need to have another look at that one.

Figure 5.3 Extract of Stockplan use in a bi-weekly work meeting

As in the earlier example of Helen and Alice’s co-operative use of Categorysales (s.
5.5), David and Paul’s Stockplan use demonstrates how co-operative inter-organisational

6 ‘UFR’ (unfulfilled requirement) refers to calling off instructions issued by the buyer against which the
supplier has yet to deliver. Theoretically, this figure ought to be zero since buyers only placed a call against
declared finished goods stock.
learning was facilitated by these merchandisers' shared interpretation of Stockplan system documentation. The example shows similarly extensive use of the system, but it also indicates the extent to which the given inter-organisational information system was dependent on active creative interventions to make it work in practice.

David’s monitoring of store-stock data trends in Stockplan meant he was able to identify an unexpected stock fluctuation in a remote Multiple Retail Co. store. On its own, however, this was insufficient either to identify a problem or to resolve it. As the latter part of this extract shows, when Paul and David shared their respective interpretations of this ‘data blip’, not only was the problem identified but these merchandisers were able to agree what action was required in an even more remote, offshore production location to prevent supply problems. This indicates the degree to which there was not only joint problem solving but also joint action.

In the next example, I describe how board-level decision makers at Grocernet received information from their buyers that was fed to them directly from their category-leading suppliers. These were the large, multinational brand leaders who through their access to and potential influence over Grocer Co. buyers could play a significant role in Grocer Co.’s category development activities.

5.8 Trading expertise and resources for data

This example shows how Grocer Co. buyer and Can Co. supplier actors exchanged access to Grocer Co.’s Categorysales data for suppliers’ category expertise and resources. Rather than being a neutral interpretation, the market intelligence received was a product of these leading suppliers’ reading of Categorysales system data. Selected individuals from these so-called ‘category advising’ organisations were granted unlimited access to Grocer Co.’s extensive product sales history database. In return, Grocer Co. buyers received regular sales analyses and specialised advice on how they might develop their category. For Grocer Co, these arrangements provided tailored, category-specific market advice, as well
as a range of resources and expertise that, even if it were possible to host internally, would have been expensive to develop and maintain. For those suppliers selected as category advisors, these arrangements provided access to exceptionally detailed market data on their own products and those of their competitors. Coupled with their broader knowledge of the market and the ability to carry out market tests and trials, this detailed data helped them to shape their own category plans and explore how the changes made played out in the market-place.

At Grocernet, individual Grocer Co. buyers selected one category supplier as a ‘category captain’ (a term later altered to ‘category advisor’). Category advisors were appointed to around one hundred and fifty of Grocer Co.’s category buying teams. Alice, a senior Grocer Co. buyer (GB1B1), explained:

We didn’t used to have a category advisor role as such, and when we got taken over by [Grocer Co.’s US parent] in 1999/2000 I think it was, they brought in the concept of category captains, which is about having a preferred supplier that you trust and you’re aligned with, and they will have access to category data and the resource that they provide for the category and the expertise, because as I say, with a lot of buyers moving around, you do rely on your suppliers to be the experts rather than yourself. So that was kind of introduced then and it’s evolved over the years.

Category advisors had access to category data, resources and expertise. Category advisor roles for preferred suppliers had been introduced first when Grocer Co. had been taken over and had since evolved. Alice’s personal view was that buyers relied on these suppliers rather than on themselves to be the category experts because buyers moved around so frequently. For these advisory relationships to work it was imperative both that the buyer trusted the category advising supplier and that the advisor was aligned correctly to the Grocer Co. business. Trust on its own was not enough. Alignment had a specific organisational meaning, something akin to ‘strategy matching’.

These discretionary, category-specific appointments gave authorised individuals from selected supplier organisations access to cross-category product sales data. This
practice was evident in buyer-supplier relationships observed between Grocer Co. and two of their suppliers, Can Co. and Glass Co. The following example demonstrates the extent to which individuals from these organisations co-operated with each other. One Grocer Co. buyer, Alice (GB1B1), drew upon information supplied by Helen, a Can Co. analyst (GSM2A2), to write her weekly sales report commentaries.

Each week, Alice compiled internal management reports for the Grocer Co. board. Here, she describes how she drew directly from commentaries of Grocer Co.’s category sales prepared by Helen:

What I do is, I fill in a sheet for my boss. What happens is, at nine o’clock we’ll go through the sales performance. So I’ll pull off a tree report which is my sales and profit and everyone in the business has their own sheet which is their report, and then I’ll write my report which is attached to some graphs that show my GBI, which is my gross buying income, which is my profit, and I’ll show my sales line and how it’s built over the year and I’ll put some commentary in as to why things have happened ... And when I say what it’s driven by I’ll use this [points to the weekly sales report]. And I’ll sometimes just copy and paste straight what [Helen’s] said.

Each week, Alice and her boss went through the sales performance at nine o’clock on Monday morning. Prior to this meeting, Alice pulled a report off the Categoriesales data system which showed sales and profit figures for the categories for which she was personally responsible. Each buyer had their own sheet. Alice then wrote a report to attach to the various graphs that showed her sales and profit trends. This showed her sales line, and how it had built up over the year. She also included a commentary, which explained why things had happened. Alice used the weekly sales report sent through to her by Helen to identify and explain the category drivers. She would sometimes just copy and paste straight from this report.

This illustration shows evidence of the tightly integrated, systematic organisational routines that underpinned Alice’s co-operative relations with members of Can Co.’s category advising team. It also shows the severe time pressure Alice was under. Once Categoriesales data for Saturday, the final day of the retail week, were processed, on
Sunday afternoons Helen ran a series of routine and customised Categorysales data reports. These reports were sent through to Alice's desk-top by eight o'clock on Monday morning. Alice had to produce her report before nine o'clock that same day. Given the number of categories that Alice oversaw, she had little time for contemplation. Grocer Co. was an organisation in which it was quite usual to see people running between meetings. At one level, then, Helen's commentary provided a straightforward, time effective and labour-saving means of producing the management reports required. At a deeper level, the supplier's interpretations of Categorysales data infiltrated deeply and almost imperceptibly into every level of the Grocer Co. organisation.

In a third example from the Grocernet case and final illustration of this chapter, I show how Grocer Co.'s Categorysales data use appeared to produce category development. Upon closer examination, however, it would seem that the series of temporary alliances may have been more influential in this process than the use of Categorysales data per se.

5.9 Appearing to use data for category growth

At Grocernet, advisors generated category value by range changes and store merchandising trials. For the previous six years, these co-operative supply network relationships had been a relatively stable feature. A representative of one of the first UK advisors commented on this as follows: 'The first year was exploring, how does it work? Let's try it. Maturity was 2002. 2002–2004/5 was where that maturity spread out, more people got to do it' (global business systems ambassador, Box Co).

A Wrap Co. informant explained to me how careful Categorysales data analysis led to the identification and exploitation of previously untapped market potential. This is demonstrated in the following field note except:
There was one product that 2–3 years previously you would have been hard pressed to find on Grocer Co.'s shelves and which accounted for only 15% of category sales. A growth trend was identified, coupled with a lower sales rate attributed, at least in part, to continual stock outs. Grocer Co. acted on this advice and two years later this product now accounts for 50% of the category. The trick, he explained to me, is to 'realise when a category is expandable' and, through leading edge category advice, 'grow your category faster than your competitors' market'. This moves the basis of competition beyond simply switching existing sales from competitor channels (although he is not adverse to this either). (field notes 11.9.2006, Wrap Co. international account manager (GS04))

From the customers' viewpoint, the category had changed considerably over the previous two years. Products that previously were relatively unimportant now occupied a significant proportion of category shelf-space. These changes, however, were not based on organic growth; rather, they were the result of deliberate action. As Wrap Co.'s international account manager pointed out, as category advisor Wrap Co. used Categorysales data to identify untapped category potential – particularly of those categories in which they already had a leading stake. In this way, it was possible to 'grow your category faster than your competitors'. As Mark, the Can Co. category marketing manager (GS2M1), commented, 'not holding the advisorship? That's a risky strategy'.

Two years after Grocer Co. had introduced category advisors, however, Hayley, the supplier development manager (GB1M2), expressed her general disappointment with the outcomes of suppliers’ access to Categorysales data:

For two years they [supplier category advisors] have had access to our data, access to our systems, access to a number of things that they wouldn’t normally get and there is an element of complacency that has set in.

As Hayley explained, although category advisors had had access to Grocer Co.'s Categorysales data for over two years, Grocer Co. was questioning whether or not it had realised the benefits expected. Hayley’s view was that any shortfall was due to advisors' complacency.

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Large, multinational suppliers were favoured advisors. Each of the advisors I spoke to had a strong category position. Grocer Co.'s documentation stated, 'we need to identify those suppliers who, because of their understanding of the market, or their resource and infrastructure, can work with us to deliver customer solutions and innovations' (company documentation, 2006). This meant that a co-operative approach to category growth invariably delivered additional sales to these advisors' own product portfolio. Grocer Co.'s supply development manager identified clearly that the availability of resource these suppliers provided was also considered crucial:

If you are a resource-poor company and your turnover is £1–2 million and you are supplying us with laundry baskets, you're not going to have the level of expertise, you're there to do a job. Plus, we import quite a lot of products from our GM [General Merchandise] business and those guys aren't category leaders, they're manufacturers, they are producers of products. End of discussion. Where you're dealing with branded, multinational suppliers such as the [other FMCG brand holder] and the [Box Co.'s] of this world, they've got resource coming out of their ears for want of a better expression, who are desperate to grow their categories because it grows their brand. (Hayley, Grocer Co. supplier development manager (GB1M2))

For the majority of suppliers, any expectation of holding a category advisorship was unrealistic. Small turnover companies with limited expertise were regarded as manufacturers, 'producers of product'. Here, Grocer Co. took a similar stance to that evident in the Storenet and Clothingnet cases – manufacturing supplies might well be importers competing with each other purely on a cost basis. By contrast, category leaders possessed significant resource – they were 'desperate' to grow their categories and hence cultivate their brands. Grocer Co. seemed well aware of its advisors' less altruistic motivations.

Secondly, and somewhat unusually for UK grocery retail, Grocer Co. was known for its relatively collaborative ethos: 'It's still probably a bit more trading and adversarial than collaborative. And by the way, I think Grocer Co. are still more collaborative than any of the other UK retailers' (global business systems ambassador, Box Co).
So, where Grocer Co. and their category advisors' interests were compatible, gains could be made. As Grocer Co.'s supplier development manager made clear, however, this co-operative collaboration was an optional extra:

It's relatively black and white, to be honest. If you're doing a good job, great, blah, blah, blah. If you're not, we're going to look for somebody else who's going to deliver this for us.

While Grocer Co. was prepared to co-operate with advisors who delivered category growth, these alliances were temporary. Co-operative arrangements lasted as long as these advisors continued to deliver as expected. A particular feature of these relationships was the precarious nature of even previously successful advisors' status. Where Grocer Co. felt that greater gains could be made advisorships were rescinded summarily. If an alternative supplier offered to deliver greater category growth, Grocer Co. simply switched advisor to gain access to alternative resources for category development. These behaviours show clearly in whose hands the power lay.

To summarise, then, this illustration suggests that the rational analysis of Category sales data played a rather limited part in the phenomenon of Grocer Co.'s category growth through category advisorships. Somewhat more important was which supplier Grocer selected as its advisor and the extent to which other category players might desire to undermine or usurp these companies, leading and influential position. This insight is explored further in the next chapter (s. 6.4 onwards).

Conclusions

In this chapter I have presented and discussed a range of actors' creative system use that I refer to as illustrations of 'collaborative conspiracies'. By using this term I mean to signal that these behaviours shared two particular characteristics. Firstly, these actors' inter-organisational information system use was collaborative in the sense that individuals from
both buyer and supplier organisations were involved. I adopt the collaborative label here as an umbrella term that recognises the potential for actors to switch between more co-operative and competitive modes of collaboration (Hamel, 1991). There are elements of both of these processes in the examples I have presented in this chapter. Indeed, my research findings depart from those of Hamel (1991) in that I found little distinction to be made between the behaviours of those actors engaged in supply relations that might be cast dichotomously as either 'co-operative' or 'competitive'. Secondly, I use the term 'conspiracy' to denote the silent acquiescence of actors engaged in these forms of use. These collaborative adaptations seemed an alternative to exiting or to voicing or resolving more fundamental problems. Further, although these actors' actions might have more far-reaching effects, they were not systematic in the sense that they were not necessarily replicated across other buyer and supplier relations within the supply network.

Nine illustrations of localised, collaborative conspiracies were detailed here: working around the system, correcting for system failures and gaps, nursing through working practice change, apportioning blame, concealing superior performance, appearing to be in control, making the system work, trading expertise and resources for data, and appearing to use data for category growth. A summary table detailing the key features and outcomes from each of these examples of use can be found at the start of this chapter (Figure 5.1). These collaborative conspiracies were efficacious in the sense that they delivered results. Whether or not these results might be considered 'good', 'bad' or 'indifferent' depended upon the actors' network position and perspective. Taken as a whole, however, these conspiracies produced suboptimal system solutions.

Although there was greater collective engagement between buyer and supplier actors than within the individual examples of 'patching ploys' and 'local plots' discussed in the previous chapter, these system adaptations were still fragmentary. This is not to say, however, that they might not also have quite far-reaching implications for other actors.
across these networks. These repercussions were, however, 'below the surface'. It is curious that these activities seem so prevalent in the interstices of this inter-organisational space. It is almost as if these actors, operating as they did at the far reaches of, if not beyond the pale of, organisation control, had a greater degree of autonomy – or at least were subject to less 'directorial' managerial control.

In the next chapter I go on to consider the systematic adaptations which more powerful actors in important inter-organisational positions were able to make to supply network relations.
Chapter 6  System-level adaptations

In this chapter, I seek to find the answer to the third of my main research questions:

- How did these sets of attitudes and behaviours begin to reshape supply relations and networks more widely – and with what consequences?

In the two previous chapters I have reported firstly, on findings from the research as it relates to individuals’ patching ploys, local plots by small, intra-organisational groups and collaborative conspiracies between buyer and supplier personnel. In this my final findings chapter, I report on my research findings at the system level. Here I discuss the limited, fragmented and partial extent to which supply relations and networks were reshaped by these individual and collective practices.

In this chapter, then, the data presented focuses on the nature and consequences of actors’ behaviour at this systemic level (Figure 6.1). Seven outcomes from across the four supply networks are discussed in detail.

With the notable exception of in their relations with Regional Co., Timber Co. sales teams and merchant buyers resisted the imposition of self-service ordering practices enshrined within the Timberorder system across the Timbernet supply network. Secondly, in the Clothingnet case there was evidence of systemic shifting on the part of the supply network. In this case, Multiple Retail Co. introduced a secondary sourcing approach across its supply network. Suppliers’ use of Stockplan was not required for this strategic alternative. Multiple Retail Co. planned to remove the system and replace it with another which made no provision for the sharing of forecast and actual sales data with suppliers.

Thirdly, at Storenet Department Co.’s branded fashion suppliers began selectively to compensate for the contractual limitations of their supply relations with Department Co.
Among others, Occasion Co. provided its own sales support staff in certain stores. This improved its relative profitability and thus these brands anticipated improved sales floor footage.

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<td>Limited value creation, Poor inter-organisational co-ordination; stock loss; replenishment problems; misguided product development</td>
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<td>Dysfunctional inter-organisational activities</td>
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<td>Shift from long-term interest increasing returns versus short-term value capture</td>
<td>Category sales data as a commodity (G)</td>
<td>Deselected advising partner, Buyer power differential maintained, Opportunities to create additional value by switching advisor</td>
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<td>The buyers’ prerogative</td>
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<td>Category sales data used as a bargaining chip</td>
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<td>Temporary suspension of co-operative activities</td>
<td>Temporary cessation (G)</td>
<td>Buyer power differential maintained, Temporal separation of co-operation and competition</td>
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<td>Relocation of implant personnel</td>
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<td>All suppliers involved in category growth</td>
<td>Managing the balance of power (G)</td>
<td>Increased category competition, Climate of suspicion</td>
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<td>Additional, ad hoc supplier category-validation</td>
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<td>Significant product range change, year on year</td>
<td>Co-constrcuting rationality (G)</td>
<td>Redefinition of sales performance baseline, Alignment between buyer and supplier merchandiser maintained</td>
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<td>Shift from merchandising based on historic sales to merchandising based on promotion-driven forecasts</td>
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<td>Adaptation of Category sales model</td>
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Figure 6.1: Summary table of system-level reshaping adaptations

A further four illustrations relate to a number of system-level changes in the Grocernet case. Here the implications for supply network relations were somewhat more complex. Firstly, there was evidence of switching behaviour: buyers selected and deselected advising partners and alternated between co-operative and more competitive
behavioural modes. Secondly, an ad hoc category-'validator' role was introduced. Competitive and co-operative category relations were mixed simultaneously. Those category advisors who adapted to these reshaped supply relations successfully engaged in, for example, forming and re-forming relations with changing category buyers and the construction of a new 'rationality' for merchandise planning. This chapter discusses each of these outcomes in turn.

6.1 Resisting imposed practices

In the Timbernet case, despite Timber Co.'s apparently progressive attempt to introduce electronic ordering across its merchant sector, very few buyers engaged with the system. Even Regional Co., the single largest user of the system, retained its original ordering routines, and as a result one particular branch buyer chose to take his business elsewhere rather than participate in this time-consuming administrative duplication.

Timberorder was launched to provide a flexible, self-service ordering mechanism for Timber Co.'s regional trade merchants. With only a few multi-branch, national operators, the bulk of this sector consisted of independently owned businesses, each of which retailed from a handful of locations. At the time of my research, Timberorder had been available for over four years. Despite Timber Co.'s continued efforts to upgrade the system and encourage merchants to trial its use, fewer than twenty merchants used the facility regularly.

Timber Co. sales representatives seemed unable or unwilling to convince the critical mass of small merchants required for Timberorder use to deliver the administrative savings expected. Instead, merchant buyers continued to place their order with Timber Co. sales teams over the telephone. The Timberorder system was ignored. One Timber Co. sales manager explained:
Timber Co. are quite forward thinking in approach to the business as a whole and we try to keep one step ahead of our competitors. E-trading will come in some type or form. We were the first to go out with EDI, we're certainly trying to lead the market forward, but you can only do it at a pace that the market will go with you. It's a very old, traditional trade, the merchant business, as much as the nationals are trying to pull it forward. Family run businesses, one depot. (Regional Sales Manager (TSK1), Timber Co.)

Regional sales managers were keen to promote Timber Co. as the most progressive business in this sector. Its lack of success in introducing web-based ordering was ascribed to merchants’ traditional values. These buyers were portrayed as the owners of small, family-run businesses that refused to see the inevitability of electronic trading even when threatened by competition from larger national conglomerates. The following illustration, from Regional Co., the largest single merchant user of the Timberorder system, suggests, however, that the reasons for merchants’ reluctance were somewhat more prosaic.

Regional Co. branch buyers purchased mainly processed timber from Timber Co. With nine branches, this large independent merchant had its own purchase order management system. Prior to Timberorder's implementation, branch managers had printed and faxed system-generated purchase orders to Timber Co. regional sales offices. James, Regional Co.'s commercial director (TB1D1), instructed each branch buyer to place their orders using Timberorder. Internal stock-keeping requirements meant, however, that order details had still to be entered on to Regional Co.'s own systems. Rather than reducing administration as Timber Co. had envisaged, Timberorder use doubled the order entry workload for Regional Co. staff. James explained this to me:

We still had to raise the purchase order on our own system, so that when stock came in it had to be booked in to keep our stock records right. So having raised a purchase order on the system, that would be printed off in the normal way and we then go and re-key it. So we key it once, we key it twice. Hit the send button, down to [regional sales office location], order processed. Material comes in, the faxed order is called up and the goods are booked in. So our people were pretty unhappy about having to key timber twice.
Regional Co. branches were 'pretty unhappy' about the requirement to double-key timber orders for what they saw as Timber Co.'s benefit. While this additional branch-level administration might reduce Timber Co.'s sales administration workload and secure a group rebate, there was little obvious direct benefit to those branch personnel who had to perform the task. As far as Regional Co. branch staff were concerned, Timberorder details were completely superfluous – they used their own records to book in goods received. From a branch perspective, then, the Timberorder system created only duplication of effort, inefficiency and redundant 'extra' order data. The reality of system use was markedly different from the forward-thinking, progressive development portrayed by Timber Co.'s sales manager.

As I show in section 5.3, Timber Co.'s national internet sales manager's use of Timberorder data strengthened the contracting relationship between the two companies at an organisational level. The picture at branch level, however, was rather different. Indeed, one Regional Co. branch manager severed his links with Timber Co. entirely. Douglas, a Timber Co. regional sales manager (TSR2), explained: 'What [branch location] do is, they give their business to a competitor.' Whatever contracting arrangements had been agreed centrally, these plans could be undone by Regional Co. branch managers' actions.

This case reveals the decidedly suboptimal nature of system-level supply relationship change, with terminal consequences. Timber Co. failed to consider how Timberorder use would integrate with merchant buyers' existing systems. Low merchant take-up meant Timber Co.'s ambitions to reduce its own administration costs were thwarted. Instead, Timber Co. incurred the additional costs of Timberorder system support in addition to telephone and fax-based ordering methods. Further, Regional Co. benefited from a price rebate, although this group incentive meant little to those branch staff who found their order-entry workload doubled. This misalignment between personal incentive and task resulted in the mutiny of one Regional Co. branch buyer. By way of contrast, in
the next example users at the supplier, Clothing Co., were as keen to keep using the Stockplan system as other actors at Multiple Retail Co. were to phase it out. The contrasting behaviours and outcomes to which these rationales led are discussed in detail.

6.2 Shifting supply

This case shows how the skilful, if somewhat duplicitous, use of the Stockplan system discussed in Chapters 4 and 5 provided Clothing Co. with a distinct and difficult-to-imitate service advantage. This advantage, however, proved vulnerable to Multiple Retail Co.’s ambitions to seize greater control over manufacturing and sourcing operations. These shifts in sourcing strategy threatened Clothing Co.’s competitive advantage. With collaborative planning forecasting and replenishment no longer a priority, supplier access to actual and sales forecast data was unnecessary. Multiple Retail Co. therefore mooted the removal of the Stockplan system.

Across much of Multiple Retail Co.’s supply base, the collaborative management of size and colour-level stock with suppliers had proved disappointing. Many suppliers failed at even the pretence of stock monitoring and proved themselves unable to respond to changing patterns of sale. Actors’ practices at Clothing Co. were distinctive. In conjunction with Paul, the Multiple Retail Co. merchandiser, David, the supplier merchandiser, and his Clothing Co. team had fashioned a complex web of local plots and collaborative conspiracies (ss. 4.2.1, 5.6). In combination, these deeply embedded informal practices were instrumental in making the system work. This Stockplan data manipulation afforded Clothing Co. competitive advantage and maintenance of the status quo, however, only if Multiple Retail Co. merchandisers were also willing to use Stockplan for joint problem-solving and action.

Unfortunately, the new merchandiser transferred to replace Paul upon his promotion within the Multiple Retail Co. business had little cognizance of how Stockplan might be used. Clothing Co.’s commercial director, Kate (CSD1), related an early
discussion she had with this new merchandiser. At their first meeting, he announced his intention to abandon Stockplan use altogether. Kate described her response as follows:

I said, I don’t want to sound anal about it but yeah, if that’s what you want to do, we’ll start doing it, but I tell you now, it will start to decline and all the messes that you have to sort out and all the shite that you have with other suppliers, if you want an easy life with us, then we have to stay on this [the Stockplan system]. It’s up to you.

Though personally committed to the use of the Stockplan, Kate was in a rather delicate position. At this early stage, she needed to build a good working relationship with the new merchandiser. Crossing him over such an apparently minor change to existing practices might not go down well. She therefore couched her resistance carefully, assuring the merchandiser of Clothing Co.’s compliance with his wishes whilst at the same time making quite clear to him how such a decision would have adverse, personal repercussions. Appealing to his self-interest, Kate highlighted the superior service Clothing Co. currently provided. Stockplan use was fundamental to this capability. The ultimate decision as to whether or not use of the system would be abandoned lay not with Kate, but with this new and inexperienced Multiple Retail Co. merchandiser.

So, as I describe in section 5.7, Clothing Co. and Multiple Retail Co. merchandisers could use Stockplan to co-ordinate responsive global manufacturing. These practices, however, hinged upon both the individuals involved and the availability of the Stockplan system. As a result, Clothing Co.’s inimitable capability was dependent upon and vulnerable to what were frequent, Multiple Retail Co. personnel changes. This made this service capability particularly difficult both to sustain and to scale. Faced with what Multiple Retail Co. saw as such limited pockets of sophisticated supplier practice, a complementary supply strategy had been devised.

‘Fast fashion’ supply arrangements differed from established relations with Clothing Co. and other so-called ‘full service’ vendors. Multiple Retail Co. had created a
separate design team to draw up product specifications, manufacturing plans and bills of materials. As another Clothing Co. director explained to me:

It's like they treat us differently, because we've got the knowledge, to somebody like Turkey, where the pack — I saw the pack that Turkey was given. So they went to Turkey to place these orders, didn't need me, [fabric technologist's name] or anybody, because the pack they were given had everything in it ... I don't know what the department have used of ours to help build that spec but there were sketches, there were manufacturing plans, there was a bill of materials. (Ray, Clothing Co. commercial director (CSD2))

Multiple Retail Co. developed its ability to design and globally source products independently of its full service vendor supply base. Where Clothing Co. outsourced manufacturing close to Multiple Retail Co. buying offices, its control over these manufacturing resources was already beginning to look vulnerable, as the following account of a conversation between Jack, the Clothing Co. commercial director for Kidswear, and his Multiple Retail Co. department contact demonstrates:

Multiple Retail Co. people who are based in Hong Kong had been into our factory in China, which we'd spent twelve months getting up to Multiple Retail Co. speed, developing, spent money on it, time, sweat, blood, tears, getting it right. They've been into that behind our back, talking directly to the MD there saying 'Don't worry about Clothing Co., you'll be dealing with us direct'. And I said, quite frankly, that's scandalous. (Jack, Clothing Co. commercial director (CSD3))

These findings show how Multiple Retail Co. had developed its ability to design and globally source products independently of Clothing Co. Indeed, Multiple Retail Co.'s information system development team planned to replace Stockplan with an alternative system. With an inexorable move towards direct sourcing, supplier access to actual and forecast sales information was no longer a necessity.

In summary, then, this example demonstrates that system-level changes produced both organisational winners and organisational losers. Clothing Co.'s inimitable and competitively advantageous service capability was dependent entirely upon the persuasive powers of Kate, the Clothing Co. director, and the enlightened self-interest of individual,
sometimes inexperienced Multiple Retail Co. merchandisers. As if these competitive capabilities were not fragile enough already, in addition Clothing Co. was utterly reliant upon the sales and forecasting information contained within Stockplan. While the extent to which these actors’ Stockplan use expedited the transfer of codified knowledge such as manufacturing plans, design specifications and bill of material information is uncertain, it is clear that when Multiple Retail Co. decided to design and source a greater proportion of goods itself, use of the Stockplan system was no longer viewed as a priority and its very existence was threatened. The next example is taken from the Storenet case and illustrates how additional staff bolstered sales rates in selected stores and thus contributed to an ‘across-the-board’ improvement in brand profitability.

6.3 Compensating for contractual limitations

In the Storenet case, I focused on sale or return practices between Department Co. and two branded fashion retailers: Modern Co. and Occasion Co. Similar practices were evident at a third supplier, Contemporary Co. All parties stood to gain from sale or return. For branded fashion retailers these arrangements offered lower overheads than a standalone store. From a Department Co. perspective, sales-funded purchases and obsolete stock could be returned – an important consideration when product life could be as little as twelve weeks. Yet, despite Department Co.’s promise, tensions emerged between Department Co. space planners, store managers and sales staff and the area managers, store buddies and merchandisers of its branded fashion suppliers.

At Storenet, Department Co. space planners extrapolated sales targets from Storespace floor plans. As I described in section 3.3.3, aggregated brand performance was extrapolated across each Department Co. store to optimise group profitability. Hence, there was competition between branded fashion suppliers for sales floor space. Neither Department Co. space planners nor store managers, however, decided which products were displayed. The merchandiser of Department Co.’s branded fashion suppliers made these
allocation and replenishment decisions. Initially, these merchandisers received a Storespace-calculated floor plan and expected sales density information. The head of merchandising at one branded fashion supplier told me:

I get a linear footage and I work that back to how many units will fit on that mat. I then get my area managers to confirm that we’ve got that linear footage, because sometimes the stores do a completely different thing to what head office say and then we make sure we manage the business based on that linear footage. (Andrea, Occasion Co. head of merchandising (SS3M1))

The most senior member of the merchandising team, Andrea managed the initial allocation of products into Department Co. stores herself. Occasion Co. area managers were directed to keep a close eye on actual store space and to ensure that Department Co. branches adhered exactly to their head offices’ instructions. The motivation behind this close interest was to ensure that Occasion Co. received its full selling space allocation. This was important because, as Andrea commented, ‘sometimes the stores do a completely different thing’. Occasion Co. personnel took it upon themselves to ensure that the expected sales and profitability outcomes from the sales floor area they were given were achieved.

The sales floor area determined how many units could be displayed at any one time. Occasion Co. merchandisers calculated which units were displayed, and how. From Andrea’s point of view this initial space allocation was crucial since 70 per cent of new products were allocated for initial display. The selling season was short and new collections were launched every two weeks. Andrea therefore forecast sales on the basis of the past performance of similar styles. As was the case in all three of the branded fashion suppliers I researched, Andrea graded each Department Co. store according to its sales potential. Although the success of individual products was uncertain, sales forecasts were then based on the historic sales of similar styles in comparably graded stores. These store-grading algorithms, not on-shelf availability targets, determined initial product selection
and stock replenishment. Speculative, initial allocations were pushed into Department Co.
stores, sales reaction was assessed, and those stores whose products sold most quickly
received replenishment. Andrea explained, ‘We’ve determined which stores are the most
important in terms of sales potential. Therefore we want them to be replenished first’
(SS3M1). Andrea prioritised those Department Co. stores with the fastest sales for
replenishment. Department Co, on the other hand, considered on-shelf availability a
primary driver of sales performance.

With the introduction of Storespace, Department Co. had introduced a space
planning management team. Space merchandiser and supply chain roles were created.
Space planners allocated store space and provided Department Co. stores with detailed
visual merchandising guidelines. Space merchandisers had a roaming remit; they ensured
these guidelines were implemented across the group. Department Co., however, was not
the only party that instigated structure change. Branded fashion suppliers such as Occasion
Co. began to introduce store buddies into selected Department Co. stores. This was a semi-
official initiative. While Department Co. store managers permitted Occasion Co. staff to
work on the premises, these full- and part-time sales staff were not part of any formal
contractual arrangements. Rather the opposite. Occasion Co.’s merchandiser, Andrea
(SS3M1), believed Department Co. store managers neglected the Occasion Co. brand. As
she explained:

I shouldn’t put my own staff in. In my concession agreement in theory it
says they supply the staff. That’s what it says – but they don’t. That is the
biggest problem. So I started saying to the [nearby Occasion Co. store]
girls, just go and tidy up and put that delivery out, just so I know what’s
going on in that business.

Andrea was particularly unhappy with sales support Department Co. provided.
Although her concession agreement stipulated that Department Co. sales staff would
support Occasion Co.’s brand, she identified inadequate staffing as ‘the biggest problem’
in the relationship. In response, she gradually increased the frequency with which Occasion
Co. staff visited Department Co. branches and the length of the visits. Over time, these occasional visits had been extended. Full- and part-time Occasion Co. sales employees were dedicated to selected Department Co. branches.

Relations between Occasion Co. store ‘buddies’ and Department Co. visual merchandisers were not always harmonious. Department Co. and Occasion Co. staff clashed over how stock ought to be displayed. One Department Co. assistant explained, ‘I know how it sells, but they [store buddies] want everything to look the same. Sometimes they change it and then I change it back.’ As soon as these store buddies left the store, sales assistants rearranged stock according to Department Co. standards.

As was discussed in section 4.2.3, there was conflict between Occasion Co.’s interest in rapid sell-through and Department Co.’s emphasis on on-shelf availability. Department Co. sales personnel and Occasion Co. store buddies were engaged in a battle of competing ideas. Department Co.’s branded fashion supplier partners monitored Department Co. store sales rates closely. Occasion Co. staff had access to Department Co. Dailysales information. They were able to make sales comparisons with their own standalone solus stores, staffed and merchandised to different standards. Occasion Co. knew more could be achieved from this prime, Department Co. selling space.

In summary, then, while Department Co. relied on Occasion Co. for detailed range plans, Department Co. store managers believed departmental profitability could be improved through increased attention to on-shelf availability. At Occasion Co, however, Andrea sought to maximise sales through targeted replenishment, rapid end-of-line discounting and continual product development. Despite high levels of operational interdependence, these divergent – and conflicting – organisational logics led to distinctive, antagonistic behaviours and thwarted the creation of inter-organisational value.

Next, I look at a set of examples drawn from the Grocernet case. Here, I explore how in
combination these illustrations demonstrate the dynamic nature of reshaping within this supply network.

6.4 Category sales data as a commodity

The next two examples illustrate dynamic change in supply relations at Grocernet. To remain a successful advisor under these conditions required a high degree of adaptive behaviour. My research suggests that some individuals and organisations found this easier to achieve than others.

In this first example, the tensions within collaborative buyer–supplier relationships come to the fore. Here, the Grocer Co. buyer and Glass Co. supplier advisor are seen as being at loggerheads. While the supplier advisor provided Grocer Co.'s trading team with category development advice, schisms between a longer-term category perspective and the short-term deal-making strategies privileged by the Grocer Co. buyer and members of the Glass Co. account team meant that her efforts were thwarted and her expertise undermined. While there seemed few gains here for the category advisor, the Grocer Co. buyer was able to reassert the power of his position. As the buyer, it was he that made the decision as to whether or not to follow the recommendations of advising suppliers – however experienced they might be.

Glass Co.'s category development manager, Sophie (GS3M1), provided Grocer Co. with category-specific marketing advice. Her Glass Co. team consisted of only a single business analyst who prepared category reports and conducted development activities. As Helen had done, this Glass Co. analyst produced standardised weekly sales reports for Grocer Co.'s trading team. This, however, was as far as the co-operative collaboration went. Sophie described how, although the Grocer Co. marketing team might look upon her development proposals with interest, there was little hope of them coming to fruition without the buyers' – and her account teams' – commitment. Sophie explained:
Anything that you propose to marketing, they'll go, oh yes, that's interesting, oh but it depends what the trading terms are, and they can't influence the trading terms. Nor can we, that's down to the account managers. Whatever you propose has to pretty much go through the buyers and the account managers.

Intra-organisational power differentials between Glass Co.'s category and account team and Grocer's buyers and marketers complicated any straightforward stimulus and response mode of advice. Alan, the Grocer Co. buyer in this category, showed no interest in category planning. He was uninterested in long-term category development. He wanted instead to focus on how to improve short-term profitability. Sophie elaborated as follows:

He generally just wanted to run it like he wanted. He also doesn't believe in category plans, so when I suggested to him that [leading retail competitor] had a five-year plan and [another retail competitor] had a three-year plan, why doesn't he even have a one-year plan, he said he thinks category plans are a load of rubbish ... in slightly stronger language.

Sophie was an experienced business analyst, and on Glass Co.'s fast-track management development programme. Despite her extensive experience, category team resources were limited, the trading team reigned supreme, and the dismissive attitude to her proposals of Alan, the buyer, effectively undermined her position as his category advisor. This maintained the appearance that he was in control of their relationship and reinforced the impression of buyer superiority.

Trading relationships between the Grocer Co. trading team and the Glass Co. account team became increasingly strained. Despite an official demarcation between advisor and trade relations, Derek, Glass Co.'s business analyst (GS3A1), attributed Glass Co.'s eventual loss of advisor status to its account teams' refusal to improve Grocer Co.'s average margin. Alice, Grocer Co.'s buyer manager (GB1B1), confirmed these tactics:
We cut their category access off and then that was bought into negotiations with them in a commercial sense. Because we're arguing with them, we don't want them to have our category data. And that will become a commercial discussion, because it is a commodity. If you want to be our [Advisor], what's it worth to you?... You know, you're not doing the right job and if we're not getting on with you and if you're not giving us funded promotions we're not going to give you our category data.

Alan, Sophie and Alice's behaviours arose from markedly different attitudes towards short-term promotional discounts, the efficacy of long-term category planning and development and Glass Co.'s relative importance as an advisor. Alan wielded the power to accept or reject Sophie's proposals, which underscored his dominant buying position. Sophie was committed to pursuing a category strategy that made sense for Glass Co., Grocer Co. and the category, whilst Alice was prepared to use Categorysales data as a commodity to negotiate the best advising 'deal' she could for Grocer Co.

Even buyers who engaged wholeheartedly in collaborative inter-organisational information system use were prepared to use Categorysales data as a commodity for the purposes of annual supplier negotiations. From a supply network perspective therefore this illustration demonstrates that switching supplier advisors produced clear benefits for Grocer Co., in terms both of demonstrating and maintaining their superior power and authority and of securing the most value from Categorysales data use. From the same case, a second example demonstrates how buyers switched between 'competitive' and 'co-operative' modes of behaviour and used the Categorysales system to maintain power and control within these collaborative relationships.

6.5 Temporary cessation

Grocer Co. buyers temporarily suspended close advising relationships during annual trading negotiations. These 'sharper' negotiating practices were in part evidence of a more aggressive approach to suppliers championed by a new trading director at Grocer Co.

Through a series of internal group meetings, Grocer Co. buyers were encouraged to engage
in more competitive tactics. By virtue of the co-located presence with Grocer Co.'s trading teams, some advisors' employees were present at these early meetings. One buyer, Alice, expressed personal concerns about the potential conflicts of interest this might generate. As a result, permanently co-located employees were moved to less sensitive areas of Grocer Co.'s head office and discussions with advisors about Category sales data use were suspended, in some cases indefinitely. Again, this use of Category sales data as a bargaining chip reasserted the buyers' authority over their influential category advisors.

Grocer Co.'s new trading director, however, expected buyers to adopt a more aggressive stance towards suppliers. Even Alice, a buyer manager convinced of the benefits of co-operative category advice, felt these tensions between co-operation and competition:

You wouldn't normally be in conflict with your category captain. And we weren't in conflict, but we were negotiating quite heavily ... we were having group meetings with our trading director, where he's saying what you should be doing to suppliers. And the first couple of group meetings, Bill (GS2AI) was at them, and I raised it with my boss to say, I don't really think it's appropriate Bill's there, because he could, at the end of the day, go back to Mark's boss and say, actually they were saying this, that and the other and these are the tactics. And at the end of the day, you've got to think of it [as being] like warfare.

Grocer Co.'s new trading director called group meetings with his buyers to discuss tactics in the annual trading negotiations. Though a Can Co. employee, Bill worked on the Grocer Co. trading floor, the open-plan office in which Grocer Co.'s buying teams were accommodated. He was, therefore, physically present during these early meetings. Alice, engaged in what she described as quite 'heavy' negotiations with members of the Can Co. account team, felt personally that this was inappropriate. While Bill's role was structurally separate from those of the Can Co. account team, both Can Co.'s account team and its category team reported through the same line manager (Mark's boss). If her negotiating tactics had become known to 'the other side', they would have placed Alice at a disadvantage.
Despite earlier promises to keep trade and advising relations separate, co-operative advisorships suffered. Regular weekly meetings between Alice and Mark, Can Co.'s category marketing manager (GS2M1), were suspended temporarily. Mark explained:

Everything was thrown up in the air earlier this year, we were told [Bill (GS2A1)] had to leave the trading floor and I wasn't able to go in and see [Grocer Co]. We were told they were going through a lot of trading negotiations and we weren't able to come in for that point of time.

Alice took action to have Bill removed from the trading floor. Although he remained within Grocer Co.'s head office, he was relocated to sit with Grocer Co.’s merchandising team.

As this example shows, Grocer Co. switched therefore between more co-operative and more competitive modes of behaviours. Successful advisors were those that could adapt to these changing tides. Drawing upon two further examples from the Grocer Co. case, I show next how Grocer Co. extended this interplay between co-operation and competition through the creation of a new ad hoc supplier role.

6.6 Managing the balance of power

This example illustrates the complex micro-dynamics of system-level change. Grocer Co. increased the level of competition within its advising relations by introducing a new supplier role: that of category advisor. The consequences of this change were rather different for individuals involved in category advising relations. From a Grocer Co. buyers’ perspective, this enabled them to sense-check advice and tap into a wider range of supplier expertise. Can Co.’s category marketing manager was confident that he could continue to build mutually beneficial advising relations with relevant Grocer Co. buyers. Can Co.’s merchandiser analyst, however, foresaw the potential for increasing difficulties and proposed to remodel the system he used to allocate merchandising space to ensure his advice remained aligned.
Some suppliers were appointed as ad hoc category ‘validators’. Upon the invitation of Grocer Co. buyers, validators participated in cross-category activities such as strategic category, range and choice reviews. Rather than the free access to cross-Category sales data enjoyed by category advisors, however, validators worked with period-specific snapshots to verify and advise on operational details relevant to pre-agreed sub-categories. Validators were described as ‘different’ from category advisors, though also as ‘equally important’, and Grocer Co.’s documentation described the rationale for these new roles as follows:

We know that there are many of these suppliers, who have a wide and varied knowledge bank of consumer insight and product expertise. We want to make sure that we capture this, and that all suppliers are fully involved in growing our categories.

Grocer Co. was focused on securing value from the consumer insights and product expertise of as wide a range of its suppliers as possible. Its intention was to draw upon the fullest possible range of resources across its whole supply base in its ambitions to grow each product category.

As I discussed section 5.5, existing category advisors were dominant market players. Hayley, Grocer Co.’s supplier development manager (GB1M2), expressed some caution about these suppliers’ underlying motivation:

Because, [taking a particular category supplier], if when they redesigned the fixture they gave themselves a disproportionate amount of space, very subtly of course, we would get that checked by another [same category] supplier to say, do we think this is right for the customer and for the market?

While Grocer Co. co-operated with these leading industry players, there was some suspicion about these companies’ underlying motivation. Hayley spelt out explicitly the message that the motivations of these close advisors were not considered altruistic. As a result of this implicit suspicion, Grocer Co. instigated procedures and processes that enabled it to sense-check particular advisors’ proposals with other players in the same category. Advice that was truly focused on improving category performance for the benefit
of the customer and the wider market, it was assumed, would be commensurate with that provided by other competitors in the same category.

So, not only did Grocer Co. aim to extend the insights it gained from suppliers’ interpretation of its Categorysales data, but, as Hayley’s comments reveal, it wanted to ensure that its advisors were not acting opportunistically (in the sense of ‘self-interest seeking with guile’). Grocer Co.’s documentation stated that suppliers taking on the new validator role it created had ‘the right and the opportunity to input their views and expertise to the category management process and challenge [my italics] any [category advisor] decisions or recommendations that have been made in an appropriate manner’ (company documentation, 2006).

These validator roles gave non-advising suppliers the right to review and comment on category advisors’ recommendations. Validation tempered advisors’ power. Bill, Can Co.’s merchandise analyst (GS2A2), found giving advice to list competitors’ products easy, whereas validators might regard advice to list Can Co. products as favouritism. As he explained to me:

It’s very easy to make recommendations on competitors’ brands, if those recommendations are true in terms of space, because why would I do it? It’s quite stressful to make recommendations about one of our own brands.

Clearly, Bill had an organisational affiliation to and an interest in the brands of his parent company, Can Co. Curiously, however, the position in which he was placed – working at the interstices between Can Co. and Grocer Co. – produced a rather paradoxical relationship between the relative ease with which he was able to make category recommendations and his situation vis-à-vis his own and competitors’ product brands. Bill found that an evident absence of conflict of interest meant recommendations of competitors’ brands were trouble-free. As he says, why would he make a recommendation that the space allocated to a competitor’s brand ought to be increased since he had no vested interests in this outcome; rather the reverse? Conversely, he reports how stressful it
was for him to make a recommendation about one of his company’s brands, however valid, since this might appear to be driven by vested interests.

As direct category competitors, validators were predisposed to make the worst of any advice that undermined their own competitive position - including advisors’ self-recommendations. This placed Bill in an increasingly awkward position. These changes were accompanied by buyer-imposed individual confidentiality agreements which blurred the boundary between internal and external lines of reporting.

Grocer Co. required its suppliers to separate advising personnel, organisationally and legally, from those engaged directly in competitive negotiations. Since Category sales data included the sales details of supplier competitors, it was commercially sensitive. Individual analysts signed stringent data confidentiality agreements. The supplier actors involved in co-operative category development activities were therefore in the main structurally separated from account management activities. As was discussed in section 5.8, however, Grocer Co. buyers were not separated structurally from account management activities. This dissimilarity in approach is indicative of the power differential between Grocer Co. and its suppliers.

Individual agreements prevented analysts disclosing category information to their colleagues and produced unusual internal relationship dynamics between suppliers’ category personnel and their account teams. As Mark, Can Co.’s category marketing manager (GS2M1), explained:

Internally, within our business, people will come up and ask you a question and I’ll say, sorry, I can’t tell you that; which is funny, because you still work for them. And people higher up within our business, you can’t tell your boss certain things; which is odd.

Although Mark was the head of Can Co.’s category team, he was still employed by Can Co. He was situated in a position where demands were placed upon him to offer advice that was beneficial to the category as a whole. What is more, he was privy to
valuable and detailed market information about the products of his direct competitors. This information could have been extremely useful both to Can Co.'s account team and to Mark's boss (who had line management responsibility both for Mark's category activities and the Grocer Co.-dedicated account team). Mark describes how he had on occasion had to refuse personal requests for information from other Can Co. employees. This unusual state of affairs was made even more peculiar by the indictment that he was unable even to pass on some types of information to his immediate superior when asked. Despite these safeguards, even where co-operation had proved successful and both sides saw clear advantages, staff movements could readily disrupt these carefully constructed arrangements.

Alice, the Grocer Co. buyer, prepared for a period away from the business, described the starkly contrasting relationships that were in place for the period of her absence. In one category, the buyer who was due to replace her had no intention of speaking to the category advising team at all, whilst on the other, a relatively new buyer would rely heavily on Mark's advice as she shaped a new, specialist product category. As Alice commented: 'Someone like [ ], who's going to babysit the category whilst I'm on maternity, doesn't want to see Mark every week and that's his view on things. And I personally think he's going to miss out by doing that, but he's only going to be on the category for six months and then he's going to move on so he probably doesn't think he needs to do that so much.'
Mark built a relationship with Julie, a specialist buyer relatively new to this Grocer Co. category (Figure 6.2). Mark's access to the buyer enabled him to continue to discuss promotion and pack deals to drive long-term category growth.

An appreciation of Grocer Co.'s promotional intentions was valuable to the Can Co. account team. Likewise, Mark's access to external market research information and insights into the retailers' competition was valuable to Grocer Co. Indeed, recent personnel changes meant that his category-specific marketing expertise was currently viewed as particularly important. While Mark acknowledged to me that there might be further opportunities to develop the role, he seemed equally content for advising arrangements to continue as they were:

I would like to see it developing, but it's fairly easy to say that it could be exactly the same, and that's no bad thing.

Mark's remarks here are interesting, particularly in terms of their conditional and somewhat ambivalent tone. This would suggest that for Can Co., the current advising relationship was one that fulfilled its organisational objectives, and perhaps suggests that the power relationships between the two organisations were not as unequal as they might at first appear.
From a system-level perspective, then, Grocer Co.'s creation of a category validator role introduced the permanent spectre of competition into co-operative category advising relationships. Whether or not this was perceived as a ‘problem’ depended very much on individual advisors’ roles. For those confident of their ability to construct and reconstruct expedient, mutually beneficial relationships with category buyers, such as Mark, this did not appear to be of much concern. Bill, the merchandise analyst, however, found his position more difficult. The introduction of ad hoc supplier validators increased competition and, within this climate of suspicion, Bill found his motives questioned, his advice treated with scepticism, and a heightened potential for conflict when making recommendations about his own products. In my final illustration, then, I consider how Bill adapted to these altered supply network conditions. He sought to engage in the co-operative, co-construction of a new Category sales data model to alter the underlying basis upon which category merchandising performance across the supply network was assessed.

6.7 Co-constructing rationality

This initiative was driven by Bill (GS2A2), the merchandise analyst of Can Co., one of Grocer Co.'s category advisors. The benefit of this new model was that it permitted Bill to continue to give Grocer Co. aligned, rational-looking category advice.

Bill worked closely with Jo, Grocer Co.'s merchandise manager (GB1M1). Using Grocer Co. software, he merchandised Grocer Co.'s range according to predetermined merchandising rules. Bill was tasked to recommend promotional shelf space: ‘I’d be allocated that to go away and look at three for four space in deals by category and come back with recommendations’. Grocer Co.'s merchandising manager assigned Bill specific tasks. Though employed by Can Co., he was expected then to report category-oriented recommendations back to the Grocer Co. team. These recommendations included store-specific product listings, shelf positions and display quantities (determined by the visible shelf width, or ‘facing’ and shelf depth). To support his analysis, Bill had access to Grocer
Co.'s shelf planning software. This information system enabled comparison of future shelf space recommendations against historic Category sales product data.

Figure 6.3 New Grocer Co. shelf layout compared against past sales

The software produced an easy-to-read visual representation. Jo, Grocer Co.'s merchandising manager (GB1M2), used this pictorial planogram display (Figure 6.3) to check allocations across the category. Products that were 'underspaced' relative to their past sales histories showed in red. Where space allocation matched previous sales exactly, facings were shown in white. Products where the proposed shelf space was greater than warranted by historic sales rates were shown in green. The darker the shade, the greater the difference between allocated space and the extrapolated requirement indicated. Bill explained:

It's supposed to move from red to green. This particular example is all green ... The main SKUs [stock keeping units] on the fixture haven't got any movement behind them, simply because they've changed from last year's sales, so historically they haven't got any information behind them.

The system was designed to enable merchandisers to respond to products that had sold better than originally predicted. Red areas on the planogram indicated that there were opportunities to increase sales of that particular product by giving it a greater proportion of the fixture. Changes in trading conditions, however, meant that this use of the model had
become increasingly limited. Past sales were no longer always an available, or, indeed, a useful guide to the future.

Forward plans for Christmas 2007 revealed that 50 per cent of the product range had changed from the previous year’s as suppliers delivered year-on-year cost reductions through smaller pack sizes. Bill explained:

It’s [product change] more than in previous years due to suppliers trying to meet price points. So packs sizes have been reduced, quantities within bottles have been reduced over the past year or two years simply to meet price points. So we want to bring the price down, so they [the consumer] are not getting less for their money, but they’re paying less and they’re getting less.

Product price points were determined by Grocer Co. buyers. The rate of product change increased as suppliers modified their existing product ranges to meet these price point reductions. For example, smaller pack and bottle sizes meant both product quantities and consumer selling price could be reduced without loss of either supplier or retailer margin. Grocer Co. and Can Co.’s strategies were aligned in that they co-operated to bring consumer prices down.

This product change made historic, year-on-year sales data comparison meaningless. The product offer had changed, so there was little reason to suppose relative sales would be comparable. In addition, Grocer Co. had introduced a number of short-term deal-based promotions. At the time of my research five different promotional strategies were in play across its stores. As if this was not enough to undermine the assumptions upon which Category sales data analysis was based, product listings were influenced by so-called ‘slotting deals’: marketing and promotional support guaranteed by suppliers in return for prime shelf positions and space. In combination, these factors subverted the logics of a space allocation system based on previous sales histories. Significant adaptation of the shelf-space model was required.
Bill explained to me how he had developed a new analytic method to account for what he described as this promotional ‘distortion’. He aimed instead to reorient Category sales analysis to ‘real’ base demand. Rather than historic sales, his new model took as its baseline Grocer Co. buyers’ sales projections:

I’m going to say [to the buyer] here’s SKU [stock keeping unit] A. I can tell him what you did last year, are you going to increase sales? Are you going to decrease sales? Are you taking off this product? And then he can give me an indication of how much that SKU’s going to change and I can feed that back into various plans and we’ll have a better picture of the future than last year’s sales data.

On Grocer Co.’s behalf, it was the buyer who influenced future sales rather than past sales performance. Buyers’ actions determined the likelihood of individual product sales increasing or decreasing, or of a particular product being ‘delisted’ (i.e. removed from future sale). Bill, the category advisors’ merchandise analyst, was pragmatic. Rather than build category advice upon last year’s sales data, he intended instead to remodel the Category sales system upon the buyers’ intentions. This, he knew, would give him ‘a better picture of the future than last year’s sales’.

Bill planned to use future sales predictions to remodel base demand. Space allocations would then be extrapolated from this new baseline. He explained, ‘I’ve just got the exact strategy for Christmas of last year, so I’m going to go back and revisit those categories with the data that I’ve got and try and rebuild them in the computer.’ Bill reoriented his baseline to mimic the buyers’ intentions. So, it was the buyers’ strategy rather than past sales per se against which future sales would be judged. This revised model provided Bill with a speculative, but quantitative and rational-looking statistical framework upon which to found future merchandising plans and advice.

So, this illustration demonstrates the co-operative co-construction of a rational-looking model against which to assess supply network performance. Further, it reveals actors’ significant adaptation of systems. While the buyers’ power remained supreme, Bill
was able to continue to align himself with Grocer Co.'s category objectives and ensure that his advice was still appropriate by using this system.

**Conclusions**

This chapter has explored how, individually and collectively, buyer and supplier actors' behaviours began to reshape supply relations and networks more widely. The range of examples discussed provides evidence of the limited, fragmented and partial nature of these system-level change outcomes. Seven reshaping outcomes have been described and discussed. A summary table detailing the key features and system-level outcomes in the case of each illustration can be found at the start of this chapter (Figure 6.1).

Taken together, these illustrations highlight three points that are worthy of particular note. Firstly, the suboptimal nature of the reshaping that took place is evident in both the Timbernet and the Storenet cases. Actors' contingent use and contradictory logics meant that neither the Timberorder nor the Storespace system produced the results their designers had intended. Secondly, in the Storenet, Clothingnet and Grocernet cases the complexity of supply relations increased. In the two latter cases, bifurcated supply routes and temporally-phased shifts between co-operation and more competitive behaviours served to increase competition significantly. Finally, across each network there was again evidence of actors' behavioural adaptations to the system and, most notably in the Grocernet case, support for earlier findings that show how information systems themselves could be altered, with fundamental and far-reaching consequences.

In the next chapter, I examine and explain these aspects of actors' inter-organisational information system use in the light of the sets of attitudes and behaviours identified in the two preceding findings chapters, in order to construct a synthesised typology of actors' inter-organisational information system use in buyer–supplier relations.
In this chapter, I examine the pattern of findings, relating to behaviour types, identified in the preceding three chapters. I also argue that the types of behaviour evidenced may be explained in terms of two factors: first, the relative degree of autonomy afforded actors by their roles, and second, the degree of alignment or misalignment between individual, group and organisational interests. From this examination I construct a four-part classification of actors' behaviours to show how distinctive combinations of organisational logics and resources shaped, and were in part reshaped by and through, these actors' behavioural modes. On the one hand, where roles were relatively fixed and organisational interdependencies high, actors conformed in various ways to the operation of the system. On the other hand, where actors had greater autonomy and organisational interdependency was relatively low, creative system use offered contingent possibilities for mutual and unilateral value generation. I explain under what kinds of circumstance these distinct modes tended to arise.

In the previous three chapters, I laid out my findings in relation to my three main research questions. In Chapter 4, I explored the question:

*Within individual, interdependent buyer and supplier organisations, how did actors respond to and use inter-organisational information system artefacts that were, at least in part, 'given' to them?*

From this analysis two particular types of behavioural adaptation were identified, which I refer to as 'patching ploys' and 'local plots'. 'Patching ploys' refers to the various ways individual users filled in the gaps when inter-organisational information systems were incomplete. Local plots, by comparison, involved small groups of individuals in either the buying or the supplying organisation who sometimes worked independently to
adapt the way they worked with the system, and at other times worked to adapt the operation of the system itself.

Chapter 5 examined the question:

Between organisations, what new, creative, joint use did buyer and supplier actors make of these inter-organisational information systems?

From this a third, more creative adaptation type was identified, namely, that of the collaborative conspiracy. Here, individuals from both the buyer and the supplier organisations worked together to cover up or correct for system failures and gaps. These negotiated inter-organisational behaviours often led to resolutions which made work practices easier for the respective operational parties, but in a manner that was suboptimal from the point of view of their organisations as a whole.

In Chapter 6, I addressed the final research question:

How did these sets of attitudes and behaviours begin to reshape supply relations and networks more widely – and with what consequences?

There appeared to be two main aspects which affected various outcomes: first, the nature of the technology and its use, and second, the range of behaviours, built around competition and co-operation, which actors engaged in when enacting their inter-organisational relationships. In this chapter I seek to examine further and to explain these aspects of actors’ inter-organisational information system use. To do this, I consider the extent to which actors’ behaviour either conformed to, or deviated creatively from, the system as defined and the extent to which either co-operation or competition was evident.

As I shall show, each of the four networks which were researched exhibited a tendency towards a predominant class of behaviour. These four modes may be described as one or other of the following: first, system utilisation, by which I mean that actors adapted their behaviour to operate the system in ways that were co-operative in intent; second,
conformist competition, in which actors again adapted to the system, though their behaviours were motivated by a drive for unilateral, competitive benefit; third, creative collaboration, where actors made unanticipated use of the inter-organisational information systems that were available to them for mutual benefit; and fourth, competitive innovation, where actors’ creative system adaptations were inspired by unilateral gains. These four forms are shown in Figure 7.1.

Figure 7.1: Behaviour types and supply networks mapped against the cross-cutting dimensions of co-operative versus competitive collaboration and conformity to versus creativity/innovation of given inter-organisational information system.

As can be seen in the figure, each of the four networks which were researched reflected one of the four classes of behaviour. For example, Grocernet was characterised in the main by creative collaboration whereas Timbernet was characterised by competitive innovation. Figure 7.1 also shows how the three types of adaptation (patching ploys, local plots and collaborative conspiracies) map on to this same conceptual map.
This chapter is organised in three parts. In the first part, I summarise the various types of behaviour identified in the previous findings chapters. In the second, I locate each of the networks studied against the cross-cutting dimensions of co-operation versus competition and conformance versus creative system adaptation. In the third part, I show which behaviours were found under what circumstance and why. In other words, I offer an explanation of the conditions under which these different behavioural patterns and tendencies occurred.

7.1 A behavioural typology

In this first section I locate each of the behavioural types, namely patching ploys, local plots and collaborative conspiracies, against the two cross-cutting dimensions (Figure 7.1). The first of these dimensions relates to the degree to which actors served either to conform to the use of, or to adapt to, inter-organisational information systems, as anticipated by these systems designers', as opposed to actors', creative and innovative adaptations of these systems. As Chapters 4 and 5 reveal, these adaptations to and of the system at times included reconfiguration of the information technology artefact itself as well as actors' creativity in using it. The second, cross-cutting dimension relates to the degree of co-operation vis-à-vis that of competition. In each of the subsections that follow I consider the range of actors involved and the appropriate unit and level of analysis, and give examples of the patterns of use that emerged. A summary table that presents a synthesised typology may be found in Appendix I.

7.1.1 Type I Patching ploys

It was individuals who engaged in ‘patching ploy’ behaviours (located in both top quadrants in Figure 7.1). As was discussed in Chapter 4, this behavioural type refers to the various ways in which users filled in the gaps when inter-organisational information systems were incomplete. Significantly, it was these actors' patching responses which on
many occasions allowed these systems to work and which made up for gaps in the designed systems. Actors were motivated by a desire either to improve the position of the organisation for which they worked or to demonstrate competence for their own personal gain (or to do both in some combination). Although individuals' practices varied, it was possible to discern replicated activity patterns across those in similar roles within these organisations. For example, although the minutiae of their actions and recording methods differed, Department Co. administrative personnel engaged in falsifying system data practices in each of the three Department Co. stores I visited. While the extent and degree of these practices varied, similar role-based replication was evident also across commercial administrators in the Clothing Co. case. This leads me to suggest that the reason actors engaged in these patching ploy practices, such as 'falsifying system data', 'delivering to plan', 'farming the data' and 'pre-emptive price negotiations,' related, at least in part, to the nature of their organisational role. Actors in these roles had narrow responsibilities and limited autonomy. For them, it was more practical to change system data than to alter organisational practices.

Many of the examples of 'patching ploy' activities took place at the boundaries of the organisations. The repercussions of these actors' actions were felt primarily, though not exclusively, outside these individuals' 'home' organisations. These hidden inter-organisational behaviours were distinctive in the sense that they left the fundamental shortcomings of the system unaddressed, which would seem less likely to have occurred if the consequences had been more visible internally or indeed considered to be of greater importance by internal managers.

### 7.1.2 Type II Local plots

The *local plots* presented in Chapter 4 were *co-ordinated* intra-organisational routines (as located in the top-right-hand quadrant of Figure 7.1). Small groups of actors worked together to synchronise their inter-organisational information system activities, however
unofficial this might have been. For example, Clothing Co. administrators manipulated finished goods stock data to give the impression that level-scheduled production plans were met routinely. On occasion these secretive, local deceptions extended beyond carefully planned and co-ordinated behaviour to include the premeditated redesign of inter-organisational information system artefacts. For example, with the integration of the Timberorder merchant interface with Timber Co.'s enterprise resource planning system, Timber Co.'s sales managers, system analysts and programmers colluded to ensure merchants would be unable to deduce large quantities of stock by placing upper and lower limits on order quantity data fields. This was not part of the original system design.

Further, it is clear that in each of the cases described in Chapter 4, some actors engaged in behaviour to achieve as close a conformance as possible to that which these information systems had been designed to support. Despite the collusion between Timber Co. sales managers and information system developers, Merchants placed purchase orders using Stockplan safe in the knowledge that the quantities they entered were available. Clothing Co. actors used Stockplan to present the appearance of carefully managed and controlled production and finished goods stocks. Likewise, through the redeployment of scarce resources to bolster the sales of waning brands, Department Co. managers strove to achieve Storespace sales and profitability targets as closely as they could. That this level of conformity was achieved by varying degrees of artifice rather than by any more systematic or transparent inter-organisational readjustment raises more fundamental questions, to which I shall return in the second half of this chapter.

Manipulative, merchandiser-led team schemes were evident to varying degrees across each of the Clothing Co. divisions researched. Similarly, at Department Co., Storespace had altered fundamentally the means by which Department Co. store managers approached setting and meeting team sales targets. The extent and influence of information system redesign was both more subtle and more far-reaching. Clearly, the Timberorder
artefact reproduced hidden order limits wherever it was used by individual merchant buyers in geographically remote, dispersed locations. It would seem, therefore, that the patterns that emerged between people may be altered by their information system artefact use. In contrast, the third behavioural type identified involved both buyer and supplier users.

7.1.3 Type III Collaborative conspiracies

A third behaviour type, 'collaborative conspiracies' (located in the lower quadrants of Figure 7.1), was presented in Chapter 5. As I discussed there, in this case actors' inter-organisational information system use was characterised by both co-operative and competitive collaboration processes (Hamel, 1991), that involved actors from buyer and supplier organisations.

To pick just one example, Grocer Co. buyers and Can Co. analysts colluded to redefine the measures used to monitor category growth in such a way that Can Co.'s dominant category position was downplayed whilst at the same time the significance of Grocer Co. buyers' specialist product initiatives achieved greater prominence. In Can Co.'s desire not to appear too dominant a supplier, there would seem to be an awareness of the ever-present spectre of competition, yet that Can Co. was able to exert some control over these reporting measures demonstrates the extent and the benefits of the co-operation between the two parties.

Although these simulated actions might have far-reaching effects, unlike the previous two behavioural types these actors' practices were not systematic or routine. There was no obvious replication across structurally similar buyer and supplier network relations. Rather, as evidenced by the nine different categories presented in Chapter 5, I found a surprisingly wide array of innovative, collaborative, inter-organisational information system use. What patterns there were seemed rather to relate to the differences
in relative negotiating position between particular buyer and supplier users and the extent to which individual and organisational interests might be mutually compatible.

Indeed, even if these interests were not entirely coherent and overlapping, as in the Grocernet example, there were still creative opportunities for collaboration. At Timbernet, Kim and James (s. 5.3) co-operated to drive rebate-driven Timberorder use across Regional Co. Similarly, in some parts of Clothing Co. merchandisers agreed to modify year-end finished goods stocks, and production planning figures in Stockplan were due at least in part to the already fabricated nature of much of this data. In other parts of these two networks, however, joint inter-organisational information system use was, though still collaborative, more competitive. Between Marion and Janet at Clothingnet (s. 5.2) and Kim and Denise at Timbernet, there was real conflict, and extended negotiation was required to make the system work. This led, at times, to the rupture of long-standing buyer-supplier relations (s. 5.3).

In summary, then, in this section I have illustrated three types of adaptive behaviour: patching ploys, local plots and collaborative conspiracies, and have mapped these against co-operative versus competitive collaboration, and against conformity to/adaptation of the given system versus creative adaptation of it (Figure 7.1). This mapping reveals a tendency for individuals to engage in patching ploy behaviour where roles were closely defined and managerial autonomy was limited. Where unilateral interests were paramount, local plots were evident. Where inter-organisational ties were more loosely defined and actors exercised greater discretion over their activities, collaborative conspiracies were instigated for mutual gain. While there is no doubt that the picture is complicated, my behavioural typology shows a path through this complexity. I now go on to show how, at a supply network level, each individual case (i.e. network cases such as Grocernet) tended towards a particular ‘class’ of reshaping.
7.2 A taxonomy of reshaping

In this second part of the chapter I synthesise evidence relating to each of the supply networks researched from the three findings chapters and locate each against the cross-cutting dimensions of competition versus co-operation and actors’ conformity to the system versus creative and innovative adaptation of the system, as shown in Figure 7.1. The findings from each case are summarised in Appendix J. I consider each in turn.

7.2.1 Clothingnet

Individually, unilaterally and collaboratively, Clothing Co. and Multiple Retail Co. actors used the Stockplan system to give the appearance that supplies were managed as the system dictated. Individually, supplier users overstated the weekly figures in finished goods stock declarations to give the appearance that planned production rates were achieved consistently. This surreptitious and informal manipulation of the data was intended to protect Clothing Co. from any risk of order cancellation on the part of Multiple Retail Co., the buyer. This somewhat paranoid behaviour did seem to be justified, as the statement of one Multiple Retail Co. merchandiser presented in Chapter 4 confirms:

Well, put it like this, if there was a product that was really, really slow and that we [Multiple Retail Co.] had loads of commitment on, if we have a chance to cancel any of that, [Multiple Retail Co.] will because it’s no longer our problem and it transfers the issues back to the supplier. Obviously, the supplier doesn’t like that.

As the above quotation makes clear, the buyer merchandiser was prepared to take individual, unilateral action to capture value at the suppliers’ expense. These zero-sum games were played regardless of the effects on ongoing collaboration. Further, this behaviour served to give the appearance that the merchandiser was managing finished goods stock levels to department targets effectively. The cancellation of an order on the Stockplan system improved both the buyer merchandiser’s and Multiple Retail Co.’s micro-bargaining positions. So, while these individuals’ actions gave the impression of
conformance to the collaborative planning, forecasting and replenishment ethos that
Stockplan use had been designed to inculcate, the motivation for this behaviour was
somewhat different. Indeed, it could be argued that these duplicitous actions provided the
motivation for others similarly to protect their own interests.

At the supplier, Clothing Co.'s commercial teams engaged in internal plots to
maintain the convenient fiction of levelled production. This required supplier
merchandisers to enter artificially smoothed planned production rates into the buyers’
systems followed by the routine adjustment of finished goods stock figures to ensure that
actual stock declarations conformed to these production rates. These unilateral local plots
were designed to demonstrate to Multiple Retail Co. buyers that Clothing Co. was
managing production flows competently. These practices had little to do with sales
responsiveness and everything to do with penalty avoidance. It may be recalled that one
Clothing Co. supplier merchandiser explained:

I could miss a flow for three weeks running, but have I affected your sale?
Should I be penalised for it, if I haven’t affected your sale?

So, while the buyer was alert to opportunities that enabled him to renege on slow-
moving stock by cancelling orders, the supplier was equally resolute that regardless of
whether or not the stock was available, actual and planned production rates would be seen
to match one another. The risk of order cancellation was therefore to some extent averted.
Actors played out these competitive manoeuvres in their use of the Stockplan system.
These unilateral attempts to improve individual bargaining positions again were a clear
attempt to hold on to the value generated from more collaborative working practices.

While these actors worked assiduously to capture any value that they could from
this collaboration, in some parts of Clothingnet buyer and supplier merchandisers engaged
collaboratively in sophisticated conspiracies to make the system work. As was detailed in
section 5.7, merchandisers met regularly to record and agree future production plans.
Forecast sales were also discussed. These discussions facilitated joint action and active, creative inventions on the part of these actors to make the system work. In combination, then, individual, unilateral and co-operative collaboration reinforced the appearance that the Stockplan system was working as it should and that collaborative planning, forecasting and replenishment practices were managed smoothly between Clothing Co. and Multiple Co. Indeed, Multiple Retail Co.'s intent to appropriate value ran even deeper.

As was discussed in Chapter 6, Multiple Retail Co. developed its capabilities to design and globally source products, independent of full service vendors such as Clothing Co. This gave Multiple Retail Co. buyers a choice of supply routes. Where Clothing Co. outsourced manufacturing close to Multiple Retail Co.'s new buying offices, its manufacturing capabilities looked vulnerable. The following account of a conversation between Jack, Clothing Co. commercial director for Kidswear, and his Multiple Retail Co. department contact reported earlier demonstrated how Multiple Retail Co.'s relationship with Clothing Co. was changing:

Multiple Retail Co. people who are based in Hong Kong had been into our factory in China, which we'd spent twelve months getting up to Multiple Retail Co. speed, developing, spent money on it, time, sweat, blood, tears, getting it right. They've been into that behind our back, talking directly to the MD there saying, 'Don't worry about Clothing Co., you'll be dealing with us direct.' And I said, quite frankly, that's scandalous.

Increased price pressure undermined the service advantage Clothing Co. had built up. Under these conditions, the exchange of production flows and sales forecast data was no longer a prerequisite for efficient and effective supply. Supplier access to actual and forecast sales information was no longer seen as a priority. Indeed, Multiple Retail Co.'s information system development team planned to replace Stockplan with an alternative system. Multiple Retail Co. planned to phase out the Stockplan system.

To summarise, then, this case demonstrates how actors individually, unilaterally and co-operatively manipulated Stockplan data to demonstrate close conformity to its
designated use. Despite the appearance of co-operation between Multiple Retail Co. and Clothing Co., when sales were slower than expected, Multiple Retail Co. buyer merchandisers reneged on contractual commitments. In their turn, Clothing Co. merchandisers and their teams hatched local plots to ensure finished goods stock declarations matched agreed, if fabricated, level production schedules. For these reasons, I have classed this case as exhibiting a mode of system-level reshaping that may be described as 'conformist competition'. As Multiple Retail Co. embarked upon a dual sourcing strategy to appropriate an even greater proportion of supply chain value, one Clothing Co. commercial director summed up its attitude as follows: ‘They just said, oh you can’t trust the supply base, we might as well just do it all ourselves.’

7.2.2 Grocernet

Actors here engaged creatively and collaboratively with the Categorysales system in pursuit of category development opportunities. High levels of co-operative behaviour were evident. However, as I shall show, Grocer Co. co-operated in this intense fashion with only a few, carefully selected suppliers. Indeed, these supplier alliances were often temporary and indeed were underpinned, if not undermined, by more competitively inspired and mistrustful inter-organisational arrangements.

Actors’ creative engagement with the Categorysales system ranged from individuals’ use of data to invent new and innovative ways of reorganising supply, to recategorisation of category growth metrics and redefinition of the system rules that drove shelf-space allocation. For example, as was highlighted in section 4.1.3, one Glass Co. supplier analyst used store-level Categorysales data analysis to target store replenishment and maximise sales at times of peak demand:

It’s only when I got hooked on the thing and realised what it could do ... that we exploited a much bigger play on what we could get from it. Not least of all, maximising Christmas, in what we could do by getting the right stock in the right place and keeping it there.
There were advantages for Glass Co. if Category sales data could be exploited to target its supplies and improve Grocer Co.'s on-shelf availability, particularly over the peak Christmas trading season. These supply-focused interventions were also well received by Grocer Co. Such creative interventions were the result of co-operative, if somewhat conspiratorial, collaborative engagement.

As was discussed in section 5.5, a second category analyst, this time from Can Co., described how, in the past, she had presented the single largest Can Co. branded product as the driver of category growth. Grocer Co. buyers, however, were dissatisfied with this approach. Rather, they were keen for analysis to highlight the success of the new stock-keeping units they had introduced into the category. To meet these demands, it may be recalled, the analyst altered the way she calculated the contribution to category growth:

I used to always say sales are driven by [own brand pack type] because it's the biggest one. And Grocer Co. picked me up on it, it's not driving sales, it's not. We've put new SKUs [stock keeping units] in and we see those doing really well. Might not be to the same scale, but that's what we're interested in, we're interested in how everything plays together, which is why I started using contribution to growth.

This creative, co-operative collaborative conspiracy meant that gains in the category contribution of smaller brands looked impressive, while the category value improvement of Can Co.'s market leading products was obscured. More fundamentally, creative system innovation was also evident between other buyer and supplier actors in this case.

Another Can Co. merchandise analyst explained to me how he intended to reorient the model he used for Category sales data analysis. As was discussed in detail in Chapter 6, rather than historic sales, his new simulation took as its baseline Grocer Co. buyers' sales projections:
I'm going to say [to the buyer], here's SKU [stock keeping unit] A. I can tell him what you did last year. Are you going to increase sales? Are you going to decrease sales? Are you taking off this product? And then he can give me an indication of how much that SKU's going to change and I can feed that back into various plans and we'll have a better picture of the future than last year's sales data.

This reveals, then, the extent to which the supplier analyst and Grocer Co. buyer creatively and co-operatively remodelled the Categorysales data systems which produced and evaluated shelf-space recommendations. As a result, the basis on which supply requirements were determined and performance evaluated across the network changed.

As I showed in Chapter 5, there was little doubt that category value was created through these relationships between Grocer Co. and its selected supplier category advisors. The suppliers holding these influential positions were, however, ill-advised if they took the advisory role for granted. As Grocer Co.'s supplier development manager made clear, co-operative collaboration was an optional extra:

It's relatively black and white, to be honest. If you're doing a good job, great, blah, blah, blah. If you're not, we're going to look for somebody else who's going to deliver this for us.

While Grocer Co. co-operated with advisors who delivered category growth, these alliances were temporary. A particular feature of these relationships was the precarious nature of even successful advisors' status. Advising arrangements lasted only as long as the supplier continued to deliver the required growth. Where Grocer Co. felt that greater gains could be made elsewhere, advisorships were rescinded summarily. If an alternative supplier offered a better deal, Grocer Co. simply switched the advisorship to them. In so doing it gained access to alternative resources for category development. These behaviours show clearly in whose hands the power lay.

Advisors were selected and deselected on the basis of their ability to meet Grocer Co.'s category development aspirations. Categorysales data was used as a commodity,
traded with advisors for category-specific skills and expertise. This competitive undercurrent even underpinned day-to-day co-operation. As was discussed in section 6.6, category validators were introduced to validate advisors’ recommendations. As the Can Co. merchandise analyst commented:

It’s very easy to make recommendations on competitors’ brands, if those recommendations are true in terms of space, because why would I do it? It’s quite stressful to make recommendations about one of our own brands.

While they were in combination, therefore, these management actions produced mutually beneficial category growth, apparently from Categorysales data analysis. Actors’ use of the system was based upon contingent logics and suspicion.

In summary, my findings reveal a complex mixture of both co-operation and more competitively driven creative behaviour. Grocer Co. commoditised the use of Categorysales data to support entrepreneurial arrangements for switching between and mixing supplier roles to gain access to a broad range of expertise and resources. For these reasons I have classed the mode of system-level reshaping evident in this case as ‘creative collaboration’. In the following section, I consider actors’ adaptive behaviours in a rather different case, that of Storenet.

7.2.3 Storenet

This case demonstrates how both buyer and supplier actors conformed to the Storespace system. These adaptations ranged from the falsified entry of product price and description information, as described in Chapter 4 (s. 4.1.1), through changes made to Department Co.’s internal, staffing routines, to branded fashion suppliers’ alterations to future product development plans based upon system-generated sales histories. These actions led to further, selective, compensatory reshaping by Department Co.’s branded fashion suppliers.

Further, as I described in Chapter 4, Department Co. store managers instigated inventive local plots to meet Storespace-defined sales targets. One Department Co. store
manager explained to me, 'When we've got our estimates, we look at previous year's sales. We do that ourselves.' In particular attention was paid to those brands that underperformed against the plan. Staffing levels were adjusted, and calls made to ascertain those styles selling well in similar, Department Co. stores: all this, so that the Department Co. store manager could bring actual sales in line with those predicted by the Storespace system. These active interventions to ensure system conformity, however, had other, unanticipated repercussions.

In Chapter 4, I described how Department Co.'s branded fashion supplier partners monitored Department Co. store sales rates closely. These rates were used in particular to direct future product and range development. Since Andrea was able to make sales rates comparisons between her own, standalone solus stores, Department Co. stores and other stores operating concessions, she believed Department Co. store managers neglected the Occasion Co. brand. Andrea explained:

I shouldn't put my own staff in. In my concession agreement in theory it says they supply the staff. That's what it says – but they don't. That is the biggest problem. So I started saying to the [nearby store] girls, just go and tidy up and put that delivery out, just so I know what's going on in that business.

As was the case across a number of branded fashion suppliers, however, relations between these store 'buddies' and Department Co. visual merchandisers were not always harmonious. Department Co. and Occasion Co. staff clashed over how stock ought to be displayed. One Department Co. assistant explained, 'I know how it sells, but they [store buddies] want everything to look the same. Sometimes they change it and then I change it back.' As soon as they left the store, Department Co. sales assistants rearranged stock already merchandised by their brand 'buddies'.

Both sets of actors made strenuous, if uncoordinated, efforts to adapt their behaviour to conform to Storespace and Dailysales information systems. As was discussed earlier, this involved not only falsifying data transmissions, but included the subsequent
redeployment of Department Co. sales staff, Occasion Co. range redesign and the introduction of sales implants to boost sales rates in specific Department Co. stores. These characteristics lead me to class this case as one in which the overriding ethos was system utilisation. I now move to consider how Timbernent, the fourth and final network I studied, might best be classified.

7.2.4 Timbernent

In this case I show how, in the context of a singularly unsuccessful inter-organisational information system implementation, actors' use of the Timberorder system was characterised by the creative, if limited and opportunistic, exploitation of certain unexpected system features. While Timber Co. personnel worked actively to reconfigure the system to close such loopholes, the competitive nature of inter-organisational relations enabled individual and relatively autonomous buyers to use the system for their own personal gain. Further, what partial and incomplete attempts the supplier, Timber Co., and Regional Co., the major user-buyer, made to work more co-operatively served only to produce internal frictions within both organisations. Specifically, some Regional Co. branch managers terminated completely what had been long-standing buyer-supplier relationships and the Timber Co. manager responsible for championing the future roll-out of the system resigned.

Of those few merchant buyers who used the system, my study explored two, a small independent trader, Specialist Co., and a larger, national merchant, Regional Co. In both cases, individual merchant users devised means to use the Timberorder system that provided them with benefits over and above the ready access to Timber Co. stock availability and '24 by 7' ordering facilities envisaged by Timber Co. As I noted in Chapter 4, one merchant reported that he used Timberorder specifically to avoid the daily order cut-off times enforced by Timber Co.'s regional sales staff. Ironically, this merchant buyer describes one of the most useful features of the Timberorder system as one of its
technical shortcomings. He explained that 'it doesn’t tell you you’ve missed the cut-off
time’, and he was therefore able to exploit this loophole to achieve an advantage, to the
disadvantage of the supplier.

In their efforts to restrict merchants’ opportunistic practices, Timber Co. sales
managers redesigned the Timberorder artefact to prevent merchants’ deduction of Timber
Co.’s total finished goods stocks. As was discussed in Chapter 4, this piece of information
was particularly useful to a merchant keen to secure the best possible market price for
traded timber since it meant that he (for these buyers were predominantly men) was able to
negotiate a further discounted price. Though this was somewhat paradoxical for a system
whose implementation had been driven by Timber Co.’s intention to provide merchant
buyers with online access to stock availabilities, Timber Co.’s sales managers and system
developers worked together to conceal the true extent of Timber Co.’s stock. Even this
creative piece of local plotting was, however, insufficient to eliminate other unanticipated
utilisation of the system for buyers’ organisational gain.

Rather than reduce administration costs, Timber Co. found that James, the buyer,
negotiated an additional rebate incentive on Timber Co. products. He then used the sales
analyses provided to him by Timber Co.’s national internet sales manager to ensure
Regional Co. branch managers used the system to place their orders. As was noted in
Chapter 5, one of Timber Co.’s regional sales managers explained how he had to report the
proportion of orders Regional Co managers placed on Timberorder:

we have to report to them at the end of the month the value of orders that have been placed by them over the internet and the value of orders that have been placed by them over the phone, and then that branch then gets their backside kicked.

Timberorder use had fragmented the previously cohesive relations between Timber
Co. sales teams and Regional Co. Whereas Timber Co. sales teams had focused on
developing personal relations with Regional Co. buyers at a branch level, Timberorder use
introduced a new dynamic. With a price rebate at stake, Regional Co.’s commercial
director, James, took a personal interest in which branches used the system to order Timber
Co. products and which did not. From Douglas’s point of view, this disrupted the normal
business of merchant–Timber Co. sales team business relations. Indeed, one Regional Co.
branch manager severed his links with Timber Co. entirely. As Douglas, a Timber Co.
regional sales manager (TSR2), explained, ‘What [branch location] do is, they give their
business to a competitor’. Lacking support from Timber Co.’s regional sales teams and
frustrated in her plans to roll out Timberorder further, Kim (TSM2), the national internet
sales manager, left Timber Co.

To summarise my findings in this final case, then, merchant buyers exhibited a high
degree of autonomy and those that chose to engage with the Timberorder system did so for
their own personal gain. Indeed, their innovations were frequently in direct opposition to
the use of Timberorder that Timber Co. had envisaged. So, as in the Grocernet case, while
Timbernet actors occupied themselves with significant adaptations of the Timberorder
system – including some stealthy redesign – these alterations took place not against a
backdrop of value creation but instead as a way of extending Timbernet’s customarily
competitive and zero-sum trading practices. For these reasons, I have classified this mode
of system-level reshaping as competitive innovation.

In this section I have identified the predominant mode of system-level reshaping
behaviour in each of the four supply networks researched. These findings are summarised
in Appendix J. The four modes relevant to each case may be classified respectively as
conformist competition (Clothingnet), creative collaboration (Grocernet), system
utilisation (Storenet) and competitive innovation (Timbernet). Now that I have described
the location of each behavioural type and the dominant behavioural mode of each supply
network, I go on to offer an explanation of why these different behaviour patterns emerged
as they did.
7.3 Explaining predominant forms of behaviour

Actors tended to co-operate where there was a mutuality of joint interest and a focus on increasing returns, and where group forces were relatively weak. Actors tended to compete where unilateral interests were privileged, there was a focus on zero-sum games and group forces were strong. Further, there was evidence that actors tended to adapt to the system where there was evidence of contradictory organisational logics, a relatively high degree of interdependency, and relatively fixed occupational roles. Actors were more likely to adapt the system in creative and innovative ways where interdependencies were relatively low, organisational logics were contingent, and greater emphasis was placed upon individuality and entrepreneurialism. The types of conditions are summarised in Figure 7.2.

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<thead>
<tr>
<th>System Utilisation</th>
<th>Conformist Competition</th>
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<tbody>
<tr>
<td>Isolated, subordinate roles</td>
<td>Tight work groups</td>
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<tr>
<td>Limited autonomy</td>
<td>Intra-group loyalty</td>
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<td>Mutuality of joint interests</td>
<td>Unilateral interests</td>
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<td>Complementary resources</td>
<td>Increasingly pooled resources</td>
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<td>Relatively high inter-dependency</td>
<td>Relatively high inter-dependency</td>
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<td>Contradictory organisational logics</td>
<td>Contradictory organisational logics</td>
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<td>Increasing returns</td>
<td>Zero-sum games</td>
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<tr>
<th>Creative Collaboration</th>
<th>Competitive Innovation</th>
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<tr>
<td>Individual, entrepreneurial roles</td>
<td>Loose work groups</td>
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<td>Suspicion</td>
<td>Greater autonomy</td>
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<tr>
<td>Mutuality of joint interests</td>
<td>Unilateral interests</td>
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<tr>
<td>Inter-dependent, symbiotic resources</td>
<td>Multiple sources</td>
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<td>Relatively low inter-dependency</td>
<td>Relatively low inter-dependency</td>
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<tr>
<td>Contingent logics</td>
<td>Contingent logics</td>
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<tr>
<td>Increasing-returns</td>
<td>Zero-sum games</td>
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Figure 7.2: Conditions under which actors engaged in patterns of co-operation/competition and conformity or creativity in actors inter-organisational information system use

In the sections that follow, each dominant class of behaviour is explained in turn.

7.3.1 System Utilisation

The form 'system utilisation' occurred where the predominant pattern of actors' behaviour tended towards co-operative collaboration and system conformity. In this class, co-
operative value creation was thwarted by contradictory cultural logics which produced constraining contradictions. Attempts to sink the logical differences between these diverse beliefs led to a need for correction. Actors attempted to manipulate others to prevent logical difficulties being voiced. With limited power and authority, system users tried to repair the situation by, for example, falsifying system data to conform to the system as best they could. My research suggests that this behaviour was the consequence of users in isolated, low-status roles with limited autonomy, a mutuality of joint, inter-organisational interests, a relatively inflexible information system built upon mathematical predictability, and dominant, if diverse, organisational logics focused on increasing returns.

I found that low-status and often isolated individuals, such as the Department Co. clerical administrators discussed earlier (s. 7.1.1), engaged in routine and largely overlooked data administration activities. Mars (1983) refers to occupational work of this type as 'donkey work'. As was discussed in detail in Chapter 4, individual Department Co. clerical assistants routinely substituted details of product price and description to facilitate electronic data interchange transmissions. These changes were made despite the fact that these individuals were well aware that their actions could result in suboptimal store replenishment.

These actors, however, had limited autonomy. With no control over Department Co. sales departments, falsifying figures and making sure branded fashion suppliers at least received financially accurate daily sales data (however suspect the detail) was the best these actors could do. That managers apparently turned a blind eye to these practices raises questions about the difficulties involved in ensuring that even simple inter-organisational procedures across fragmentally managed networks are robust. And these practices existed despite a clear mutuality of interest, focused on value creation.

Both parties desired improvements in sales and profitability. To help them achieve this, actors in both organisations made consistent and active use of even these basic and
relatively inflexible information systems. So, for example, actors adapted their range of development, store manning and visual merchandising practices to reflect system demands. The diversity of this use reflected the distinct operational capabilities each partner brought to supply relationships.

At an operational level, however, actors’ relative isolation and weak group ties meant that even in these relatively favourable conditions, actors, rather than holding shared network interpretations (Knight and Pye, 2005), continued to harbour different — and potentially conflicting — ideas about how these desirable outcomes might best be achieved. Further, my research suggests that fundamental differences in underlying organisational logics hampered operational performance.

To summarise, in the behaviour mode characterised as ‘system utilisation’, actors collaborated because of a mutuality of interest in creating further network value through increased sales. Though it took different forms, these actors’ conformance to the system was a factor of users’ relatively limited autonomy, a lack of inter-organisational interaction and, within these buyer and supplier organisations, the low status of these users’ roles.

7.3.2 Conformist Competition

The term ‘conformist competition’ characterised the nature of actors’ inter-organisational information system use in one type of predominantly competitive collaboration. System use here centred on the creation and capture of value. The system was a monitoring mechanism and actors’ data manipulation part of a series of operation-level micro-bargains. What had previously been mutually reinforcing relations were destabilised by increased inter-organisational pooling of resources and capabilities as one partner raced to learn at the expense of the other. Unlike in the previous system utilisation class just described, here actors’ conformance to the requirements of the system was more an appearance than a reality. These behaviours were underpinned by tight work groups
demonstrating intra-group loyalties, unilateral interests and engaged in zero-sum games. These games extended to include data manipulation within the information space of relatively sophisticated and bespoke inter-organisational information systems.

Actors adapted their behaviours to give the appearance of close conformity to the flexible systems with which they worked. Intra-organisational teams engaged in local plots. These practices were long-standing and deeply embedded, and seemed to recur across intra-organisational space. My research suggests that these deceptive behaviours predominated where users worked in tight-knit groups with high levels of intra-group loyalty. According to Mars (1983), collusion within such occupation groups is commonplace where group survival is threatened. Certainly, the increased competitive threat from Multiple Retail Co.'s direct buying operations in the Clothingnet case provides strong support for this explanation.

Unilateral rather than joint interests were the primary motivation for collaboration. These groups' actions were aimed at improving the micro-bargaining position of one inter-organisational partner at the expense of the other. Another way of expressing this is to say that each party engaged competitively with the other in an attempt to capture collaborative value (Hamel, 1991). And, where information systems were relatively flexible, these competitive negotiations extended into the information systems space. Rather than generating value, actors used these systems to engage in local plots designed primarily to appropriate and capture value themselves, or to defend against such actions on the part of the other party.

Given increasing direct, offshore competition, value was seen as something that was at best finite, if not actually reducing: actors focused on negotiating how to divide up what they had rather than on how to increase it. This downward spiral was reinforced by the view that further cost reduction was the most effective means of delivering further margin improvement. Rather than being an advanced management practice, co-operative
collaboration in this case carried with it an air of weakness and desperation. Further, in those rare instances where such co-operative collaboration did get off the ground this was very much a function of the vested self-interest of relatively more powerful organisational actors. Either way, stable co-operative value creation was difficult to sustain. While pockets of sophisticated practice arose, such capabilities were vulnerable in supply networks characterised in Ebers' (1999) terms by the shift from symbiotic to pooled relations. This heightened unilateral interests, mutual mistrust and a penchant for zero-sum games.

In conformist competition, actors competed because unilateral interests were placed ahead of joint network outcomes. Specifically, given the competitive pressures of direct, low-cost competition, suppliers were most concerned to secure as high a proportion of diminishing value as they could. Similarly, the buyer aimed to increase its value capture through the takeover of value-adding activities previously carried out by its supply partners. This created a shift from symbiotic to 'pooled' inter-organisational relations. If these suppliers could not avert, then they might at least mitigate the buyers' intentions. Suppliers capitalised on the internal loyalties of tight-knit work groups which plotted for survival. Through apparent conformance to the system, suppliers could both minimise the threat of current order cancellations and position themselves to capitalise on any underestimation of sales that required the speedy supply of additional stock.

7.3.3 Competitive Innovation

'Competitive innovation' describes the dominant class of behaviour where actors' use was focused on inter-organisational information system adaptations made so as to compete more creatively. Although use was limited, those who chose to used the system to create and capture value. The rationales for these competitive collaborations varied. Contingent logics led to a wide range of creative system use, non-use, and what might from a system designers' perspective be referred to as abuse. The competitive innovation I found was the
result of loose work groups made up of individuals with a high degree of relative autonomy. Despite a relatively unsophisticated user interface, in this highly competitive market-place with a range of alternative supply sources, a few actors found creative ways of exploiting opportunities and weaknesses within the system for their individual competitive advantage.

Branch buyers and supplier regional sales teams were part of loosely connected work groups. System users were geographically distributed. Remote from any organisational head office, individual actors were semi-autonomous, often with executive responsibility for local buying and supply decisions. My findings show local haggling over the price rebate awarded as compensation for merchants’ laborious duplication of order data-entry. Individuals within these rather loosely affiliated working groups may be classified in Mars’ (1983) terms as ‘vultures’. Mars suggests that fiddling in such cases tends to be a result of resentment, which can lead to the severance and rupture of previously long-standing relations.

Interestingly, the case within this category demonstrates that it is not necessarily the system instigator, however large and dominant, that benefits from the value capture afforded by system use. High buyer autonomy and a fragmented industry structure meant that at the regional level the supplier singularly failed to achieve the critical mass necessary to create the value efficiencies for which it had hoped. On the other hand, loosely organised buyers, either through ownership, as in the case of Regional Co., or via buyer association affiliations, exploited the system to negotiate a compensatory price rebate. It is such a change to individual organisations’ bargaining power that determines the success of value capture in competitive collaboration. Across the sector, competition was the dominant logic. Zero-sum games predominated. In this case, however, rather than system conformance, actors devised more creative means of playing these games.
Where competitive innovation was the dominant form, competition was driven by users with relatively greater autonomy and the drive to improve their individual competitive advantage. This drive was fuelled by the multiple potential sources of supply within a highly competitive market-place. While the majority of users ignored the system for the routine ordering for which it had been designed, a few more innovative individual buyers were savvy enough to envisage more creative ways in which it could be used. This brings me to the final class of dominant behaviour identified, that of creative collaboration.

7.3.4 Creative Collaboration

In this final class, actors exhibited creative inter-organisational information system use and a high, if selective and ruthlessly clinical, degree of collaborative behaviour. Value was created through changes to supply relationship structures. Relations between buyers and supplier were opportunistic, in the creative sense of the term discussed in section 3.1.1. Contingent incompatibilities emerged between suppliers, a result of the imposition of further, more widespread, ad hoc supplier co-operation (see e.g. s. 6.6). Co-operative collaborative arrangements with selected suppliers were dependent upon how much additional category value, at minimum cost, each could add.

While some of these influential, boundary-spanning roles involved routine work, in each there was significant scope for more 'entrepreneurial' data-based innovation. Inter-organisational information system users were highly experienced individuals with significant industry-specific expertise. Furthermore, a mutuality of interest between buyer and supplier meant creative adaptations were undertaken frequently as opportunistic, collaborative conspiracies. Buyer–supplier boundaries were increasingly blurred. These individuals' interventions focused on generating increasing returns for the wider supply network, although with the implicit understanding that these initiatives produced disproportionate benefit for the collaborating supplier concerned. These outcomes were
made possible by the extent of aligned mutual interests (i.e. increased sales and margins) between the buyer and their selected, co-operating supplier.

Buyer-selected supplier actors engaged in entrepreneurial, proactive and creative use of data-rich, inter-organisational information systems. The ways in which they engaged with this data included its manipulation and reconfiguration at the level of product data categories, and even the business rules underlying decision-making models. Such adaptations had wide-ranging performance implications and these collaborative conspiracies were a particular feature of inter-organisational information system use at Grocernet. Blurred boundaries meant that organisational and group affiliations were weakened, and individuals' activities were reminiscent of the 'hawkish' fiddles described by Mars (1983).

Changes to the form and structure of supply network relations were evident. Hamel (1991) suggests that this is an indication of successful value creation. Regular, co-operative interactions between buyer and supplier personal enabled the creation of shared meaning. The buyer had no compunction, however, about switching between suppliers to generate new value-creating opportunities. Likewise, Grocer Co.'s imposition of a new category validator role underscores how the ethos of these inter-organisational buyer-supplier relations was one of suspicion rather than trust. So, while there was no doubt value was created, clearly this was not accessible to, or shared equally with, all supply network participants. Rather, it was a product of relative negotiating strength.

To summarise, although this mode of behaviour was the closest I found to that characterised by Knight and Pye (2005) as 'network learning', the benign co-operation they describe was supplemented here by a more ruthless drive for innovative value creation opportunities. In stark contrast to the competitive innovation described earlier, this creative collaboration was driven not by the capture of value chain activities but by a strategic imperative to generate new value through a series of temporary, symbiotic, interdependent
supply relations. Actors' creative and often conspiratorial collaborative system use can be explained by the entrepreneurial nature of these influential boundary-spanning roles, the need to demonstrate the continuance of increasing returns, and (despite an evident mutuality of interest in value creation and growth) an ever-present underlying climate of suspicion and distrust.

**Conclusions**

The range of actors' behaviours identified in this research may be synthesised into a taxonomy which locates each case against a cross-cutting frame illustrating, on one axis, actors' conformity to or innovative, creative use of the inter-organisational information systems that they were 'given', and, on the other, the degree to which either co-operation or competition was emphasised. Actors tended to *co-operate* where there was a mutuality of joint interest and a focus on increasing returns and group forces were relatively weak. They tended to *compete* where unilateral interests were privileged, there was a focus on zero-sum games, and group forces were strong. Further, there was evidence that actors tended to adapt to the system where there was evidence of contradictory organisational logics, a relatively high degree of interdependency and relatively fixed occupational roles. Where interdependencies were relatively low, contingent organisational logics existed and greater emphasis was placed upon individuality and entrepreneurialism, actors were more likely to *adapt* the system in creative and innovative ways.

In their work on ‘network learning’, Knight and Pye (2005) stress the development of *shared* meaning, method and commitment. My research findings suggest that while this is one possible form of outcome, it is by no means the only, or indeed the predominant, form of behaviour evident in this investigation of actors’ inter-organisational information system use in the UK retail sector. In the following and final chapter of this thesis, I identify the implications of these findings for management practice, for theory and for future research.
Chapter 8  Conclusions

This thesis has examined actors' inter-organisational information system use within buyer-supplier relationships in the retail sector. It focused in particular on two features. The first was the nature of the technology and its use. The second was the kind of behaviours required to make such inter-organisational relations work. In this chapter I summarise the main highlights from the findings and then discuss their implications for management practice, for theory, and for future research.

8.1 Summary of main findings

This research begins to address calls in the strategic management literature for closer examination of the underlying processes involved in the increasing integration of specialised value chain capabilities (Holcomb and Hitt, 2007). Specifically, it presents detailed findings related to the micro-dynamics of actors' inter-organisational information system use. A model of the nature and consequences of actors' behaviour patterns is created, illustrated and explained.

A variety of inter-organisational information system artefacts were in use across these networks. These ranged from an exceptionally detailed and extensive, warehouse of shared, historic product-sales information, through to a sophisticated algorithm-based predictive mathematical model, to a comprehensive inter-organisational sales and stock management system and finally to a web-enabled order pro forma, integrated seamlessly into an enterprise resource planning system. Despite the evident range and sophistication of these information systems, I found variations in both the nature and consequences of their use and the range of behaviours actors' demonstrated to make these inter-organisational relations work. In combination, these individual and collective behaviours contributed to a limited and fragmented reshaping of supply relations and networks.
These behavioural types can be explained by the relative autonomy of actors' roles (whether weak or strong) and the degree of alignment or misalignment between individual, group and organisational interests. Syntheses of these findings show that each of the four networks researched exhibited a tendency towards a predominant behaviour mode. These four modes may be described as conformist competition, system utilisation, creative collaboration and competitive innovation. In conformist competition, actors competed because unilateral interests were placed ahead of joint network outcomes. Through their apparent conformance to the system, individuals and unilateral groups attempted to capture value from collaboration. In the mode classed as system utilisation, actors collaborated due to a high degree of alignment between organisational interests. Actors' system conformance, however, was a function of relatively limited role autonomy and a lack of inter-organisational interaction.

Though it was supplemented by a more ruthless, competitive undercurrent, the closest behaviour pattern I found to that characterised by Knight and Pye (2005) as network learning was one which I termed creative collaboration. Actors' achieved the strategic imperative to generate new value through a series of temporary, symbiotic inter-dependent supply relations made possible by the transference of codified data between suppliers (Ebers, 1999). Finally, I classed competitive innovation as the dominant form where users with relatively greater autonomy devised innovative ways to exploit even a simple, web-based order entry information system for unilateral competitive advantage.

Actors' tended to co-operate where there was a mutuality of join interest, a focus on increasing returns and group forces were relatively weak. Actors' tended to compete where unilateral interests were privileged, there was a focus on zero-sum games and group forces were strong. Further, there was evidence that actors' tended to adapt to the system where there was evidence of contradictory organisational logics, a relatively high degree of inter-dependency and relatively fixed occupational roles. Where interdependencies were
relatively low, there were contingent *organisational* logics and greater emphasis placed upon individuality and entrepreneurialism, actors’ were more likely to adapt the system in creative and innovative ways. It is worth reiterating that while these classifications identify the principal and distinctive characteristics of each case, this does not preclude the existence of other modes nor the possibility of a wider range of behaviour sub-types.

### 8.2 Implications for management practice

These cases illustrate the complexities of embedding collaborative behaviours between even the most sophisticated organisational actors. The logics of discipline and domination upon which inter-organisational information-system-based change is predicated may, as Miles and Snow (1992) predicted, prove to be a (management) step too far. The conflict-based nature of even the creative collaboration evident here raises serious doubts about the predictability of value creation and innovation through inter-organisational information system use in this and other sectors similarly characterised by competition and co-operation. These tensions produced real, sometimes creative and often troublesome effects.

For, actors engaged in both co-operative and competitive behaviours. Despite the promise of shared benefits, even in the most advanced cases, inter-organisational information system use was of significantly greater benefit to some organisational actors than others. In addition, and perhaps of more concern, there was evidence of decidedly suboptimal supply relationship and network reshaping in two of the networks researched. Even in those networks where some degree of more co-operative collaborative reshaping was evident, these partial adaptations were temporary, limited and fragile.

Thus, far greater attention needs to be paid to how actors’ inter-organisational information systems use may disturb the unrecognised patterns of inter-organisational relations. In recent work, Mars (2008) suggests that rather than their eradication, managers need to find ways in which these informal behaviours can be uncovered and actors’ creativity harnessed more effectively.
This analytic lens therefore may provide managers' with a powerful tool. Firstly, it may be used as a diagnostic to analyse existing structural and cultural relations between groups and the situational logics that emerge as a result. Secondly, it may be coupled with scenario planning techniques to explore the conditional effects of restructuring proposals. Through such an analysis, useful insight may be revealed into individuals' situated logics.

8.3 Implications for management theory

I have used critical social realism to illuminate how the structural and cultural changes associated with inter-organisational information system use loaded particular individuals and groups with discrepant situated logics. Adopting the theoretical perspective explored in this thesis suggests that it is not the nature of the technological infrastructure of the network per se but if and how supply network actors are able either adapt to these information systems or use them creatively, in ways perhaps unanticipated by their originators, that drives the reshaping of inter-organisational networks. A stronger version of this argument is that it is not the nature of the information technology that delivers innovation and change, but rather the flexibility, creativity and adaptability of individuals and intra- and inter-organisational groups.

This approach sheds new light on the learning difficulties faced by individuals, groups, organisations and networks when inter-organisational information systems are introduced in an attempt to change practices. While my findings relate specifically to relations between retail buyers and suppliers in a UK context, these general principles seem also to extend into other economic sectors and social spaces. Thus, the contribution of this thesis is to model these different classes of actors' behaviour and to explain under what circumstances actors' engaged in these different patterns of use.

This study reports upon a far wider range of supply relationship behaviours and network reshaping outcomes than is suggested currently in either the inter-organisational relations or supply management literature. While the singularly benign variant of 'network
learning' identified by Knight and Pye (2005) is undoubtedly one potential outcome of supply network reshaping, my research findings show that it is by no means the only one. Indeed, my exploration of numerous buyer-supplier relations suggests that this mode is relatively rare when compared with the others. Similarly, my findings suggest that in addition to Williamson’s definition of opportunism as 'self-interest seeking with guile' (Williamson, 1985; p. 45) a more expansive, definition that recognises actors’ motivation to capitalise more creatively upon the contingent compatibilities that may arise in their inter-organisational relations may be appropriate. Such instances of opportunism and 'gaming' are also found in the English National Health Service – ironically the sectoral location of the Knight and Pye study.

In terms of inter-organisational and network learning theory this study highlights the intrinsically political nature of inter-organisational relations. As is widely acknowledged, this aspect has been under researched in literature on inter-organisational learning to date. In this regard my findings underscore the depth of insight that a political perspective of actors’ inter-organisational information systems use can reveal. Further, my analysis suggests that on its own, Hamel’s dichotomy between co-operative and competitive inter-organisational value creation and appropriation provides only limited explanation. Actors’ behaviours looked rather similar in both co-operative and competitive contexts. Adding a second, cross-cutting dimension related to innovation versus conformance provides greater explanatory power.

The behavioural typology confirms and the work of Mars (1983) and extends his typology into the digital sphere. Individuals ‘patching ploys’ conform to Mars role-based taxonomy and may therefore be characterised as ‘donkey work’. Similarly, my findings show evidence of tight knit, intra-organisational work groups engaged in unilateral fiddling, primarily motivated by survival. More interesting perhaps are the surprisingly varied and prevalent extent of collaborative conspiracies between buyer and supplier inter-
organisational information system users. These more 'hawkish' practices demonstrate a particular variant of creative collaboration.

8.4 Implications for future research

Comparative cross-sector and international research studies would be valuable. The extent to which the behaviours identified in this research are specific to retail is an important question. Additionally, cross-sectoral work may also benefit from adjustments to the methods used in this project. Approaches that combine the qualitative methods developed here with quantitative measures of key dimensions such as value capture and creation, conformance and creativity would be beneficial. The construction of such measures would make an important contribution to further comparative study which might include, for example, exploration of whether or not public and third sector organisations are more likely to collaborate co-operatively.

This would permit further research to explore some of the more intriguing performance-related questions raised by this research. For instance, just how effective and efficient is the form of creative collaboration displayed by Grocernet? How do such practices compare with the development of what Hamel (1991) terms more 'traditional' collaborative value creating strategies? From an economic perspective, is hyper-competitive collaboration in fact the way to go? Or, do the social implications (e.g. distrust and suspicion) counterbalance any economic gain?

From a management action perspective, my findings are suggestive of, in some cases, management complicity at the most senior levels in both the formal sanction of information system adaptations to information systems and in turning a blind eye to, at least minor and routine, 'fiddling' transgressions. Further research is needed, therefore, to investigate the extent to which more senior managers are complicit in these forms of gap filling, adaptations and distortions.
Similarly, examination of the extent to which information system designers are
cognizant of and take into account the kinds of adaptive behaviours found here would be
valuable. Research taking a 'requirements engineering' perspective might seek to develop
recommendations for those designers who face these challenges. Finally, there would
appear to be an opportunity to develop further understanding of how organisational culture
may affect such behaviours.
References


Appendix A

Extract from a coded transcript
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Do your b2b information systems mean business?

How often do you get the chance of an independent review of your current b2b practices? How does your organization measure up against state of the art thinking? Involvement in this study offers the opportunity for comparative learning at zero cost.

Ask yourself,

- Are the information systems you use with your business partners strategically effective, operationally dysfunctional or just somewhere in between?
- How do you know if your people have the knowledge they need to act incisively, or are they hamstrung by too much of the wrong- or not enough of the right- information?
- Can your ICT respond to the (changing and diverse) needs of your business partners or do you just cope and pray?

Integrating information systems within a business can be a major challenge; when information systems span organizational boundaries the stakes can be even higher. So while we know about the benefits – and the trials of development - the experiences of some leading companies suggest that implementation may be only half the story:

- How can you best exploit inter-organizational information systems to deliver sustained benefits?
- And if they don’t, what can you do about it?

If you believe improving your answers to these questions could enhance your relations and your business, then I would like to talk to you.

Want to know more?

Contact: Caroline Emberson
c.a.emberson@open.ac.uk
mobile 0788 4216941
voicemail: 01908 655811

Centre for Human Resources and Change Management
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Walton Hall
Milton Keynes
MK7 6AA
Appendix C

**Project Background**

Running until October 2007, this research project forms part of a 3 year postgraduate study funded by the ESRC.7

The research process includes:

- **Informal exploratory interviews**, lasting on average 1 1/2 hours (conducted face-to-face, by telephone or via conference) with selected managers.

- **Case studies** focusing in detail on inter-organizational information system use within specific business partnerships.

**Researcher Biography**

Currently the holder of a competitive ESRC studentship, Caroline has previous research experience gained as a Research Fellow investigating the behaviour aspects of ‘customer-responsive’ supply chain management: a pan-European project run jointly by the Open University Business School and Cranfield University.

Prior to her academic career, Caroline gained industrial experience in the clothing sector, working in a variety of cross-functional and externally-facing staff roles including business strategy development, systems execution and quality assurance.

**Ethical Statement**

This study is carried out following the British Sociological Association Code of Ethical Conduct (available at www.britsoc.co.uk). Accordingly,

- The confidentiality and anonymity of individuals will be respected.
- Company-specific data will be anonymised, unless written permission to the contrary is given.
- Interviewees may ‘opt in’ to anonymised, aggregated feedback.
- Interviews may be recorded (with permission) and quotes (attributed for example, by sector and job title) may be included in an academic thesis and related publications.
- Participants have the right to decline further involvement in the research at any time.

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7 Economic & Social Research Council (www.esrc.ac.uk).
Consent Form

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- Interviews may be recorded (with permission) and quotes (attributed for example, by sector and job title) may be included in an academic thesis and related publications.
- Interviewees may ‘opt in’ to anonymised, aggregated feedback.
- Participants have the right to decline further involvement in the research at any time.
- Participant data will be held in accordance with the Data Protection Act.

Participant Consent
I agree to participate in this research, according to the conditions described above. Specifically:

| Data from my participation may be used for analysis | Yes/No |
| I wish to ‘opt in’ (to contribute and to receive) anonymised, aggregated feedback from other case studies. | Yes/No |

Any relevant conditions/ exclusions (please specify):

Signed:

Participant
Date:

Researcher Caroline Emberson
Meeting Review

Telephone conversation, 30 mins, not recorded.

Question Outline

- Who instigated this particular piece of work? Why?
- Would it have been something that Can Co. would have done anyway, even if not Category Advisor's?

Key points

- 4 pack discussion: particularly store dislike. What are the issues here? Opportunities for store education
- Market trends data, how does this tie in?
- Tie into joint business planning, what further involvement would you expect to have here? On the Can Co. side?
- Anything that struck you as interesting/unexpected from Alice's view of Category Advisors?

AOB

- Routine meetings?
- Context of the meeting

This was a Can Co. driven piece of insight. It was started in January, and represented a huge investment by the Category Advisor; Mark quoted a six-figure sum. It was designed to fill knowledge gaps that the company felt they had in their understanding of shopper behaviour. The meeting had originally been organized as the second of a two-part presentation of the 96-slide research findings.

The first half of the meeting had been planned to re-present the first half of the presentation to Julie, the new buyer to bring her up to speed; however, the two were joined by xxx, the buyer's boss, who to a certain extent hijacked the meeting. He wanted to see summaries and highlights, so 'poor J' still didn't get to see the presentation, not that it matters, because I can bring her up to speed later.

The second part of the meeting, in which I was present, was Mark showing both Alice and Julie the remaining part of the presentation.

There were 3 main aspects: What type of shopping mission do shoppers undertake across various retailers; to identify shopper clusters, indicate what types of shopper categories exist and what brands/ SKUs they go for. Then, on the basis of these first two pieces of information, overlay with the stuff they buy and how they buy it.

Mark mentioned that his background was a science degree, and that he liked all this stuff. He felt it was market leading, it was the first time anyone had done this, out of any FMCG company. The data had been collected through TNS, now that the baseline was set up; it would be a simple (and less costly) exercise to refresh it each year. Therefore, next year can start getting cluster trends.

I asked about possible connections with Categorysales data, can make connections, dependent upon area.
It provides them with a depth of insight on Grocer Co. sales, combined with market information from this, Project xxx to build a greater story.

Mark explained his role is looking for a combination of different sites of information and pulling it together.

I raised some of the key points that I had noted during the meeting.

The 4 pack discussion and stores dislike of them. This came back to Mark’s point about seeing things actioned.

In Mark’s view, this discussion had told him 2 things, Firstly, this was not the first time that he had talked to Grocer Co. about 4packs. The message had been received and the Grocer Co. trading team were focusing on them, selling the message on into the business. This was a positive; they have taken that on board. However, even though they’re doing that secondly, this was very difficult to implement. Mark suggested that it didn’t matter which retailer you talked to, ‘there is this thing about power wielding’ at store, opposition from store managers prevents things happening, even when Grocer Co. buyers have been convinced.

[Stores] They’re not getting the full picture, that’s why I asked what more I could do to help.

What they are doing is focusing on the stuff that they do really well – selling loads of bulk packaged xxx.

I asked why he felt that was.

There was a combination of reasons. Historically and the way Grocer Co. operate, there has been an emphasis on volume, ‘it’s all about driving volume sales’. Plus, not really understanding why they are important. A comment had been made in the meeting that the stores were not really product focused.

I asked whether there was opportunity as a Category Advisor to develop this educational aspect.

Mark immediately talked about resource difficulties, there were over 300 stores. They do have a field sales force, but this might be difficult because of ‘the nature of their role’.

He and Alice had been trying to organize a meeting with the Scottish managers, because there had been a problem with Scotland particularly underperforming. It had been recognized that there was a need to focus more on Scotland.

Another option was to target educational activities as the regional, cluster level through the cluster coaches.

I asked about expected subsequent involvement in joint business planning?

‘I think I should’, but whether I will or not depends on the buyer. Referred to Alice’s comments about xxx, who was taking over from her while on maternity leave and doesn’t intend to use the Category Advisor, because he thinks he knows it all. Looks like instead,
Mark will see how he’s able to impact the category through links with xxx, the buyers’ manager, and Julie, the new specialist buyer.

Alice, who Mark described as really good, absolutely brilliant and recognised for this throughout the business, had already set a number of things in train for xxx, the implication being, I think, that things shouldn’t go too wrong whilst she’s away.

Mark felt this situation gave him 2 possibilities for promoting further work, present Category Advisor work to Grocer Co. as part of the Grocer Co. process, whether or not this would be possible, ‘it just depends whether or not I get invited’ and internally, to pursue the opportunities through Can Co.’s account team. Obviously he has taken the account team through the same information, only about 1/3 of which is retail. The Can Co. team can then build this in when they go to talk to Grocer Co. about the plan. For example, by tailoring their proposals and promotions to drive particular sectors and line up the investment behind it [I suggested this was a sort of pincer movement. And I think this is where some of the real benefit of having a category captaincy approach lies] the proposed initiatives will therefore ‘fit in perfectly’.

I asked Mark what he had thought about Alice’s comments.

He had been pleased she had invited him to stay, had taken it as a compliment. Nothing had struck him as being particularly unexpected or interesting about what she had said.

He asked me what had struck me; I suggested I had a stronger sense of Category Advisor as outsourced R&D and that I had been struck by Alice’s comments on alignment and the potentially transient nature of the relationship. I suggested this may offer Grocer Co. a benefit in moving ‘R&D’ activities from one supplier to another, where this alignment drifted. Mark suggested that this could present dangers, in that the quality of work may not be maintained and equally, that there could be uncertainty. He did question her view on the balance of power. Suggesting again that Grocer Co. might find it difficult to replicate specific Category Advisor skills, particularly of Bill and Helen. Whereas perhaps his own skills were more easily replicated (I suggested more market-, rather than customer-oriented, thinking about asset specificity). In fact, Grocer Co. might find it more difficult than they think to draw back owing to this close fit. It would be a lot of upheaval.

Mark highlighted the responsive nature of their involvement. The longer you had the role, the more embedded certain people became, mentioned Alice’s analysis of Bill and Helen as part of the Grocer Co. team.

I talked about the next stages of the project, that I would make contact with Bill about sitting in on a Merchandising meeting, send Mark a pack of the work done so far and then come back to him in 3-4 weeks, when things had settled down with Julie, about perhaps sitting in on a more routine meeting between them.

[End of discussion]
Initial Interview Schedule: Informal Interviews  
(max duration 1½ hours)

Interview Outline  
(Provided to each interviewee, along with Project Proposal prior to interview)  
The purpose of each interview is to explore your assessment of Timber Co.'s internet-based sales capability.

Where are you, as a company (and how does this vary e.g. across particular sectors/types of customers)?  
How did you get here?  
How does this compare with other b2b relationships/systems (e.g. with/without different types of IT)?  
Where would you like to be?  
What stands in the way/needs to be done to get there?

Introduction  
Introduce myself and wider project brief  
Introduce consent form (to be completed at end): restate individual and company confidentiality and right to decline participation at any time  
Ask whether or not happy to be recorded/take notes  
Where are you, as a company (and how does this vary e.g. across particular sectors/types of customers)?

Tell me about Timber Co. – where do you sit in the industry?  
How has this changed in the last few years?  
What factors have had an effect? (Prompt: trade associations; regulation?)  
What has this meant in terms of business relationships?  
How many of your customers use this/other systems? (e.g. EDI, XML, internet sales)?  
Why? (Those that do/don't)  
How did you get here?

Why was the internet sales system developed?  
What was/were the issue(s) to be addressed?  
Why were these issues perceived to need attention?  
What factors were seen to contribute and by whom?  
Why was this system seen as the best solution?  
What alternatives were considered?  
What objectives were set?  
To what extent have these been met?  
How does this compare with other b2b relationships/systems (e.g. with/without different types of IT)

What, if any, have been the implications for the way you conduct business with customers?  
(Ask for specific examples: best and worst cases)  
What have been the biggest successes/failures and why?  
What are the main factors that contributed to these successes/failures? (Prompt: related to business environment, organizations, teams, individuals)  
What was expected/unexpected about this?  
Can these effects be measured?  
Where would you like to be?  
How could the system be used more effectively?
What works well and could be extended? How? (Prompt: ways of working: customers, individuals and systems)
What works badly and how could it be changed? (Prompt: ways of working: customers, individual and systems)
What should be done next? Why?
What stands in the way/needs to be done to get there?
What are the principal factors that need to be addressed?
What factors enable/inhibit this?

Wash up
What happens next?
Process for customer contacts
Feedback/confidentiality issues
Consent form
Naturalistic data?

This extract is from a weekly work meeting held at Multiple Retail Co.'s head office. Paul, a buyer merchandiser (CBM1), David, a supplier merchandiser (CSM1), and Kate, one of Clothing Co.'s commercial directors (CSD1), were present. The meeting was self-recorded at my request.

01 Paul Are we being recorded now? (0.3) Er, David, I'm surprised you've
come dressed as a duck today. Um. Can you explain?
02 David Quack

[laughter]
04 Paul OK. Very good.
05 David [oah [sighs]
06 Paul [And Kate,
07 Kate I'm surprised]
08 David [coughing]
09 Kate Actually]
10 Paul [Yep
11 Kate [to start with
12 David [coughing]
13 Kate OK then.

When I met David later that day to collect the recording, he was not dressed as a duck. Rather than researcher reactivity being reduced, with this disembodied attempt at research data collection it seemed to have increased. Although the participants did move on to discuss business, self-recording disturbed them again, as this second, later extract shows.

24 Paul Do you want to tell me those ones first?
25 David No, could you start at the top?
26 Paul OK [long pause]
27 David [Product range name]
28 Kate [laughs]
29 Paul Are we going to continue to do this meeting in sign language?
30 David [[laughs]
31 Kate [[laughs]
32 Paul OK.
33 David [sighs] Oh dear]
34 Paul [Product range name]]
35 David And you know, the only reason she wanted it taped was
36 because she thought it was a very good meeting. And now it's all
37 going to go to pot this week.

The reactions of Paul (line 29), Kate (lines 28 and 31) and David (lines 35–7) suggest that the meeting was not occurring naturally.
Loosely coupled talk

Sally, a Multiple Retail Co. buyer merchandiser (CBM3), had been with the company eight months and, according to Bryn, the Clothing Co. supplier merchandiser (CSM3), did not yet have a good grasp of the figures, a weakness he was prepared to exploit.

[Meeting extract begins at 09:14.]

01 Sally OK and all our full production [contract quantities] match.
02 Sally You’ve got nothing left to come through on [product number].
03 Bryn We have.
04 Sally No we have, even. That’s what I meant to say. Yeah, this was the one that’s delayed for a week, wasn’t it?
05 Bryn You’re not going to get it.
06 Sally I’m not going to get it at all?
07 Bryn I’ve got a problem. We (...) I said to you that there was a problem with the airfreight shipment, yeah?
08 Sally Yeah]
09 Bryn And] that had been delayed, y’know?
10 Sally Yes.
11 Bryn And we finally received the goods yesterday from um (0.2) from the shipping company and they’d been sat in the yard yeah?
12 Sally Right.
13 Bryn About 80% of the product which is water damaged, all right?
14 Sally Yeah.
15 Bryn And there seems to be some chemical on it. It went through the dye house last night
16 Sally [Yes
17 Bryn [And it’s come out this morning and there’s streaks in it. It’s not suitable.
18 Sally So it’s a no-goer.
19 Bryn It looks like a no-goer.
20 Sally Now what I’ve asked my technical team to do is to look at manufacturing this product out of [UK location], yeah?
21 Bryn [Jack walks past]
22 Jack I’ll see you later.
23 [To Jack]
24 Bryn All right, no problems.
25 [To Sally]
26 Sally manufacturing this product out of [UK location]
27 Bryn I thought you couldn’t do it [out of]
28 Sally [we can’t because it was [a problem is, is the fit, yeah?
29 Bryn Yeah.
30 Sally In that you can’t get the laterals with the yarns that we’re using
31 Bryn because our kit isn’t set up to achieve that.
32 Sally Yeah.
Appendix H

A series of problems had already delayed delivery of this product. The latest was that the goods Clothing Co. had received were manufactured to an incorrect specification. Since Bryn had assured Sally this had been checked already, he fabricated the account of water damage. Although Sally had accepted this explanation in the meeting, Bryn expected further questions from her boss; however, the decision as to whether or not to cancel the order had been delayed.
### Synthesised typology of actors' inter-organisational information system use in buyer-supplier relations

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Behavioural Types</th>
<th>Type I: Patching ploys</th>
<th>Type II: Local plots</th>
<th>Type III: Collaborative conspiracies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Categories</strong></td>
<td></td>
<td>Falsifying system data, delivering the plan, farming the data, staying in control, pre-empting price negotiations, dodging delivery cut-off times</td>
<td>Defining success on the sales floor, constraining system limits, levelling schedules.</td>
<td>Working around the system, correcting for system failures and gaps, informing on working practice change, apportioning blame, concealing superior performance, making the system work, trading data for expertise, appearing to use data for category growth.</td>
</tr>
<tr>
<td>Who was involved</td>
<td></td>
<td>Isolated and subordinated individuals in homogeneous interest groups</td>
<td>Tight-knit, intra-organisational groups</td>
<td>Entrepreneurial individuals within cross buyer-seller interest groups</td>
</tr>
<tr>
<td>Level/unit of analysis</td>
<td></td>
<td>Recognisable replications across similar roles</td>
<td>Recognisable replications within intra-organisational space 'teams'</td>
<td>Inter-organisational buyer-supplier relationships</td>
</tr>
<tr>
<td>Emerging patterns defined in relation to:</td>
<td></td>
<td>Individuals’ roles</td>
<td>Inter-functional routines</td>
<td>Relative buyer-supplier negotiating strength and coherence of overlapping interests</td>
</tr>
<tr>
<td>Actors’ inter-organisational information system use</td>
<td></td>
<td>Data manipulation (reactive)</td>
<td>Data manipulation (routine)</td>
<td>Data and field category manipulation (creative)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>e.g. Storenet administrators</td>
<td>e.g. Clothing Co. commercial teams manipulation of production schedules and finished stock targets</td>
<td>e.g. Grocer Co. buyer and Can Co. category advisor staff redefinition of category growth metrics, Timber Co. internet sales manager and Regional Co. commercial director monitoring of branch Timberorder use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clothingnet commercial administrators</td>
<td>Premeditated reconstruction of data field limits by Timber Co. sales and system developers</td>
<td>Multiple Retail Co. and Clothing Co. merchandisers hiding year end stock</td>
</tr>
</tbody>
</table>
A summary of predominant, system-level reshaping behaviours

<table>
<thead>
<tr>
<th>Supply Network</th>
<th>Clothingnet</th>
<th>Grocernet</th>
<th>Storenet</th>
<th>Timbernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patching ploys (Individuals)</td>
<td>Delivering the plan</td>
<td>Farming the data</td>
<td>Falsifying system data</td>
<td>Pre-emptive price negotiations</td>
</tr>
<tr>
<td></td>
<td>Staying in control</td>
<td></td>
<td>Dodging delivery cut-off times</td>
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</tr>
<tr>
<td>Local plots (Unilateral)</td>
<td>Levelling schedules</td>
<td>Defining success on the sales floor</td>
<td>Constraining system limits</td>
<td></td>
</tr>
<tr>
<td>Collaborative conspiracies (Inter-organisational)</td>
<td>Working around the system</td>
<td>Concealing superior performance</td>
<td>Apportioning blame</td>
<td>Informing on working practice change</td>
</tr>
<tr>
<td></td>
<td>Correcting for system failures and gaps</td>
<td>Trading data for expertise and resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Making the system work</td>
<td>Appearing to use data for category growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Appearing to be in control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System-level reshaping</td>
<td>Shifting supply</td>
<td>Category sales data as a commodity</td>
<td>Compensating for contractual limitations</td>
<td>Resisting imposed practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Temporary cessation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Managing the balance of power</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Co-constructing rationality</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>Conformist competition</td>
<td>Creative Collaboration</td>
<td>System Utilisation</td>
<td>Competitive Innovation</td>
</tr>
</tbody>
</table>
Glossary of terms

A

Actors
Role incumbents (following Archer, 1995, p. 276).

Actor-network theory (A-N T)
A critical social theory whose central tenet is relational materiality; what Latour (2005, p. 9) refers to as 'a sociology of associations'.

Agency
Analytically distinct from either structure or culture, agency is characteristic of a collective group of people who sharing the same life chances, the result of grouping and regrouping of human beings (Archer, 1995, p. 253). It accounts for who occupies which roles and why they do what they do when the role does not require it.

Agents
Human beings with particular life chances, pre-dating their roles as actors (Archer, 1995, p. 277).

Allocators (Storenet)
Found across the fashion industry, these role-holding actors are responsible for deciding the distribution and sequencing of available stock to retail outlets.

'Analytic' cases
Cases are viewed as theoretical constructs, made by focusing on specific themes (e.g. co-operation/competition) of importance to participants (Knight and Pye, 2007, p. 169).

'Availabilities' (Clothingnet)
A declaration of the finished goods stock available for immediate despatch from their UK warehouses required by Multiple Retail Co. from their full service vendor suppliers.

B

Bargaining power
A first-order emergent property dependent upon the availability and distribution of resources between existing groups. Agents with low access to all resources have the weakest bargaining position, agents with differential access to the various resources will be in a stronger bargaining position whilst agents with high access to all resources have the best bargaining position (Archer, 1995, pp. 299–300).

Business Process Engineering (BPR)
As opposed to simply speeding up or automating existing process, BPR is an analysis and design approach based on the radical change of one, or several processes, sometimes between separate organisations. Such re-engineering may lead to changed job requirements, organisational structures and management systems as well as changed cultures and values (Davis, 1999, p. 189).

Buyer-driven global commodity chains
Premised on the search for cheap labour and supported by commercial capital flows,
trans-national manufacturers relocated to export processing zones. This global sourcing strategy is driven by intense competition among different types of developed-country retailers and marketers interested in both growing their offshore networks and using brands as a source of market power. Buyer-driven chains are characterised by global sourcing networks that rely on sophisticated logistics and performance trust among numerous contractors (Gereffi, 2001, p. 33).

**Category**
A portfolio of products with some particular attribute in common (lifestyle, target market segment, occasion, etc.) typically sourced from a number of different suppliers and treated as a group. According to the ECR (2007), ‘A category is a distinct, manageable group of products/services that consumers perceive to be interrelated and/or substitutable in meeting a consumer need’.

**Category advisors (Grocernet)**
'Those suppliers who because of their understanding of the market, or their resource and infrastructure, can work with us to deliver customer solutions and innovation' (company documentation, 2006).

**Category management (Grocernet)**
Set of operational techniques focused on optimising particular category attributes (e.g. profit, growth) to satisfy consumer needs on a store-by store basis (Nielson, 1992) or a retailer/supplier process of managing categories as strategic business units, producing enhanced business results by focusing on delivering consumer value.

**Category sales (Grocer Co.)**
Grocer Co.'s proprietary database of historic product sales information, shared to different degrees with selected Category suppliers.

**Collaborative Planning, Forecasting and Replenishment (CPFR)**
According to VICS standard definition, this is a business practice that combines the intelligence of multiple trading partners in the planning and fulfilment of customer demand (VICS, 2007).

**Colourings (Clothingnet)**
Breakdown of contracted purchase order qualities into particular colour/size combinations required.

**Continuous Replenishment Programme (CRP)**
The concept of continuous supply of goods between supplier and trade partner based on automated exchange of current demand, inventory and stock management information, within the framework of an agreed supply policy. The aim of CRP is to achieve a responsive and precise flow of product to the store, with minimum stock holding and handling (ECR, 2007).

**Competition**
Following Archer (1995), a structural emergent property, the result of contingent contradictions. Leads to a situational logic of elimination.

**Competition Commission (CC)**
Replacing the Monopolies and Mergers Commission on 1 April 1999, the
Competition Commission is an independent public body established by the Competition Act 1998. It conducts inquiries into mergers, markets and the regulation of the major regulated industries, including a recent investigation into UK supermarket retailers (Competition Commission, 2007).

**Competitive collaboration**
A particular type of strategic alliance between competitors (e.g. joint ventures, outsourcing agreements, product licensing) in which, though one partner may be weakened with respect to another, in tandem both are strengthened against external companies (Hamel et al., 1989).

**Compromise**
Following Archer (1995), a structural emergent property, the result of necessary contradictions. Leads to a situational logic of correction, where actors address the contradiction by seeking to repair it by reinterpreting the components (p. 231).

**Computer Supported Co-operative Work (CSCW)**
An academic domain whose object of study is the use of information technologies, especially groupware in support of co-operative team working.

**Context: Case: Process model (CCP)**
Framework for political process analysis of management case studies developed from the work of Andrew Pettigrew (1973).

**Co-operative collaboration**
A form of strategic alliance characterised by value creation, with success measured in terms of alliance satisfaction and longevity (Hamel, 1991).

**Cultural emergent properties**
Activity-dependent, these may be present or past tense (casual interactions may be the result of either present or past actors’ actions) (Archer, 2000, p. 145).

**Cultural system**
Pre-existing, autonomous and durable entities, logically inter-related and temporally distinct from the meanings held by agents at any one time. (Archer, 2000, p. 179).

**Dailysales**
An inter-organisational information system that transmitted daily sales data from Department Co.’s point of sale to its branded fashion suppliers.

**Deficiencies (Multiple Retail Co.)**
A ‘deficiency’ was a system-generated comparison of the theoretical stock required by Multiple Retail Co. against the stocks predicted by its suppliers. The system took the previous week’s Supplier Actual Stock or Predicted Supplier Stock (if there was no Actual value) plus any planned production for that week minus the Retailers’ Requirement. The field was calculated in the Stockplan artefact and was read-only for all users (company documentation).

**Differentiation**
Following Archer, a structural emergent property, the result of contingent complementarities, where social structures are viewed as an open system, to which there are no effective barriers against the potential formation of contingent
relationships which may prove highly compatible within the interests of particular groups (Archer, 1995, p. 244).

Direct buying (Multiple Retail Co.)
Buying directly from a non-FSV supplier. Around 30 per cent of the General Merchandise bought was sourced ‘direct’ (Company Annual Report, 2006–7).

Double morphogenesis
The elaboration of agential powers in the process of sociocultural transformation (Archer, 1995, p. 185).

European Article Number (EAN)
Product identification standard endorsed by an international association whose object is to establish global multi-industry systems of identification and communication for products and services on the basis of internationally accepted and business-led standards (ECR, 2007).

Efficient Consumer Response (ECR)
A joint initiative by members of the supply chain to work to improve and optimise aspects of the supply chain and demand management to create benefits for the consumer (e.g. lower prices, more choice variety, better product availability). The mission of ECR Europe is to ‘serve the consumer better, faster and at lower costs’. (ECR, 2007).

Electronic Data Interchange (EDI)
Computer-to-computer transmission of business information between trading partners based on standard file formats and transaction sets (ECR, 2007).

Electronic Point of Sale (EPoS)
The method of recording store sales by scanning product barcodes at the store’s tills (ECR, 2007).

Emic
What is happening and deemed important within the boundaries of the empirical case.

‘Empirical’ case
In Knight and Pye’s terms (2007, p. 170), the empirical case is an empirically real and bounded network of organisational and individual actors.

Enterprise Resource Planning (ERP)
A computer planning system that uses the Manufacturing Resource Planning (the time phased explosion of the material requirement) but in addition should have product configuration facilities, quality assurance management plus resource planning for the non-manufacturing areas such as plant maintenance, human resource planning, etc. Some people define ERP II as ERP using internet technology; so, browser-based, platform-independent, and with optional links to suppliers and customers (BPIC, 2007).

Extensible Mark-up Language (XML)
A technical standard for coding data to be sent, received and processed via the internet. Designed for ease of implementation and inter-operability with other
standard mark-up formats (e.g. SGML and HTML), it conforms to the ISO 10646 character set used by major trading nations (ETHOS, 2007).

F

FMCG
Fast-moving consumer goods.

Free On Board (FOB)
FOB (Free On Board) is an import/export term relating to the point at which responsibility for goods passes from seller (exporter) to buyer (importer). From the seller's point of view, a FOB price must therefore include/recover his costs of transport from factory or warehouse, insurance and loading, because the seller is unable to charge these costs as extras once the FOB price has been stated. The FOB expression originates particularly from the meaning that the buyer is free of liability and costs of transport up to the point that the goods are loaded on board the ship. While liability and responsibility for goods passes from seller to buyer at the point that goods are agreed to be FOB, the FOB principle does not correlate to payment terms, which is a matter for separate negotiation. FOB is a mechanism for agreeing price and transport responsibility, not for agreeing payment terms (Businessballs.com, 2007).

Full Service Vendor (FSV) (Multiple Retail Co.)
'A supplier who provides a full design, commercial, sourcing, manufacturing and shipping service of our products from source to our distribution centres in the UK' (company annual report, 2006-7).

G

General Merchandise (GM) (Multiple Retail Co.)
Clothing, footwear, home and beauty products (i.e. all non-food) (company annual Report, 2006-7).

Global Commodity Chains (GCC)
An inter-organisational network theory that conceptualises global networks as an important strategic asset, their co-ordination a key source of competitive advantage and 'organisational learning' as the mechanism by which individual firms consolidate their position (Gereffi et al., 2005).

Human-Computer Interface (HCI)
A subdomain of information systems study, whose primary object is how individuals interact with technology. Micro-ethnographic studies, such as Lucy Suchman's work on Technology-in-use, are found in this field.

Intermediate markets
Firms that specialise in conveying the ownership of goods from the initial supplier to final customers.

Inter-organisational relations
Domains of study whose primary object is the relations between organisational actors.

IT
Information technology.

**ICT**
Information and communications technology.

**Institutional effects**
Four alternative institutional configurations (necessary complementarities; necessary incompatibilities; continent incompatibilities and contingent compatibilities), the result of the inter-relationships between structural and cultural emergent properties which, in turn, condition either the morphostasis or the morphogenesis of agency (Archer, 1995, p. 218).

**IOIS**
Inter-organisational information systems.

**Integration**
Structural emergent property, the result of necessary complementarities (necessary and internal linkages between systemic structure, where institutions are mutually reinforcing). Leads to a situational logic of protection.

**M**

*Make To Order (MTO)*
An operational strategy that aims to produce goods or services only for confirmed customer orders (in contrast to a ‘Make To Forecast’ or ‘Make To Stock’ approach).

*Merchandiser (Storenet)*
Responsible for providing guidelines to set and maintain standards of visual merchandising across Department Co. stores

**Morphogenesis**
Those processes which tend to elaborate or change a system’s given form, structure or state (Buckley, 1967, cited in Archer, 1995, p. 75).

**Morphostasis**
Those processes in a complex system that tend to preserve a system’s given form, structure or state unchanged (Archer, 1995).

**N**

*Network embeddedness*
How places are inserted into the organisational spaces of the retail TNC and used as part of their competitive strategies, and to what effect (Hess, 2004).

*NDC*
National distribution centre.

**Negotiating strength**
A bilateral, or relational term. Negotiating strength ‘arises in exchange situations e.g. where group X commands resources which are highly valued but lacking (or lacking in sufficient quantities) by group Y, when Y in turn possesses resources of a different kind which are sought by X. It is a matter of degree, which ranges from a) the ability of X to make Y utterly dependent on the resources it supplies, through b) a balanced situation of reciprocal exchange between X and Y, to the opposite pole of imbalance c) where X is totally dependent on the resources supplied by Y. Cases a) and c) are instances when power, itself an emergent relational property,
characterises interaction. This is so providing that the dependent agent cannot reciprocate, cannot get the needed resources from elsewhere, cannot coerce the other party to supply them and, finally cannot reconcile [itself] to dispensing with the resources or services supplied' (evidence of a cultural component) (Archer, 1995, pp. 301–2).

Network Information Management (NIM)
The managed alignment of structural, institutional and human (behavioural) aspects of inter-organisational systems within inter-firm networks (Klein et al., 2004, p. 28).

Office of Fair Trading (OFT)
A government body responsible for making markets work well for consumers. It achieves this by promoting and protecting consumer interests throughout the UK, whilst 'ensuring that businesses are fair and competitive' (OFT, 2007).

On Shelf Availability (OSA)
A common operational measure within FMCG grocery, ‘on-shelf availability’ is an operational objective that focuses on ensuring a minimum level of stock present at the point of sale at all times.

Opportunism (Archer, 1995)
Structurally, an open system where no barriers can be erected again contingent relationships that might prove highly compatible with the interests of particular groups. Culturally, agents are free to make what they will of alternative ideas.

Opportunism (Williamson, 1985)
‘Self-interest seeking with guile’ (Williamson, 1985, p. 45).

Outsourcing
Method whereby a company chooses to subcontract particular activities previously carried out in-house to a third party.

Own buy (Department Co.)
Merchandise bought and paid for at the point of delivery, thereby becoming Department Co. stock (as opposed to ‘sale-or-return’ merchandise).

People's Emergent Properties (PEPs)
Any form of sociocultural conditioning only exerts its effects on people and is only efficacious through people. Further, agential relations themselves have emergent properties (PEPs). PEPs have two defining features: firstly, they modify the capacities of component members (affecting their consciousness and commitments, affinities and animosities), and secondly, they exert causal powers proper to their relations themselves vis-à-vis other agents or their groupings (Archer, 1995, p. 184).

Pluralism
Cultural emergent property, the result of contingent incompatibilities, where there are bonuses associated with conflict that led to ‘a battleground of ideas’ (Archer, 1995, p. 241). Leads to a situational logic of elimination.

Pooled inter-organisational relations
Following Ebers (1999), where organisational actors bring similar resources and
capabilities to the relationship.

**Position**
The problematic or felicitous situations or contexts in which agents find themselves, though not tightly associated with specific normative role expectations (Archer, 1995, p. 153).

**Primary sortation centres (Clothingnet)**
A facility where consolidated goods despatched from UK supplies were sorted into store-specific shipments for onward distribution to stores via regionally-specific distribution centres.

**Producer-driven global commodity chains**
International production networks established through transnational foreign direct investment to access raw materials and new overseas markets (Gereffi, 2001, p. 32). Producer-driven chains are characterised by vertical integration. (see also buyer-driven global commodity chains).

**Product listings (Grocernet)**
The range of products stocked by Grocer Co. in a particular category.

**Production flow (Clothingnet)**
Statement of future, weekly planned production required by Multiple Retail Co. of their full service vendor suppliers.

**Protectionism**
The situational logic produced by emergent structural and cultural properties when everyone has something to lose from disruption (though this may be more for some than for others) and any gains from change are uncertain (Archer, 1995, p. 220).

**Purchase order buying (Clothingnet)**
Supply terms and conditions under which discrete quantities of manufactured goods were purchased, typically for ‘FOB’ delivery by a particular, pre-agreed date.

**Quick response**
A strategy where partners in a supply chain work together to respond more rapidly to consumer demand. This may involve sharing point-of-sale data, forecasting demand levels and making manufacturing as flexible as possible so that production can be agreed to consumer demand (ECR, 2007).

**Reproductive power**
The relative ‘orderliness’ or ‘disorderliness’ between the systemic and the social. Where there is conjunction between structural and cultural morphostasis, social conditions will be reproduced, although what transpires depends upon their reception by PEPs and the negotiating strength of corporate groups *vis-à-vis* others (Archer, 1995, pp. 309–12).

**Retail Trans-national Corporations (Retail TNCs)**
Complex configurations of intra, inter and extra-firm relational networks, retail TNCs are conceptualised as possessing unusually high levels of either territorial (i.e. within local markets and consumption cultures) or networked embeddedness.
Role
Relative, autonomous, structural emergent property; with defined obligations, sanctions and interests (Archer, 1995, pp. 187–8).

Resources
Autonomous, anterior and capable of exerting casual influence; for example, factories; stores; finished goods (Archer, 1995, p. 108).

Sale Or Return (SOR) (Department Co.)
Merchandise bought and paid for at the point of sale. Stock that remained unsold at the end of the selling season could be returned to the supplier without financial penalty.

Science and Technology Studies (STS)
A domain of study focusing on the relationship between science and technological development.

Situational logics
Depending upon whether structural and cultural emergent properties are necessary or contingent; complementary or incompatible, four situational logics result: protection; compromise; elimination and opportunism. These predispose agents towards specific courses of action for the promotion of their interests, created through relations between SEP (structural emergent properties) and CEP (cultural emergent properties (Archer, 1995, pp. 216–18).

Social shaping of technology
A domain of study focusing on the question of how the design and implementation of technology are patterned by social and economic factors (Williams, 1996).

Social integration
Analytically distinct from structure, the orderly or conflicting relations between particular groups of actors (Archer, 1995, p. 67).

Social informatics (SI)
A multidisciplinary research field that examines the design, uses and implications of information and communication technologies in ways that account for their interactions with institutional and cultural contexts (Kling and Hert, 1998, p. 1,047).

Stockplan (Clothingnet)
An inter-organisational information system developed by Multiple Retail Co. for collaborative stock planning with its suppliers.

Solus stores (Storenet)
Retail outlets dedicated to the sale of a particular brand/collection.

Slotting deals (Grocer net)
A practice by which Grocer Co. and its suppliers negotiate financial benefits in return for particular listing, space or shelf position guarantees.

Strategic purchasing
'The ongoing process of soliciting, negotiating, and contracting for the delivery of
goods and services’ (Holcomb and Hitt, 2007, p. 470).

**Specialisation**
Cultural emergent property, the result of contingent complementarities where further opportunities are opened up. Leads to a situational logic of opportunism.

**Storespace**
A diffusion model developed by Department Co. to extrapolate optimum space: profitability ratios from historic sales: store space allocations.

**Structuration theory (Giddens)**
A theory of social ontology that advances the duality of structure in terms of the mutual constitution of both structure and agency.

**Structural emergent properties**
Distributions, roles, institutional structures and social systems which are relatively autonomous and enduring, structural emergent properties are primarily dependent upon material resources, both physical and human (Archer, 1995, pp. 175–7).

**Structures**
Social institutions that pre-date the actions of people by which they are transformed (Archer, 1995).

**Symbiotic inter-organisational relations**
Following Ebers (1999), where organisations combine complementary resources and capabilities.

**Syncretism**
Cultural emergent property, the result of necessary contradictions between cultural ideas, described by Archer (1995, p. 233) as ‘the attempt to sink differences and effect union between contradictory elements’. Leads to a situational logic of correction.

**Synchronic analysis**
Advocated as a research strategy by Barley (1990), synchronic analysis is a research design that compares old and new technology use in different social settings to determine whether or not the various technologies may be associated with relational role differences.

**System integration**
The result of ‘relations-between-relations’ of interacting institutional structures (Archer 1995, p. 188).

**Systemisation**
Cultural emergent property, the result of necessary complementarities between cultural ideas, defined by Archer (1995, p. 236) as ‘the strengthening of the pre-existing relations among the parts, the development of relationships among parts previously unrelated, the gradual addition of parts and the relationships to a system, or some combination of these changes’. Leads to a situational logic of protectionism.

**Technology-in-use**
An ethnomethodological approach to the study of Human-Computer Interaction
commonly associated with the work of Suchman, Orr and Trigg at Xerox, Palo Alto.

Territorial embeddedness
How economic actors are 'anchored' in different places at spatial scales from the nation state to the local level (Wrigley et al., 2005).

Third Party Logistics Provider (3PL)
Subcontracted organisation responsible for logistical operations.

Timberorder
Pseudonym for a web-based ERP customer interface, developed by Timber Co. to provide stock and customer order-entry facilities.

Transformatory power
The result of the relative orderliness or disorderliness of the intersection between the structural and the cultural systems, by which some agents become the efficient cause of change (Archer 1995, pp. 304–5).

Trans-National Corporations (TNCs)
Organisations whose operations and interests span national geographic boundaries.

Triple morphogenesis (of agency)
Where the particular social identities of individual social actors are forged from agential collectivities in relation to the array of organisational roles which are available in society at that specific point in time (i.e. where agency conditions who comes to occupy different social roles) (Archer, 1995, pp. 155–275).

Unfulfilled requirement
The percentage of the Multiple Retail Co. requirement which could not be called from the supplier warehouse because of a deficiency (Multiple Retail Co. company documentation).

XML
See Extensible Mark-up Language.