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THE GROWTH OF 'CONNECTED' FIRMS

A re-appraisal of Penrosian theory and its
application to artisanal firms operating in
contemporary business networks

by

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The University of Birmingham
for the degree of
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A re-appraisal of Penrosian theory and its application to artisanal firms operating in contemporary business networks

Abstract

The thesis is concerned with the growth of 'connected' firms, characterised as small firms that are engaged in stable spatial and vertical network relationships, involving a variety of actors, including larger firms. It locates these firms within the landscape of the 'New Competition', (Best 1990, 2001), highlighting the relatively unexplored region occupied by connected artisanal firms. The literature review is constructed around a detailed re-appraisal of Edith Penrose's (1959) study, *The Theory of the Growth of the Firm*, which traces its antecedents, re-constructs its interconnections and calibrates its explanatory potential against the work of contemporaries, successors and opponents. The review provides the basis for development of a modified Penrosian framework, designed to embrace a multi-level analysis of growth processes that span the 'blurred boundaries' of the connected firm. An empirical study of the growth of connected artisanal firms demonstrates the application of this modified framework. The study is presented in the form of an analytically structured narrative, illustrated by network mapping sequences and informed by a qualified critical realist perspective. The final chapters reflect on the theoretical, methodological and practical policy implications of the study, highlighting the broader implications for researching the growth of other forms of connected firm.

Dedication

For my parents.

Acknowledgements

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Preface

When I was young I told my mum, I' m going to walk on the moon someday. Armstrong and Aldrin spoke to me, From Houston and Cape Kennedy, And I watched the Eagle landing, On a night when the moon was full, And as it tugged at the tides, I knew deep inside, I too could feel its pull.

Billy Bragg, *The Space Race is Over* (1996)

As Neil Armstrong set foot on the Sea of Tranquillity, the career paths of two youngsters were set in motion; both would be astronauts and journey to the moon. After three decades, one remained grounded in the English Midlands, writing about the growth of small cheese-making firms. His childhood friend got a little farther, though the odds were stacked against his breaching the stratosphere at the controls of a Boeing 747. So what happened? Why did these paths diverge so dramatically from one another, and from their initial shared goal? ⁽¹⁾

This thesis is concerned with the growth trajectories of firms, rather than the life histories of individuals, yet it addresses a similar question. Why do firms develop in such divergent and seemingly arbitrary ways? Previous research has demonstrated that it is no more possible to predict the growth path of a particular firm than it is to anticipate the biography of an individual. Indeed, firms have an enviable capacity to flout the life-cycle that sets an ultimate boundary on our own histories. However, most small firms' research has continued to pursue the more common, and necessarily generic, factors contributing to differential growth outcomes. This study takes a different approach to the task of explaining the growth process. The research problem arose from direct experience of small and medium-sized horticultural firms engaged in supply relationships with multiple food retailers. I became interested in the mechanisms that generated observed changes in such firms, notably the rapid development of

new capabilities (e.g. international product sourcing, managing overseas operations, product and process innovation), to meet the requirements of multiple food retailers. The initial proposal for the thesis was based around an empirical study of similar dyadic relationships amongst artisanal cheese-making firms. Two major ‘turning points’ in the research have shaped its subsequent form. First, early exposure to Penrose (1959) generated an increasing interest in the unresolved challenge of conceptualising growth processes that seemed to extend beyond the boundaries of the firm. Second, I became convinced of the need to address growth at multiple levels of analysis, incorporating network relationships rather than simply the dyadic ties, and taking greater account of both context and temporality. The final product is a more integrative approach to conceptualising the growth process, which extends the original Penrosian framework in a way that addresses the distinctive circumstances of the ‘connected’ firm ⁽²⁾. These conceptual innovations are also reflected in the accompanying research methodology and empirical study. Hence, while one part of the study is indeed concerned with ‘what happened’ to two English cheese-makers, its broader aim is to shed a new theoretical light on the growth of the firm. Finally, a brief comment on the use of quotations. A recurrent theme in the re-appraisal of Penrose’s legacy is the extent to which her work has been mis-represented in later accounts. While any attempt to paraphrase complex ideas is bound to introduce distortions, the use of longer quotations can help to minimise the damage and do greater justice to the original author. If this strategy has involved a trade-off with ‘readability’ in parts of the literature review, I beg your indulgence, and trust that Penrose’s acute, and occasionally sparkling, prose is some consolation.

Richard Blundel

Oxford, August 2002

Notes

- 1 I am grateful to Johan Wiklund for the playful analogy between the growth trajectory of a firm and the life story of an individual. The Preface to Johan's doctoral thesis began, 'At the age of ten I knew. I should become a physics professor and live in Australia. Some 25 years later I have now completed my dissertation concerning the growth and performance of small Swedish firms. What went wrong?'.
- 2 The term 'connected' firm refers to a small firm engaged in network relationships that extend to larger firms. A more detailed interpretation is developed in the main text (Section 1.2).

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List of definitions

Actor	An individual or an organisation within a network.
Complex	Describes a connection between two network actors, or a flow, that has several dimensions (e.g. economic and friendship). Also known as 'multiplex'.
Density	Describes the number of connections between actors (i.e. it may be 'tight' or 'loose')
Dyad	A connection between two network actors. Also known as a 'linkage' or 'tie'.
Ego-centric	A partial network based on links between one actor (e.g. an entrepreneur) and his/her main direct and indirect contacts. Contrasted with a 'socio-centric' network.
Embeddedness	Describes the degree to which economic activities and organisations (including networks) are affected by social and cultural factors.
Flow	That which is transferred via a network connection (e.g. knowledge, power, financial resources, emotion/friendship).
Governance	Describes the way that a network is co-ordinated and regulated (Jones <i>et al.</i> 1997).
Linkage	A connection between two network actors. Also known as a 'tie' or 'dyad'.
Morphology	The 'shape' of a network (i.e. its density, range, reachability etc.).
Multiplex	Describes a connection between two network actors, or a flow, that has several dimensions (e.g. economic and friendship). Also known as 'complex'.
Partial	All representations of networks are 'partial', in the sense of being incomplete. The real issue is what to include when drawing a partial network.
Range	Describes the extent and heterogeneity of a network (e.g. may comprise a few, similar ties or many varied ones).
Reachability	Describes the extent to which connections between actors are direct, or via intermediaries.
Socio-centric	A partial network which includes links between many different actors. Contrasted with an 'ego-centric' (or 'focal') network.
Strong tie	Describes a connection between two network actors that is either embedded or formalised. Contrasted with 'weak' tie (Granovetter 1973).
Structural hole	Describes a position within a network in which it is possible to exercise power, because the actor occupying it is a 'go-between', providing the only point of connection for other actors in the network (Burt 1990).
Weak tie	Describes a connection between two network actors that is neither embedded, nor formalised. Contrasted with 'strong' tie (Granovetter 1973).

CHAPTER 1 - INTRODUCTION: EXPLORING GROWTH IN THE 'CONNECTED' FIRM

The emergence of the New Competition has put pressure on firms everywhere to reorganise according to the new principles of production. The task is difficult because [...] the New Competition is not simply about transformed principles and practices within enterprises, but extends to buyer-vendor relations, inter-firm associations and industrial policies.

Michael H. Best
The New Competition (1990: 21)

That a firm has boundaries follows from the nature of the categories that we think in [...], not because we can clearly 'observe' them in reality. The boundary of the firm is what distinguishes it from the market and therefore must 'exist', whether or not it is 'real' since the firm / market dichotomy has been perhaps the major building block of an economists analytical thinking.

Edith T. Penrose
Foreword to *The Theory of the Growth of the Firm* (3rd edition, 1995: xvi)

This chapter introduces the central themes of the thesis and relates them to the main contributing fields of economics and organisation theory. The first theme is a re-appraisal of Edith Penrose's (1959) study, '*The Theory of the Growth of the Firm*', focusing on its explanatory potential in the much-altered industrial conditions of the new century. The second theme is the progressive refinement and application of a modified Penrosian approach to an empirical study of 'connected' artisanal firms operating in contemporary business networks. The connected firm is identified as an important but currently under-represented component in the neo-Penrosian landscape of the 'New Competition', as developed in the work of Michael H. Best (1990, 2001). The research questions are outlined under three broad headings: theoretical, methodological and empirical. Working definitions are provided for several important concepts. The chapter closes with an overview of the approach adopted. A chapter-by-chapter summary clarifies the overall structure and direction.

1.1 Penrose and the 'connected' firm

1.1.1 Re-appraising Penrosian theory

Edith Penrose (1914-1996) made a major contribution to the theorising of firm growth. Her research monograph, *The Theory of the Growth of the Firm*, was first published in 1959. Over the years, this concise (258 page) study has gained widespread recognition amongst economists, organisation theorists and strategists for its pioneering attempt to open the 'black box' of the firm (Foss 1998, Loasby 1991, Marris 1961, Moran and Ghoshal 1999). Penrose (1959) was a product of practical experience and extended reflection, meriting the over-used adjectives 'seminal' and 'pathbreaking'. It was an astonishingly ambitious attempt to forge a new conceptual framework for analysing the behaviour of firms, based on an eclectic mix of concepts drawn from several disciplines (Penrose 1959: 2-3). Penrose's capacity to operate across such a broad conceptual and empirical canvas gives her argument an enduring explanatory potential. It is surprising therefore to discover the extent to which Penrose's ideas have been overlooked by her successors (Clark 2000, Foss 1997b, Loasby 1999a, Penrose and Pitelis 1999). The intellectual breadth and multi-disciplinarity of *The Theory of the Growth of the Firm* has proved to be an obstacle to further elaboration and application.

Until the mid-1980s, the main developments in Penrose's work on the growth of the firm had been limited to the work of a few economists, who had concentrated on the formalisation of particular concepts (Marris 1964, Rubin 1973, Slater 1980b). The publication of Wenerfeldt's (1984) paper, 'A Resource-based View of the Firm', in the *Strategic Management Journal*, prompted an increase in citations amongst students of corporate strategy. This interest was

broadened with the publication of Hamel and Prahalad's (1990) managerially-oriented paper, *The Core Competence of the Corporation*. However, increased citation rates do not necessarily indicate a more profound understanding of the author's original ideas. Penrose's complex and holistic conceptual argument, so painstakingly inter-woven, has been vulnerable to 'cherry-picking' as each contributory discipline has pursued its separate agenda. *The Theory of the Growth of the Firm* has been vulnerable to two sources of error. Of these, errors 'of commission' are the more obvious, comprising the kinds of distortion that arise from superficial citation, inaccurate representation and selective application of Penrose's argument. However, the most important error committed by those adopting Penrosian concepts appears to have been one of 'omission'. Penrose warned that her argument must be seen as an integrated whole:

'The entire study is essentially a single argument no step of which can be omitted without the risk of misunderstanding later conclusions'. (Penrose 1959: xxxi)

Penrose's 'single argument' is constructed upon an integrated, multi-level framework. The thesis will argue that this distinctive framework, here termed the 'Penrosian Synthesis', transcends its individual components. It forms the core of Penrose's contribution to understanding the growth of the firm and offers a natural starting point for its modification and re-application (Section 4.4).

The simultaneous rise of the 'resource-based' perspectives in strategic management and of 'evolutionary' approaches to economics prompted several cross-disciplinary reflections on the Penrosian contribution, which have proved more insightful. These have included a special issue of the journal *Contributions to Political Economy* (1999), a separate track at the

Academy of Management Conference (2000) and a new edited work, based on the *CPE* special issue (Pitelis 2002a). There have also been more explicit efforts to incorporate Penrosian concepts into programmes of research (e.g. Best 1990, 2001, Garnsey 1998a, Kay 1997, Loasby 1991, 1999a, Whipp and Clark 1986). However, these reflections and applications remain relatively isolated. Proponents continue to regard Penrose's work as an under-exploited source of ideas for mainstream empirical research in the fields of economics, strategy and organisation (Clark 2000, Foss 1997b, Penrose and Pitelis 1999, Spender 1994). Furthermore, conceptual refinement has been hampered by a lack of well-documented empirical work, grounded in a Penrosian framework (Clark 2000, Kay 1999).

It is for these reasons that the thesis seeks to contribute to the re-appraisal and re-application of Penrosian theorising in the changed circumstances of the early 21st century. It opens with an extended theoretical reassessment, which traces the antecedents of Penrose's argument, reconstructs its inter-connections and calibrates its explanatory potential against the work of her contemporaries, successors and opponents. The second part of the thesis comprises an empirical study of the growth of small artisanal firms operating in contemporary business networks. This context provides an unusual, and arguably extreme, test of the Penrosian explanatory framework. It also serves as a methodological demonstration-piece, illustrating how Penrosian concepts can be reformulated and extended in order to embrace the complexities of growth at the level of the firm and in dynamic network relationships (Section 5.1).

1.1.2 Challenging received wisdom: 'firms' and 'growth'

In the course of this investigation, we follow Edith Penrose's lead in challenging many implicit and highly intractable assumptions regarding core organisational concepts. It seems appropriate, therefore, to restate Penrose's characteristically clear yet largely unheeded prefatory advice:

'Just one warning: this book deals with familiar concepts, but in an unfamiliar way'.

(Penrose 1959: xxii)

The most notable conceptual challenges posed in this thesis relate to an orthodox understanding of the terms 'firm' and 'growth'. In reconsidering the firm, we will loosen its conventional (i.e. legal/administrative) boundaries to incorporate what George Richardson has termed the, 'dense network of co-operation and affiliation by which firms are inter-related' (Richardson 1972: 883). The recognition the boundaries of the firm are thoroughly 'blurred' is now an established, if not foundational, element of the organisational networks literature. However, it is an image that continues to encounter varying degrees of incomprehension, resistance and denial in other areas of organisational and economic research. The definition of growth taken in the thesis is also broader than that found in most studies of this kind, with a particular emphasis on qualitative and processual aspects. The rationale for extending the concept is developed in later chapters. The next section introduces the 'connected' artisanal firms that are the subject of the main empirical study, and explains their relevance to the renewed interest in Penrosian concepts. Subsequent sections comprise a review of the research questions, an introduction to the approach that has been adopted in the study, and a chapter-by-chapter summary.

1.2 'Connected' firms in the New Competition

1.2.1 Introducing the 'connected' firm

Small firms can be remarkably insular. Their contacts with other firms, and with non-commercial organisations, are often limited both in extent and in duration (Curran and Blackburn 1994, Hardill *et al.* 1995, Penn 1992). The life of most small firms is short and, while not always brutish, often fails to match idealised images of local communal engagement and mutual support. Yet this is not the whole story. In some circumstances, small firms do engage in more extensive networking activities, establishing a variety of connections beyond their current legal and administrative boundaries. Many of these ties are with organisations of a similar size and character, often located in close proximity to one another. Localised activities give rise to what might be termed a 'traditional' spatial conception of the small firm network. Small artisanal (i.e. craft-based) firms have been particularly associated with this form of network, the most widely known being the specialist food, clothing and furniture firms of the Italian industrial districts (Bagnasco 1977, Brusco 1982, 1990, Lazerson 1995, Piore and Sabel 1984). The enthusiastic pursuit of spatial networks has tended to overshadow other network formations, in which small firms are active, notably the 'vertical' networks associated with contemporary supply chains and vertically-integrated production systems. These network relationships are sometimes seen as recent organisational innovations. However, in common with their spatial counterparts, it is possible to trace historical precedents over several centuries (Sabel and Zeitlin 1997). Despite this, vertical network forms can be seen as representing a novel context for small firm networking. For example, in recent empirical studies, it has been observed that small firms are engaging in relatively close

and stable business relationships with much larger organisations (Birkinshaw and Hagström 2000, Blundel and Hingley 2001, Cox *et al.* 1999, Jarillo 1988). Indeed, both vertical and spatial varieties of inter-organisational network are in operation, with some evidence of hybridisation and isolated examples of vertical networks superseding spatial forms (Hendry *et al.* 2000). However, there remains a lack of understanding of the factors determining their relative importance as modes of economic co-ordination, and few studies focusing on the unfolding pattern of the inter-firm relationships that comprise either network form.

The empirical section of the thesis is concerned with the growth of small artisanal (i.e. craft-based) firms that engage in both spatial and vertical forms of networking activity. The case studies encompass the formation of individual dyadic relationships, the impact of those relationships on the growth of firms, and the interplay between firm and network levels of organisation. The term ‘connected’ firm is introduced in the thesis, referring to a small firm that is actively engaged in relatively stable network relationships with other economic actors. This characteristic, which distinguishes the connected firm from the isolated and insular small firms highlighted in previous studies, is elaborated in subsequent chapters. It remains, however, to establish the significance of such firms in a contemporary industrial landscape.

1.2.2 Establishing the importance of the connected firm

The industrial firm permeates every aspect of our lives. With private enterprise in the ascendant, firms have become, ‘the basic unit for the organization of production’. (Penrose 1959: 9). It follows, therefore, that nature of the firm population, its composition, structure

and dynamics, has a fundamental effect on the way that the earth's resources are reproduced and exchanged:

'The very nature of the economy is to some extent defined in terms of the kind of firms that compose it, their size, the way in which they are established and grow, their methods of doing business, and the relationships between them'. (Penrose 1959: 9)

This ever-changing population comprises organisations that differ in size, scope and composition. However, for much of the last century, smaller firms were seen as playing an increasingly marginal role in a modern industrial structure that was itself predicated on the ascendancy of 'Big Business'. A brief review of the literature of this period will clarify the reasons for neglect and indicate why it may be appropriate to reconsider the status of the connected small firm.

1.2.3 Small firms in the era of 'Big Business'

The essential elements of the Big Business, or corporatist, thesis are familiar; large, vertically integrated corporations deployed the technologies of mass production to great effect. These technologies were allied to modern organisational and managerial innovations such as multidivisional, or 'M-form', structures and sophisticated computer-assisted techniques of corporate planning and budgeting. In overcoming historical constraints on organisational size, corporations facilitated economic growth through the exploitation of economies of scale and scope (Chandler 1990, Galbraith 1967, Williamson 1985). At the level of macro-economic policy, Keynesian aggregate demand management was allied to national planning systems under the 'corporatist' joint governance of politicians, business leaders and – in the

mixed economy variant – trades union representatives. Economics, strategy and organisation theory contributed to a long-standing and pervasive consensus regarding the ascendancy of the Big Business thesis. Contemporary accounts envisaged it as a permanent solution to the problems of production and economic co-ordination, and one which would subsequently be replicated around the world. The triumph of corporatist industrial organisation was uncontested because, in the words of its pre-eminent analyst:

‘[I]t has succeeded, tacitly, in excluding the notion that it is a transitory, which would be to say that it is a somewhat imperfect, phenomenon’. (Galbraith 1967: 390).

Indeed, we need look no further than Galbraith’s writing of the period to obtain powerful, if inadvertent, support for the intellectual strangle-hold exerted by corporatist ideology. In the following paragraphs, we draw on his exhaustive critical analysis of ‘*The New Industrial State*’, published in 1967. This is not an exercise in retrospective criticism. Rather, the purpose is to illustrate the extent to which small firms were marginalised in the age of Big Business, and thereby to clarify the reasons for their subsequent re-emergence:

‘By all but the pathologically romantic, it is now recognised that this is not the age of the small man’.
(Galbraith 1967: 42)

Galbraith’s argument was underpinned by an historically-informed yet ultimately reductivist and determinist account of organisational change in the face of technological innovation. His belief in the ineluctable advance of technology and its singular implications for the size of firms, is illustrated in the following commentary. Galbraith is responding to an assertion,

made at the Senate Sub-committee on Anti-trust and Monopoly, to the effect that small firms under competition are the ‘true innovators’:

‘This, by the uncouth, would be called drivel. Size is the general servant of technology, not the special servant of profits. The small firm cannot be restored by breaking the power of the larger ones. It would require, rather, the rejection of the technology which since earliest consciousness we have been taught to applaud’. (Galbraith 1967: 42-43)

Galbraith (1967) argued that the population of firms in modern industrial economy could be divided into two discrete and disconnected groups, ‘The world of a few hundred technically dynamic, massively capitalized and highly organized corporations on the one hand and of the thousands of small and traditional proprietors on the other’ (Galbraith 1967: 21). Smaller firms were thus perceived as peripheral to modern industrial dynamics; researchers and policy-makers were advised to focus on the big hitters:

‘This is the part of the economy which, automatically, we identify with the modern industrial society. To understand it is to understand that part which is most subject to change and which, accordingly, is most changing our lives. No exercise of intelligence is to be deplored. But to understand the rest of the economy is to understand only that part which is diminishing in relative extent and which is most nearly static. It is to understand very little’. (Galbraith 1967: 21)

The dichotomy was striking and influential, but it also proved to be false. In the closing decades of the twentieth century, the ‘problem of production’ re-asserted itself in a variety of disconcerting ways. For policy-makers in long-established industrial countries, such as Britain and the United States, the most obvious symptom was a well-documented collapse of competitiveness in the face on emerging rivals and new patterns of industrial organisation.

Economies of scale and scope, once envisaged as necessary and sufficient foundations of corporate success (Chandler 1990), proved to have severe limitations at the level of the firm. The assumed direction of causality was reversed, with firm size recast as a mostly a *consequence* of competitive advantage rather than its cause:

‘Size offers no long-term protection for those who have no true distinctive capability: lack of it proves no obstacle to those who genuinely enjoy one’. (Kay 1993: iii)

Doubts over the Big Business consensus prompted a re-assessment. Corporatism was found wanting amongst both the new right and the libertarian left (Bosanquet 1983). This gave rise to a renewed emphasis on the role of small and entrepreneurial firms.

1.2.4 Small becomes beautiful: the entrepreneurial revolution

The resurgence of the ‘entrepreneurial’ firm (Best 2001) and the transformation of corporatist industrial structures, were anticipated in two ‘radical’ critiques of the mid-1970s. Ernst Schumacher and Norman Macrae launched polemical attacks on the Big Business consensus, as represented in the work of Galbraith and others. Macrae, then deputy editor of *The Economist* newspaper, set out ten speculative propositions, the first of which was a direct challenge to corporatism in business and government:

‘The world is probably drawing to the end of the era of big business corporations. These institutions were virtually created during 1875-1910. During 1975 to 2010 they may virtually disappear in their present form, and the interesting question is what will replace them’. (Macrae 1976: 41)

His analysis of organisational change shared Galbraith's assumptions regarding the singular drive of technology. However, he was amongst the first to recognise the fundamental competitive and organisational implications of the emerging information technologies on what is now termed the 'knowledge-intensive' firm:

'[As] more people can become brainworkers, it will be nonsense to sit in hierarchical offices trying to arrange what the workers in offices below do with their imaginations' (Macrae 1976: 42)

Macrae highlighted a fundamental tension between systematisation and innovation, that is sometimes characterised as 'exploit or explore' (March 1991). In a transformed competitive environment, Big Business needed to re-organise in favour of the latter:

'Successful big new businesses in the past two decades have often been those that imposed central management systems in industries formerly diverse (e.g. retailing, hotels) [...] But the industries that have hitherto been centralised will be equally wise to decentralise into many new entrepreneurial experiments for a while, unless technology pulls the other way'. (Macrae 1976: 62)

Ernst Schumacher drew on a disciplinary background in economics, and practical experience in one of the UK's largest nationalised industries. In its explicit ethical stance and capacity to envisage alternative trajectories, Schumacher's (1974) treatise, *Small is Beautiful: A Study of Economics as if People Mattered*, stands in sharp contrast to Macrae's eager anticipation of a Thatcherite liberalisation agenda. However, Schumacher echoed Macrae's critique of Big Business, and his recourse to new organisational models incorporating the attributes of small entrepreneurial firms:

‘Even today, we are generally told that gigantic organisations are inescapably necessary; but when we look closely we can notice that as soon as great size has been created there is often a strenuous attempt to attain smallness within bigness’. (Schumacher 1974: 53)

1.2.5 Introducing the ‘New Competition’ – within and beyond the firm

During the 1980s and 1990s, the reassertion of small scale operations and entrepreneurial initiative, signalled in the work of Macrae and Schumacher, was translated into successive managerial prescriptions, including: ‘intrapreneurship’, ‘total quality management’, ‘business process re-engineering’ and ‘knowledge management’. Organisation theorists and practitioners have highlighted the limitations of these often transitory management ‘fads’ and ‘fashions’ (Clark 1999, Scarbrough and Swan 1999). However, this period has also seen some more profound searches for alternative models of organisation. For example, Kanter’s (1983) study, *The Change Masters*, presented a detailed case-based analysis of ‘segmentalist’ and ‘integrative’ companies, and is couched in terms of a revival of earlier enthusiasms:

‘If America is to build on its past competitive strengths and to secure a better future for itself, innovation – and the risk of change that it implies – is a necessity [...] To get more innovation, we need to reinfuse [*sic.*] more American organizations with the entrepreneurial spirit responsible for America’s success in the past’. (Kanter 1983: 23)

The consequences of this entrepreneurial revival were felt both within and beyond the boundaries of Big Business. Internally, the radical organisational change predicted by Macrae and Schumacher has been realised in the form of massive reductions in corporate workforces (i.e. in contemporary terms, ‘downsizing’ and ‘delaying’), in the dis-integration and marketisation of many ancillary activities (i.e. ‘outsourcing’ and ‘re-competition’), and in

the creation of more flexible, project-based work groups (i.e. ‘internal networking’ and ‘communities of practice’). Beyond corporate boundaries, attention has focused on the re-fashioning of supply chains and inter-organisational networks to meet the contrary demands of operational efficiency and dynamic innovation (Brown and Hendry 1997, Cox 2000, Harland 1996). While each of these areas has attracted academic analysis, few studies have attempted an *integrated* appraisal at multiple levels, embracing the changes that have been occurring in firm-level processes, inter-organisational relationships, sectoral structures and industrial policy. In the course of his two studies, Michael H. Best developed just such a framework in order to understand what he termed, ‘The New Competition’. Best argued that this was a multi-dimensional phenomenon, which was not explicable in terms of its isolated components:

‘The New Competition can be distinguished from the old in four dimensions: organization of the firm, types of coordination across phases in the production chain, organization of the sector, and patterns of industrial policy. The New Competition is about strategic actions in each dimension’. (Best 1990: 11)

Best’s starting-point was the now-familiar claim that the Big Business model that had become established in the United States, Britain and other industrial nations, was confronted by a new and highly-effective model of production. The New Competition manifested itself in flexible production systems co-ordinated through intra- and inter-organisational networks. Best’s *The New Competition: Institutions of Industrial Restructuring* (1990) was one of the most insightful commentaries on the origins of these new models, while *The New Competitive Advantage: the Renewal of American Industry* (2001) extended the framework and traced its application to high technology clusters in the United States. Best was a colleague and friend of Edith Penrose, and both books are grounded in a detailed grasp of Penrosian concepts. For

example, he interpreted the paradoxical combination of rapid technological advance and declining productivity in the 1980s in terms of ‘production capabilities’, a term that derives from Richardson’s (1972) rephrasing of Penrose’s term ‘productive services’ (Section 4.3):

‘America lacked the production capabilities to convert its technological advances into high-quality, low-cost products; Japan, on the other hand, had extended the principle of flow from flexible mass (lean) production to product led competition based on the systematic integration of new technologies into production’. (Best 2001: 58)

The breadth of Best’s analysis, which ranges from firm-level capabilities to regional industry policy, is also reminiscent of Penrose’s broad-ranging synthesis in the *Theory of the Growth of the Firm*. This is illustrated by his capacity to redeploy a distinctive Penrosian-Schumpeterian hybrid, which he described as the ‘capabilities and innovation’ perspective, across inter-organisational networks in several different regional contexts. Best introduced new constructs that both acknowledge and build on Penrose’s originals (Best 2001: 86 n36). As a consequence, there is considerable common ground between Best’s (1990, 2001) approach and that adopted in this thesis. One of the major points of difference relates to the choice of research subject. While Best focused primarily on high technology and ‘knowledge-intensive’ firms located in California’s Silicon Valley and Boston’s Route 128, the empirical section of this thesis is concerned with small artisanal (i.e. craft-based) firms in rural England. Hence, while the connected firm has some resonances with Best’s (2001) ‘entrepreneurial’ firm (Section 1.2.4), the associated ‘evolutionary’ genealogy of firm types (*ibid*: 74 n18) is challenged by evidence of surprising co-existences of ‘old’ and ‘new’.

1.2.6 Unexplored regions of the 'New Competition'

The research agenda of the 'New Competition' has admirable breadth, but in its current form, it leaves unexplored some potentially fruitful regions and firms. More specifically, Best (2001) shares the Galbraithian tendency to focus attention what appears to be the economic 'heartland', with the effect other sectors are marginalised, both empirically and conceptually. Where Galbraith's (1967) attention was taken by the large corporations, *The New Competitive Advantage* is focused primarily – though not exclusively – on spatial clusters of high technology firms and a small coterie of giant technology-based firms that occupy the 'summit' of contemporary supply chains. There are strong arguments for focusing on high technology firms as the 'leading edge' players of the New Competition, particularly in the context of global competition. However, there is also evidence that radical organisational change, characteristic of the New Competition, is taking place amongst firms located in more traditional sectors. The dichotomised economy of Galbraith (1967: 21), once such a compelling image of the United States economy, proved to be neither an enduring, nor a universal model. In the intervening years, industrialised economies have experienced a general increase in new firm formation rates, leading to more diverse firm populations. The resulting mixture of large and small firms has proved perplexing for those whose conception of economic 'progress' is based on the notion that more 'advanced' organisational forms supersede those of previous eras, leaving little or no trace of their forebears. While this progression may be typical of the high technology clusters, in other sectors, such as food production and retailing, the picture has become less tidy. In this broader perspective, the New Competition has been reflected in the, 'recombinability and interpenetration of different forms of economic organisation' (Sabel and Zeitlin 1997: 2), with historical and cross-

national analyses revealing a variety of possibilities for co-ordinating production and consumption, including some unusual combinations of ‘old’ and ‘new’ forms:

‘[S]uddenly the repertoire of economic forms deemed appropriate to current conditions contains such types as the small firm which twenty years ago were viewed as close to extinction and combinations of types – such as the small contractor collaborating as an equal with a much larger customer in the design of a new product – which were quite literally unthinkable. It is as though the prehistoric and the imaginary creatures in the industrial bestiary had suddenly come to life’. (Sabel and Zeitlin 1997: 3)

By investigating the growth of connected artisanal firms in the empirical section of this thesis, we are addressing just such a combination of old and new. The landscape of the New Competition forms the backdrop for the study, yet our attention is focused on a largely unexplored region. This region is populated by small artisanal food producers that form the primary subject of the research. However, the apparent peripherality of these firms is deceptive. Over a period of several decades, they have experienced a radical re-structuring of their pattern of inter-organisational relationships. These changes have brought them into direct contact with some of the world’s largest and most technologically advanced supply chains. Many small firms are now experiencing this kind of ‘connection’, yet little is known about its effects on their growth, or on the broader consequences for the business and social networks in which they operate. Hence, in studying the growth of connected firms, it should be possible to provide additional insights into the nature of the New Competition. The next section introduces the research questions, and explains the mediating role played by the Penrosian framework.

1.3 The research questions

1.3.1 Three levels: theoretical, methodological and empirical

The thesis aims to contribute to knowledge at three levels. First, it undertakes a substantial critical re-appraisal of existing theoretical explanations of the growth of the firm, with particular emphasis on the pioneering work of Edith Penrose. The re-appraisal forms the basis for a modification and extension of Penrosian theory, with the intention of addressing the growth of connected firms. Second, it develops and demonstrates the application of a research methodology, which is constructed around the modified Penrosian framework. This methodology is assessed against prevailing approaches on the basis of its ability to deliver an enhanced explanation of the growth process. Third, it tackles a series of empirical questions regarding small artisanal firms and their participation in contemporary business networks. The broad issues relating to each level are introduced in the following paragraphs. The inter-relationships between the research questions are summarised in Figure 1.1.

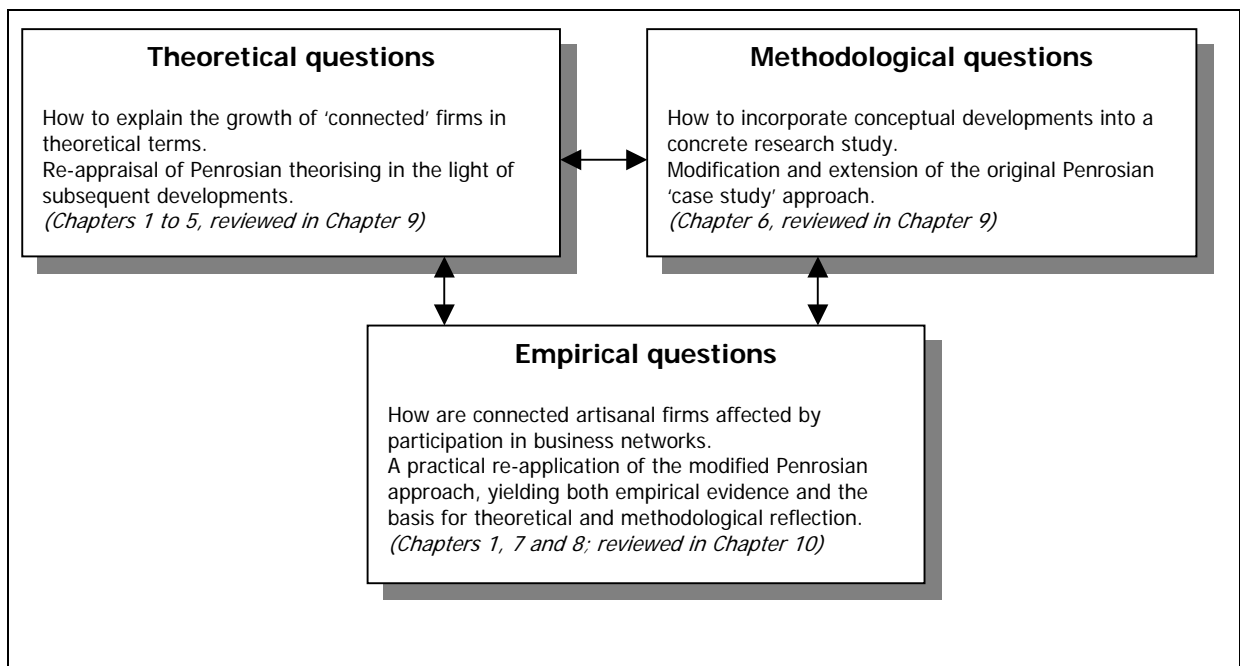
1.3.2 Theoretical level: conceptualising the growth of connected firms

How is the growth of connected firms to be conceptualised? This question is a direct response to a challenge set out by Edith Penrose (1995a, 1996) in two of her final contributions to the field (Section 5.1). Penrose questioned whether *The Theory of the Growth of the Firm* required modification in order to inform the ‘New Competition’ of networked organisations:

‘The business network is very different from a cartel of individual firms in its structure, organisation, and purpose. It is clear that this type of organisation is likely to continue to spread for some time and continue to engage in a competition very different from that analyzed between firms in so-called free markets. This may call for a new ‘theory of the firm’ in economics and changed views about the behaviour of markets and the effects of ‘free market’ competition’. (Penrose 1995a: xx)

This conceptual challenge is addressed in two stages. First, the chapters tracing the antecedents of Penrose’s argument review competing approaches to conceptualising the firm and the growth process. Second, by re-constructing the principal components of the Penrosian framework, and highlighting their inter-connections, we calibrate its explanatory potential against the work of contemporaries, successors and opponents, albeit with a particular focus on the connected firm. This reappraisal provides the basis for the modification and extension of the framework.

Figure 1.1 Research questions: inter-relationships and approach



1.2.3 Methodological level: exploring layered processes

How is the growth of connected firms to be explored? Edith Penrose advocated a qualitative, case-based approach to researching the growth of the firm. This is exemplified by her detailed account of the Hercules Powder Company (Penrose 1960), a case study which was originally intended for inclusion in *The Theory of the Growth of the Firm* (Section 4.2). The methodological question is complicated by the intervening decades of organisational research practice and debate, which have created a multi-faceted challenge to Penrose's empirical work. The methodological challenge is addressed through a re-assessment of Penrose's original case-study method. A modified approach is proposed, which combines the historically-informed practice of 'analytically structured narrative', with the construction of network mapping sequences (Sections 6.3 and 6.4). The aim is to address specific limitations in the original (i.e. the 'Hercules') case approach, and to develop a methodology that is capable of exploring growth as a multi-level process. The new approach examined by applying it to an empirical study of connected artisanal firms.

1.3.4 Empirical level: examining the networking of artisanal firms

The value of the modified Penrosian framework and its methodological counterpart is assessed in terms of its explanatory potential. The empirical chapters address a number of substantive questions regarding the growth process in connected artisanal firms. Their purpose is two-fold. First, to generate a suitable empirical base upon which the effectiveness of the conceptual framework and methodology can be assessed. Second, to tackle the practical issues faced by small firms that operate in such networks. These themes are

developed in Chapter 9, which reflects of the theoretical and methodological outcomes, and Chapter 10, which considers the implications for policy and practice.

1.4 The approach adopted

1.4.1 Researching in the 'Contextualist' tradition

The approach adopted in this study can be located in the 'Contextualist' tradition of organisational research, which has strong associations with three universities in the English Midlands: Aston, Birmingham and Warwick. Contextualist studies have been constructed around detailed, case-based, accounts of individual firms. The approach is exemplified in Pettigrew's (1985) intensive study of strategic developments within ICI, and by the detailed historical account of production practices at Rover, conducted by Whipp and Clark (1986). Child and Smith adopted the broader, 'firm-in-sector' approach in their account of strategic changes at Cadbury's (Child and Smith 1987). Whittington's (1989) comparative account of eight British manufacturing firms was presented as both a critique and an incremental extension of the Contextualist approach (Whittington 1989: 68-71). The empirical section of this thesis is also a case-based account, which builds on the Contextualist research tradition. At its core is an account of the growth of two specialist cheese-making firms over a period of fifty years. The account is therefore comparative and, in some, respects historical. It traces, contrasts and seeks to explain the different paths that each firm has followed over time. It is also multi-dimensional, incorporating into the analysis, both the networks surrounding each firm and the broader 'context' of food production and consumption in England. The following sub-sections address four aspects of the approach that require some clarification

and substantiation at the outset. First, the effort to apply and extend the Penrosian framework. Second, the cross-disciplinary argument, drawing on organisational economics and organisation theory. Third, the mechanism-based mode of explanation. Fourth, the industry sector chosen for the empirical study.

1.4.2 Application and extension of the Penrosian framework

Edith Penrose's (1959) work, *The Theory of the Growth of the Firm* has received increased recognition in recent years and is routinely cited by both economists and organisation theorists. However, most citations identify the work as the principal precursor of more recent studies in the fields of resource-based strategy, industry dynamics and evolutionary economics. This presents the doctoral student with a fine dilemma: if one accepts Penrose (1959) as a laudable but largely historical reference, overlaid by a half century of elaboration, what is the justification for adopting it as a framework for the study? On the other hand, if the framework is assumed to be unsurpassed, what is the justification for further meddling? At this stage, the reasons for the application and extension of the Penrosian conceptual framework can be sketched in broad outline.

The case for continuing to apply Penrose (1959) is based on its imaginative breadth and conceptual integration. The analysis ranges widely and freely across disciplinary boundaries and between different levels of analysis, from the micro-level of managerial cognition to the macro-level of industrial policy. Penrose's radical and holistic approach exposed the dynamics of firm-level growth to an unprecedented degree (Section 4.3). In this respect it retains a unique advantage over subsequent work. The constrained and compartmentalising

tendencies of the latter are betrayed by their partial and incomplete understanding of the Penrosian thesis. However, while the overall framework may be unsurpassed, the calibration process reveals considerable scope for updating and refinement. Updating is needed in order to incorporate conceptual developments and empirical findings from the various source disciplines. Clarification of the basic ontological and epistemological positions, largely implicit in Penrose (1959) is also necessary in the light of subsequent social theoretic critiques (Clark 2000). The other major refinement relates to the unit of analysis. The Penrosian framework addressed single firm dynamics and limited itself to the industrial firm. This thesis addresses the co-evolutionary dynamics of small firms and the business networks in which they are embedded. The subject firms themselves also differ in that they combine some aspects of industrial production with significant artisanal characteristics.

1.4.3 Cross-disciplinary argument

The thesis is grounded in organisation theory, and its primary concern is with phenomena at the level of the individual firm. However, it draws on several related disciplines. In its initial stages, there are many references to economics and the neo-classical ‘theory of the firm’. Economics was the discipline in which Edith Penrose was operating when she set herself the challenge of opening the ‘black box’ of the firm. As a consequence, it has shaped many of her ideas. Having opened the box, she began to recognise that a plausible explanation for firm-level changes would need to draw on a much broader canvas, incorporating management and organisation theory:

‘There is, incidentally, a great deal of useful information available in the ‘management’ literature which has, I think, been sadly neglected by economists who, however, are gradually beginning to take more seriously the literature of ‘management’, and of the businessman generally, largely owing, I suppose, to the insistent hammering of those empirically-minded economists who have a foot in each discipline’.

(Penrose 1959: 4 n1)

There is a continuing debate regarding the merits of multi- and trans-disciplinary research (Gibbons *et al.* 1994, Huff 1999). Disciplinary boundaries influence both the units of analysis and the conceptual tools used in research. As a consequence, forays into other disciplines are particularly challenging for the researcher, and should be undertaken with caution and with appropriate justification (Section 6.2).

1.4.4 Explanation through social and economic mechanisms

The thesis is a systematic exploration of those social and economic mechanisms that might contribute to a more plausible explanation of the growth of connected firms. Detailed support for the research methods adopted can be found in Chapter 6. However, at this point, it may be helpful to provide an initial rationale. Previous research, primarily in the fields of small business and organisational economics, has identified statistical associations between a dependent variable, ‘growth’, and a variety of independent variables, such as the age of owner-managers, firm sector and market positioning (Storey 1994: 123). These associations are invariably the product of large-scale surveys, aggregating data from a representative sample of the firm population. Some studies agree on the more significant variables associated with growth, some disagree. While multivariate techniques have been employed in an effort to establish ‘common’ characteristics, the comparability problems are such that each

claim stands in isolation. In the absence of explanatory mechanisms, the further accumulation of empirically-derived associations is of little value, either to academics or to practitioners. While there is a vast array of potential causal mechanisms, the product of innumerable research studies and the constant accumulation of anecdotal knowledge, there have been few attempts to combine them into a coherent and integrated explanatory framework. In addition, there is the challenge of reconciling the unique contingencies of ‘history’ and the necessary abstractions of a processual ‘model’. As Penrose (1959) recognised, the search for mechanisms needs to *begin* inductively, by exploring the concrete complexity of ‘real’ firms in ‘real’ contexts. In abstracting from this empirical base, it may be possible to develop a more general explanation of what has occurred. Penrose provides a rich supply of plausible mechanisms. As a consequence, the emphasis throughout the thesis is on the identification and refinement of mechanisms that appear to operate in relation to the connected firm. The empirical study provides an opportunity to explore the interaction of these mechanisms. The underlying argument for this mechanism-based mode of explanation is that it extends the Contextualist approach in a potentially productive direction. As a consequence, a seemingly parochial empirical study, focusing on the growth of artisanal cheese-makers, is capable of informing a broader set of research questions.

1.4.5 The sectoral focus: artisanal cheese-making in England

There are several reasons for selecting artisanal cheese-making as the subject of the primary research. First, the agricultural and food industries provide a novel empirical setting for researching the New Competition thesis, to complement the recent brace of high-technology and knowledge-intensive firm studies. Second, it allows the researcher to confront Penrose’s

(1959: 217-228) claim to generality, by pursuing the growth of a particular class of *small* firm, rather than the large firm diversification studies with which she is more commonly associated. Third, cheese-making continues to operate under a peculiar combination of the pre-industrial and highly mechanised modes of production. These modes of production are grounded in contrasting bases of ‘industrial’ and ‘artisanal’ knowledge, providing an entry-point for the study of knowledge-related phenomena. Furthermore, cheese production in England has occurred in both modes for more than 150 years. The industrial-artisanal duality has long been reflected across the English agricultural and food production ‘chain’, and can be seen as part of a continuing dialogue between production and consumption knowledge (Goodman and Watts 1997: 3). Fourth, food production systems are uniquely consequential – in the literal sense that, ‘we are what we eat’ – and contested. Catastrophic events such as Bovine Spongiform Encephalopathy (BSE) and Foot and Mouth disease, and longer-term debate over issues such as animal welfare, organic farming, genetic modification and pasteurisation find some resonances in Kautsky’s polemical, yet prescient treatise, *The Agrarian Question*:

‘The transformation of agricultural production into industrial production is still in its infancy. [But] bold prophets, namely those chemists gifted with imagination, are already dreaming of the day when bread will be made from stones and when all the requirements of the human diet will be assembled in chemical factories [...] but one thing is certain. Agricultural production has already been transformed into industrial production in a large number of fields [...] economic life even in the open countryside, once trapped in such eternally rigid routines, is now caught up in the constant revolution which is the hallmark of the capitalist mode of production’. (Kautsky [1899] 1988: 297, cited in Goodman and Watts 1997: vi)

The contested nature of agricultural production exposes underlying power relations in a way that is rare in other production systems. This serves to highlight the broader industrial and economic policy issues that were raised in the closing chapters of Penrose (1959), but largely ignored in subsequent assessments of her contribution (Sections 10.1 and 10.5).

1.5 Chapter-by-chapter summary

The first part of the thesis contains four chapters of literature review, which revolves around a detailed reappraisal of Penrose's contribution (Chapter 4). The second part comprises three chapters, which report on the empirical study. The final three chapters relate the outcomes of the empirical study to the earlier discussion, draw out the practical implications and establish what has been learned from the exercise.

Chapter 2 is a critical appraisal of the principal theories of the firm. It begins with the neo-classical 'theory of the firm', traces the main modifications and locates Edith Penrose's distinctive formulation within this literature. The core concepts and assumptions of each contribution are assessed, with particular emphasis on their explanatory potential with respect to each inter-firm relationships and the growth process.

Chapter 3 is a critical review of the literature that has sought to explain the growth of firms. The opening section discusses the powerful influence of several contrasting 'images' of growth, most notably the analogies drawn from biology. This is followed by an assessment of the main theories and related methodologies. These competing approaches are then contrasted with the Penrose's integrative conceptualisation of firm-level growth.

Chapter 4 is a detailed re-appraisal of Edith Penrose's *The Theory of the Growth of the Firm*. A short biographical account provides a context in which the distinctive features of her approach can be better understood. Six components of her analysis are outlined separately, and then in the form of a unique Penrosian synthesis.

Chapter 5 outlines a modified Penrosian framework, which extends the original analysis beyond the boundaries of the firm. It begins from the recognition that knowledge is 'situated', and considers the research evidence on the role played by network relationships and the broader 'context'. Given the focus of the empirical study, there is an explicit concern for the ways in which historically and location-specific business network characteristics might influence the nature and performance small artisanal firms.

Chapter 6 revisits the principal research questions and explains how they are pursued in the empirical study. The main research tools, analytically structured narrative and network mapping, are introduced and substantiated, with reference to previous studies and to methodological issues arising from previous chapters. The approach is also contrasted with Penrose's use of the single firm case study. The abstracting technique of retrodution is outlined, and related to the transcendental or critical realist tradition from which it is derived. The principal features and limitations of critical realism are outlined, and its explanatory value is assessed. The primary and secondary research methods are outlined and related to the preceding discussion.

Chapter 7 comprises the first phase of the analytically structured narrative, which forms the basis of the empirical findings. It is constructed in the form of two parallel accounts, which

provide an historical perspective on English cheese-making, and the consumption of English cheese, allowing for a focussed assessment of their causal connections over an extended period. The historical narratives are periodised into five configurations, focusing on the development of artisanal knowledge and organisational practices.

Chapter 8 comprises the second phase of the analytically structured narrative. It is an account of the growth trajectories of two English cheese-making firms and the business networks in which they are located. ‘The tale of two cheese-makers’, spans a period of half a century, beginning at the formation of the businesses in the early 1950s. The narrative flow of this account is structured on the basis of distinct ‘episodes’, characterised by significant structural and processual changes at both firm and inter-firm levels. Two sequences of network maps are used to highlight the distinct pattern of linkages formed by each firm. The maps are supported by a commentary that draws on the managers’ perceptions of the changes, including the reasons why they occurred, and the consequences for their businesses

Chapter 9 discusses theoretical and methodological implications of the research findings. The theoretical discussion revisits the literature reviewed in Chapters 2 to 5, noting how the firm and the growth process have been re-conceptualised and assessing the extent to which the modified Penrosian interpretation has been sustained. The methodological discussion reviews the approach adopted in the empirical study.

Chapter 10 discusses the practical and policy implications of the empirical findings. It comments on the impact of network relationships at the firm level, and on the management of distinctive network forms involving small artisanal firms. It also makes a number of

recommendations regarding the protection and enhancement of the knowledge practices in this sub-group of connected firms.

Chapter 12 draws together the main theoretical, methodological and empirical conclusions, relating them back to the initial research aims and indicating the contribution to knowledge. A number of important limitations are discussed and linked to proposals for future research.

CHAPTER 2 - OPEN THE 'BLACK BOX': TOWARDS THE PENROSIAN FIRM

For certain economic problems the existence of the firm is of the essence. For example, if we study the size distribution of firms or the growth of the firm, the organization and some of its properties and processes are the very objects of the investigation. In such studies we insist on a high degree of correspondence between the model (the thought-object) and the observed object.

Fritz Machlup

Theories of the Firm: Marginalist, Behavioural, Managerial (1967: 10)

[T]he question I wanted to answer was whether there was something inherent in the very nature of any firm that both promoted its growth and necessarily limited its rate of growth. Clearly a definition of a firm with 'insides' was required.

Edith Penrose

The Theory of the Growth of the Firm (1995a: xi)

This chapter comprises a critical review of the principal theories of the firm, which serves to introduce the concept developed by Edith Penrose. In each case, it identifies the core assumptions and assesses their explanatory potential, with a particular focus on the growth process. The review begins with an assessment of the highly circumscribed yet pervasive model of the 'firm' derived from neo-classical economics. It then turns to three of the most significant modifications to the neo-classical firm, highlighting the progressive loosening of its abstractions. Penrose's distinctive approach to the firm is explored in some detail, and a number of issues are raised regarding its application to the connected firm. The discussion provides the basis for an initial working definition of the firm. The chapter concludes by establishing links between this working definition and the competing conceptualisations of growth, to be addressed in Chapter 3.

2.1 The definitional challenge

2.1.1 Realism and abstraction: a firm with 'insides'

Chapter 1 reviewed the central and constitutive role of the firm, as the 'basic unit' in the organisation of production (Penrose 1959: 9). The connected firm was identified, and its emergence was related to a complex array of changes in production systems that have been termed 'the New Competition' (Best 1990). The discussion prompted a number of questions concerning the growth of connected firms. Further progress in tackling these questions is predicated on a working definition of the firm. However, the firm has proved to be an elusive concept, commonplace yet resisting easy categorisation. Penrose's (1959) distinctive approach to the firm followed an extended period of reflection. After a considerable period of reflection, she concluded that the task of explaining the growth of the firm required a new definition, incorporating a number of 'realistic' features that were not present in the established theory of the firm (Musson 2002). In short, the firm must be equipped with 'insides' (Penrose 1995a: 11). There have been many attempts to incorporate 'flesh and blood' characteristics, such as the attitudes and behaviour of managers, into a workable definition of the firm. However, given their inherent ambiguities, any effort to define the firm in such terms is rendered problematic:

'A "firm" is by no means an unambiguous clear-cut entity; it is not an observable object physically separable from other objects, and it is difficult to define except with reference to what it does or what is done within it. [...] Herein lies a potential source of confusion'. (Penrose 1959: 10)

The tension between rigorous abstraction and more ambiguous realism is a central theme in *The Theory of the Growth of the Firm*, and its repercussions are felt throughout the reappraisal and modification conducted in this thesis. The definitional challenge has both conceptual and empirical dimensions. In this chapter, we focus attention on the former, deferring a detailed discussion of the empirical implications to the chapters addressing growth and research methodology (i.e. Chapters 3 and 6 respectively). Our review begins with the highly-abstracted conceptualisation of the firm associated with the theory of the firm in neo-classical economics. This leads to a critical appraisal of four modifications to the neo-classical marginalism, each of which has contributed to the re-conceptualisation of the firm and the successive removal of its abstractions. These modifications are contrasted with Penrose's (1959) distinctive characterisation of the firm, on the basis of the capacity of each to inform our understanding of the growth of the firm. The aim of the review is to locate the Penrosian firm within a complex filiation of ideas, yielding a working definition that can be elaborated in subsequent chapters.

2.1.2 Competing influences: economics and organisation theory

Chapter 1 noted that, despite its grounding in organisation theory, the thesis would draw on several related disciplines. The following discussion is necessarily multi-disciplinary, negotiating the conventional, yet contested boundary between economics and organisation theory (Rowlinson 1997). The case for beginning from the standpoint of neo-classical economics is based on three arguments. First, this was Edith Penrose's starting-point in developing her theory of the growth of the firm. In order to conduct a comprehensive reappraisal of her approach, it is essential to appreciate its relationship with neo-classical

thinking (Foss 1997b, Loasby 1999a, Marris 1999). Second, the evident tension between a ‘neo-classical’ view of the firm and various competing concepts highlights a long-running debate over the relative merits of ‘models’ and ‘histories’ in economic and organisational research (Rowlinson 1997: 55). This firm-level discussion serves as a useful introduction to these tensions, which resurface as central issues in the methodological section of the thesis (Chapter 6). Third, it reflects the profound and enduring influence of neo-classical assumptions on theorising in economics, strategy, organisation theory and subsidiary areas, including small firms research (Marris 1987: 831, Penrose and Pitelis 1999: 17). These assumptions, and the values ascribed to them, have proved to be an intermittent source of confusion for organisational theorists, and are therefore best clarified at the outset.

2.2 The influence of neo-classical economics

2.2.1 ‘Cultivating our garden’: Penrose as pragmatic theorist

The ‘theory of the firm’ originated in the early 19th century work of Cournot, but became more influential following its rediscovery by Jevons and incorporation into the marginalist analysis by Edgeworth and Marshall, where it was used to model the price and output decisions of firms. In its initial form, the theory assumed perfect markets and its extension to imperfect markets, undertaken by their successors, Robinson and Chamberlin. By the mid-1950s, when Penrose began working in this area, a variety of attacks had been launched on the perceived limitations of this conceptualisation of the firm, focusing on the apparent lack of ‘realism’ in its underlying assumptions, notably those related to information available to the decision-maker (Machlup 1967: 1-4, Rowlinson 1997). Penrose was concerned with an

entirely different set of questions to those preoccupying other critics of the neo-classical theory of the firm. However, her thinking was clearly influenced by this contemporaneous debate. She also came to a similar conclusion, arguing that a more ‘realistic’ concept of the firm was required in order to construct her own *Theory of the Growth of the Firm*. The theory of the firm had a well-defined purpose in neo-classical economics, as an essential prerequisite for the primary task of formalisation. This conceptual framework was used to guide the process of abstracting from reality in order to develop an economic model that could combine generalisation beyond the specific with a degree of predictive ability:

‘For empirical work on the firm to progress beyond the descriptive and case-specific, it needs to be conducted within an explicit theoretical design’. (Machlup 1967: 8)

Fritz Machlup (1902-1983) was one of the leading neo-classicists and a central figure in the ‘marginalism controversy’ of the mid-1940s. This had involved him in a spirited defence of neo-classical theory against the critiques of managerialists (Berle and Means 1932, Marris 1964, Williamson 1964) and behaviouralists (Cyert and March 1963, March and Simon 1958). While some aspects of the argument can be regarded as peripheral to the theorising undertaken by Penrose, there is a strong case for reviewing Machlup’s (1967) paper, ‘Theories of the Firm’ at this point. As Professor of Economics at The Johns Hopkins University, Machlup had supervised Edith Penrose’s doctoral thesis into the economics of the patent system (Penrose 1951). A few years later, he became the co-leader of a well-funded research project into the growth of firms, and asked his former student to participate. This experience provided the main stimulus for Penrose’s *The Theory of the Growth of the Firm*. Furthermore, Machlup proved to be an important influence on the argument as it progressed towards its final form. According to Penrose (1995: xxii), he scrutinised ‘several drafts’ of

the text and, ‘served as a sounding-board for the testing of ideas, and again and again forced me to more rigorous thinking and clearer expression’.

Machlup’s (1967) paper is an extended reflection on the heated debate that had arisen two decades before, when the ‘theory of the firm’, the cornerstone of price theory, was challenged by managerialist and behaviouralist ideas. He began by drawing some historical parallels. Similar arguments for increased realism were presented in the ‘historical’ school’s attack on ‘classical’ theory in the *Methodenstreit* (i.e. the ‘methods wars’) of the mid-1880s. They also surfaced in the work of what is now termed the ‘old’ institutionalists [Commons 1910] in the United States and, ‘the researchers in Oxford’, including Hall and Hitch [1939], who criticised the application of profit-maximisation assumptions to situations of oligopoly and monopoly (cited in Machlup 1967: 3). In each case, the debate revolved around the perceived limitations of an abstract theory of the firm as a vehicle for explaining its activity in real world settings. Machlup’s assessment was that conceptual debate on the firm has often fallen victim to irrelevant claims for superiority, fuelled by terminological confusion:

‘I hope there will be no argument about which concept of the firm is the most important or most useful. Since they serve different purposes, such an argument would be pointless. [...] Most of the controversies about the “firm” have been due to misunderstandings about what the other specialist was doing. Many people cannot understand that others may be talking about altogether different things when they use the same words’. (Machlup 1967: 28-29)

That this problem is a common – arguably endemic – characteristic of social scientific argument does not detract from its importance in this instance. Machlup proposed a suitably

pragmatic criterion for selecting a theory of the firm, which seeks to by-pass the semantic obstacles by focusing attention on the research question:

‘I conclude that the choice of theory has to depend on the problem we have to solve’. (Machlup 1967: 30-31)

Penrose (1959: 10) offered a similar blend of tolerance and pragmatism. In an introductory chapter, entitled ‘The Firm in Theory’, she noted that the inherent complexity and diversity of the firm necessitated many types of analysis, ‘sociological, organizational, engineering or economic’, each of which might encompass different perspectives according to the nature of the problem. The pressing question therefore, was which type of analysis should be used to explain the *growth* of the firm? In the following paragraph, Penrose made a determined effort to position her study securely within the mainstream economics literature. Her ambition was signalled by careful, yet emphatic boundary-setting that preceded her critical appraisal of the theory of the firm:

‘Educated laymen as well as economists studying the vagaries of actual business behaviour often show an understandable impatience with the “theory of the firm”, for they see in it little that reflects the facts of life as they understand them. It is therefore worth a little trouble, perhaps, to discuss at the very beginning the nature of the “firm” in the “theory of the firm”, to indicate why it provides an unsuitable framework for a theory of the growth of firms, but at the same time to make it clear that we shall not be involved in any quarrel with the theory of the “firm” as part of the theory of price and production, so long as it cultivates its garden and we cultivate ours’. (Penrose 1959: 10)

Penrose’s major accomplishment, which took shape behind the walls of her well-defined garden, was to construct a firm with ‘insides’. Others have sought to build on the foundations

of the Penrosian firm. However, this task has been complicated by subsequent theoretical developments. Two basic obstacles can be isolated. First, despite the best efforts of Machlup, Penrose and others to differentiate the neo-classical from more ‘realistic’ theories of the firm, neo-classical assumptions have continued to intrude into research that requires a firm with ‘insides’. More specifically, these intrusions have influenced studies that have sought to explain the growth of firms. Hence, while the merits of a neo-classical theory of the firm operating within its ‘own garden’ (i.e. addressing issues related to the prediction of aggregate movements in price and production) are not our concern, it has become necessary to re-assess its inadvertent impact on prevailing approaches to theorising the firm. Second, while there has been some progress in replacing neo-classical abstractions – often through an extension of specific Penrosian themes – there have been few attempts to combine these contributions into a coherent and overarching theoretical framework. We are engaged, therefore, in a dual task of genealogy and reconstruction. The purpose of this exercise is to clarify the distinctive contribution of Penrose (1959) and to provide a sound basis for the modified Penrosian framework developed in Chapter 5. The first step may appear counter-intuitive, tracing the intellectual antecedents of Penrose’s integrative concept of the firm to the classical political economy of Adam Smith.

2.2.2 Integration: Adam Smith and the firm

Classical political economy was a product of the Enlightenment. It was the product of passionate reformists, notably Adam Smith (1723-1790). Much of this early writing is grounded in practical experience. For Smith, the market was still quite concrete (Clark 2000: 101). His work also reflected a familiarity with the internal operations of industrial firms

(Loasby 1991). However, the classical political economy spanned a broad range of institutional, moral and aesthetic concerns, beyond those of the firm and its markets (Porter 2000, Skinner 1987). In Smith's case, this combination of experience and reflection gave rise to several 'connecting principles' that linked different aspects of the work. His publications, including the [1776] (1993) *An Enquiry into the Causes and Consequences of the Wealth of Nations* were seen as contributions to an integrated system of ideas:

'Each separate area of analysis may be represented as highly systematic: all are interdependent, forming in effect the component parts of a greater whole'. (Skinner 1987: 360)

This ambition was not fulfilled in Smith's lifetime, and has been obscured by retrospective analyses that address each work in isolation. The lack of integration is a particular problem in the case of Smith's investigation into the mechanisms of wealth creation. His radical critique of the 'moral economy' of mercantilism and its associated structures of political interventionism and protectionist trade policy was based on carefully-constructed linkages between the division of labour and the operation of the market:

'The division of labour, however, so far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labour. The separation of different trades and employments from one another seems to have taken place in consequence of this advantage. This separation, too, is generally called furthest in those countries which enjoy the highest degree of industry and improvement; what is the work of one man in a rude state of society being generally that of several in an improved one. In every improved society, the farmer is generally nothing but a farmer; the manufacturer, nothing but a manufacturer'. (Smith [1776] (1993), Book 1 Chapter 1).

Smith chose to illustrate this process within the boundaries of an industrial firm (i.e. the much-celebrated pin manufacturer). In a ‘wealth creation’ reading, Smith demonstrated that the division of labour is an *endogenous* (i.e. internally-generated) source of productivity improvements. Yet these internal processes are precisely those ignored in the narrower ‘resource co-ordination’ interpretation consistent with a ‘black-box’ theory of the firm:

‘In a resource co-ordination reading of Smith, changes in production methods, skills and technology are outside the theory. But this violates Smith’s view of production as an unfolding adjustment process’.
(Best 2001: 61)

However, Smith’s analysis of the wealth-creation process extended beyond the boundaries of the firm, recognising that the internal dynamic is contingent on *exogenous*, institutional factors, notably the extent and the nature of the market:

‘As it is the power of exchanging that gives occasion to the division of labour, so the extent of this division must always be limited by the extent of that power, or, in other words, by the extent of the market’. (Smith [1776] (1993), Book 1, Chapter 2).

The obvious corollary is that the rate of economic growth in an economy – and the performance of its constituent firms – was the product of complex interactions between firm-level and market-level processes. In Best’s (2001: 61) words, ‘Smith suggests an interactive dynamic between the emerging opportunities and evolving activities of production. With each increase in the extent of the market the subdivision of activities proliferates and ever more activities become subject to specialisation and increasing returns’. In this interpretation, the grounds for Smith’s well-known case against market constraints are for their negative effect on an endogenous dynamic of specialisation. By linking the concept of the division of

labour to the operation of liberalised markets, Smith set out a powerful and enduring challenge to mercantilist thought. However, in presenting arguments that ranged across a number of levels of analysis, he was also pioneering a systematic approach to organisational research:

‘The division of labour is not a quaint practice of eighteenth-century pin factories, it is a fundamental principle of economic organization’. (Stigler 1951: 193 – cited in Best 1990: 105)

However, in the hands of his successors, Smith’s quest for integration gave way to increasing specialisation and abstraction. His contribution marked the end of era when one person could work so close to the frontiers of knowledge in several fields (Skinner 1987: 373).

2.2.3 Separation: the neo-classical theory of the firm

The 19th century saw a deepening division, both conceptual and applied, between the study of economic activity through the market and that occurring via the internal hierarchy of the firm. The strand of Enlightenment rationalism concerned with the internal operations of the firm followed a separate path of development from that concerned with the operation of the market. Charles Babbage’s [1832] treatise on industrial organisation, *On the Economy of Machinery and Manufactures*, signalled the beginning of a new, empirically-oriented research agenda, which provided a template for the wider organisational theory literature of the 20th century. Economics, in contrast, drew away from the level of the firm. Its agenda was set by a form of equilibrium-based theorising associated, which sought to pursue a scientific method, characterised by its similarities to Newtonian mechanics. In its emphasis on the centrality of the price mechanism, and of resource allocation, neo-classical economics reduced the firm to

the status of a production function, or ‘black box’. In theorising markets, the objective was to determine aggregate price and output under specified conditions, rather than to address the development of specific firms:

‘In that theory, the firm is not an organization but an abstract entity; its equilibrium output (size) is determined by the intersection of cost and demand curves under carefully specified competitive circumstances’. (Penrose 1996: 1716)

From the perspective of the abstract theorist, efforts to endow the firm with ‘realistic’ features are seen as misguided:

‘To confuse the firm as a theoretical construct with the firm as an empirical concept, that is, to confuse a heuristic fiction with a real organization like General Motors or Atlantic & Pacific, is to commit the “fallacy of misplaced concreteness.” This fallacy consists in using theoretic symbols as though they had direct, observable, concrete meaning’. (Machlup 1967: 9)

The reason for this lies in the challenge of constructing general theories, which require a combination of rigour and parsimony. The addition of incidental detail is thus seen as both unnecessary and as a potentially confusing distraction:

‘Too many students, however, want a realistic model of the firm for all purposes. They forget the maxim of Occam’s Razor that unnecessary terms in a theory be kept out (or shaved off)’. (Machlup 1967: 11)

Machlup’s blunt rejection of, ‘this sentimental hankering after realism’ (Machlup 1967: 12), is therefore explicable in the context of the neo-classical research agenda. Our next task is to

draw together the disparate efforts of economists and organisation theorists who have sought to introduce 'realistic' elements into later conceptualisations of the firm 'against the grain' of the neo-classical consensus.

2.2.4 Beyond the neo-classical firm?: three challenges

On several occasions, economists have emerged from the mainstream with questions that challenged its fundamental assumptions regarding the firm. This has given rise to a continuing debate between the relative merits of realism and abstraction, with isolated cases where one side or the other has given some ground. Three pioneering examples serve to illustrate the nature of the problem. The economic historian J.H. Clapham (1922), expressed concern that theory had not been applied to specific industries in a famous *Economic Journal* article entitled, 'Of empty economic boxes'. This critique was ignored by economic theorists of the inter-war period, reflecting Keynes's view that Clapham was, 'barking up the wrong tree.' (cited in Deane 1987: 427). In the 1930s, the economist Nicholas Kaldor initiated a more direct challenge to neo-classical assumptions, focusing initially on the theory of the firm and imperfect competition (Wood 1987: 3). Kaldor (1934) highlighted the inadequacies of the supply curve (i.e. more specifically, its assumption that higher output is supplied at a higher price at the level of the individual firm). The editors of a recent industrial organisation text reflected on the continuing resonance of Kaldor's critique; one recalled his Sixth-Form College teacher's presentation of the idea of the supply curve:

'The teacher had explained the demand curve without any problem. He then drew the supply curve, explained its meaning [...] acknowledged that he did not necessarily expect anyone in the class to

believe this [...] but stated that we would in any case just have to accept it. Without this assumption none of the rest of the course, he explained, would make any sense'. (Buckley and Michie 1996: 5)

Kenneth Boulding's (1956) monograph, *The Image*, was a wide-ranging reflection on the role of knowledge in society. It included a profound and influential 'subjectivist' critique of the treatment of firm-level knowledge in mainstream economics:

'The economists have badly neglected the impact of information and knowledge structures on economic behaviour and processes [...] With deft analytical fingers the economist abstracts from the untidy complexities of social life a neat world of commodities'. (Boulding 1956: 82)

Boulding deployed newly-emerged concepts from theories of systems and of human communication, in order to differentiate five 'levels' of organisation operating in nature and society (Figure 2.1). He defined organisation in its broadest sense, as 'anything that is not chaos, anything, in other words, that is improbable' (Boulding 1956: 19), and observed the historical tendency towards increasing complexity, culminating in human societies. Boulding's hierarchical categorisation was speculative and necessarily provisional. Writing three years after the discovery of DNA's double helix, he was poorly positioned to reflect on the implications of its self-replicating structure. The systems-theoretic approach is also open to the charge of functionalism, a generalised critique ascribed to 'evolutionary' systems theories of this period (Reed 1999: 32). However, *The Image* remains an important point of reference, both for its influence on Penrose (1959), and for its enduring implications in researching the growth of the firm.

Figure 2.1 Boulding's levels of organisation: an interpretation

<i>Level</i>	<i>Distinctive characteristics</i>	<i>Typical examples</i>
1 Static structure	Unchanging structure, organising elements through pre-determined labelling or classification.	Organisation chart, map, formula, index, physical structures (e.g. statue).
2 Clockwork	Pre-determined dynamic structure, repeating movements on the basis of simple law of connectedness among its parts.	Planetary system, early mechanical clock, other simple machines.
3 Thermostat	Self-adjusting dynamic structure, maintaining steady states (i.e. <i>homeostasis</i>) through pre-determined pattern of communication and control, via 'receptors' and 'effectors'.	Auto-pilot, domestic thermostat, swimming pool robot.
4 Cell	Self-maintaining dynamic structure, capable of metabolising inputs in order to extend, elaborate and re-produce itself. An 'open' system.	Elementary forms of life at or about the level of the cell.
5 Botanical	More complex interacting 'family' of cells, with functional specialism, structural inter-dependence, elementary temporal sense, capacity for growth and adjustment.	Plant.
6 Animal	Enormous increase in capacity for information capture and processing, and corresponding increase in capacity for learning. Varying degrees of self-consciousness.	Non-human animal
7 Human	Abstract thought and communication yielding much enhanced capacity for organising, sharing and storing information, self-awareness ('We not only know, but we know that we know'. Boulding 1956: 25), and enhanced capacity for learning.	Human
8 Social	Enduring adaptive structure based on abstract communication between roles, occupied by 'parts of men' (i.e. capacity for multiple roles), including controlling role of the 'executive', arguably, 'self-conscious', but the 'image' resides in individual humans.	Firm, government agency, university, tribe, church, family.

Sources: Boulding (1956: 19-31), Hatch (1997: 36) – adapted. Boulding's original titles have been used to describe eight levels. He noted that the 'social' level, 'should perhaps be regarded as parallel to the human level rather than above it' (Boulding 1956: 29). The tabular format is derived from Hatch (1997).

The first implication is holistic; analysis must be complemented by synthesis. Sub-system interdependence produces unique higher-level features, such that the essence of a system can only be identified when it is confronted as a whole (Buckley 1967). Second, there is an interaction of subjective and objective knowledge. Firms stand at one of the highest levels of

organisation, incorporating and building on characteristics from lower levels. These higher level organisations are open to increasingly elaborate ‘images’ of the world beyond their boundaries. Hence, the behaviour of firms, and other social organisations, is always mediated by the cumulative, subjective and situated perceptions of those who manage them:

‘The behaviour of the organization [...] must be interpreted as a result of the image of the executive, directed by his value system. [...] He is a receiver of messages from the receptor of the organization, and his job is to transform those messages into instructions or orders which go out to the effectors. He cannot be regarded, however, as simply a sausage machine grinding out instructions from the messages received. It is more realistic to suppose that between the incoming and outgoing messages lies the great intervening variable of the image. The outgoing messages are the result of the image, not the result of the incoming messages. The incoming messages only modify the outgoing messages as they succeed in modifying the image’. (Boulding 1956: 27-28)

Boulding (1956: 29-31) noted that our understanding of these theoretical constructs was variable, both within and between levels (e.g. we know ‘a great deal’ about the atom, yet remain ignorant of many biological processes; we have a ‘pretty fair’ understanding of how the price system works but don’t know how to prevent wars). Perhaps as a consequence, we often have recourse to analogy. However, there are dangers in applying analogies to systems operating at different levels (Boulding 1956: 59-60); this is one of the major themes that Penrose addresses in relation to the firm (Penrose 1952, 1959). The following sections review the various ways in which theorists have conceptualised the firm, heeding Boulding’s (1956) warning to varying degrees.

2.2.5 Re-conceptualising the firm: Kay's 'hub and spokes'

Kay (1997) has provided a useful interpretation of the main developments in building a more 'realistic' theory of the firm. Four strands of thought are represented as 'spokes', each of which modifies one element of the 'hub', or core principles, of the neo-classical concept of the firm. Kay suggests that his four representative figures (i.e. Coase, Penrose, Simon and Schumpeter) dealt primarily with isolated modifications to the neo-classical agenda, while retaining other items in their reformulated models. The basic structure of Kay's argument is summarised below in tabular form (Table 2.1).

Table 2.1 The neo-classical agenda and some alternatives

<i>Neo-classical assumption</i>	<i>Modification</i>	<i>Pioneering modifier</i>
Market context	Hierarchy context	Coase (1937)
Product focus	Resource focus	Penrose (1959)
Optimising behaviour	Satisficing behaviour	Simon (1955)
Price as driver	Technology as driver	Schumpeter (1954)

Source: Kay 1997: 9-11 – adapted and tabulated.

In comments that echo Machlup's (1967) call for appropriate and parsimonious theorising, Kay (1997: 11) warned against unnecessary integration:

‘[I]t should be said that there is no automatic merit in putting all the elements of the spoke theories together in one integrated approach. For some purposes there may be no justification in drawing upon any of them. In other cases, the neglect of certain spoke perspectives may reflect the level of the analysis or the types of problems being looked at’. (Kay 1997: 11)

However, his position on the merits of integration appears ambivalent, in that the isolated incursions of each ‘spoke’ have allowed the neo-classical orthodoxy to retain its traditional dominance:

‘The important issue is that the hub and spoke relation of neoclassical theory to its alternatives does help to reinforce the traditional dominance of neoclassical theory, and permit it to continue to restrict heavily the agenda for economic theorising and research’. (*ibid*: 11)

Kay’s framework is a useful heuristic device, employed in this and subsequent chapters. However, in the spirit of the ‘integrationist’ arguments presented by Smith [1776] (1993), Boulding (1956), Penrose (1959) and others, we argue that the four ‘spokes’ cannot be treated as isolated probes into the complex realities of firm-level activity. Each spoke highlights distinct yet inter-dependent phenomena whose interactions can only be appreciated through a similarly integrated conceptual framework. While there may be specific instances where empirical work seeks to isolate the effect of a single spoke, the growth of the firm is a product of their systematic interaction (Sections 2.5 and 2.6).

In the following sections we begin the process by considering the two modifications with particular significance for our working definition of the firm. The discussions identify the contribution of each body of literature in opening the ‘black box’ and enabling us to explore the processes that govern its growth. The Coasian ‘hierarchy’ modification (Section 2.3) is

concerned with the nature and boundaries of the firm. The ‘resource’ modification (Section 2.4) is also concerned with the nature of the firm, addressing the composition of the firm, and the relationship between the firm’s resources and its economic performance. Two versions of the resource modification are identified, the latter providing a direct link to the Penrosian definition of the firm (Section 2.5). Kay’s other spokes, which can be related more directly to the growth process, are discussed in later chapters. The ‘satisficing’ modification is adapted in order to address the broader yet arguably more pertinent issue of ‘managerial agency’ in the growing firm (Section 3.4). The ‘technology’ modification is introduced as a necessary complement to the original Penrosian growth model (Section 5.5).

2.3 The ‘hierarchy’ modification

2.3.1 Coase and the ‘nature’ of the firm

Ronald Coase (1937) can be regarded the first economist to extend neo-classicism in a way that sought to explain the existence of the firm in an economy based on the operation of markets (Kay 1997: 29 n4). This much-cited paper, written when Coase was a 21 year-old commerce student at the London School of Economics, made an explicit and admirably ambitious claim to link the firm of the ‘real world’ to the industry-level analysis of conventional economic theory:

‘Since there is apparently a trend in economic theory towards starting analysis with the individual firm and not the industry, it is all the more necessary not only that a clear definition of the word “firm” should be given but that its difference from a firm in the “real world”, if it exists, should be made clear’.
(Coase [1937] 1996: 40)

Coase challenged the assumption that economic co-ordination is the sole preserve of an ‘invisible hand’:

‘As D.H. Robertson points out we find “islands of conscious power in this ocean of unconscious co-operation like lumps of butter coagulating in a pail of buttermilk”. But in view of the fact that it is usually argued that co-ordination will be done by the price mechanism, why is such organisation necessary? Why are there these “islands of conscious power”?’ (Coase [1937] 1996: 41)

He sought to ‘bridge the gap’ between the ‘conscious’ economic co-ordination of Adam Smith’s prototypical manager, the ‘undertaker’, and the seemingly unconscious co-ordination achieved through the price mechanism. Having eliminated the other likely reasons for the existence of firms, Coase asserted that it was *primarily* a question of relative costs:

‘The main reason why it is profitable to establish a firm would seem to be that there is a cost of using the price mechanism. The most obvious cost of “organising” production through the price mechanism is that of discovering what the relevant prices are’. (Coase [1937] 1996: 43)

Coase claimed that his approach enabled researchers to give, ‘a scientific meaning’ to changes in the size of a firm, on the basis of the context in which transactions are co-ordinated:

‘A firm becomes larger as additional transactions (which could be exchange transactions co-ordinated through the price mechanism) are organised by the entrepreneur and becomes smaller as he abandons the organization of such transactions’. (Coase [1937] 1996: 45)

He then took up the challenge of identifying what he terms, ‘determinants of the size of the firm’ (*ibid*: 46), a task that others – notably ‘Professor [Frank] Knight’ – had considered

beyond the scope of scientific research. His approach was to apply straightforward marginalism to firm-level decision-making:

‘[A] firm will tend to expand until the costs of organising an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organising in another firm’. (Coase [1937] 1996: 46-47)

Coase (1937) recognised that certain exogenous changes, in the form of technological and ‘managerial’ innovations, might reduce the cost of organising within the hierarchy, and thus encourage firms to grow larger:

‘Changes like the telephone and the telegraph which tend to reduce the cost of organizing spatially will tend to increase the size of the firm. All changes which improve managerial technique will tend to increase the size of the firm’. (Coase [1937] 1996: 48)

However, in its efforts to explain the firm in a way that integrates with industry-level frameworks of, ‘the ordinary technique of economic analysis’ (*ibid*: 48), the paper failed in its stated aim of providing a concept of the firm, ‘which fits in with that existing in the real world’ (*ibid*: 53). Coase’s arguments were left in this under-developed form until the 1970s, when they were re-discovered by a new generation of industrial economists, most notably Oliver Williamson (1975, 1985). Williamson’s influential approach to theorising the firm is regarded by its proponents as an effective explanatory tool, which has been applied with particular enthusiasm to the growth of the multidivisional firm (Chandler 1990, Rugman 2000). Two issues are raised in this connection. First, how has Williamsonian ‘transactions cost economics’ extended Coase’s reference to the ‘changes’ in the costs of organising?

Second, does an exclusive emphasis on the *cost* of transactions deny serious consideration of the growth dynamic under these different forms of governance?

2.3.2 Williamsonian transaction costs: 'half of a theory' of the firm

Williamson's transaction costs theory is based on the assertion that markets and hierarchies are alternative instruments, or 'governance mechanisms', for co-ordinating economic transactions (Barney and Hesterley 1999: 111, Williamson 1975: 8). The theory introduced two important behaviouralist modifications to 'mainstream' neo-classical marginalism, bounded rationality (Simon 1955) and opportunism, the latter being defined as, 'self-interest with guile' (Williamson 1975: 26). Firms exist, in a Williamsonian interpretation, because they facilitate the co-ordination of transaction-specific investments under conditions of uncertainty. The theory has been applied in various contexts, most extensively in the study of vertical integration and multinational strategy decisions, analysing choices made by economic actors selecting between market and hierarchical forms of governance on the basis of relative costs. In its normative implications, the Williamsonian version of transaction cost theory directs attention to cost minimisation, to the virtual exclusion of other factors:

'Economising is more fundamental than strategising – or, put differently, *economy is the best strategy*'.

(Williamson 1991: 76 – emphasis in original)

This emphasis on costs has attracted strong criticism from proponents of resource-based theory and others associated with evolutionary theorising (Ghoshal and Moran 1996, Kay 1997, Loasby 1999b). The core of the critique, as it relates to the growth of the firm, is that transaction cost theory, in both the original Coasian formulation, and its subsequent

elaboration by Williamson (1985), is no more than, ‘half a theory’ (Kay 1997: 37). The argument returns us to the neglected inter-connections in Adam Smith’s original formulation. Transaction costs theory fails to address the relationship between the mode of governance and the demand side, a relationship which changes as a consequence of the value created by the firm. Coase had recognised that, under conditions of uncertainty, an imperfectly specified contract giving control over capabilities may be the lowest cost option, but he did not identify the implications of exercising such control:

‘[C]ontinuing direction of these capabilities is likely to improve both the productive and managerial skills available to the firm. Creating the firm may thus be the high value option’. (Loasby 1999b: 90)

In short there is a ‘transaction value’ corollary to transactions costs (Zajac and Olsen 1993). Firms ‘grow’ – or alter their boundaries – not simply as an automatic equilibrating reaction to changes in relative costs, but because they find themselves in a position to pursue new market opportunities. Coase touched on this issue in the final paragraph of his original paper, where he highlighted the need to address the ‘dynamic factors’ within the firm. However, the implication was that this, too could be achieved within the bounds of marginalism:

‘When we are considering how large a firm will be, the principle of marginalism works smoothly. The question always is, will it pay to bring an extra exchange transaction under the organizing authority? [...] Business men will be constantly experimenting, controlling more or less, and in this way equilibrium will be maintained. This gives the position for static analysis. *But it is clear that dynamic factors are also of considerable importance*, and an investigation of the effect changes have on the cost of organising the firm and on marketing costs generally will enable one to explain why firms get larger and smaller’. (Coase [1937] 1996: 53-54 – emphasis added)

It would be churlish to criticise the optimistic stance of an inspired 21 year-old student. However, subsequent refinements of transaction cost theory have perpetuated this error, placing a severe limitation on its explanatory value in questions relating to the growth of the firm. By conflating fundamental differences in the nature of economic activity in markets and hierarchies, transaction cost analysis fails to address the factors that stimulate growth, and those that constrain it:

‘Transaction cost economics has a missing ‘off switch’: as long as costs of the market exceed the costs of firm organization, we have a signal for continued corporate expansion irrespective of value considerations’. (Kay 1997: 38)

Several writers have been prompted to recover the role of ‘production’ in the Williamsonian framework, presenting the concept of ‘transaction value’ as the forgotten corollary to transaction costs (Kay 1997, Loasby 1999b). Williamson’s (1985) work on the multidivisional (‘M’ form) firm superimposed transaction costs logic on Chandler’s (1962) historical study, *Strategy and Structure*, presenting the former as an effective theoretical explanation of the latter. This assertion has been challenged, along with Williamson’s ‘separation theorem’, the assumption that transaction costs can be analysed independently of production factors (Loasby 1999b: 94). In this context, it is significant that Chandler’s (1990) study, though retaining a transaction costs framework, concluded with a more explicit assertion of the capabilities approach, prefaced with a side-swipe at the theorists:

‘Economists, particularly those of the more traditional mainstream school, have not developed a theory of the evolution of the firm as a dynamic organisation. For many of them the modern industrial

enterprise is little more than an extractor of monopolistic or oligopolistic rents. Nor have sociologists and other social scientists developed such a theory'. (Chandler 1990: 593)

Chandler argued that his historical research had revealed the underlying firm-level dynamic in the development of industrial capitalism. Furthermore, firm-level capabilities were at the core of this dynamic:

'Such organisational capabilities, in turn, have provided the source – the dynamic – for the continuing growth of the enterprise'. (Chandler 1990: 594)

His subsequent reflections signalled an increasing scepticism over transaction cost approaches and displayed a correspondingly greater recognition of production effects as crucial factors in determining organisational arrangements (Loasby 1999b: 89).

2.4 The resource modification

2.4.1 The resources and capabilities of the firm

While transaction cost analysis provided an economic rationale for the existence of the firm, its internal processes remained beyond the scope of economic analysis. The second major modification to the 'black box' can be seen as an alternative conceptualisation of the firm to that presented in transaction cost theory (Pitelis and Wahl 1998a: 255), and one that appears to offer greater potential for explaining growth processes. In Kay's (1997) framework, this second modification re-directs attention from aggregate outputs to the resources upon which the products of a specific firm are based. The 'resource-based perspective' (RBP) on the firm

has particular resonance because Edith Penrose is widely recognised as one of its founding figures. Subsequent developments in this approach have drawn on economics and organisational theory, but much of the research output has appeared in the strategic management literature. Two versions of the resource-based perspective (RBP) are presented, drawing on Foss's (1997a) distinction. The contrasting contributions of each approach are identified, along with the more pertinent critiques. The rhetorical scheme of Foss's (1997a) account is to contrast a Demsetzian 'RBP Mark I' with its Penrosian counterpart, 'RBP Mark II'. While acknowledging that work in the latter version draws heavily on Penrose (1959), we are seeking to guard against the tendency to ascribe to the original work the criticisms that are better directed at subsequent contributions. As a consequence, Penrose's distinctive conception of resources and their relationship to the firm is reserved for discussion in the next section (Section 2.5).

2.4.2 Origins and principal features of the resource-based perspective

The conventional explanation for the resource-based turn is as a reaction to a previous over-emphasis on external factors (Clark 2000, Foss 1997c, Grant 1991, Mintzberg 1994). The 1970s and 1980s were characterised by sporadic episodes where opportunistic acquisition was followed by a spectacular and much-publicised corporate collapse. Analysts identified the absence of relevant capabilities in the activities of acquired businesses as a common factor in these failures, prompting the normative injunction to 'stick to the knitting' (Peters and Waterman 1982). The internal resources of the firm were also identified as a more secure and stable base for strategy-making, in contrast to what were perceived as the increasingly confused signals obtained from a turbulent, or arguably 'hypercompetitive' marketplace

(D'Aveni 1994, Grant 1991). The trend towards introspection influenced both corporate and business strategy. In the former, the initial focus for theoretical interest was in economies of scope and transaction costs as a basis for bounding multi-divisional corporations (Chandler 1990, Williamson 1975, 1985). In business strategy, various techniques were either introduced or re-deployed in order to explore the relationship between resources, competition and performance (Grant 1991: 114, Montgomery 1995b).

The common foundation of the firm-level approaches is the fundamental relationship between resource heterogeneity and rent (Table 2.2). Four underlying assumptions can be identified: (1) Firms are endowed with a unique combination, or 'bundle', of resources. (2) There are systematic and relatively stable differences in these endowments. (3) These differences cause differences in firm-level performance. (4) Firms seek enhanced performance (Foss 1997a: 10). Hence, the focus of analysis is on a firm's capacity to deploy rent-yielding resources. This problem has been addressed from various directions. However, two main themes can be distinguished: (a) analysis of the conditions for sustained competitive advantage, and (b) analysis of the deployment process within the firm. Efforts at integration, both between and within these themes, have been handicapped by a continuing lack of consensus over terminology. 'Resources' tend to be equated with tangible and intangible *assets* over which the firm has either property rights or privileged access, while 'competences' and 'capabilities' describe its *activities*. However, the terms lack precision and useage is often inconsistent or interchangeable. For example, some writers have treated the distinction between competences and capabilities has been described as purely semantic, but in other accounts capabilities are distinguished as the product of *linked* competences (e.g. Johnson and Scholes 2002: 146-150).

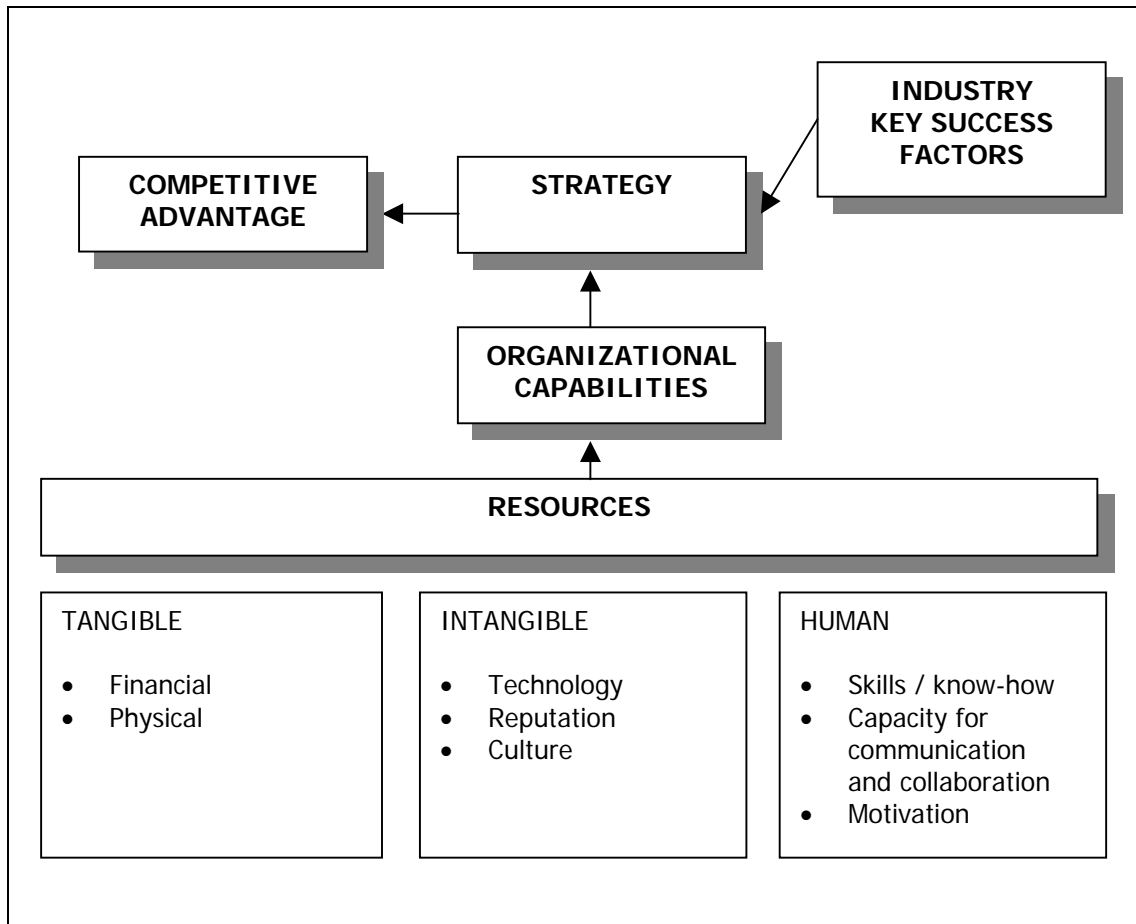
Table 2.2 Rent-based categorisation of resources and competences

	<i>Imitable</i>	<i>Non-imitable</i>
Resources	NECESSARY RESOURCES: required assets, similar to those of competitors, or easily acquired in the market, hence not a source of competitive advantage	UNIQUE RESOURCES: valued assets, including unique or limited products, unique location or route to market, brands, patents and copyrights, hence critical to competitive advantage
Competences	THRESHOLD COMPETENCES: required activities, similar to competitors, or easily acquired through experience or by hiring staff, hence not a source of competitive advantage	CORE COMPETENCES: valued activities, distinctiveness being based on tacit knowledge, collective experience or distinctive culture, hence critical to competitive advantage.

Source: Johnson and Scholes (2002: 154 - adapted)

Various techniques have been proposed for analysing linked competences, notably Porter's (1985) 'value chain'. Other efforts have been directed at identifying 'core' competences (Prahalad and Hamel 1990) or 'strategic capabilities', broadly defined as activities that articulate with a strategy delivering sustainable advantage over competing firms. Most recent contributions combine academic argument with practitioner-oriented prescription. For example, Porter's (1985) model directs managers towards a wider appreciation of the 'value system' (i.e. the external network of supplier, distribution channel and customer value chains), as a source of advantage. The importance of the intervening linkages is acknowledged in the literature, and reflected in popular explanatory frameworks (Figure 2.2). However, there has been limited progress in exploring the nature and operation of these linkages (Spender 1994: 354). The following sections explore the 'RBP Mark I' and 'RBP Mark II' perspectives, identifying the potential for integration and noting the implications for a working Penrosian definition of the firm.

Figure 2.2 Relationships among resources, capabilities and advantage



Source: Grant (2002: 139)

2.4.3 'RBP Mark I': equilibrium-based analysis

This approach to the analysis of a firm's resources rests on the proposition that, in a world of uncertainty, the primary barrier to the equalisation of rents is informational. It is primarily the work of economists, or of strategists with an economics training, and relies on the equilibrium framework. Foss (1997a) traces the approach to the University of Chicago economist, Harold Demsetz, encapsulated in his (1973) paper, 'Industrial Structure, Market Rivalry and Public Policy', which anticipated the central theme of heterogeneity and its differential effects:

‘It may well be that superior competitive performance is unique to the firm, viewed as a team, and unobtainable to others except by purchasing the firm itself. In this case the return to superior performance is in the nature of a gain that is completely captured by the owner of the firm itself, not by its inputs’. (Demsetz 1973: 2)

Several related ideas, including the essential point of ‘uncertain imitability’ as an *ex-post* barrier to competition (Lippman and Rumelt 1982), are pre-figured in Demsetz’s paper. Subsequent elaboration by strategists has generated something of a consensus, comprising four relatively straightforward *pre-conditions* for competitive advantage (Figure 2.3).

Figure 2.3 Pre-conditions for sustained competitive advantage

<i>Criterion</i>	<i>Indicative theorists</i>
Resource heterogeneity: Differences in resource endowments. With homogenous resources, all firms can implement the same strategies, hence there is no basis for differentiation or rents.	Barney (1991)
Imperfect mobility: Resources and the associated rents are specific to the firm and cannot be readily transferred to, or captured by, a competitor.	Lippman and Rumelt (1982) Barney (1991)
Ex ante limits to competition: To yield future rents, resources need to have ‘value’, having been acquired in ‘strategic factor markets’ at a price below their discounted net present value.	Demsetz (1973) Barney (1986) Rumelt (1987)
Ex post limits to competition: Competitors are unable to imitate or to substitute the firm’s rent-yielding resources readily, due to factors such as ‘causal ambiguity’ over linkages between resources and firm-level performance, ‘history dependence’ or ‘social complexity’.	Demsetz (1973), Barney (1991)

Sources: Barney (1991), Foss (1997a).

These pre-conditions have been translated into a range of strategy prescriptions, yet they are essentially the logical extension of an equilibrium-based analysis of industry competition. One of the major concepts to emerge from this approach is that of ‘isolating mechanisms’, a generic term for, ‘phenomena that limit the ex-post equilibration of rents among individual firms’ (Rumelt [1987] 1997: 141). Rumelt emphasised the inherent stability of such

mechanisms; this stability is important, since it provides the justification for Grant's (1991) proposal to construct strategy around a firm's resources:

'The importance of isolating mechanisms in business strategy is that they are the phenomena that make competitive positions defensible and stable'. (Rumelt [1987] 1997: 141)

The concept of isolating mechanisms has been applied in various empirical studies, which serve to demonstrate the valuable contribution made by 'RBP Mark I' (e.g. Jones 2002). However, there are important limitations to this approach (Spender 1994). First, the Demsetzian influence, whether direct or indirect, has tended to lock-in the intellectual development of 'RBP Mark I', contributing to the divide between its equilibrium-oriented approach and the process-oriented contributions emerging from 'RBP Mark II' (Foss 1997a: 9). As in the case of transaction costs, we are confronted with 'half a theory' of the firm (Section 2.3). The absence of process is evident in Rumelt's (1987) review of the implications for 'normative theory', which emphasises the redeployment of *existing* resource configurations, rather than the creation of new capabilities:

'The routine component of strategy formulation is the constant search for ways in which the firm's unique resources can be re-deployed in changing circumstances'. (Rumelt [1987] 1997: 142)

Second, the denial of the dis-equilibrating and subjectivist interpretation of this relationship (i.e. 'RBP Mark II', discussed below), excludes from consideration the constitutive role of the environment as a source of new resources and capabilities. The novelties arising from phenomena such as learning, innovation and entrepreneurial discovery are essential elements

in a model of endogenous change, yet these novelties cannot be forced into an equilibrium straightjacket (Loasby 1991):

‘The same critique that Penrose directed against the neo-classical theory of the firm is also applicable to the RBP [Mark I]: there is, “no notion of an internal process of development leading to cumulative movements in any one direction” (1959: 1). Thus, while Demsetz (1973), Lippman and Rumelt (1982) and Barney (1986) provide a theory of rents in equilibrium, they actually tell us very little about how the heterogenous conditions underlying differential rents arise’. (Foss 1997a: 24)

In the absence of a clear model of the endogenous creation of resources, theorists have resorted to ‘big bang’ theories of competitive advantage (Spender 1996: 45), where the source is traced to an initial and unexplained event (Foss 1997a: 24).

2.4.4 ‘RBP Mark II’: accounting for dynamics

The alternative approach to the analysis of firm-level resources is commonly associated with Prahalad and Hamel’s (1990) paper, *The Core Competence of the Corporation*, which proved to be a highly successful exercise in dissemination, albeit in a self-consciously managerialist form. As Foss (1997a: 8) has argued, contributions taking their cue from this *Harvard Business Review* article tended to address ‘soft’ issues, such as learning, innovation and vision, without recourse to formal theory. The approach is undeniably ‘Penrosian’, in the sense that it focuses on the dynamic processes of resource-creation, in contrast to the ‘RBP Mark I’ concern with specifying pre-conditions for competitive advantage. Three examples of work in this approach are summarised below, illustrating differences of approach and varying degrees of sophistication in the analytical treatment of resources (Table 2.3).

Table 2.3 Examples of research in the 'RBP Mark II' approach

<i>Contributor</i>	<i>Format, core message and assumptions</i>
Prahalad and Hamel (1990)	Practitioner-oriented normative application of 'core competence' concept, with case examples (e.g. '3M's competence with sticky tape' as a result of consistent and focused investment). Competence-based concept of the corporation should replace one based on SBUs. Given supportive leadership, a firm's core competences can be readily identified, mapped and manipulated.
Itami and Roehl (1987)	Practitioner-oriented application of 'invisible assets' concept, with case examples (e.g. Kirin Beer illustrating dynamic synergy). Invisible assets, capable of simultaneous multiple use, are the real source of competitive advantage. These accumulate both directly and as a by-product of operations. Need to address dynamics of <i>future</i> resource combination and accumulation as well as current 'fit' between resources and strategy, even at the cost of short-term instability. Resource analysis requires a time dimension and needs to incorporate non-economic factors.
Kamoche (1996)	Conceptual exploration of links between RBP and strategic human resource management. Two-level analysis contrasts implications for individual and firm-level. Develops a critique of RBP's failure to address the implications for knowledge creation and distribution of, for example, the opportunistic actions of the firm and counter-strategising at individual level (i.e. impeding knowledge transmission). Appropriability of resources and capabilities is problematic, yet may be amenable to human resource intervention.

Source: Original articles cited (n.b. these examples are not specified in Foss 1997a)

Many concepts associated with 'RBP Mark II', including the examples illustrated, have become well-established in the canon of strategic management and are reproduced through the activities of business schools and management consultancies (e.g. Grant 2002, Johnson and Scholes 2002). Criticism of the approach, from economists and organisation theorists, has centred on the definition and operationalisation of resources and capabilities.

2.4.5 Limitations in 'RBP Mark II': a provisional comment

In recent years, the dynamic approach to resources in 'RBP Mark II' has been exposed to critical comment, and several limitations have been identified. Many of these issues will re-surface in our discussion of the Penrosian contribution (Section 2.5 and Chapter 4). However, they can be prefaced under four headings: (a) the definition of resources and capabilities; (b)

the treatment of generation and transfer mechanisms; (c) assumptions regarding discursive penetration and manager' powers of manipulation; (d) the articulation of resource and capability processes at individual, firm and higher contextual levels (Table 2.4).

Table 2.4 Some limitations identified in the 'RBP Mark II' tradition

<i>Limitation</i>	<i>Illustrative critiques</i>
Definitional	Descriptive rather than analytical approaches (Clark 2000) Lack of clarity and coherence (Foss 1997a)
Generation and transfer mechanisms	Analogy between organisational routines and quasi-biological mechanisms (Nelson and Winter 1982) challenged (Clark 2000) Political and institutional factors as under-theorised intervening variables (Kamoche 1996)
Discursive penetration and manipulation	Paradoxical effects of 'causal ambiguity' on managerial agency (Scarborough 1998) Overly optimistic assumptions regarding the plasticity of capabilities (Clark and Staunton 1989)
Articulation between levels: individual, firm, higher-level contexts (network, sectoral, regional and national)	Emergent interaction effects between individual and firm levels (Kamoche 1996, Nonaka and Takeuchi 1995) Pervasive institutional effect of national contexts (Porter 1990, Clark 2000)

Source: Various, as cited.

At this stage of the argument, the definitional problem is our primary concern. If the firm is to be defined in terms of its resources and capabilities, these concepts need to be refined and located in a suitable theoretical framework:

'[T]he definition of capabilities is vital yet tends to be rudely descriptive. Often the reader is presented with the name of a well-known firm (e.g. Honda) accompanied by a variety of figures depicting different kinds of engine and the design activities. The implication is that these constitute capabilities. This sketchiness in academic analysis parallels the simple frameworks and descriptions often presented at international seminars by practitioners and consultants' (Clark 2000: 216)

Excessive analytical zeal in defining capabilities poses a less well-acknowledged, but potentially far more serious threat to our definition of the firm. In some readings, an attempt

to isolate ‘core’ competences or ‘distinctive’ capabilities leads to an excessively reductive analysis. These accounts have the appearance of surgical precision, yet they can disembowel the firm almost to the extent of the neo-classical theorists:

‘If we try to whittle the picture of the firm down to some particular feature which provides it with its ‘distinctive’ or ‘core’ competence, then we may be left with a very small rump – as, indeed, Prahalad and Hamel (1990: 82) appear to argue when they talk of reducing the highly diversified 3M corporation to a few shared core competencies’. (Kay 1997: 16)

The assumption that resources can be isolated in this way appears to reflect aspects of ‘RBP Mark I’ thinking, discussed above. Kay (1997) asserts that Penrose’s (1959) definition of the firm represents the best defence against a reductive definition. The following section elaborates on this Penrosian definition of the firm:

‘It therefore seems preferable to hold on to the Penrosian notion of the firm as, “essentially a pool of resources the utilisation of which is organised in an administrative framework (Penrose 1959: 149)”’.
(Kay 1997: 16 – emphasis added)

2.5 The Penrosian firm

2.5.1 More than resources; more than a constraint

We have now reviewed two of Kay’s (1997) modifications to the neo-classical firm, relating to hierarchy and resources, recognising that each has the potential to inform a theory of the growth of the firm, but noting their limitations in achieving this aim. Penrose’s is cited widely as an important precursor to the ‘RBP Mark II’ approach to resources and capabilities

(Section 2.4). In the strategy literature she is often associated with the term ‘bundle of resources’, while industrial economists associate her with the managerial constraint on growth (i.e. the ‘Penrose Curve’). Such attributions tend to obscure Penrose’s major contribution, which has accordingly escaped the attention of scholars in both RBP traditions. Most recent work has focused on specific aspects of resource categorisation or dynamics, sometimes achieving a degree of refinement, clarification or extension. The unique achievement of Penrose (1959) was to have integrated a coherent set of resource-based concepts with a comprehensive and radical re-definition of the firm:

‘At first sight Penrose’s definition of the firm appears reasonable, uncontroversial, indeed even obvious. However, it is difficult to overstate how different a picture of the firm this provided compared to neoclassical theory’. (Kay 1997: 14)

This definition is radical because it presents the firm as a dynamic system involving all four of Kay’s (1997) modifications. Furthermore, and in contrast to Kay’s (1997) apparent caution against ‘unnecessary’ integration, these diverse elements are inter-woven throughout her argument. The concluding sections of this chapter introduce Penrose’s distinctive approach to the firm. Chapter 3 contains a parallel introduction to the Penrosian approach to growth.

2.5.2 More than a ‘bundle of resources’

Penrose’s firm is much more than a shadowy and residual counter-part to the market. She is concerned with the growth of the, ‘innovating, multi-product, “flesh and blood” organizations’ that businessmen call firms’ (Penrose 1959: 13). This requires a new and very different concept of the firm from that used in price theory. In *The Theory of the Growth of*

the Firm, the firm is not merely a ‘price and output decision-maker’ (Penrose 1959: 14). In order to represent its behaviour realistically, the Penrosian firm needed to be endowed with many more attributes than were applied in price theory. Penrose echoes Machlup’s (1967) injunction on the need to abstract on the basis of the research problem, defining the firm in a way that addresses its dynamics.

‘It is not the *degree* of abstraction involved in the “theory of the firm” that makes it inappropriate as a starting point for an analysis of the growth of the firm, but rather the *kind* of abstraction [...] The object of the present study is to investigate the growth of the industrial (non-financial) firm as an economic entity in its broadest sense [...] Consequently the definition of what constitutes a “whole firm” for our purposes depends on its essential function as an economic entity in the economy’. (Penrose 1959:15 - emphasis in original)

For Penrose, this test of relevancy means treating the firm as a strategic decision-making unit, in which managers play a central resource-allocation role. The firm is defined as the area in which managers are able to exercise ‘authoritative co-ordination’. The concept was derived from Barnard (1938), possibly under the influence of Boulding (1956), who had highlighted the purposive role of the executive as the ‘central agent’ in a social system. Boulding (1956: 153) cites his three major influences as: Barnard’s *The Functions of the Executive*, Shannon and Weaver’s *Mathematical Theory of Communication* and Wiener’s *Cybernetics*. All three appear to be reflected in Penrose’s boundary-setting definition:

‘It is the ‘area of co-ordination’ - the area of ‘authoritative communication’ - which must define the boundaries of the firm for our purposes, and, consequently, it is a firm’s ability to maintain sufficient administrative co-ordination to satisfy the definition of an industrial firm which sets the limit to its size as an industrial firm’. (Penrose 1959: 20)

In contrast to transaction cost theory, which lacks the tools to analyse the firm at this level, it is the activities of managers that provide the critical factor distinguishing the firm's mode of co-ordination from that found in the market (Penrose 1959: 15). Hence, the firm was not simply a heterogenous 'bundle of resources', amenable to dispassionate analysis in the mode of 'RBP Mark I'. Furthermore, this oft-cited phrase conflates Penrose's critical distinction between 'resources' and the 'services' obtained from them. Resources are rather, 'a bundle of *potential* services' (Penrose 1959: 25), with an option value that is exercised through managerial agency. Heterogeneity was thus the product of an interaction between the resource base and the cumulative decisions of managers, yielding situated 'productive services' (Section 4.3.5). Firms differ from the market in a crucial respect, that is obscured by Williamson's (1975, 1985) transaction-based focus. The 'invisible hand' of the market co-ordinated the exchange of resources, but firms provided an organising context for production. Resources yielded firm-specific services under a managerial 'visible hand':

'What an organizational structure does is put into place capabilities for future decision-making. A manager holds his or her position in the firm in order to participate in decision-making in the future. While they may have got there on the basis of past decisions, they exist in the hierarchy solely to make future decisions. Effectively, hierarchy is a device for procrastination'. (Kay 1997: 53)

In short, Penrose's resource-service distinction sketched the mechanism that delivers deferred decision-making in the firm.

2.5.3 The 'productive opportunity' of the firm

By placing managers in a central constitutive role, Penrose conceptualised the firm in a way that diverges fundamentally from mainstream economics. She introduced the notion of a firm's changing 'productive opportunity', which in turn depends upon the 'entrepreneurial services' available from its managers (Section 4.3.6). Productive opportunity was a vital concept, because it redefined the source of productive activity in the firm in terms of the subjective perceptions of its managers (Penrose 1959: 31). Managerial subjectivity, acting through the medium of productive opportunity, affected both the future development and the current internal co-ordination of the firm.

2.6 Conclusion: towards a working definition of the firm

2.6.1 The case for adopting a Penrosian definition

The Penrosian 'resource-services' insight has the potential to open the 'black box' of the firm. While there has been a recent burgeoning of work in the 'Penrosian' 'RBP Mark II' tradition, much of it has lacked clear conceptual definitions and a coherent explanatory framework (Clark 2000, Foss 1997a, Kay 1993). However, in our view, the goals of clarity and coherence are best served by a 'return to Penrose', albeit in a modified form. The definition of the firm introduced by Penrose is well-articulated and is linked into an integrated theoretical framework (Section 4.3). It has already proved itself amenable to elaboration and adaptation (e.g. Best 1990, 2001, Garnsey 1998a, Itami and Roehl 1987, Spender 1994). Above all, it addresses the research questions addressed in this thesis. As Kay (1997: 29 n4)

has noted, ‘in contrast to the Coasian emphasis on, ‘where transactions were organised, [...] Penrose focused more directly on the nature and composition of the firm (what was doing the organizing)’. The radical nature of Penrose’s firm arises from her ability to integrate previously disparate arguments related to (amongst other things) resource heterogeneity, managerial knowledge and economic rent. She problematised the role of knowledge generation in the firm, in a way that has eluded many who have followed her along the resource-based road:

‘The generation of knowledge is a non-logical (but not illogical) process: imagination and novelty entail the generation of new premises. If there is to be an adequate theory of this process it must be causal rather than strictly deductive’. (Loasby 1999a: 43)

Penrose’s approach to the firm contained an important, but largely ignored, critique of modernist assumptions regarding the firm and its strategy. She recast the firm as a high level system, thereby challenging the abstracted view of the firm associated with ‘design rules’ approaches to organisation theory (Clark 2000, Hatch 1997):

‘Meaningful strategy is not a statement of corporate aspirations, but is rooted in the distinctive capabilities of the individual firm. When strategy is emergent in this sense, the distinction between formulation and implementation largely falls away’. (Kay 1993: 337)

In a Penrosian ‘resource-service’ (or ‘capabilities’) interpretation, strategy as ‘grand design’ (Kay 2000, Mintzberg 1994) gives way to the a new concern with activity and application, emphasising the role of the firm as a setting for the generation of new knowledge:

‘The prime significance of Penrose’s work is that it both reminds us of the central importance of the growth of knowledge in economics and simultaneously provides the basis for an appropriate way of investigating and understanding this growth, the problems of co-ordination to which it gives rise and the processes of co-ordination which help to shape it’. (Loasby 1999a: 43)

The Penrosian conceptualisation of the ‘flesh and blood’ industrial firm can thus serve as a working theory that can be modified and re-deployed in the arguments that follow.

2.6.2 The next steps: integration or isolation?

This chapter has reviewed insights into the nature and activity of the firm that have been obtained from contrasting approaches, most notably the static analytical frameworks of transaction cost economics and various incarnations of ‘RBP Mark I’. At first sight, there is little scope for integrating these approaches. Penrose’s vision of the firm was distinctly disequilibrium-oriented and subjectivist. In an effort to isolate her work from the neo-classical mainstream, Penrose attempted to construct what Loasby (1999a: 41) has termed, ‘an impenetrable barrier’, between her theory of development and the neo-classical theory of co-ordination, a tactic adopted by Schumpeter for similar reasons. She later argued, in no uncertain terms, that Williamson’s (1975) effort at integration was undermined by their incompatible conceptual tools:

‘Williamson finds in the development of the M-form a means of joining more fully the neoclassical theory of the firm and “bureaucratic theory”. He may be right to the extent that in the narrow sense the “profit maximisation hypothesis” becomes more applicable in the “real world”, but not if one holds as I do, that the two types of theory are designed to answer different questions and are therefore not to be compared in any meaningful way’. (Penrose 1985: 13).

However, *The Theory of the Growth of the Firm* contains fragments of Penrose's neo-classical training. For example, her description of the firm's search for 'impregnable bases' echoes the notion of 'isolating mechanisms', discussed earlier (Rumelt [1987] 1997) (Section 2.4):

'In the long run the profitability, survival, and growth of a firm does not depend so much on the efficiency with which it is able to organise the production of even a widely diversified range of products as it does on the ability of the firm to establish one or more wide and relatively impregnable "bases" from which it can adapt and extend its operations in an uncertain, changing, and competitive world. It is not the scale of production nor even, within limits, the size of the firm, that are the important considerations, but rather the nature of the *basic position* that it is able to establish for itself'. (Penrose 1959: 137 – emphasis added)

The incorporation of the concept of 'position' is perhaps explained by Penrose's rigorous training in neo-classical economics, since it appears to originate in the conventional 'theory of the firm' (Section 4.3). Such commonalities have led to calls for greater integration between static and dynamic explanations, as reflected in the two 'versions' of RBP:

'As a result of this dichotomization of the resource-based approach, there is clearly a lack of clear and coherent treatment of dynamic factors: while the RBP (Mark II) does address dynamic issues, it does so in rather diffuse and incoherent terms, and while the RBP (Mark I) is clear and coherent, there is no real treatment of dynamics'. (Foss 1997a: 23)

One of the main themes of this chapter has been that the neo-classical 'theory of the firm' remains relevant, through its explicit or implicit influence on subsequent empirical and conceptual research. This has been felt both within and beyond economics, despite the vigorous efforts of various theorists, including Penrose, to isolate its impact. The resulting

tensions have been a recurrent theme. In this chapter, they were reflected in the division between equilibrium ('RBP Mark I') and evolutionary (RBP Mark II') versions of the resource-based perspective (Foss 1999a). Similar tensions are evident when attention turns to the growth of small firms, where neo-classical assumptions have exerted a strong, albeit indirect, impact on the research agenda.

CHAPTER 3 - EXPLAINING GROWTH: COMPETING 'IMAGES' AND APPROACHES

The development of a suitable process theory of [small] firm growth remains one of the major challenges in entrepreneurship and the wider social sciences.

Mark Freel

***Entrepreneurial and Growth Firms* (book chapter in: Deakins 1999: 218)**

'Do you know who made you?' 'Nobody as I knows on,' said the child with a short laugh. The idea appeared to amuse her considerably; for her eyes twinkled and she added, 'I 'spect I growed'.

Harriet Beecher Stowe

***Uncle Tom's Cabin* ([1852] 1961: 244)**

This chapter comprises a critical review of the research literature that seeks to explain the growth of firms. The opening section notes the under-conceptualisation of the growth process in the 'small firms' literature, and relates it to the influence of particular analogies or 'images' of growth. The remaining sections introduce the most widely adopted mechanical and biological analogies. These provide a context for the more detailed appraisal of Edith Penrose's distinctive approach to growth that is presented in Chapter 4. The review begins with illustrative material from the 'small firms' literature. This serves to problematise its often implicit conceptualisation of the growth of the firm as a static mechanical analogue. The following section considers the potential contribution of biological and evolutionary analogies, including the application of dynamic processes of variation, selection and retention within firms and industries. A review of Edith Penrose's critique of biological analogy introduces the twin themes of purposive action and levels of analysis, which are elaborated in Chapters 4 and 5. The review concludes with a challenge to conventional quantitative approaches to growth, a theme that is also revisited in the following chapter.

3.1 Introduction: explaining the growth of firms

3.1.1 The under-conceptualisation of growth

This chapter comprises a critical review of a diverse literature that seeks to explain the growth of firms. This research agenda has been characterised by relentless empiricism, punctuated by sporadic requests for greater conceptualisation and theory-building. In the small firms and entrepreneurship research community, the primary focus of this review, there is a longstanding recognition that progress has been hampered by a paucity of explanatory theory:

‘[A]t present an adequate explanatory framework within which to analyse the growth of small owner-managed firms has not been developed. We are still seeking a theory which will simultaneously explain the infrequency of the phenomenon and account for the major processes underlying growth’. (O’Farrell and Hitchens 1988: 1380)

Similar sentiments were expressed in an exhaustive review of the small firms’ literature, conducted as part of an Economic and Social Research Council (ESRC) research programme between 1988 and 1992. David Storey (1994) concluded that, in contrast to developments in other areas, the ‘growth’ of the firm remained an under-theorised phenomenon:

‘In some areas theorists have already made a major contribution to our understanding of small firm issues, but in others their contribution is much weaker [...] In some contexts, such as the discussions of financing, the theoretical framework is well developed and accessible. In other areas, most notably small firm death and growth, it is much weaker’. (Storey 1994: 5)

These criticisms have, for the most part, been directed at the most prevalent form of explanatory study in the small firms' literature, which is based on the analysis of discrete variables that are hypothesised as exerting a particular influence on the rate of growth of firms. However, similar problems arising from a lack of relevant theory have been highlighted more recently, in relation to the shift in empirical studies towards dynamic analyses, which seek to incorporate observations of firm-level processes:

'The aim of such research is to discover and delineate the underlying processes of adaptive learning and growth, irrespective of context. Or indeed, to determine whether such processes exist. Unfortunately, no coherent testable model has been developed to date. The development of a suitable process theory of [small] firm growth remains one of the major challenges in entrepreneurship and the wider social sciences'. (Freel 1999: 218)

The impression of a continuing imbalance between empirical and theoretical research is supported by Johann Wiklund's (1998) review of the literature, covering almost 70 published articles, books, chapters and conference proceedings. Wiklund found very few conceptual contributions related to the growth of the firm and noted that researchers appeared more willing to measure than they were to conceptualise:

'Performance and growth seem to be conceptualised, operationalised and measured in many different ways. It is curious to note that discussions of the conceptual meaning of the two terms were somewhat lacking, while discussions of appropriate measures were more common. This suggests that the conceptual meanings of the concepts are either taken for granted or of little interest'. (Wiklund 1998: section 1.2)

The chapter examines the apparent discrepancy between the under-conceptualisation of the growth process and a seemingly over-enthusiastic pursuit of measurement. It suggests that the conjunction is more than simply coincidental, and that the explanation lies in the analogies of growth that have been adopted by researchers, and in the associated measures of growth that have been used to operationalise these concepts.

3.1.2 Direct and metaphorical analogies of growth

Academic discourse on economic organisation has made liberal use of images drawn from other fields (e.g. Morgan 1986). Analogical reasoning may have heuristic value, but is also a potential source of distortion. It is important, therefore, to establish at the outset a clear understanding of the term ‘analogy’, as it is applied to the present explanatory task. Penrose (1952) made a useful distinction between what she termed ‘direct’ and ‘metaphorical’ analogies, and the corresponding types of reasoning. She underlined the need for clarity of thought on the part of those adopting analogical language:

‘The purpose of analogical reasoning in which we consciously and systematically apply the explanation of one series of events to another very different series of events is to help us better to understand the nature of the latter, which presumably is less well understood than the former. If the analogy has really helpful explanatory value, there must be some reason for believing that the two series of events have enough in common for the explanation of one, *mutatis mutandis*, to provide at least a partial explanation of the other. This type of analogy must be distinguished from the purely metaphorical analogy in which the resemblances between two phenomena are used to add a picturesque note to an otherwise dull analysis and to help a reader to see more clearly the outlines of a process being described by enabling him to draw on what he knows in order to imagine the unknown’. (Penrose [1952] 1971: 5)

Nonaka and Takeuchi (1995) reflected on Penrose's distinction, and used it to develop their argument that tacit knowledge could only be transferred through a sequential process of metaphor and 'direct' analogy, with the latter acting to reduce uncertainty by highlighting common features:

'Metaphor and analogy are often confused. Association of two things through metaphor is driven mostly by intuition and holistic imagery and does not aim to find differences between them. On the other hand, association through analogy is carried out by rational thinking and focuses on the structural / functional similarities between two things, and hence their differences. Thus analogy helps us understand the unknown through the known and bridges the gap between an image and a logical model'. (Nonaka and Takeuchi 1995: 67)

In their efforts to explain the growth of the firm, researchers have made liberal, and occasionally reckless, use of both metaphorical analogy and 'direct' analogical reasoning. The most common analogies found in the 'small firms' literature are based on rudimentary mechanical and biological metaphors, which cannot be regarded as appropriate conceptualisations of the firm (Ardishvili *et al.* 1998, Boulding 1956, Hodgson 1995). The popularity of biological imagery is the product of a strong strand of evolutionary theorising, which can be traced to the 18th century political economy of Thomas Malthus and Adam Smith, and to Spencerian sociology (Section 3.3). It also owes a great deal to a long history of human reflection on natural processes that provides today's students of economic and social organisation with such a rich and evocative vocabulary. The use of mechanical images of the firm and its growth is the product of a different set of imperatives. As we shall see, these appear to revolve around the heuristic qualities of mechanistic analogies, particularly in



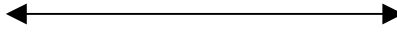
relation to the perceived need for quantitative measures of growth, and for unambiguous public policy prescriptions.

3.1.3 The review in outline: mechanical, biological and evolutionary analogy

The following sections comprise a critical review of several competing analogies of growth at the level of the firm, and their associated research methodologies. In some cases, these analogies have been little more than impressionistic metaphors, yet much confusion has resulted from a failure to distinguish between ‘metaphorical’ and ‘direct’ analogical reasoning in work of this kind. The review is thus designed to inform and to clarify the main empirical questions, regarding the conceptualisation of growth in small, connected firms, and also the theoretical questions, which seek to locate and to re-appraise the Penrosian contribution (Section 1.3). The approach adopted can be contrasted with the widely-cited typology presented by Ven and Poole (1995) (Figure 3.1). The authors identified four generic process theories (i.e. Life-cycle, Evolution, Teleology and Dialectic) that sought to explain development and change in organisations. The four ‘change motors’ typology and supporting arguments have informed the argument in this chapter, particularly in relation to biological and evolutionary analogising (Sections 3.3 and 3.4). However, the four-way framework does not provide an ideal structure for the present review, which combines a narrower empirical focus (i.e. connected firms) with a broader theoretical scope (i.e. the Penrosian synthesis). As the authors acknowledge, the heuristic appeal of this ‘least common denominators’ approach has to be balanced against overly reductionist interpretations (Van de Ven and Poole 1995: 536). Penrosian growth theory, which was not addressed in the original article, is not readily categorised within this typology. Indeed, it can be seen as an extension of the framework,

since it involves relationships that hold between the four change motors (*ibid*: 534) (Section 3.6). For these reasons, the review has been structured on a different basis, tracing the most common analogies used in explaining the growth of small firms.

Figure 3.1 Van de Ven and Poole's (1995) typology

<i>Multiple units of change</i>   <i>Single units of change</i>	<p>EVOLUTION</p> <p><i>Process events:</i> Variation, selection, retention</p> <p><i>Distinguishing characteristics:</i> Population scarcity Environmental selection Competition</p>	<p>DIALECTIC</p> <p><i>Process events:</i> Thesis, antithesis, conflict, synthesis</p> <p><i>Distinguishing characteristics:</i> Pluralism Confrontation Conflict</p>
	<p>LIFE-CYCLE</p> <p><i>Process events:</i> Start-up, grow, harvest, terminate</p> <p><i>Distinguishing characteristics:</i> Immanent program Regulation Compliant adaptation</p>	<p>TELEOLOGY</p> <p><i>Process events:</i> Dissatisfaction, search/interact, set/ envision goals, implement goals</p> <p><i>Distinguishing characteristics:</i> Purposeful enactment Social construction Consensus</p>
<p><i>'Prescribed' mode of change</i>  <i>'Constructive' mode of change</i></p>		

Source: Van de Ven and Poole (1995: 520, Figure 1)

The review concentrates on attempts to apply or impute analogies of growth from other fields. It is divided into three sections, addressing the mechanical models associated with growth characteristics (Section 3.2), the biological processes of metamorphosis and life-cycle (Section 3.3), and the hybrid biological and economic analogising associated with evolutionary theory (Section 3.4). This is followed by a short digression on the related issue of measurement, and the impact of a long-standing 'quantification bias' on efforts to conceptualise the growth process (Section 3.4). Each section is illustrated using

representative studies from the recent literature. The studies chosen are competent and widely-cited examples of their type, which have generated some useful knowledge related to the growth of firms. However, by concentrating on their conceptual and empirical limitations, the review aims to assess the explanatory potential of each underlying analogy, or ‘image’ of growth (Boulding 1956). The chapter closes with a short reflection on the ontological and epistemological themes arising from the review. This includes an initial appraisal of the Penrosian approach to growth, highlighting ways in which it contrasts with the other approaches reviewed.

3.2 Mechanical analogies of growth

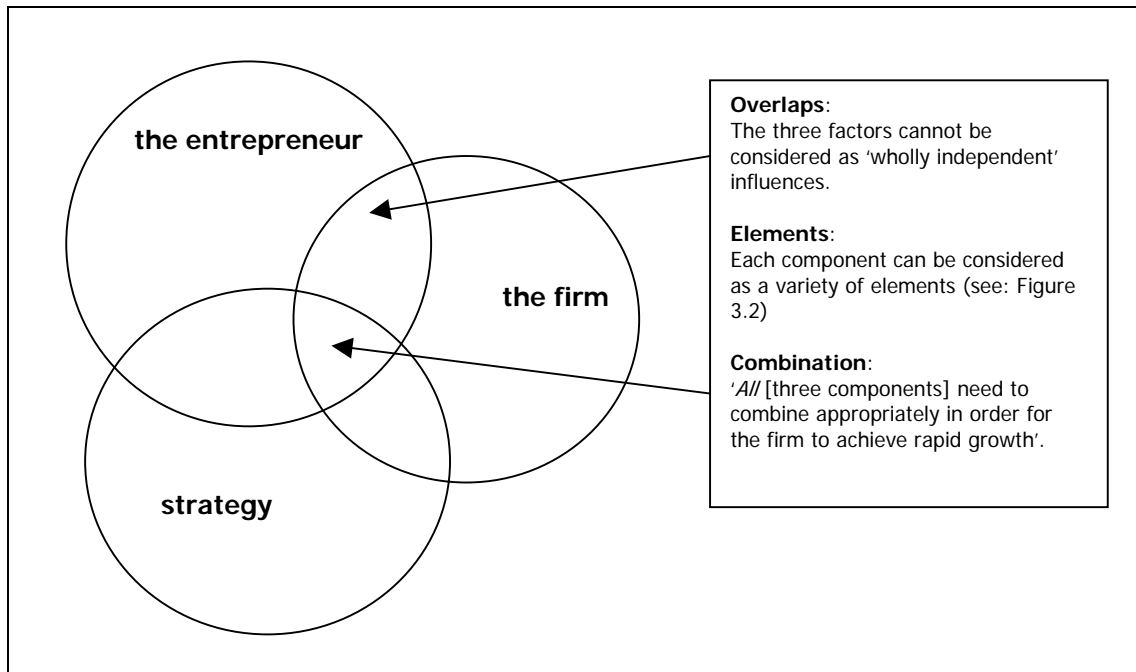
3.2.1 The characteristics approach to explaining the growth process

The small firms’ growth literature includes three main approaches (Freel 1997b: 298): stage models of firm growth (Churchill and Lewis 1983, Greiner 1972), barriers to growth (Cambridge Small Business Research Centre 1992, ICAEW 1996) and predictive modelling or characteristics of growth (Adams and Hall 1993, Barkham *et al.* 1996, Hall 1995, Storey 1994). This section focuses on the characteristics approach to growth and includes a brief additional commentary on the search for ‘barriers’; stage models are reviewed in Section 3.3. The characteristics approach aims to identify internal and external factors that influence firm-level growth. There have been several variants on this basic formula. For example, some studies have sought to isolate the impact of a specific factor, often in the form of categorical data such as the gender or educational level of the owner-manager. Other studies have incorporated a more comprehensive set of potential influences, with the aim of establishing

the relative importance of particular factors or composites. Studies have also varied in their ambitions with regard to predicting growth outcomes *ex ante* (i.e. typified by the ‘picking winners’ literature) or in providing *ex post* rationalisations, in terms of the relative importance of categories or variables. In its various forms, the ‘categories’ approach has proved to be the most persistent methodology, and continues to generate international conference papers and articles. While some of the more comprehensive characteristics research has incorporated multi-variate analysis techniques, there has been little consistency between studies, in terms of specific variable measures and sampling techniques adopted (Wiklund 1998). Given a potentially limitless list of potential influences, research efforts have turned towards the use of multivariate techniques to identify the relative importance of a wide range of variables (Birley and Westhead 1990, Hall 1995: 125). Storey’s (1994) review of the literature was an attempt to bring some order to the proceedings, while recognising this diversity of influences. The review identified 35 ‘factors’ influencing growth in small firms, categorised under the headings ‘the entrepreneur/resources’, ‘the firm’ and ‘strategy’ (Figure 3.2). Storey recognised that there was a degree of interaction between these factors, yet made an explicit assumption that each of the ‘elements’ of which they are comprised could be analysed separately:

‘[T]he three components may be seen as overlapping or intersecting circles. They cannot be considered as wholly independent influences. Each component provides a distinctive contribution to our understanding of the growth of small firms, *but it is possible to consider the components as comprising a set of separate elements*’. (Storey 1994: 122-123 – emphasis added)

Figure 3.2 Growth in small firms: Storey's (1994) model



Source: Storey (1994: 122-1244 – annotation added, based on accompanying text)

Drawing on his review of the characteristics literature, Storey (1994) identified a total of 15 elements related to his 'entrepreneur/resources' factor, ranging from motivation to social marginality, six elements relating to 'the firm' and 14 elements relating to 'strategy'. He presented these elements as combining, in some unspecified manner, to form the factors 'influencing' growth in small firms (Storey 1994: 123). This suggests considerable optimism regarding the capacity of researchers to measure each element, having isolated it both temporally and categorically:

'In principle, each element could be measured or assessed prior to starting the business, although some elements are more difficult to measure than others. [...] Nevertheless, the integrating, or common, characteristic of the entrepreneur / resources component is that all elements can be identified prior to business start-up and they relate exclusively to the entrepreneur and his/her access to resources, not to the business which is established'. (Storey 1994: 123-124)

3.2.2 An application of the characteristics approach: method and findings

The 35 elements identified by Storey (1994) provided the basis for a more elaborate research design, outlined by Barkham *et al.* (1996). For the purposes of the present review, the primary issue is the extent to which the authors' methodology, and the 'mechanical' analogy upon which it is based, was capable of explaining the growth process. Storey's 15 elements were rationalised to form a set of 'key variables' that were applied in a questionnaire survey of owner-managers (Table 3.1).

Table 3.1 Categorising the perceived determinants of growth in small firms

<i>Owner-manager</i>	<i>The firm</i>	<i>Strategy</i>
Age	Firm age	Planning
Gender	Size	External finance
Education	Industrial sector	Product development
Founder of business	Region	Process development
Career history	Legal structure	Marketing
Management experience (function, sector, size)	Ownership	Management recruitment
Other business interests		
Other business owners		

Source: Barkham *et al.* (1996: 15) – after Storey (1994: 123)

The study aimed to re-introduce a 'role' for the owner-manager or entrepreneur, an omission that the authors had identified in microeconomic studies (Barkham *et al.* 1996: 8):

'The main objective of this study was to conduct an in-depth analysis of the determinants of small firm growth, and in particular to explore the relationship between the growth of established small firms and the characteristics of their owner-managers. The main hypothesis [...] was that the characteristics of

the owner-manager have a significant effect on the performance of the firm, both through their abilities and experience and through the management strategies and business practices they choose to adopt'. (Barkham *et al.* 1996: 17)

The study aimed to discover the extent to which *internal* variables, such as owner-manager qualifications and motivation, accounted for growth in the small firm (*ibid*: 17). It also intended to bring together research in economics, organisation studies and business strategy, in order to, 'examine the link' (*ibid*: 15) between a comprehensive range of factors. Data collection and analysis methods can be summarised briefly. Responses from 174 firms were collected using semi-structured questionnaires, divided into six sections: background company characteristics, measures of growth, owner-manager qualifications and experience, motivations of owner-manager, business development activities and constraints on growth. Respondent firms were categorised on the basis of growth rate, as measured by employment change over the period 1986 to 1990 (n.b. firms reporting an increase of 100 per cent or more were defined as 'fast-growth', those reporting between 99 per cent and 1 per cent were 'slower growing', while those reporting zero or negative change were 'static/declining'). Strict temporal limits were placed on the data recorded in each section, all of which were bounded within the same five year time period. This bracketing procedure was intended to facilitate a direct connection between each characteristic and level of growth achieved by the firms studied:

'It should be stressed that all of the questions in sections 4 and 5 focused on the specific time period 1986-90, and each interviewee was constantly reminded to answer only with respect to this period and not to talk about the business in general since its establishment or, indeed, possible future intentions. In this way the analysis can be seen to link the motivations, objectives and strategies of the owner-

manager to the *actual* growth performance of the firm in a particular time period'. (Barkham *et al.* 1996: 21 – emphasis in original)

The research aimed to improve upon previous studies by including a comprehensive set of variables in a single study. A total of 240 variables were obtained from the survey and tested for their influence on the growth measure. Multiple regression equations were calculated in an attempt to identify the impact of each characteristic independently of the others. A preferred model equation was presented, containing 26 variables that 'had a simultaneous and statistically significant influence on growth in output' (*ibid*: 33-34). The R^2 value for the equation was 0.51, indicating that it accounted for 51 per cent of the variation in turnover growth between the companies. However, a stepwise regression revealed that two variables (i.e. undertaking formal market research and demand as a constraint on growth) accounted for a quarter of the variation in growth, and thus accounted for half of the explanatory power of the full preferred equation (*ibid*: 40-41). The authors acknowledged the inherent complexity of the growth process, but concluded that this characteristics-based methodology was capable of generating a plausible explanation of differential growth outcomes:

'It is clear that growth in small firms is a complex process. However, it has been possible to identify a range of influences on growth which together form a plausible explanation of why some firms grow much faster than others.' (Barkham *et al.* 1996: 51)

Other studies have adopted similar methodologies and yielded comparable explanations of the growth process. For example, Hall's (1995: 147-162) comparative analysis was based on interview data obtained in a survey of small- and medium-sized firm managers in eight European countries. The chosen performance measure was proportionate growth in sales

turnover in a three-year period (i.e. between 1980 and 1983). Attempts to regress the growth measure on quantitative and qualitative variables proved unsuccessful. The author has also noted the inherent complexity of a process where, ‘So many factors can affect the growth of an SME that it was not possible to measure the separate impact of each one’ (Hall 1995: 148). However, improved results were obtained by aggregating the data into cells, according to country, sector and size band. The statistical analysis involved a stepwise all possible subsets regression, which was chosen in order to identify the variables that collectively had the greatest influence on the dependent variable. The resulting model ‘explained’ about three-quarters of the variation in growth, a result that was acknowledged as the expected trade-off between accuracy and generalisability:

‘The improvement in explanatory power after aggregation into cells is not particularly surprising. Generally speaking, aggregation enables the influence of one factor on average on another to be identified even when that influence is slight with respect to individual cases’. (Hall 1995: 149)

The main findings reported from this data set illustrate the limitations of this methodology, and bring into question the broader project of seeking to isolate universal correlates of growth (Table 3.1). Temporal compression and statistical aggregation have combined to obscure plausible causal linkages between firm-level data captured by interview statements and the aggregated growth measure. For example, the table reveals that the ‘state of technology’ variable (i.e, recording whether a firm’s served market involved ‘very complex technology’), was ranked 10th in importance out of the 23 variables that collectively had the greatest impact on growth, and was therefore categorised as being of ‘medium importance’. Rankings of this kind provide no insight into the mechanisms governing the implied relationship between firm, technology, market and growth. While the notion of relative importance would appear to

imply a degree of generalisability across time or context, this is belied by the idiosyncratic nature of the factors generated. These limitations caution against efforts to convert such findings into policy prescriptions, given the highly abstracted and provisional nature of knowledge obtained through this methodology:

‘The clear message from the results is that firms exhibiting the highest rates of growth have been those that were highly focused in their marketing towards a single product group and avoided spreading their efforts too widely throughout the world. [...] On the other hand, the importance of supplying quality [...] was not confirmed by STRATOS, though there was some implication of this from the negative relationship with the supply of standardised products’. (Hall 1995: 160)

Table 3.2 A ranking of the importance of major influences on growth

<i>Rank</i>	<i>High importance</i>
1	Percentage of sales from main product group
2	If British
3	If French
4	If main product group generates sales throughout the world [NEGATIVE]
5	If competitors are mainly 'big' [NEGATIVE]
6	If Finnish
7	If in clothing [NEGATIVE]
8	If offering a standard product [NEGATIVE]
	<i>Medium importance</i>
9	Percentage of sales to main customer group
10	If business involves very complex technology
11	If in food
12	Number of customer groups [NEGATIVE]
13	If competitors are mainly very small to medium [NEGATIVE]
14	If market is 'large' or 'very large'
	<i>Low importance</i>
15	If 'no importance' is attached to 'financial independence', 'doing better than other businesses' or 'a high level of income'
16	If over the last three years new products have been introduced
17	If over the last three years there has been an extension of the domestic market
18	If needs of customers are 'very differentiated'
19	If father was 'a civil servant, in business, retailing or was a professional'
20	If over the last three years there had been an extension of customer groups
21	If demand is 'fairly regular' [NEGATIVE]
22	If products linked by 'same customer needs or buying habits'

Source: Hall (1995: 156-157, Table 12.1 - n.b. 22 factors listed, as in original)

3.2.3 The ontological basis of the characteristics approach

The characteristics-based approach has been reviewed in some detail in order to clarify its ontological position with regard to the growth process. The approach exemplifies a ‘mechanical’ analogy of the firm and its application to researching the growth process. Differential rates of growth at the level of the firm are interpreted as the product of a finite number of factors, either within the firm or in the external environment, which operate as ‘independent’ variables. In practice, these tend to be operationalised as categorical data, often in binary form (e.g. ‘urban’ or ‘rural’ location), or less frequently as variable data (e.g. age of owner-manager). The dependent variable is normally operationalised using quantitative measures of firm size recorded at two or more discrete points in time. Univariate or multivariate analysis techniques are employed in order to identify strong correlations between these variables. Several important limitations can be identified in this approach. First, when explanatory factors are abstracted from both the firm and its environment, there can be no understanding of the nature and direction of causation (Freel 1997a: 298). For example, if the analysis reveals a ‘strong’ association between the variables ‘limited company status’ and ‘growth’ at a point in time, the former may be either a cause, a consequence (i.e. of ‘growth’ in a previous period) or the result of a subtle form of multicollinearity (i.e. undetected relationships between a combination of explanatory variables). Second, as illustrated in Hall’s (1995) earlier comparison with studies of human populations (Section 3.2), the approach can only provide insights into an ‘average’ or ‘representative’ growth firm. At this level of generalisation, there is no analytical grasp of competitive dynamics (Jensen and McGulkin 1997: 27). Third, the widely-held view that a small proportion of all small firms account for a high proportion of the long-term net increase in employment has encouraged

researchers to introduce crude typologies (e.g. ‘failures’, ‘trundlers’ and ‘flyers’). Such categorisations are necessarily arbitrary, a point acknowledged by some researchers:

‘The distinction between the fast- and slower-growth categories was an arbitrary one, but it was felt that a small firm that has at least doubled its employment size over a four year period would genuinely constitute a fast-growth firm’. (Barkham *et al.* 1996: 19)

However, the problem is not so much one of empirical support, as of theoretical justification. These categorisations assume stable patterns of growth within and between categories, which do not correspond to reality at the level of the individual firm. The framework discounts the discontinuous (i.e. ‘stop-start’) nature of firm growth, and excludes it from the analysis. Storey’s interim conclusion on the need for a better understanding of factors that influence and determine the characteristics of ‘flyers’ is striking in this respect, since it raised the possibility that the notion of stable characteristics may itself be misguided:

‘This is not a search for the “Holy Grail” which will enable perfect prediction of the flyer. Indeed, the general pervasiveness of log normal distributions in social science could easily be consistent with random shocks leading to some fast-growth firms but *without any consistent factors “explaining” their growth*’. (Storey 1994: 119 - emphasis added)

The failure of previous studies in this tradition to identify the relative importance of possible influences on growth has often been attributed to the selection of variables:

‘The reasons why such an answer is not readily forthcoming from the literature is that most studies, with the notable exception of Westhead and Birley (1990), either consider only a narrow range or variables, or if they are more wide-ranging, consider each factor separately ...’ (Hall 1995: 125)

However, while there is no doubt that the factors identified in characteristics studies have some influence on the growth of firms, the analysis techniques have the effect of obscuring the relevant causal mechanisms (Freel 1999: 216). More fundamentally, the most important growth-related phenomena remain beyond its explanatory grasp. In one of the studies profiled above, the authors commented in the following terms on the 49 per cent of variation in growth that was not explained by their multiple regression equation:

‘Much of this variation reflects *random factors* that are unlikely to be explicable in a systematic, statistical fashion. A single equation accounting for half of the between-company variation is certainly better than has previously been achieved. It may well prove difficult to raise the proportion of variation explained much beyond one half, but only future research will reveal this’. (Barkham *et al.* 1996: 138 – emphasis added)

Attempts to identify statistical regularity are confronted by a fundamental ontological obstacle. Comparative static frameworks are not capable of addressing the temporal complexity of the growth process (Perren 2000: 381), including the lagged, cumulative, discontinuous (i.e. ‘stop-start’), and interactive influence of factors over time. It is these complex interactions between factors that generate stochastic variation, thereby frustrating the search for stable patterns in short chronological timeframes:

‘Fundamentally, their influence is neither consistent nor, by consequence, predictable. Storey’s model, and models of this ilk, neither describe, predict or, more importantly, explain very well’. (Freel 1999: 216)

The implication is that researchers need to reconsider the ‘black box’ approach, in order to develop a more fruitful explanatory theory of growth.

3.2.4 Absence of mechanism: a 'black box' theory of growth?

The common point in each of the preceding criticisms is that the characteristics literature is devoid of explanatory mechanisms. Its approach to explanation consists largely in the identification of relatively stable statistical associations between variables. In some cases, strong or counter-intuitive associations may lead to the generation of plausible hypotheses relating to possible 'causes' (i.e. these take the generic form: 'XYZ has a strong association with growth; this may be because ...'). However, since hypothecations of this kind are usually presented separately, there is no sense of progress towards a coherent theoretical explanation of the growth process. The reason for the absence of explanatory mechanisms can be traced to the ontology of the firm that is implicit in the characteristics approach to growth. The methodology is heavily influenced by neo-classical economics, yielding an ontology that is equilibrium-based and abstract. The implicit theory of the firm adopted in these studies is that of the neo-classical 'black box', the target of Penrose's opening critique in *The Theory of the Growth of the Firm*. In his approach, representative firms are analogised at the organisational level of Boulding's (1956) 'thermostat' (Sections 2.1 and 2.2). Furthermore, they are portrayed in a kind of limbo, both static and acontextual, in the face of analytically distinct yet generic characteristics. Models are designed to quantify the contemporaneous effect of each of these inputs against a similarly generic output measure. The 'barriers' to growth literature relies on a similar ontology, the primary difference being in the nature of the inputs (i.e. generic 'barriers' to growth, such as: access to credit facilities and availability of buildings). The fundamental problem with such an analogy, as discussed in the previous chapter, is that it does not reflect the nature of organisation at the level of the

individual firm, most notably its endogenous capacity to evolve over time, and the situated nature of that process. These issues are addressed in the following section.

3.3 Biological analogies of growth

3.3.1 Cross-currents in biological and economic thought

It is evident from the previous discussion that the nature of the chosen analogy of the firm and its growth, however inappropriate or distorted, can have a profound effect on theoretical development and empirical research. Biological analogies have played an important role in the social sciences, including those disciplines (i.e. economics and organisation theory) which have contributed most strongly to the theorising of firm-level growth (Aldrich 1999, Hodgson 1995, Loasby 1991). The long-standing traffic in ideas between biology and economics has flowed in both directions. Charles Darwin's understanding of natural selection as a driving force of evolution was famously influenced by Adam Smith's political economy and by the demographic projections of Thomas Robert Malthus. Hence, explorations of competitive processes within human populations first informed the study of evolution in flora and fauna, and were subsequently re-applied to the economic sphere (Hodgson, 1993, 1995). Furthermore, the history of economic ideas since the mid-nineteenth century has witnessed its own localised battle for supremacy. More specifically, there is a continuing struggle between dynamic 'evolutionary' approaches and the neo-classical orthodoxy, the latter drawing on static, equilibrium-based analogies associated with Newtonian physics (Sections 2.3 and 3.3).

The following sections comprise an account of the most common biological and evolutionary analogies, and their fluctuating fortunes in the social sciences. As Ardishvili *et al.* (1998) have noted, much of this literature falls into two categories, population level and individual venture level studies, the former being dominated by explanations analogised from the theory of natural selection, whilst the latter draw mainly on biological processes of cell division and metamorphosis. Evolutionary theory is arguably the most influential contributor to our understanding of firm growth processes. However, other biological constructs have also proved influential. This review concentrates on the most influential metaphorical analogies, drawn from a rich and complex history of competing ideas. Section 3.3 concentrates on the application of life-cycle and stage models to explain the ‘metamorphosis’ of the firm. Section 3.4 is a review of the core evolutionary concepts, including the use of Darwinian and Lamarckian analogies to explain adaptation and selection mechanisms in firms and industries, and the re-interpretation of DNA as an analogue of the transmission mechanisms operating within and between firms. The primary intention, in tracing the intellectual heritage of these analogies, is to locate Penrose’s distinctive approach to theorising the growth of the firm. However, the first task is to clarify her use of two biological metaphors: metamorphosis and species difference.

3.3.2 ‘Metamorphosis’ and the small firm

Given that a proportion of small firms grows into larger ones, with radically different organisational features, the problem arises of explaining the transition. In the first chapter of *The Theory of the Growth of the Firm*, Penrose was defining the kinds of firms that were embraced by her study. She was concerned that some very large corporations might not

conform to its theoretical framework, due to their radically different administrative structures.

These differences were expressed in biological terms:

‘Apparently what has happened as firms have grown larger is not that they have become inefficient, but that with increasing size both the managerial function and the basic administrative structure have undergone fundamental changes which profoundly affect the nature of the “organism”’. (Penrose 1959: 19)

Penrose made use of two distinct metaphorical analogies to illuminate the issue. The first metaphor suggested that the structural differences between very small and very large firms was equivalent to a leap across the Linnean system:

‘The differences in administrative structure of the very small and the very large firms are so great that it is hard to see that the two species of the same genus’. (Penrose 1959: 19)

Since this a feat that is impossible in nature (n.b. Linnaeus noted in his celebrated *Philosophia Botanica* [1751] that, ‘nature does not make jumps’), the first metaphor distinguished between biological and social levels of organisation. In apparent recognition of this problem, Penrose switched to the metaphorical analogy of metamorphosis. In an oft-quoted passage, she compared the kinds of administrative transformation taking place in the very largest firms of the period to the contrast between a caterpillar and a butterfly:

‘[T]here is no reason to assume that as the large firms grow larger and larger they will become inefficient; it is much more likely that their organization will become so different that we must look on them differently; we cannot define a caterpillar and then use the same definition for a butterfly’. (Penrose 1959: 19)

To re-iterate, her argument was that the *very largest* corporations of the period might not conform to the growth constraints and dynamics that she had identified in other industrial firms. The metaphorical use of metamorphosis underlined Penrose's argument by conjuring up a combined image of continuity (i.e. the same organism is involved) and radical structural change. However, this combination of metaphors has generated some confusion in the literature. Storey (1994: 121), in particular, drew on the two quotations to support an entirely different line of argument. It began uncontentiously, suggesting that theoretical and empirical understanding of the characteristics of rapidly growing *small* firms remained 'somewhat sketchy'. However, the accompanying abbreviated quotation conflated the metaphors of species difference and metamorphosis, creating the erroneous impression that Penrose regarded *small* firms, rather than very large ones, as being of a different 'genus':

'In part, this is because a firm making the transition from small to large fundamentally changes in character. As Penrose (1959) points out:

The differences in administrative structure of the very small and the very large firms are so great that it is hard to see that the two species of the same genus ... We cannot define a caterpillar and then use the same definition for a butterfly.

The metamorphosis which lies at the heart of this Penrose quotation, has encouraged some analysts to consider the changes in a firm which are associated with growth. These changes are presented in the form of stage models'. (Storey 1994: 121)

Storey's final point (i.e. that stage models have sought to explain changes in small growing firms) was also valid (Section 3.3.3). However, the problematic nature of the intermediate argument has been laboured, on account of its inadvertent impact on the small firms'

literature. Repeated citation and use of these quotations in the same abbreviated form, has perpetuated a distortion of Penrose's original argument (Beaver 2002). More specifically, given the subject-matter of this thesis, it has fuelled an erroneous but seemingly widespread assumption that Penrosian theory can not be applied to the growth of small firms.

3.3.3 Life-cycle and stage models of growth

The changes that occur in the growing company have been interpreted in two related ways. Firstly in terms of a life-cycle analogy of emergence, growth, maturity, decline and death (Greiner 1972). Secondly, in the related notion of developmental stages (Churchill and Lewis 1983), the latter deriving additional concepts from applied natural science disciplines, notably child psychology. Both models imply that firms progress sequentially along a known growth trajectory, each stage being associated with particular phenomena, such as organisation structure and management style (Freel 1999: 203, Storey 1994: 121-122). These models can be seen as a special case of a broader approach to organisations, which seeks to taxonomise the basic elements of strategy, structure and environment into a finite number of observed configurations. This facilitates debate over the direction of causality (e.g. in the relationship between strategy and structure). The underlying assumption in such approaches is of a *contingent* relationship. In this case, the growing firm faces generic mismatches between strategy, structure and environment, such as increasing complexity or scale of production; under conditions of competition, these problems stimulate either generic managerial and organisational solutions, or the failure of the firm (Aldrich 1999: 197, Pugh *et al.* 1968, Wiklund 1998). Two of the best-known variants on this approach are illustrated here (Tables 3.2 and 3.3). In Greiner's (1972) model, there is a continuous, linear relationship between

calendar time and growth, which is punctuated by transformational crises. These have the effect of initiating the next growth stage. Churchill and Lewis's (1983) developmental model can be differentiated in two ways from that presented by Greiner. First, the model does not have recourse to explicit 'triggers' for transitions between the stages. Second, it distinguishes two alternative trajectories at 'Stage 3', suggesting that firms either continue to grow (i.e. 'Stage 3-G'), or reach a stable plateau (i.e. 'Stage 3-D'), in which the process is effectively halted. There is a fundamental difference between developmental analogies, such as stage theories of growth, and evolutionary theory. In the former, the course of growth is essentially immanent and prescribed:

'[T]hat is, the developing entity has within it an underlying form, logic, program, or code that regulates the process of change and moves the entity from a given point of departure towards a subsequent end that is prefigured in the present state. (Van de Ven and Poole 1995: 515)

Researchers applying the life-cycle analogy have pursued this immanent logic, on the assumption that common principles can be extracted through research into the 'natural history' of existing firms (Aldrich 1999: 197).

Table 3.3 Greiner's (1972) stage model of growth

<i>Attribute</i>	<i>Phase 1 Creativity</i>	<i>Phase 2 Direction</i>	<i>Phase 3 Delegation</i>	<i>Phase 4 Co-ordination</i>	<i>Phase 5 Collaboration</i>
Management focus	Make and sell	Efficiency of operations	Expansion of market	Consolidation of organisation	Problem solving and innovation
Organisation structure	Informal	Centralised and functional	Decentralised and geographical	Line, staff and product groups	Matrix of teams
Top management style	Individualistic entrepreneurial	Directive	Delegative	Watchdog	Participative
Control system	Market results	Standards and cost centres	Reports and profit centres	Plans and investment centres	Mutual goal setting
Management reward emphasis	Ownership	Salary and merit increases	Individual bonus	Profit sharing and stock options	Team bonus
Crises [transitional]	Crisis of leadership	Crisis of autonomy	Crisis of control	Crisis of red tape	Crisis of ?

Source: Greiner (1972)

Table 3.4 Churchill and Lewis's (1983) life-cycle model

<i>Features</i>	<i>Stage 1 Existence</i>	<i>Stage 2 Survival</i>	<i>Stage 3-D Success- Disengage</i>	<i>Stage 3-G Success- Growth</i>	<i>Stage 4 Take-off</i>	<i>Stage 5 Maturity</i>
Management style	Direct supervision	Supervision	Functional	Functional	Divisional	Line and staff
Extent of formal systems	Minimal to non-existent	Minimal	Basic	Developing	Maturing	Extensive
Major strategy	Existence	Survival	Maintain profitable <i>status quo</i>	Get resources for growth	Growth	Return on investment

Source: Churchill and Lewis (1983)

3.3.4 Limitations of stage and life-cycle analogies

Stage models have an intuitive attraction, and gain empirical support from the anecdotal familiarity of many of the features that they describe (e.g. owner-managers and small business advisors are familiar with Greiner's 'crisis of leadership', when the founder of a growing owner-managed firm is unable to cope with the scale and/or complexity of its operations). However, the models contain several well-rehearsed flaws, each of which is associated with their inherent rigidity (Freel 1999: 206). The rigidity can be explained as a necessary consequence of the biological analogising that underpins these approaches:

- 1 **Inadequate treatment of 'low' or 'arrested' growth:** most firms do not increase in size, whether this is measured in financial or operational terms, over extended periods of time. As Child and Kieser (1980: 46) have argued, stage models, 'cannot be employed very usefully to describe the process of organizational development, mainly because many organizations seem to survive at an arrested stage of organic development, while most of the organizations attaining a mature level of development then avoid the transition into decline and death'. While some account is taken of conscious decisions to remain in a particular stage (Greiner 1972) and disengagement from the growth process (Churchill and Lewis 1983), both models were based on the implicit assumption that progression through the stages is the 'norm' (Freel 1999: 206, Storey 1994: 122).
- 2 **Inflexible sequencing of growth stages:** the models do not allow for regression to earlier stages, as a consequence of a financial crisis, for example. There is also no obvious recognition that firms may 'skip' stages (e.g. a firm created from a management buy-out

does not experience the initial stages; a bio-technology spin-out venture may experience rapid growth in financial terms with few of the associated managerial and organisational attributes of later stages (Blundel 2001).

3 **Failure to acknowledge ‘hybrid’ firms:** In practice, as the biotechnology spin-out illustrates, firms can exhibit simultaneously the attributes of more than one stage. As Freel (1999: 208) has noted, ‘from Greiner we can conjecture a situation where top management style is participative (Phase 5), whilst the organisation structure is informal (Phase 1); from Churchill and Lewis, a situation that formal systems are either maturing (Stage 4) or extensive (Stage 5) and yet the major strategy is survival [Stage 2]’. The connected artisanal firms analysed in the empirical chapters have similar ‘hybrid’ features.

Storey’s (1994) critique of stage models addressed these points. However, it prompted a different set of conclusions from those presented here. For Storey, the inability of such models to *predict* growth outcomes, was a significant limitation. This absence of predictive ability led researchers to pursue the characteristics approach, discussed in Section 3.2:

‘[W]e remain unpersuaded of the value of stage models. This is partly because the models describe rather than predict. (Storey 1994: 121)

From a Penrosian perspective, the critiques of stage models direct attention to an entirely different methodology. In contrast to the static, mechanical ontology of the characteristics approach, stage models introduce a dynamic element (Hatch 1997). However, these dynamics are deceptive (Clark 2000: 54, Clark and Staunton 1989: Figure 2.1). Moreover, while they may claim to recognise the role of history in shaping the future trajectory of an organisation

(Freel 1999: 208, Greiner 1972: 45-46), the real limitation in these models is that they failed to capture the *evolutionary* aspects of this historical development:

‘Difficulties arise in the interpretation of this historicity, path dependency and crisis-stimulated growth. The frameworks suggested are overly rigid. The inevitability of each stage and each crisis is implausible. To assume that firms move from one stage to another along a narrow path, shaped only by periods of regularly recurring crises, ignores the variability and complexity of firm growth’. (Freel 1999: 208)

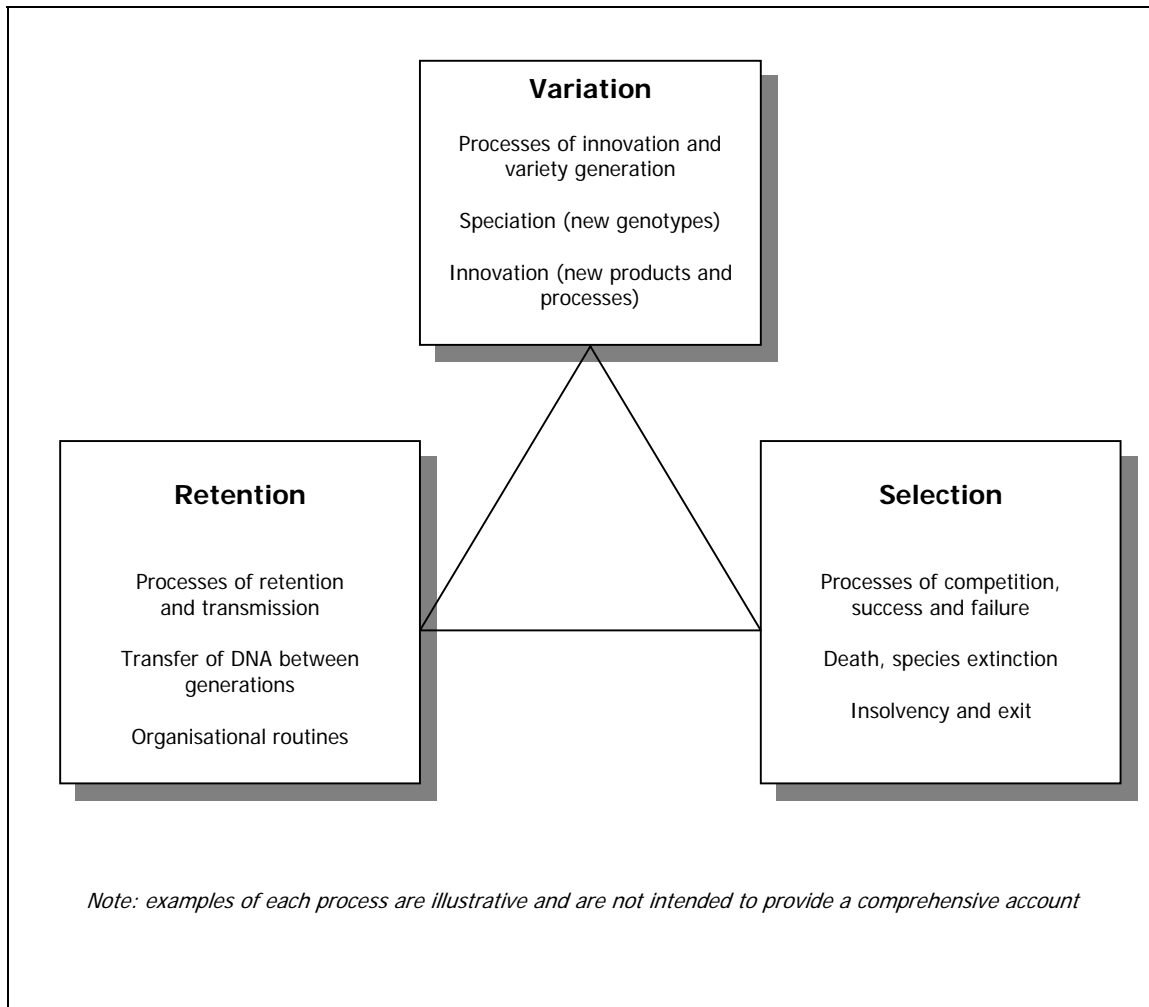
The following section introduces several of the more pertinent evolutionary concepts that have been signalled in this critique.

3.4 Evolutionary analogies of growth

3.4.1 Defining evolutionary theory

In popular discourse, the term ‘evolution’ is a synonym for development. It is also used as an adjective to distinguish incremental from transformational, or ‘revolutionary’. The following sections review ‘evolutionary’ theory in the more restricted sense that it has been applied in the social science literature. This approach to growth and change is founded on an explanatory framework, involving the interconnected evolutionary processes of variation, selection and retention (Figure 3.3):

Figure 3.3 Evolutionary processes in nature and in social organisation



Evolutionary concepts have been applied in economics (Alchian 1950, Loasby 1991, 1999b, Nelson and Winter 1982, Nelson 1995a) and organisation theory (Aldrich 1999, Campbell 1969, Hannan and Freeman 1977, 1989, Weick 1979), with later transfers into the strategic management literature (Barnett and Burgelman 1996, Montgomery 1995a, Schendel 1996). In each of these fields, there has been considerable debate regarding the appropriateness of analogies drawn from biological evolution, but a broad consensus on its distinctive approach to explaining change. This centres on the notion that the three evolutionary processes are operating at both firm and industry (i.e. ‘population’) levels:

‘[E]volution explains change as a recurrent, cumulative, and probabilistic progression of variation, selection, and retention of organizational entities [...] Although one cannot predict which entity will survive or fail, the overall population persists and evolves through time, according to specified population dynamics’. (Van de Ven and Poole 1995: 518)

Much of the recent analysis of evolutionary processes has been conducted at the level of the industry, rather than that of the individual firm (e.g. Hannan 1997). Some of the most detailed empirical studies have been conducted within the ‘population ecology’ framework pioneered by Hannan and Freeman (1977, 1989). These studies have addressed questions regarding the variety, and more recently the absolute number, of firm populations within particular industries. The approach is illustrated by a recent comparative study of the brewery industries in Germany and the United States. The researchers analysed data on firm foundings and mortality over an extended period (1861 to 1988), in order to test an existing theory of density dependence of firm populations in each country (Carroll *et al.* 1993). The detailed findings of such studies are of little direct relevance to the growth of individual firms. However, research at the population level has informed firm-level research. For example, it has produced mounting evidence that selection process do not function as a smooth, optimising force (Barnett and Burgelman 1996: 6), supporting the contention that non-efficient firms can persist for extended periods. In addition, the debate between researchers studying firm and population-level processes has raised important questions regarding the articulation between evolutionary processes operating at different levels (Barnett and Burgelman 1996). The following discussion concentrates on the application of evolutionary concepts at the level of the firm. It highlights three significant contributions to our understanding of the growth process: the emergent and indeterminate nature of the process, the role of path dependence, and the impact of human agency.

3.4.2 Growth as emergent and indeterminate

Evolutionary analogising seeks to explain change as the result of a largely unintended process of emergence, rather than as the result of planning and design. In other words, the processes of selection, variation and retention operate against the notion of a unitary structure of command. It therefore serves as a counterweight to the modernist assumptions of linearity, expert knowledge and control, that are associated with both the characteristics and life-cycle approaches to growth (Clark 2000: 54). From the outset, the notion of indeterminate outcomes has proved problematic amongst those with a preference for closure:

‘[I]t was the openness of Darwin’s system that proved most difficult for his contemporaries to accept. The idea of evolution was not itself new, and was indeed familiar in to context of movement towards a particular goal [...] But Darwin removed the goal. He sought to explain the origin of species, but denied them a destination and therefore any ultimate purpose’. (Loasby 1991: 13)

The conceptual difficulties are exemplified by Alfred Marshall’s [1920] (1986) efforts to develop a unifying principle of biological and economic evolution. The influence of Marshall’s evolutionary thinking remains contentious amongst heterodox and evolutionary economists. Loasby (1991: 94, 1999a: 31-39) located Marshall’s work on economic development in a consistent tradition that links the pioneering contribution of Adam Smith to the independently-conceived, yet largely compatible analysis in *The Theory of the Growth of the Firm*. Others have argued that Marshall’s theory development was constrained by his attachment to equilibrium concepts (Foss 1994; Hodgson 1995). The open systems associated with Adam Smith’s ‘proto-evolutionary’ theory of economic development, and with

Darwinian evolution, could not be reconciled with orthodox economic theory, the latter being based on a closed system, a pre-requisite for equilibrium-based analysis:

‘[Adam] Smith’s principle of increased productivity through the division of labour embraced discovery and invention; and Darwinian evolution depended on the emergence of new species. Both were open systems, and Marshall’s combination of the two was similarly open: the current pattern of economic organisation, like the natural world, was the consequence of a process of innovation and selection, and provided the setting in which that process continued’. (Loasby 1991: 12-13)

Indeterminacy continues to be regarded as one of the most difficult evolutionary concepts for social scientists to accept, often giving rise to the ‘retrospective fallacy’, whereby earlier events are represented as subject to the control of subsequent outcomes (Aldrich 1999: 33). It seems likely that resistance to the problem of indeterminacy will remain strongest in fields, such as strategic management and small firms’ and entrepreneurship, where research agendas are heavily influenced by policy imperatives (Chapter 10).

3.4.3 Growth as cumulative and path-dependent

From an evolutionary perspective, growth is also path dependent. Retention processes preserve selected variations. However, they also place constraints on the kinds of variation that can occur at any point in time (Aldrich 1999: 33). The sociologist Herbert Spencer [1876, 1889] (1971) anticipated the concept of path-dependency, and its application in organisation theory. Herbert Spencer’s approach to socio-economic evolution is criticised as overly individualistic, deterministic and reductionist (Hodgson 1995: 7). However, his work on the relationship between growth and structure represented an important early contribution

to the development of evolutionary theorising in economics and organisation theory. While Spencer's approach to evolution is often portrayed as 'Darwinian', its organicist ontology (i.e. viewing social organisations as holistic organic systems), reflected the competing Lamarckian approach, which stressed the organism's adaptation to the environment, rather than environmental selection, as the primary mechanism for variety generation (Hodgson 1995: 7). Spencer's key insight, in pursuing this analogy, was that the retention of particular characteristics (i.e. structural inertia) was an inevitable corollary of the growth of complex social organisations:

'Socially, as well as individually, organization is indispensable to growth: beyond a certain point there cannot be further growth without further organization. Yet there is good reason to suspect that beyond this point organization is indirectly repressive - increases the obstacles to those re-adjustments required for larger growth and more perfect structure'. (Spencer [1889] cited in Andreski 1971: 46)

Spencer's illustrations of path dependency include two contemporary technologies, railways and drainage systems. These vivid examples support his contention that greater attention should be paid to the role of pre-existing structures (i.e. in Spencer's terms, 'existing premature organisation'), in shaping contemporary processes (Section 5.4.2):

'Observe how inconveniently narrow gauge (which, taken from that of stage-coach wheels, was itself inherited from an antecedent system of locomotion), has become an insuperable obstacle to a better gauge. Observe, also, how the kind of carriage [...] having become established, it is difficult now to replace it by the more convenient kind later established in America, where they profited by our experience but were not hampered by our adopted plans [...] Take again, our system of drainage [...] - one part of our sanitary system having insisted on a sewage-system by which Oxford, Reading, Maidenhead, Windsor etc., pollute the water London has to drink, another part of our sanitary system

makes loud protests [...] And now there must be a reorganisation, which will be immensely impeded by the existing premature organization, before we can have either pure air or pure water'. (Spencer [1889] cited in Andreski 1971: 46-7)

The implications of cumulative and path dependent growth have been investigated empirically in a variety of organisational settings, and are reflected in related concepts such as: 'competency traps' (Levitt and March 1988) and 'technological lock-in' (Aldrich 1999: 239). The implication for theorising the growth process, variously reinforced and re-invented in subsequent research, is that 'history matters'; each cycle in the growth of a firm or an industry is the product of a unique and contingent interaction of the three evolutionary processes. Furthermore, as indicated in the natural world, the cumulative effect of these interactions may not yield an 'optimum' organisational solution:

'Thus, the organisations and populations we observe at any given moment are not the "most fit" in any absolute sense. Rather, their forms reflect the historical path laid down by a meandering drift of accumulated and selectively retained variations'. (Aldrich 1999: 33)

The resulting heterogeneity is central to an understanding of competitive dynamics. This introduces the role of human agency into the discussion.

3.4.4 Growth as purposive?: retention, selection and variety in the firm

The fundamental difference between evolutionary mechanisms operating in natural and social systems relates to purpose. In firms, as in other forms of social organisation, each of the core mechanisms (i.e. variation, selection and retention) is open to human agency. The biologist,

Richard Dawkins has argued the Darwinian case with great clarity. In presenting Darwinian retention mechanisms as a ‘river out of Eden’, he highlighted the fundamental difference between the encoding of information in biological DNA, and that of human knowledge in organisations. The genetic material in DNA contains immutable programmed routines, which are unchanged as a result of residing in the bodies of individuals:

‘The river of my title is a river of DNA, and it flows through time, not space. It is a river of information, not a river of bones and tissues: a river of abstract instructions for building bodies, not a river of solid bodies themselves. The information passes through bodies and affects them, but it is not affected by them on its way through’. (Dawkins 1996: 9)

In a Darwinian perspective, ‘survival of the fittest’ is the product of gradual, inter-generational selection processes, arising from differential birth and mortality rates. These ‘macro’-level effects are the subject of research conducted within the ‘population ecology’ framework (Section 3.4.1). However, the Lamarckian interpretation appears more appropriate to the study of firm-level processes (Van de Ven and Poole 1995: 519). In contrast to the strict Darwinian view, the information ‘passing through’ social organisations, such as firms, is both generated and transformed by human intervention. Cumulative path dependency cautions against an excessively voluntaristic view of agency. However, it would be easy to underestimate human capacity to break out of established patterns (i.e. to generate variety), through processes of innovation and ‘exnovation’ (i.e. removing current knowledge or organisational practices; Clark 2000: 117). While social structures may be resistant to human agency, they are not readily analogised to the immutable routines encoded in strands of DNA (cf. Nelson and Winter 1982, Nelson 1995a). Penrose’s distinctive interpretation of the firm, as ‘an area of “authoritative communication”’ (Penrose 1959: 20) (Section 2.5) brought this

issue centre stage. Her concerns were prefaced in a seminal debate over the appropriateness of particular evolutionary analogies.

3.4.5 Debating evolutionary analogies: Penrose and Alchian

Some of the most useful insights from evolutionary theorising have arisen from arguments over the application of particular analogies. One of the most striking exchanges was prompted by Armen Alchian's (1950) ground-breaking article 'Uncertainty, evolution and economic theory'. Alchian's approach, which was termed 'viability analysis', enabled economists to analyse changes in the optimum conditions of generalised production and demand functions, and thereby to predict certain changes in the characteristics of firm populations. The problematic issue, from Penrose's perspective, was Alchian's argument that economics could make valid predictions without reference to the purposive behaviour of individual firms, including their capacity for foresight and, relatedly, any assumption of profit maximising behaviour:

'[The] constellation of firms found in a new environment will have characteristics closer to the new optimal conditions than to the old [...] *And this will have happened whatever the wisdom, perspicacity, or motivation of the individual firms*'. (Alchian 1953: reprinted in Penrose 1971: 15 - emphasis added).

Edith Penrose's response appeared in an article, which included a vigorous critique of three types of biological analogy. However, her primary target the evolutionary approach presented by Alchian. The detailed argument is of less importance here, than the differing perspectives of the combatants, which continue reverberate in contemporary debates – Penrose's critique has been identified as imposing a serious block on evolutionary theorising (Phelan 1997,

1999). However, while it is true that there was little progress in evolutionary economics during the period between 1950 and the appearance of Nelson and Winter's early work in the 1970s, Penrose is an unlikely candidate as a defender of 'reactionary' liberal neo-classicism (Sections 2.3 and 4.2). Like Marshall [1920] (1986) before her, Penrose was concerned to clarify the effects of purposive human action in evolutionary theory. In contrast to her predecessor, she pursued this issue to its logical conclusion; the uniqueness of the individual firm became a central plank of the Penrosian framework:

'Firms are clusters of differentiated knowledge, and the incompletely specified contracts by which each firm is constituted allows some choice of closure. The different realisations of these dispositions, [...] and the effects of these realisations on the capabilities that are available within each firm, trace out the growth paths of these firms'. (Loasby 1999b: 91)

By contrast, Alchian's (1950) work was grounded in an attempt to predict aggregate behaviour in an economy and, 'the selection pressures which determine the characteristics of that population (Loasby 1999b: 20). It did not dispense with profit-maximisation altogether, since surviving firms would be those which had made positive profits, while the consistently unprofitable would disappear over time. Profit was relevant as an *outcome*, rather than as part of a process of choice. Hence, Alchian argued that, 'the essential point is that individual motivation, while sufficient, are not necessary'. (Alchian 1950: 217) Or, more specifically, 'The significant point is that the new optimum is approached even in the absence of foresighted appropriate behaviour of individual economic units' (Alchian 1953, reprinted in: Penrose 1971: 16). Penrose regarded Alchian's argument as a dangerous mis-application of genetic analogies to the processes occurring in the firm:

‘To treat the growth of the firm as the unfolding of its genetic nature is downright obscurantism. To treat innovations as chance mutations not only obscures their significance but leaves them essentially unexplained, while to treat them directly as purposive attempts of men to *do* something makes them far more understandable’. (Penrose [1952] 1971: 14)

In retrospect, it appears that there was truth on both sides of the argument. The differences related primarily to the level of analysis, with Alchian representing the application of quasi-Darwinian processes at the population level, while Penrose’s critique echoes the Lamarckian counter-argument at the level of the firm. The explanatory potential of the two approaches may thus be regarded as complementary. For example, Alchian’s population-level analysis help to may inform a phenomenon such as the pattern of an in industry ‘shake-out’, while firm-level analyses are required to explain the survival or failure of particular firms. Subsequent critiques of evolutionary theorising have reflected Penrose’s (1952) concerns regarding an under-emphasis on agency and its implications for firm-level dynamics:

‘Evolutionary economics has yet to incorporate an understanding of how actors engage with both internally sedimented structures (‘routines’) and external institutionalized structures in the process of furthering organizational evolution’. (Child 1997: 67)

3.4.6 Organisational evolution: purposive and multi-level

The Penrose-Alchian debate of the early 1950s supports the contention that evolutionary approaches to the growth of firms need to reflect a balance between the ‘macro’ and ‘micro’ levels of analysis. As Loasby (1999b) has argued, Penrose’s treatment of environmental selection is under-played (Section 3.3). However, her firm-level approach provides an

effective counter-balance to the homogenising and deterministic tendencies of some evolutionary theory:

‘Penrose explains how the particular history of each firm, as interpreted within its administrative framework, tends to maintain this necessary variety. Evolutionary economics is stronger on selection and replication than on the generation of variety which makes selection and replication of interest; Penrose’s theory helps to restore the balance. She has little to say about the selection of firms, but a good deal to say about the selection that goes on within firms. Variety generation is itself a selection process, and it is important that the criteria and processes of selection should vary between firms’.

(Loasby 1999b: 94)

Hence, the Penrosian approach to evolution appears capable of maintaining the mechanisms of variety-creation that are the fundamental driver of economic organisation and competition. Penrose’s emphasis on managerial agency resonates with Burgelman’s (1991) research on intra-organisational strategic processes, which suggested that internal selection could substitute, to some extent, for external selection (cf. Loasby 1991, 1999b). This insight has profound implications, regarding the explanatory scope of Penrose’s theoretical framework. More specifically, it opens the way to an extension of the framework to multiple levels of analysis, a theme that is developed in Chapter 5. The final section of the present chapter is a short digression on the epistemological issues surrounding the measurement of growth.

3.5 Identifying growth: the 'quantification bias'

3.5.1 An epistemological critique

Identifying growth appears to be a relatively straightforward empirical task. The growing firm is obvious from its bulging order book, announcements of 'new jobs created' or 'new facilities opened' and, in the longer term, for its enhanced balance sheets and capital valuation. By contrast, a stagnating or declining firm can be identified through its financial performance, or by simple observation (i.e. spare capacity, static or declining levels of employees or of capital investment). However, on reflection it is clear that growth is what Edith Penrose might have termed a 'slippery' concept, not readily reducible to such simple empirical measures. She had conceptualised the growth process around interacting processes of variety generation and selection (i.e. entrepreneurial agency, in pursuit of productive opportunity) and retention (i.e. the cumulative growth of knowledge). This subtle conception of a strategic-evolutionary growth process is obscured by an exclusive focus on quantitative input and output measures. However, the advantages of readily quantifiable measures are self-evident. They are clear and, subject to the consistency of financial reporting, relatively unambiguous. Quantitative data facilitate predictive financial and econometric modelling and provide convenient benchmarks for policy intervention. Moreover, such measures are founded on the prevailing ('Western') assumption that value is measured in terms of material accumulation. This methodological preference for quantitative measures of growth outcomes generates a quantification bias in research designs. The supporting assumptions are rarely contested, yet isolated critiques have proved insightful. For example, Ernst Schumacher (1974) identified quantification bias at a macro-economic level, where qualitative differences

in the growth process were obscured by an exclusive reliance on quantitative methods; his comments are also pertinent to growth at the level of the firm:

‘Most of the “conspicuous developments of economics in the last quarter of a century” [...] are in the direction of quantification, at the expense of understanding of qualitative differences. Indeed, one might say that economics has become increasingly intolerant of the latter, because they do not fit into its method and make demands on the practical understanding and the power of insight of economists which they are unwilling or unable to fulfil. For example, having established by his purely quantitative methods that Gross National Product has risen by, say, five per cent, the economist-turned-econometrician is unwilling, and generally unable, to face the question of whether this is to be taken as a good thing or a bad thing. He would lose all his certainties if he even entertained such a question: growth of GNP must be a good thing, irrespective of what has grown and who, if anyone, benefited. The idea that there could be pathological growth, disruptive or destructive growth is to him a perverse idea which must not be allowed to surface’. (Schumacher 1974: 39-40)

The management writer, Peter Drucker (1980), adopted similar biological analogies to emphasise that firms can pursue counter-productive forms of growth and was quick to extract the pertinent policy implications. His managerialist prescription carried the implicit assumption that qualitative differences in growth were readily identifiable and amenable to human agency:

‘A business needs to distinguish between the wrong kind of growth and the right kind of growth, between muscle, fat and cancer. The rules are simple: any growth which, within a short period of time, results in an overall increase in the total productivities of the enterprise’s resources is healthy growth. It should be fed and supported. But growth that results only in volume [...] is fat. A certain amount of fat may be needed; but few businesses suffer from too little fat [...] Finally, any increase in volume that

leads to reduced productivities, except for the shortest of start up periods, is degenerative if not precancerous. It should be eliminated by radical surgery - fast'. (Drucker 1980: 49)

Quantitative bias in conventional analyses has given rise to two fundamental distortions. First, as indicated by Schumacher and Drucker, research attention has become focused only on what can be readily measured and compared. This has had the effect of under-representing qualitative differences in growth outcomes. Second, as illustrated by the characteristics approach (Section 3.2), it has encouraged analysts to take a large conceptual leap between assumed explanatory variables and size-related outcome measures. Size, whether it is measured in numbers of employees, sales volume and similar data, remains a 'confounded variable' in organisation theory (Weick 1979), which leaves causality under-explained. In short, quantification bias has had the effect of packing a second 'black box', marked 'growth process' within the 'black box' concept of the neo-classical firm (Section 2.1). Qualitative analysis of the growth process continues to pose methodological challenges. However, Penrose's (1959) framework has provided conceptual tools that have the potential to open both of these boxes (Sections 2.5 and 4.3).

3.6 Conclusions: re-theorising the growth process

3.6.1 A summary of the argument

The growth of small firms is indeed under-theorised. There are several reasons for this. We have reviewed a number of ontological obstacles, relating to the misuse of mechanistic and biological analogy, and a less familiar epistemological critique relating to the 'quantification bias' of research on growth. Much of the literature on small firm growth has imposed overly

mechanistic metaphorical analogies, or ‘images’, of the growing firm in a policy-driven effort to isolate discrete characteristics pre-disposing firms towards high growth (i.e. ‘picking winners’) or to identify similarly generic obstacles in the firm and its environment (i.e. ‘barriers to growth’). Contributions and methodological limitations of these studies, primarily statistical analyses of aggregated cross-sectional survey data, have been summarised. This revealed a fundamental ontological obstacle, arising from their essentially ‘static’, fragmented and aggregated conceptualisation of the living firm. More specifically, these mechanistic analogies are not suitable for capturing firm trajectories, exploring critical interactions, or recreating organisational routines over time (Kogut 1997, Nelson and Winter 1982, Whipp and Clark 1986). Biological analogies are, by contrast, inherently dynamic. The long-established crosscurrent of ideas between evolutionary biology and the social sciences has yielded some valuable insights, most notably in the identification of mechanisms of selection, transmission and variety generation. However, as Penrose (1952) pointed out, the application of direct biological analogy can lead to a serious distortion of social processes. There are large differences in the explanatory potential of biological concepts. Life-cycle models offer particularly crude analogues to the operation of particular firms, beyond the familiar notions of size-related contingencies and transitional stages. Ecological modelling has proved insightful at the level of firm populations, yet has a tendency towards over-determined accounts when applied to lower levels of analysis. Penrose (1952, 1959, 1995a) provided a distinctive ‘image’ of growth, which has the potential to overcome these ontological obstacles. The Penrosian firm is purposive, its productive resources are under the control of a managerial team with a capacity for strategic (i.e. consequential) decision-making. By introducing human activity, Penrose integrated, mediated and gave life to the isolated factors found in ‘mechanistic’ growth analogies. She also challenged the implicit determinism of

much ‘biological’ theorising, while recognising that the firm was subject to the operations of higher-level selection mechanisms. There have been some signs of convergence between the fields of population ecology, evolutionary economics and the resource-based strategic management. This offers the prospect of a more valid co-evolutionary theory of firm growth (Section 5.5). However, clarity of expression is needed when combining process theories that draw on different theoretical roots, since their conceptual basis can be obscured (Van de Ven and Poole 1995: 513). The review closed by introducing an important, yet rarely considered, epistemological obstacle to researching the growth of the firm, which has been termed the quantification bias. The critique identified problems arising from exclusive reliance on quantitative measures of growth, an issue that is revisited as part of the review of Penrosian theory in Chapter 4.

CHAPTER 4 - RE-APPRAISING 'THE THEORY OF THE GROWTH OF THE FIRM'

The book is indeed so packed with ideas that it would be impossible for all of them to be consistent.

Robin Marris

Review of 'The Theory of the Growth of the Firm' (1961: 144)

[I]t is undeniably her masterpiece; a masterpiece, however, whose fundamental message has been insufficiently appreciated.

Nicolai Foss

Edith Penrose and the Penrosians (1998: 1)

This chapter presents a critical re-appraisal of Edith Penrose's major work, *The Theory of the Growth of the Firm*. It begins with a short biographical account, highlighting some of the many facets of her full and varied career. This account reveals some underlying themes that unite Penrose's seemingly disparate choice of subject-matter and which help to explain her disciplined yet maverick approach to research. The core of the chapter is a two-part critical assessment of Penrose's arguments regarding the growth of the firm, which builds on the concepts introduced in preceding two chapters. The first part is a critique of the principal components of Penrose's theory of the growth of the firm. The second part considers the work in a more holistic way. It makes the case that, while each of these components has offered valuable insights in their own right, the major contribution of *The Theory of the Growth of the Firm* lies in the unique 'Penrosian synthesis' that is outlined in the work. An assessment of Penrose's influence on subsequent theoretical and empirical research argues that economic, strategic and small firms research has failed, with rare exceptions, to recognise the implications of the Penrosian synthesis; isolated components have been adopted, while other components and inter-relationships remain largely unexplored.

4.1 Introduction

4.1.1 The Penrose legacy

Edith Penrose was, for many years, a dynamic, prolific and widely respected figure in academic and public policy circles. *The Theory of the Growth of the Firm* was well received on publication, yet the following two decades saw few empirical applications or conceptual developments with an explicit grounding in these ideas. The exception was a small group of economists, who attempted to formalise one component of Penrose's argument, the so-called 'Penrose effect', or managerial limit' to growth (Marris 1964, Rubin 1973, Shen 1970, Slater 1980b, Uzawa 1969). It was only in the mid-1980s, that Penrose's contribution to theorising the growth of the firm began to receive more detailed attention in the fields of strategy and organisation theory (Foss 1998, Kor and Mahoney 2000, Pitelis 2002a). The renewed interest prompted a commissioning editor at Oxford University Press, to propose a third edition of the *Theory of the Growth of the Firm* (Musson 2002). The new edition was duly published, with a new Foreword by Edith Penrose (Penrose 1995a). Many writers have cited Penrose (1959), primarily to acknowledge the work as an early influence on the 'resource-based' approach to strategy. However, few appear to have taken the time to absorb its accessible, yet complex and tightly interconnected web of ideas (Foss 1999a, Pitelis and Wahl 1998a, 1998b). This much is evident from the ways that her ideas are misrepresented; analysis is generally superficial and, on occasion, fundamentally misconceived. Edith Penrose died in 1996. In the period of memorialising and reflection that has followed her death, something of the depth and subtlety of her argument has begun to spread to a wider audience. This chapter is a re-appraisal of Penrose's argument and her legacy.

4.1.2 Driving across a desert

It is impossible to read Penrose (1959) without recognising the clarity of the writing and the quality of intellect that it betrays. This prompts a degree of puzzlement over the limited application of Penrosian ideas, something that increases as one becomes aware of Edith's personal dynamism and sheer tenacity, evidenced in the accounts of her many friends, colleagues and acquaintances. In considering this paradoxical life and career, one of the most striking images is of Edith and her husband E.F. 'Pen' Penrose, driving across a desert in order to attend a job interview:

'In 1959 Edith drove across the Syrian desert (Pen did not drive), through Turkey and on to England in an old Hillman estate car so that Edith could attend an interview at Cambridge University. Joan Robinson had read page proofs of *The Theory of The Growth of The Firm* and instigated the invitation. As the story goes, Austin Robinson was less impressed and a job offer was not forthcoming'. (Best and Garnsey 1999: F199)

The following review suggests a metaphorical 'ride across the desert', in which a vigorous set of ideas, developed with considerable effort, has persisted in an inhospitable, if not actively hostile, intellectual environment. The chapter begins with a review of Penrose's life and experience, identifying the ways in which it informed her choice of subject-matter and her distinctive approach to research. It then turns to an assessment of her contribution, focusing specifically on her work relating to the growth of the firm. The book is, as Penrose emphasised, 'a single argument ...' (Penrose 1959: xxii). The analysis seeks to reflect this holistic approach by reviewing the book, firstly as a series of six linked components, and then as an integrated whole. Many of its insights were lost for a generation, yet most have proved

to be of continuing relevance. And, as the journey reveals, there is still a great deal that remains to be explored.

4.2 Penrose's background, interests and concerns

4.2.1 Biographical details

Edith Tilton Penrose was born in the USA in November 1914. As her former colleagues have noted, 'Edith Penrose's life was not humdrum'. (Best and Garnsey 1999: F197). She was caught up in some of the major economic and social transformations of the twentieth century, and her life was punctuated by abrupt changes of career and extensive international travel. Much of her childhood was spent on the highways of California, where her father was a civil engineer. Her strength of character, iconoclasm and 'later amusement at grandeur and pretension' (*ibid*: F197) may in part be explained by the pioneering conditions of her early life. Edith and her two brothers were brought up in road camps; one of her childhood memories was of her mother shooting a rattlesnake that was threatening to attack the young family. Her life was also marked by several personal tragedies. Her first husband, David Denhardt, was killed in a hunting accident, leaving her widowed at the age of 20, and four months pregnant with her first son. In later years, a second son died in infancy. Edith's two brothers, both US airforce pilots, were killed while on duty.

Penrose graduated in 1936 with a BA in economics from UCLA, Berkeley and spent two years as a social worker. In 1939, she accepted a post at the International Labour Office (ILO) in Geneva. While working at the ILO with her former professor from Berkeley, the

English-born economist E.F. ('Pen') Penrose, she became involved in efforts to help Jews escaping from Germany. Edith and Pen moved with the ILO to Montreal, then to London, where 'Pen' was appointed economic advisor to the US ambassador. Edith was made his Special Assistant, with a brief from Eleanor Roosevelt to investigate social conditions in wartime Britain. In 1940, *Food Control in Great Britain*, her analysis of wartime food production, distribution and consumption, was published. Pen was heavily involved in negotiations with John Maynard-Keynes and Harry Dexter White over post-war economic policy. As a consequence, Edith was brought into contact with many leading economists of this period, including Schumpeter and Maynard-Keynes:

‘She had been greatly influenced by Schumpeter, whom she met once (Pen knew him), and as a young woman came into contact with Keynes, Meade, D.H. Robertson, Austin Robinson, H.D. Henderson, Robbins, Jewkes, all before, as she used to say later, seriously taking up economics!’ (Penrose and Pitelis: 1999: 4)

Following their marriage in 1944, the couple returned to the United States. In 1945, Pen joined the US delegation to the newly-formed United Nations. In 1947 they moved to Johns Hopkins University, where Edith pursued masters and doctoral studies. Her doctoral supervisor was the neo-classical economist, Fritz Machlup. She and Machlup shared an interest in the economics of knowledge creation and transmission, which was reflected in her (1951) thesis, *The Economics of the International Patent System*. Her interest in the growth of firms appears to have been sparked following her appointment as a research fellow at John Hopkins, where she participated in Machlup's 'College-Business Exchange Programme'. This led her to conduct fieldwork at the Hercules Powder Company, a former subsidiary of Du Pont. She spent six weeks at the company in the Summer of 1954, 'with the full

cooperation of all its personnel' (Penrose 1960: 2). The case material from the Hercules Powder Company provided an empirical base for *The Theory of the Growth of the Firm* (1959). The case study itself was removed from the final text, seemingly in response to the publisher's concerns over the length of the book (Kay 1999: 67, Penrose 1960: 1). It was subsequently published separately, receiving the Newcomen Award in 1961 for the best article in *Business History Review* (Penrose 1960). Penrose later acknowledged that her decision to research the growth of firms was a thoroughly pragmatic one. However, the combination of immersion in the 'real world' of the Hercules Powder Company, followed by an extended period of reflection, provided the stimulus for a radical theoretical reappraisal:

'I had no special interest in firms, but a Professor there [i.e. Machlup at Johns Hopkins] had a large grant to do studies of the growth of firms, and he asked a group of us to participate. I didn't mind what I specialised in, but I had to earn some money and the growth of firms seemed interesting. So I elected to work on the theory of the growth of the firm and it took me nine months of reading *and especially thinking* before I realised that the traditional theory of the firm, in which I, like other economists, had been trained, was not relevant to the problem of the growth of firms'. (cited in: Parkin and King 1992 – emphasis added)

While at Johns Hopkins, Edith and Pen became involved in the defence of Owen Lattimore, a leading sinologist and Mongolia specialist, against the accusations of Senator McCarthy's Committee for UnAmerican Activities. Increasing disillusion with the United States led to their decision to move abroad, first to the Australian National University in Canberra, and subsequently to the University College of Arts and Sciences in Baghdad (1957-59). The latter move, co-inciding with the completion and publication of, *The Theory of the Growth of the Firm*, prompted Edith's new and growing interest in the international firm and the oil industry:

‘It was a natural development of Edith’s work on the growth of the firm that she became interested in the international firm and the oil industry. Although it is often believed that her work on multinational firms is a parallel interest rather than a direct offshoot of her work on the growth of firms, she regarded her study of the international oil companies as an extension of the theory of the growth of the firm internationally’. (Penrose and Pitelis 1999: 6)

While the journey across the Syrian desert failed to deliver a position at the University of Cambridge, Edith did secure a joint readership in Economics, with reference to the Middle East, at the London School of Economics and the School of Oriental and African Studies (SOAS). In due course, her work at SOAS led to the Chair of Economics with special reference to Asia, a post that she held from 1964 to 1978. This period saw her growing interest in the oil industry, multinational companies and third world issues (Penrose 1971). Penrose’s change of focus after the publication of *The Theory of the Growth of the Firm* can be explained in straightforward biographical terms; relocation to the Middle East brought ‘Pen’ and herself into direct contact with the international petroleum industry. For her students in Baghdad, Beirut, Cairo and Khartoum, the economics of the multinational corporation and its role in economic development were clearly pressing concerns. On securing an academic post in London, Penrose chose not to pursue research on the growth of the firm (Best and Garnsey 1999: F199). However, it is possible to trace continuities in the later work, including that relating to multinational firms and economic development. The link was certainly clear to Penrose, as she indicated in the following statement, in the Foreword to a text on foreign direct investment and the multinational enterprise:

‘The twentieth century will perhaps be looked at in retrospect as the century of the ‘global’ firm [...] *The foreign firm is a special case of the growth of firms*, as Buckley points out, but a firm growing abroad encounters a number of circumstances not faced by other firms expanding only within their

national boundaries. At the same time, once a firm has entered a foreign market, its growth continues, again requiring special types of managerial strategies [...] There is much emphasis on the central role of management, often neglected in studies of multinational enterprise generally, and the processes of internationalisation. It is noted that firms grow by replacing imperfect or non-existent markets by internal ones, but they also grow by taking over other firms, and more ambiguously by making joint ventures'. (Penrose 1995b: xi – emphasis added)

In 1978 she retired from the University of London, yet took up a new post as Professor of Political Economy at a leading European business school, INSEAD, Fontainebleau. This placed her again in direct contact with the issues of the firm and its management. Following Pen's death in 1984, she retired from INSEAD and returned to Waterbeach, Cambridgeshire. She formed new links with Templeton College, Oxford (1982-1985) and was a visiting senior fellow in Managerial Economics at the University of Bradford Management Centre (1989-1992). Her long-standing interest in public policy issues had led her to join the Sainsbury committee on the pharmaceutical industry (1965-1967) and the Royal College of General Practitioners committee on chemical research ethics. In her retirement, Edith remained an active member of several governing bodies, including the council of the Overseas Development Institute and the board of the Commonwealth Development Corporation. These years saw an increased recognition by the academic community of her contribution to the theory of the growth of the firm. The renewed interest and the steady stream of visitors to her home in Waterbeach were a source of surprise and pleasure to Edith (Best and Garnsey 1999: F200, Musson 2002, Penrose and Pitelis 1999: 7). This also encouraged her to reflect on the continuing relevance of the original ideas. She had returned to the text of *The Theory of the Growth of the Firm* only intermittently, one of the most substantial published comments being contained in an anniversary lecture entitled 'The Theory of the Growth of the Firm:

twenty-five years after' (Penrose 1985). Some of her later reflections were captured in the Foreword to the Third Edition of the book (Penrose 1995a), and in a short entry on networks and the growth of the firm, published in the *International Encyclopaedia of Business and Management* (Penrose 1996). Both of these late works introduced the notion of a 'metamorphosis' of the firm:

'The stimulus of the renewed interest in her work set her thinking again about theories of the firm, both in terms of business and management, and in terms of the poverty of the neo-classical model. She became interested in how firms were changing, having toyed with the idea of a theory of the death of the firm, the idea metamorphosing into the metamorphosis of the firm [n.b. see Penrose 1995: xviii-xx]'. (Penrose and Pitelis 1999: 7)

Edith Penrose died in October 1996, shortly before her 82nd birthday, having remained an active and insightful contributor of articles and book reviews to the end of her life. Perran Penrose captured his mother's irrepressible energy and determination in the following anecdote:

'The night before she died she called the doctor, complaining of not feeling well, and he gave her something to take. As he left, she ran out after him into the road in her nightclothes to make sure that the prescription would not conflict with her evening whisky'. (Penrose and Pitelis 1999: 8)

4.2.2 Reflections on Penrose's life and thought

Penrose's life and career was characterised by variety. It combined a strict training in neo-classical theory, under one of its most orthodox exponents, with direct exposure to business organisations, government agencies and public policy. Penrose's work reflects the intellectual

rigour that is associated with an induction of the kind provided at Johns Hopkins. However, in contrast to the majority of academic economists, Penrose had accumulated a great deal of relevant experience *prior* to her formal studies. This appears to have helped her to avoid the intellectual straight-jacketing that characterises economics, and many other unitary disciplines. She remained an intellectual maverick, unwilling to accept the constraints of established frameworks, where these appeared to be in conflict with her practical experience. Robin Marris reflected on a, ‘life-long but argumentative’ friendship, noting that Penrose considered him to be, ‘unnecessarily anti-establishment and intellectually under-baked’ (Marris 1999: 47). His comments on Penrose’s unsuccessful application for a lectureship in the Cambridge economics faculty indicate the creative non-confirmity that he had detected:

‘A bad day for Cambridge but in my opinion a good day for Edith, who I think would have been suffocated there’ (Marris 1999: 48)

Penrose’s creativity was thus a potent mixture of practical experience, open-minded reflection and analytical rigour. *The Theory of the Growth of the Firm* can be seen as the product of just such a conjunction. It was spurred on by Penrose’s realisation that established theory was in conflict with the empirical evidence. However, it was insufficient simply to critique what existed, or to accommodate the evidence. Penrose recognised that, by isolating her ideas from those of neo-classical equilibrium theory, she could exploit an ‘intellectually productive opportunity’ (Loasby 1999a: 40), and construct her own theoretical explanation – her success in this task is evidenced by the support she obtained from her mentor Fritz Machlup. Edith Penrose’s son, Perran has remarked on the, ‘fascinating paradox’ that a work so far from the mainstream – indeed, which some regard as fundamentally opposed to its core tenets – was created under the guiding hand of Machlup, the doyen of neo-classical economics and self-

styled ‘old-type marginalist’ (Machlup 1967: 31, Penrose and Pitelis 1999: 5 n1). The paradox is, to a large extent, explained as a corollary of Machlup’s (1967) argument that the choice of theory depends on the problem to be solved (Section 2.2). The next section reviews the six principal components of Penrose’s growth theory.

4.3 Principal components of the Penrosian theory of growth

4.3.1 Origins and influences

Two of the core themes of *The Theory of the Growth of the Firm* can be seen as originating in previous work. The first set of ideas is associated with Penrose’s 1952 paper, ‘Biological Analogies in the Theory of the Firm’, and the ensuing debate with Armen Alchian, which centred on the role of human purpose in the ‘black box’ of the firm (Penrose 1952, 1953) (Sections 2.3 and 3.4). A second theme can be traced to Penrose’s (1951) doctoral thesis, ‘The Economics of the International Patent System’, which was concerned with the creation and transmission of knowledge. Other themes can be traced to a number of writers who are cited in the book. The economist Kenneth Boulding’s work on ‘the image’ proved influential in relation to Penrose’s subjectivist notion of ‘productive opportunity’ (Sections 2.3 and 4.3.4). She also made extensive use of official reports and industry surveys, most notably to support the arguments of the final chapters. In contrast to many orthodox economists, Penrose was happy to draw on related disciplines, including contemporary writers on industrial organisation, such as Chester Barnard, P. Sargant Florence and J.K. Galbraith. Direct experience provided the other major source of ideas. As has been noted (Section 4.2), Penrose’s post-doctoral research involved her in fieldwork at the Hercules Powder Company

during the summer of 1954. Penrose had originally intended that her detailed case study of Hercules would form a chapter within the *Theory of the Growth of the Firm*, and stated that it, ‘was designed to illustrate the arguments of that study’ (Penrose 1960: 1). However, as Kay (1999: 67) has pointed out, it is also clear that the case study itself was, in turn, an important influence on the development of those arguments.

4.3.2 A radical departure

It is difficult to appreciate the sheer audacity of Penrose’s departure from the neo-classical orthodoxy. Reflecting on her experience ‘25 years on’, Penrose noted that in the early 1950s, when she joined Fritz Machlup’s research project examining the growth of firms, ‘I elected to work on the *theory*’. (Penrose 1985: 6 – emphasis added). She describes a strong, insular and self-reinforcing sub-culture at The Johns Hopkins University that will be familiar to many academic researchers. Her fellow economists were the confident exponents of a sophisticated theory and well-established techniques. They had little time for theories of organisation:

By the middle of the century the [neo-classical] “theory of the firm” [...] could reasonably be looked on as a “mature science” in the Kuhnian sense [...] For [its practitioners] the firm was primarily a set of supply and demand functions and theoretical economists treated it in no other way; students of industrial economics were regarded as in a border area of “applied” economics. Sociologists, institutionalists, behavioural psychologists, business analysts (and especially business school teachers), though undoubtedly commendable fellows, were clearly of lesser scientific standing. They had no “hard” integrated theoretical foundation for their alleged disciplines’. (Penrose 1985: 6)

However, she was fortunate in her choice of mentor. Fritz Machlup's training was orthodox. He studied economics at the University of Vienna under two of the leading academics of the period, Friedrich von Wieser and Ludwig von Mises. However, like Penrose, he was not a prisoner of his discipline. On graduating, he had combined intellectual interests in economics and the philosophy of science with a business career in the family's cardboard-manufacturing partnership (Chipman 1987: 267-268). On his subsequent relocation to the United States, Machlup continued to pursue both 'pure' and 'applied' forms of research. As a consequence, he was one of the few economists prepared to countenance an exploration 'inside' the firm. Penrose's observes, with some amusement, the reticence of others:

'Few economists thought it necessary to enquire what happened inside the firm – and indeed their "firm" had no "insides", so to speak. I do not say they were wrong, only that being theoretical economists, they saw reality differently from other people'. (Penrose 1985: 7)

Following the Hercules fieldwork, Penrose's attention was drawn away from the traditional 'theory of the firm', towards the work of the pioneering economists of industry structure, such as E.A.G. Robinson, 'and those from other disciplines treating the firm as an organisation' (Penrose 1985: 7). She was able to maintain the support of her mentor as a result of careful efforts to distance her innovatory theory of growth from the concerns of neo-classical orthodoxy. Penrose shared Machlup's views on the purpose-specific role of theory (Section 2.3). She maintained this position throughout her career. While those studying the firm agonise over the merits of 'integrationism' (Foss 1999d), Penrose condemned any attempt to blend the neo-classical theory of the firm with emerging organisational theory:

‘Williamson finds in the development of the M-form a means of joining more fully the neoclassical theory of the firm and “bureaucratic theory”. He may be right to the extent that in the narrow sense the “profit maximisation hypothesis” becomes more applicable in the “real world”, but not if one holds as I do, that the two types of theory are designed to answer different questions and are therefore not to be compared in any meaningful way’. (Penrose 1985: 13)

4.3.3 Identifying the principal components

This section presents six principal components of the argument presented in the Theory of the Growth of the Firm. The aim is to clarify the argument presented in Penrose (1959), in order that it can be applied to the research questions regarding the connected firm. The discussion considers the way in which each component was constructed and how it is related to the others. Some components were introduced in Chapters 2 and 3; the intention here is to review them as a part of Penrose’s integrated argument (Table 4.1). The selection is based on a detailed critical assessment of *The Theory of the Growth of the Firm* and a review of the literature in which Penrose’s arguments have been discussed. The latter revealed a degree of consensus, but also a variety of emphases and several partial or incomplete assessments (e.g. Slater’s (1980a) review is detailed, but focuses largely on the implications for theoretical economists). The analysis has also been informed by the exhaustive categorisation prepared by Kor and Mahoney (2000), writing for a management research audience. Table 4.2 is a summarised comparison of the Kor and Mahoney schema and that adopted in this chapter.

Table 4.1 Six principal components in Penrose's (1959) argument

	<i>Component</i>	<i>Section</i>
1	'Authoritative communication': bounding the firm	4.3.4
2	'Resources' and 'services': a vital clarification	4.3.5
3	'Productive opportunity': option value and conjecture	4.3.6
4	'The receding managerial limit': agency and constraint	4.3.7
5	'History matters': cumulative and situated growth	4.3.8
6	Dynamics of the 'interstices': a forgotten mechanism?	4.3.9

Table 4.2 Ten fundamental arguments and the six components

	<i>Summary of the ten fundamental arguments described by Kor and Mahoney (2000: 114-119)</i>	<i>Six equivalent component(s) presented in this chapter (Fig 4.1)</i>
1	Firm growth can be usefully studied as a dynamic process of management interacting with resources.	(5)
2	Firms are institutions created by people to serve the purposes of people.	(1)
3	Services of resources are drivers of firm heterogeneity.	(2)
4	Services that material resources will yield depend upon the knowledge possessed by human resources.	(2) (3)
5	Firm growth is a function of firm-specific experiences in teams.	(2) (3)
6	Managerial capability is the binding constraint that limits the growth rate of the firm (the so-called 'Penrose effect').	(3) (4)
7	Excess capacity of productive services are drivers of firm growth.	(4)
8	Unused productive services of resources can be a source of innovation.	(2)
9	Firm diversification is often based on a firm's competencies that can lead to a sustainable competitive advantage.	(5)
10	An important component of the competitive process is experimentation.	(3)

Source: Kor and Mahoney (2000: 114-119 – tabulated and adapted)

Kor and Mahoney (2000) stated that their ten-point schema was based on the order in which the ideas appeared in Penrose (1959). As Figure 4.2 suggests, the six-point analysis presented in this chapter is broadly comparable, but arguably more coherent, with a greater emphasis on the dis-equilibrating aspects of Penrose's framework (Foss 1999a, Loasby 1999a). It also highlights an important omission in Kor and Mahoney's (2000) analysis, the concept and role of what Penrose termed 'the interstices' (Penrose 1959: 223). Component 6 of the following review, 'The dynamics of the interstices' (Section 4.3.9) is an essential, yet commonly overlooked part of Penrose's 'single argument'.

4.3.4 Component (1) 'Authoritative communication': bounding the firm

In an early passage entitled, 'The Firm as an Administrative Organisation', Penrose began to define the firm in a way that facilitated the kind of theorising that she wished to undertake. The basis for abstraction was related to the main objective of the book, since it determined those aspects of the firm that needed to be selected, and those that could be ignored:

'The object of the present study is to investigate the growth of the industrial (non-financial) firm as an economic entity in its broadest sense [...] Consequently the definition of what constitutes a "whole firm" for our purposes depends on its essential function as an economic entity in the economy.'
(Penrose 1959: 15 – emphasis in original)

For Penrose, this test of relevancy meant treating the firm as a strategic decision-making unit. This contrasted with the Coasian transactional analysis, as a basis for distinguishing firm-level co-ordinating activity from that taking place in the market (Section 2.3):

‘The essential difference between economic activity inside the firm and economic activity in the “market” is that the former is carried on within an administrative organization while the latter is not’.

(Penrose 1959: 15)

Penrose illustrated the distinction by contrasting the activities of an industrial firm and a ‘purely financial’ investment trust. This led to the important conclusion that the area she termed ‘authoritative communication’ would define the boundaries of the firm for the purposes of *The Theory of the Growth of the Firm*. The implication was that different analytical techniques might be needed, where researchers sought to explain the growth of holding company structures, rather than her subject, the industrial firm:

‘It is the ‘area of co-ordination’ - the area of ‘authoritative communication’ - which must define the boundaries of the firm for our purposes, and, consequently, it is a firm’s ability to maintain sufficient administrative co-ordination to satisfy the definition of an industrial firm which sets the limit to its size as an industrial firm. Nevertheless, it cannot be presumed that if this limit is exceeded the organisation has become ‘inefficient’; it may merely have become a different type of organisation to which a different type of analysis must apply.’ (Penrose 1959: 20)

As has been noted (Section 2.5.2), the term, ‘authoritative communication’ was an acknowledged borrowing from Barnard’s pioneering (1938) managerialist account, *The Functions of the Executive*. In a footnote, Penrose explained that her views did not differ fundamentally from those presented by contemporary organisation theorists, and that she was not attempting to extend their work:

‘I am concerned only with those aspects of these large and complex subjects which will be of use in the theory of the growth of the firm to be developed later’. (Penrose 1959: 16, n2)

Her analysis of human motivation is, accordingly, focused on the perceptions and behaviours of the managerial team. In doing so, Penrose reflected her concern for human purpose in organisations (Sections 2.5.2 and 3.4.4). These themes are developed in Components 2 and 3.

4.3.5 Component (2) 'Resources' and 'services': a vital clarification

A short (two page) section entitled, 'The Firm as a Collection of Productive Resources', might be regarded as the 'birthplace' of the Penrosian approach to growth. In a careful reading, it also differentiates the Penrosian approach to resources from the bulk of the subsequent 'resource-based' literature (Sections 2.4 and 2.5). Penrose's first move was to establish the firm as more than simply an administrative unit. The firm had a 'cohesive character' (Penrose 1959: 24), which derived from the 'authoritative communication' of its managers, and which justified separating it, for analytical purposes, from other economic groupings. The activities of an industrial firm could be further distinguished by the fact that managers were free to deploy its productive resources in different ways over time:

'A firm is more than an administrative unit; it is also a collection of productive resources the disposal of which between different uses and over time is determined by administrative decision. When we regard the function of the private business firm from this point of view, the size of the firm is best gauged by some measure of the productive resources it employs.' (Penrose 1959: 24)

Penrose's apparent motivation for clarifying the nature of the resource base was to establish a more appropriate measure of firm size, a pre-requisite for her theory of growth. Having placed resources at the centre of her analysis, she made a second move, introducing the vital distinction between 'productive resources' and the 'productive services' that they create:

‘Strictly speaking, it is never resources themselves that are the ‘inputs’ in the production process, but only the services that the resources can render. The services yielded by resources are a function of the way in which they are used – exactly the same resource when used for different purposes or in different ways and in combination with different types or amounts of other resources provides a different service or set of services. *The important distinction between resources and services* is not their relative durability; rather it *lies in the fact that resources consist of a bundle of potential services* and can, for the most part, be defined independently of their use, while services cannot be so defined, the very word service implying a function, an activity. As we shall see, it is largely in this distinction that we find the source of the uniqueness of each firm’. (Penrose 1959: 25 – emphasis added)

In other words, resources represented an economic *input* with an option value (Section 4.3.3), whereas services were the *output*, the activity itself. In a brief but telling footnote, presumably directed at fellow economists, Penrose explained that she had rejected the conventional term ‘factors of production’ to describe these inputs, ‘precisely because it makes no distinction between resources and services’ (Penrose 1959: 25, n1). The interactions between these concepts are central to *The Theory of the Growth of the Firm*, and are inseparable from the notion of ‘productive opportunity’, which is discussed in the next section. This aspect of her theorising confronted the common practice, in mainstream economics, of treating the application of resources as homogenous across firms (Clark 1998: 3). Perhaps unsurprisingly, Penrose’s essential distinction has escaped much of the equilibrium-oriented ‘RBP Mark I’ literature (Section 2.5). However, it is also largely absent from ‘RBP Mark II’, including studies that are routinely cited as Penrosian. For example, Itami and Roehl (1987) adopted the term ‘invisible assets’ in place of ‘resources’ and ‘capabilities/services’ and showed how their effective mobilization could form the basis for a ‘dynamic’ strategic fit. While the approach to invisible assets was innovative (e.g.

introducing the notion of lagged ‘repercussion’ effects arising from their accumulation over time), the conflation of concepts was a retrograde step:

‘Invisible assets are the real source of competitive power and the key factor in corporate adaptability for three reasons: they are hard to accumulate, they are capable of simultaneous multiple uses, *and they are both inputs and outputs of business activities*’. (Itami and Roehl 1987: 12-13 – emphasis added)

The ‘dynamic capabilities’ approach (Teece *et al.* 1997) also dispensed with the term ‘resource’, in favour of ‘firm-specific asset’. Its ‘processes, positions and paths’ approach was informed by a number of related strategy concepts, but remains constrained by the absence of a Penrosian ‘resources-services’ dynamic. The following extract from an interview that Penrose gave to a doctoral student, indicates that she shared the view that later resource theorists had conflated ‘resources’ and ‘productive services’, thereby missing the essential issue of conversion:

‘[I] argued that the resource-based literature did not fully explain value-creation (instead focusing on the value appropriation aspect). Professor Penrose expressed strong agreement with my observations [...] The problem was, she said, that the resource-based literature had not fully pursued her position and had been too concerned with the analytical properties of resources. The literature had, hence, partly neglected her fundamental insight that resources were only a means to an end’. (Haanæs 1997: 17 cited in Foss 1998: 5)

Spender’s (1994: 355) review was a notable exception, which recognised the Penrosian emphasis on the firm as a, dynamic body in action’. The paper was an explicit rejection of the search for advantage amongst resources that are logically prior to the firm’s activities:

‘The resource-based shift may be an error. Focusing only on the acquisition and protection of core resources, we overlook how the resources are applied, i.e. how a potential resource-based competitive advantage is transformed into revenue. The processes of resource acquisition and protection merely protect and sustain the rent-potential not the revenue [...] When we overlook the resource application processes we miss what it means to bundle resources together so that they become a firm. [...] Resource-based theory has paid little attention to the construction and management of the bundle’.

(Spender 1994: 354)

Penrose (1959) focused precisely on these processes of construction and management, by linking the concepts of resources, services and productive opportunity (Section 4.4).

4.3.6 Component (3) Productive opportunity: option value and conjecture

Penrose’s third major move built explicitly on the conception of the firm outlined in Components (1) and (2) above (Penrose 1959: 31). However, the concept of ‘productive opportunity’ was a much bolder step. It was problematic for economic theorists because it was predicated on an unquantifiable degree of Knightian entrepreneurship, explaining the variable capacity of firms to perceive opportunities, and of Schumpeterian entrepreneurship, explaining their capacity to exploit it. Penrose was conscious of the lack of conceptual clarity with respect to entrepreneurship. She attempted to clarify this ‘slippery concept’, by distinguishing entrepreneurial and managerial services (Penrose 1959: 33-41) (Section 4.3.8). However, the assertion that growth is limited by ‘productive opportunity’ is still entirely contrary to the objective conception of knowledge that underpins conventional economic theory (Clark 1998: 1, Kor and Mahoney 2000: 115). Where this component is presented in isolation, there is still scope for a selective reading that down-plays, or simply ignores, its

subjectivist implications. However, by incorporating this insight into an *integrated* theoretical explanation, Penrose located her single argument in direct opposition to the mainstream:

‘The productive activities of such a firm are governed by what we shall call its “productive opportunity”, which comprises all of the productive possibilities that its “entrepreneurs” see and can take advantage of. A theory of the growth of the firm is essentially an examination of the changing productive opportunity of firms; in order to find a limit to growth, or a restriction on the rate of growth, the productive opportunity of a firm must be shown to be limited in any period’. (Penrose 1959: 31-32)

The section, ‘The Role of Expectations in the Productive Opportunity of the Firm’ saw Penrose in her most subjective mode of enquiry. It was an explicit extension of her vitriolic critique of explanations that failed to take account of purposive behaviour (Alchian 1950, Penrose 1952, Penrose 1971) (Section 3.4.5). It appears that this component in her argument was already largely developed when she came across Kenneth Boulding’s (1956) anticipation of social constructionism, *The Image* (Section 2.2.4). Penrose was evidently impressed with this, ‘imaginative little book’. She noted that, ‘Image is so apt a word for my purposes that I promptly appropriated it’ (Penrose 1959: 5, n5). The influence of the firm’s ‘environment’ was not ignored. As she later noted, it was, ‘put on one side in the first instance in order to permit concentration on the internal resources of the firm’. (Penrose 1995: xiii). In contrast with many of its later exponents, Penrose was at pains to emphasise the *limits* of subjectivism, acknowledging the ‘reality’ of the selection environment in which the firm operated:

“Expectations” and not “objective facts” are the immediate determinants of a firm’s behaviour, although there may be a relationship between expectations and “facts” – indeed there must be if action is to be successful [...] *In the last analysis the “environment” rejects or confirms the soundness of the*

judgements about it, but the relevant environment is not an objective fact discoverable before the event'. (Penrose 1959: 41 – emphasis added)

Penrose explored this anomaly and concluded that, because environmental influences are always mediated by firm-level factors, analysis of the growth process must *begin* at the level of the firm:

‘Therefore, except within very broad limits, one cannot adequately explain the behaviour of firms or predict the likelihood of success merely by examining the nature of environmental conditions’ (Penrose 1959: 42).

In the Foreword to the Third Edition, Penrose emphasised two important corollaries of this argument. First, that each firm’s ‘productive opportunity’ was unique, and relatedly, that neither the *rate* nor the *extent* of the growth of the firm was determined by exogenous factors; both were influenced by firm-level activity:

‘The “relevant” environment, that is the set of opportunities for investment and growth that its entrepreneurs and managers perceive, is different for every firm and depends on its specific collection of human and other resources. Moreover, the environment is not something “out there”, fixed and immutable, but can itself be manipulated by the firm to serve its own purposes’. (Penrose 1995a: xiii)

Penrose (1959) had asserted that demand conditions *per se* should not limit growth of an industrial firm willing and able to diversify into new products and markets. Three decades on, she was able to claim some empirical support for this insight:

‘The analysis of the process of diversification combined with the analysis of the costs of growth on the supply side, seems to have stood up reasonably well to the passage of time’. (Penrose 1995a: xiii)

In a related discussion, entitled ‘The Quality Of Entrepreneurial Services’, Penrose explored the pivotal role of *the firm* as a context for entrepreneurial agency. The following quotation makes the explicit link between this process and the creation of new productive opportunity:

‘Many of the most important services that a firm’s entrepreneurs can produce are not the result of “temperamental” characteristics of the individual men but are shaped and conditioned by the firm itself [...] for the “production” within the firm of an important class of entrepreneurial services is a significant aspect of its changing productive opportunity’. (35)

The role of the firm in generating entrepreneurial services was fundamental to the concept of the ‘receding managerial limit’ (Section 4.3.7). Because all productive services emerged from firm-level activity, they shared the common characteristic of being context-specific, difficult to reproduce, and hence a fundamental constraint upon growth:

““Specificity” of entrepreneurial resources means that some of the productive services most essential for expansion will not be available to the firm even though all managerial services which are required for efficient operation in a particular field are fully available’. (Penrose 1959: 36)

Furthermore, as Penrose pointed out, explanations of failure to grow were often incorrectly attributed to demand conditions when the underlying cause was an absence, or limited supply, of these ‘specific types of productive services’ (*ibid*: 37). This insight anticipated later critiques of an excessive voluntarism found in parts of the management literature, which have either underestimated the impact of structural constraint or exaggerated the biddability of productive resources and services (Scarborough 1998).

4.3.7 Component (4) 'The receding managerial limit': agency and constraint

Penrose's examination of the internal dynamics of the firm revealed that the same mechanisms operated to stimulate growth, and to limit the rate at which it occurred. These were, in her terms:

'The forces inherent in the nature of firms which at the same time create the possibilities for, provide the inducements to, and limit the amount of expansion they can undertake or even plan to undertake in a given period of time'. (Penrose 1959: 4-5).

As the argument developed, Penrose isolated three 'classes of explanation' for this observed limit on the rate of growth: managerial ability; product or factor markets; and uncertainty and risk. Of these, managerial ability was identified as an internal (or endogenous) factor, markets were external (or exogenous), while uncertainty and risk were the product of both internal attitudes and external conditions. Penrose's achievement was to introduce a radically different definition of growth, based on reducing the limits upon managerial expertise (Clark 1998: 2). She argued that this inherent, managerial limit on the growth rate of an individual firm was, 'by its nature temporary' (Penrose 1959: 5), since it receded as a direct consequence of the interaction of the managerial team (i.e. Components 1 to 3). The receding managerial limit was first expressed in economic terms, highlighting its 'disequilibrating' character:

'[A]fter the completion of an optimum plan for expansion a new "disequilibrium" has been created in which a firm has new inducements to expand further even if all external conditions (including the conditions of demand and supply) have remained unchanged'. (Penrose 1959: 5)

This was followed by one of the most widely-quoted passages, which provides a succinct summary of this phase of the argument:

‘As management tries to make the best use of the resources available, a truly “dynamic” interacting process occurs which encourages continuous growth but limits the rate of growth’. (Penrose 1959: 5)

In essence, the Penrosian firm required managerial resources with (necessarily pre-existing) experience within the firm in order to absorb new managers and other resources. Marris (1999: 51) noted how this concept echoed his father’s remarks on troop reinforcements (i.e. that, ‘you cannot instantly create an effective military unit by bringing together trained people who have never worked before with each other [...] they need time to bed down; they need time to learn each other’s ways’). Managerial resources also needed time to bed down. Since this was not something that could be acquired from the market, it represented a necessary limit on the *rate* of growth:

‘Since there is plainly a *physical* maximum to the number of things any individual or group of individuals can do, there is clearly some sort of limit to the rate at which even the financial transactions of individuals or groups can be expanded... the capacities of the *existing* managerial personnel of the firm necessarily set a limit to the expansion of that firm in any given period of time, for it is self-evident that such management cannot be hired in the marketplace’. (Penrose 1959: 45-46)

However, the managerial constraint did not limit the *extent* of growth. On the contrary, the infusion of new blood initiated its own dynamic: once each increment of growth was completed, managerial resources became available for further expansion. This was because activities could be routinised, economising on cognitive effort, and allowing managers to consider new possibilities. The concept became identified as the ‘Penrose curve’ or ‘Penrose

effect’, and was the main focus of efforts to formalise *The Theory of the Growth of the Firm* (Section 3.5):

‘The firm’s existing human resources provide both an inducement to expand and a limit to the rate of expansion. Even growth by acquisition and merger does not escape the constraints imposed by the necessity of using inputs from existing managerial resources to maintain the coherence of the organisation. This is the essence of the so-called ‘Penrose curve’, which has been applied in a number of contexts, and even, to my surprise, to agricultural enterprises’. (Penrose 1995a: xii)

4.3.8 Component (5) ‘History matters’: cumulative and situated growth

Having established the primary mechanisms driving the growth of the firm, Penrose mapped out the content of the processes they engendered and the patterns that were displayed over time. Growth in the Penrosian firm was a product of its past activities, and the knowledge that these activities had generated:

‘One of the primary assumptions of the theory of the growth of firms is that “history matters”; growth is essentially an evolutionary process and based on the cumulative growth of collective knowledge, in the context of a purposive firm’. (Penrose 1995a: xiii)

Penrose took the opportunity of the Third Edition to acknowledge more recent work on knowledge and evolution. For example, she cited Loasby’s (1991) text, *Equilibrium and Evolution*. Loasby had made use of the same component of the Penrosian argument to support his contention that ‘equilibrium’ at the firm level was itself, ‘the consequence of an evolutionary process during which managers learn to operate effectively together within a particular environment’ (Loasby 1991: 61). The ‘kind of temporary evolutionary equilibrium’

(Penrose 1995a: xiv) that arises in a firm, at any particular point in its history, was differentiated from the generalised – and unrealisable – equilibrium of neo-classical economics. She also complemented Best's (1990) analysis of business cycles in capitalism. In this book, Best made an explicit attempt to demonstrate how the selection mechanisms associated with Schumpeterian 'creative destruction' (Schumpeter 1954: 81-86) could be reconciled with the Penrosian mechanisms of knowledge-based growth. He argued that the relative success of Japanese firms in the preceding decade was could be explained by just such a conjunction:

'[T]he successful Japanese firm has combined Schumpeter and Penrose, and thereby altered the notion of entrepreneurship from "big ideas by individuals" to a social process of learning within which individual contributions can come from the bottom up, as well as from specialist staff'. (Best 1990: 138)

The importance of this combination lies in the modification of Schumpeter's singularly 'destructive' interpretation of industry dynamics:

'While the gales of Schumpeterian destruction almost invariably have a devastating effect on individual products over time, the same does not necessarily hold as far as the firm itself is concerned'. (Kay 1997: 82)

Schumpeterian innovations might destroy (core) capabilities, but firms are not simply passive vessels in which such capabilities reside. As Kay (1997: 82) has noted, 'the internalisation of creative destruction is the corporate equivalent of the elixir of life'. He further argued that this internal selection process would be, 'certainly easier' for highly diversified companies, but noted that, 'it is a feat that even some fairly specialized companies have managed to

achieve' (*ibid*: 82) (n.b. the empirical study investigates how this process operates in small and highly specialised connected firms). In its Penrosian interpretation, the firm provides an institutional setting for conjecture and innovation. It is the area of 'authoritative coordination', in which available 'productive services' are evaluated against, and directed towards perceived 'productive opportunities'). The variety generating element is reflected in Penrose's distinction between 'entrepreneurial services' and 'managerial services', both of which were required to some degree in most firms. Penrose's extended definition of these terms, highlighted their significance in her analysis, and echoes March's (1991) distinction between 'explore' and 'exploit':

'Entrepreneurial services are those contributions to the operations of a firm which relate to the introduction and acceptance on behalf of the firm of new ideas, particularly with respect to products, location, and significant changes in technology, to the acquisition of personnel, to fundamental changes in the administrative organization of the firm, to the raising of capital, and to the making of plans for expansion, including the choice of method of expansion. Entrepreneurial services are contrasted with managerial services, which relate to the execution of entrepreneurial ideas and proposals and to the supervision of existing operations. The same individuals may, and more often than not probably do, provide both types of services to the firm'. (Penrose 1959: 31 n1)

It is arguable whether this distinction survived the re-designation of Penrosian 'services' as 'capabilities' (Richardson 1972), but there is some evidence of rediscovery (e.g. Itami and Roehl 1987, Nonaka and Takeuchi 1995). However, the concept remains important because it assumed a pivotal role for *the firm* in generating entrepreneurial conjecture and agency:

'Many of the most important services that a firm's entrepreneurs can produce are not the result of "temperamental" characteristics of the individual men but are shaped and conditioned by the firm itself

[...] for the “production” within the firm of an important class of entrepreneurial services is a significant aspect of its changing productive opportunity’. (Penrose 1959: 35)

In a Penrosian framework, internal processes of selection and variety generation are shaped by the knowledge practices retained and accumulated within the managerial team. The firm supports an evolutionary growth dynamic by providing ‘connections’, between past activities and future options (Loasby 2001: 10). However, the Penrosian evolutionary process differs from that of many evolutionary theorists. While all firms display degrees of path dependency, this is tempered by their ability to create new paths into the future.

4.3.9 Component (6) Dynamics of the ‘interstices’: a forgotten mechanism?

Penrose’ final major move, in *The Theory of the Growth of the Firm*, was to introduce the concept of the ‘interstices’ of the economy. Interstices were defined as strategic opportunities for the growth of smaller firms, which themselves arose from the inability of larger firms to exploit ‘productive opportunities’ arising from their own growth (Penrose 1959: 221-225). The concept of interstices is examined in some detail in the following paragraphs. There are two reasons for emphasising this component in the argument. First, because it has been either omitted from, or under-represented in, subsequent accounts of Penrosian theory. Second, because it has the effect of extending the argument from the firm level to incorporate mechanisms in the wider economic environment, a point of particular relevance to the research objectives of this thesis (Section 1.2). In the closing sentences of Chapter 9, Penrose signalled a move from the analysis of growth within the firm to a consideration of the wider competitive environment. She summarised the argument to date, noting its limitations:

‘What we have set forth is a “typical” pattern of growth (or “growth curve”) that is widely believed to characterize the successful business firm, an explanation couched in terms of the mechanism of growth and related to the problems of growing bigger and not merely to the complexities of absolute size’. (Penrose 1959: 213)

Penrose’s overall aim was to ensure that her theoretical explanation was sufficiently ‘general’, encompassing all of the mechanisms that exerted a *systematic* influence on the growth of industrial firms. However, in its present form, the theory failed to account for the growth of an entire sub-category, the small industrial firm. The problem arose as a result of an earlier simplifying assumption regarding the ‘environment’ in which small firms competed, which enabled small or new firms to grow unimpeded until it was large enough to face the environment of ‘big business’ competition:

‘Thus we evaded what is widely held to be the characteristic position of the small firm in a developed economy – an inability to compete with large firms, an inability which precludes its growth into those areas particularly suitable for the operations of larger firms’. (Penrose 1959: 214)

If the ‘characteristic’ position of small firms was that pre-existing structural factors (i.e. in Penrose’s (1959: 214) terms, ‘the “environment” in the shape of competition from large firms’) determined their growth, then the other Penrosian mechanisms (i.e. Components 1 to 5), would be nullified:

‘In other words, environmental conditions would limit the growth of small firms regardless of their resources or entrepreneurial ability’. (Penrose 1959: 214)

This was a crucial point for Penrose's *general* theory of growth. Its explanatory claims would be undermined if they failed to account for such a generalised phenomenon:

'That a particular firm may not possess the productive services which would enable it to take advantage of opportunities in the economy for expansion is evident, and of no consequence for our analysis. But if whole groups of firms are in such a position because of their size alone, then the problem is more general and becomes of considerable significance for the theory of the growth of firms'. (Penrose 1959: 214)

Chapter 10, 'The Position of Large and Small Firms in a Growing Economy' was an explicit attempt to resolve the problem of growth in the small firm, and to incorporate it into the Penrosian framework. In so doing, it refined the simplified conceptualisation of the environment that had been adopted in preceding chapters:

'Aware of the possibility that the growth of this large group of firms may be more controlled by the environment than by the quality of resources or the enterprise and ingenuity of entrepreneurs, many readers have probably been uncomfortable with the way in which external conditions have so far been handled in this study'. (Penrose 1959: 215)

The main target for refinement was the highly subjectivist approach to the environment used to introduce the concept of the 'productive opportunity' of the firm:

'The environment has been treated not as an objective "fact" but rather as an "image" in the entrepreneur's mind; the justification for this procedure is the assumption that it is not the environment "as such", but rather the environment as the entrepreneur sees it, that is relevant for his actions'. (Penrose 1959: 215)

Penrose acknowledged that this subjectivist argument was based on the assumption that opportunities for expansion did, in some sense, 'exist'. She introduced a note of 'reality' into the argument, deferring in characteristic style to the pragmatic and the empirical 'businessman':

'Now none but the most philosophically sophisticated businessman will accept the proposition that the opportunities for the expansion of his firm are simply his ideas about what his firm can do; he will insist that the opportunities he sees reflect the "facts" of the world, facts that may be known with indifferent accuracy to be sure, but facts none the less'. (Penrose 1959: 216)

If large firms in a sector were already enjoying size-related economies, smaller rivals faced structural barriers to expansion. In a rarely-cited section, entitled 'The Continued Existence of Small Firms', Penrose asked why small firms continued to exist, if the competitive disadvantages were so serious. Penrose presented a characteristically 'dynamic' interpretation of the problem, which also served to highlight the limitations of prevailing 'static' and cross-sectional interpretations (cf. Blundel and Hingley 2001, Freel 1998):

'It would seem that at any given time a fair number of small firms would be in existence simply because they were young, and that at a later date the same firms would have developed into medium-size or large firms. This possibility, however, is rarely included among the explanations advanced for the existence of small firms, the analysis usually being presented in terms of the economies and diseconomies of size, using a kind of "static" or cross-section approach'. (Penrose 1959: 220)

She presented four conventional explanations for the continuing existence of small firms, which were consistent with a broadly-defined class of firms, 'that do not grow or, at least, that do not grow very much' (Penrose 1959: 220): (1) Firms undertaking activities unsuited to

large firms; (2) Firms protected by large firms for public relations reasons; (3) Firms in industries where entry is easy; (4) Firms in industries where ‘big firms have not got around to mopping them up’. Penrose’s fundamental point was that these four categories of explanation were insufficient to account for observed changes in the population of firms, and specifically for the continuing emergence of small firms:

‘If the existence of small firms could be accounted for by the explanations advanced, we should expect a shifting population of small firms and a steady expansion of large firms without any significant increase in the numbers of the latter. In fact, however, we find that as an economy grows the number of firms classed as ‘large’ also increases, even in an advanced economy. How does this come about if existing older and larger firms have such powerful competitive advantages over newer and smaller firms that the latter are confined to areas where they cannot grow very much?’ (Penrose 1959: 221-222)

Penrose’s attempt to explain this anomaly began from an assumption that large firms *did* enjoy a generalised competitive advantage over the newer, smaller ones. However, since there was an inherent limitation on the growth of larger firms, even under the ‘most favourable’ conditions, their growth would *necessarily* result in the creation of unexploited productive opportunities. It was into these temporary windows of opportunity, or ‘interstices’, that small firms could deploy their productive services:

‘If [...] the opportunities for expansion in the economy increase at a faster rate than the large firms can take advantage of them and if the large firms cannot prevent the entry of small firms, there will be scope for the continued growth in size and number of favourably endowed small firms, some of whom will themselves enter the “large” category in time. I propose to call these opportunities for small firms the *interstices* in the economy. The productive opportunities of small firms are thus composed of those interstices left open by the large firms which the small firms see and believe they can take advantage of.’ (Penrose 1959: 222-223)

For Penrose, the interstices appeared to be wholly a product of large firm activity, a by-product of the limited rate of expansion of the larger firm and remaining subject to its pursuit of productive opportunity. For example, she noted that interstices may be invaded by the large firm in a way that, ‘destroys the small firm’s opportunity, either driving it out of business or purchasing it outright’ (Penrose 1959: 223 n1). Hence, productive opportunities were determined, albeit inadvertently, by the activities that larger firms chose to pursue, and represented a kind of residual option set:

‘[T]he nature of the interstices is determined by the kinds of activity in which the larger firms find their most profitable opportunities and in which they specialize, leaving other opportunities open’. (Penrose 1959: 223)

In a section entitled ‘Interstices in a Growing Economy’, Penrose used the observed situation in the United States of the 1950s, to demonstrate the dynamics of the interstices, indicating the ways in which large firm decisions affected the creation and nature of small firm opportunity. She suggested that rapid increases in demand might lead (profit-maximisation oriented) large firms towards increasing output of their *existing* products, since this is where ‘managerial effort per dollar of expansion’ is at its lowest. However, this contrasted sharply with the situation where new industries and technologies are being developed:

‘In the earlier stages of rapid industrial development the interstices may be very wide and numerous simply because the established firms are so few and because many new industries are coming into being. There seems considerable evidence, however, that very quickly each of the major industries tends to become dominated by a few large firms and a high degree of concentration develops early’. (Penrose 1959: 224)

This insight shaped the arguments presented in the final chapter of *The Theory of the Growth of the Firm*, where Penrose turned her attention to the industrial policy implications of her argument. The concept of the interstices was thus the essential component linking the preceding, firm-level analysis to an interpretation of inter-firm dynamics. In the following chapters, the concept of the interstices is re-applied in order to investigate changes in the productive opportunity of the connected firm.

4.4 The 'Penrosian synthesis'

4.4.1 The case for 'a single argument'

This section aims to distinguish what is termed, 'the Penrosian synthesis' – that is, the single holistic argument that Penrose emphasises in the Preface (Penrose 1959: xxii) – from the six principal components of the argument, which have been analysed in the previous sections. The term, 'Penrosian synthesis' has been coined by the author to replace more cumbersome forms. It refers to Penrose's single, holistic argument, as presented across the eleven chapters of *The Theory of the Growth of the Firm*. The intention is to clarify Penrose's original argument, and to enable a contrast to be drawn with incomplete and otherwise distorted interpretations.

The argument presented in, *The Theory of the Growth of the Firm*, is characterised by an unusual richness and diversity of concepts. In the words of its first reviewer, the book was indeed, 'packed with ideas' (Marris 1961: 144), ranging from the psychological traits of entrepreneurs to the role of small firms in the industrial policies of nation-states. The case

presented here is that, while the insights associated with particular components were major contributions in their own right, Penrose's real and lasting achievement was to *combine* these somewhat disparate concepts into a working theoretical explanation of the growth of the firm. This view contrasts with Robin Marris's (1961) assertion that the absence of a *formal* analytical model indicated a lack of concern for interactions between the concepts:

'This book – which, if the evidence of last year's students' essays is any guide, is likely to prove one of the most influential of the decade – does not purport to provide an integrated analytical model of the growth of the firm. Rather, it describes the why and the way, the controlling boundaries of a historical process. It is far more than an institutional description; new concepts are introduced and defined, and to some extent interactions analysed: *we could say that the author is concerned with the theoretical internal biology of growth, but not, at this stage, with the logical interdependence of the whole picture which emerges*. The book is indeed so packed with ideas that it would be impossible for all of them to be consistent'. (Marris 1961: 144 – emphasis added)

Marris's (1961) verdict, which was published in the influential *Economic Journal*, had coincided with his own efforts to develop a formal model of growth. Four decades on, Marris maintained the position that Penrose (1959), 'lacked an *economically* interpretable account of the *motives* growth' (Marris 1999: 48 – emphasis in original). The difference may be regarded as one of disciplinary perspective, rather than of substance. While there has been some formalisation and elaboration of particular components of *The Theory of the Growth of the Firm*, the broader implications of the 'Penrosian synthesis' have often remained unacknowledged. In his endorsement to the Third Edition, the evolutionary economist Richard Nelson wrote:

‘The basic propositions Edith Penrose put forward were provocative and path-breaking. However, few then ventured to go down the path she blazed. Time has passed, and over the last decade that path has become crowded with scholars of firm behaviour, some of whom have only the dimmest awareness that the ideas they are working with were first put forward by Penrose’. (Nelson 1995c: ii)

The reasons for this reticence are not hard to find. While Penrose was careful to isolate her project from that of neo-classical orthodoxy, it was still a radical break with academic convention. Her case-based research methods were atypical, but the most significant signal of her ‘maverick’ status was her willingness to broach established disciplinary divides (Section 2.2). However, multi-disciplinarity was a necessary element in pursuing her goal. Penrose had, in effect, resumed Adam Smith’s unrealised search for ‘connecting principles’ in the field of production and wealth creation (Loasby 1999a, Skinner 1987). Furthermore, as the earlier discussion of the ‘interstices’ concept has illustrated, Penrose was willing to incorporate multiple levels of analysis, the only criterion for inclusion being that the concept contributed to a systematic explanation of the growth of the firm.

4.4.2 Experience, analysis and synthesis

Penrose’s approach to research was a reflection of her multifaceted life (Section 4.2). Her inductive methodological approach was highlighted in the comment that, ‘Theory is needed precisely *because* reality is so complicated’, (Penrose 1989: 11). However, she was also a holistic and conceptual thinker, subjecting the inherent complexities of ‘reality’ to a penetrating combination of analytical abstraction and creative synthesis:

‘For Penrose the world is inherently complex. We need theory to make sense of the world and to act sensibly within it. Her research method involved close observation and detailed documentation of individual firms. But she used observation to distil her conceptual model, not to prove or disprove hypotheses’. (Best and Garnsey 1999: F195)

Penrose’s methodological choices, and their exhaustive justification in the early pages of *The Theory of the Growth of the Firm*, were consistent with an inductive approach to theory construction, while meeting the more pragmatic concern to retain the support of her peers:

‘Penrose’s focus on constructing a theory appropriate to a well-defined problem, and her avoidance of direct criticism may be inter-related with the methodological stance of Fritz Machlup, her mentor and leading neoclassical economist and methodologist. Machlup drew a distinction between methodology, a branch of philosophy that addresses how knowledge is established, and methods applied to specific problems (Stan Engerman, private correspondence). While not a theoretical framework he shared, Penrose was free to develop methods appropriate to explaining her chosen problem’. (Best and Garnsey 1999: F196, n12)

Penrose’s approach is sometimes misinterpreted. For example, *The Theory of the Growth of the Firm* is often compared to the business historian Alfred Chandler’s classic (1962) work, *Strategy and Structure*. The two books were developed independently, and though the authors have subsequently cited one another (e.g. Chandler 1990, Penrose 1995a), they did not meet until the 1990s (Best and Garnsey 1999: F200). Chandler’s comments on the meeting highlighted the intrinsic differences in their disciplinary approaches:

‘[A]t the Business History Conference here in Boston a few weeks ago, I met Edith Penrose. We had a number of discussions. It was interesting that her approach and mine were diametrically opposite, but that our findings had similarities. She came to conclusions through deductive economics and I came to

mine through inductive historical study' (Chandler, letter to Joseph Mahoney, dated 11 May 1993: cited in Kor and Mahoney 1999: 129)

However, Chandler was perhaps over-stating these methodological differences. As Kor and Mahoney (2000: 129) have noted, while Penrose (1959) is written in the *style* of deductive economic theorising, her research *methods* were also informed by inductive reasoning, of the kind adopted by Chandler. Her son, Perran Penrose echoed this view, suggesting that Penrose's inclination was to combine wide-ranging inductive reasoning, drawn directly from 'real world' experience, with the cool and measured abstractions of the theoretical economist. This combination appears to have reflected the continuing influence of Fritz Machlup and her husband, 'Pen' Penrose, and the constantly changing circumstances of her turbulent life:

'Perran Penrose maintains that Edith Penrose was influenced by two men: "Pen, who was a stylistic pedant, a great believer in non-specialization; trained in economics at Cambridge in the early 1920s with all that that means; and Fritz Machlup ... an incredible pedant and absolutely rigorous"'. (Best and Garnsey 1991: F198, n14)

'Edith's economic preoccupations were frequently a response to situations in which she found herself. Although in one sense this characteristic meant that she did not follow a given path over time, in another it contributed to the way she approached theory, from observing the real world and trying to make sense of it'. (Penrose and Pitelis 1999: 6)

For her own part, Penrose attributed her elegant prose style to the influence of her high school English teacher (Best and Garnsey 1999: F197). However, the extensive footnotes that punctuate *The Theory of the Growth of the Firm* could be interpreted as a pragmatic

compromise between the competing requirements of clarity of expression, rigorous argument and a perceived need to defend her unconventional argument from all sides.

4.4.3 The nature of the synthesis: knowledge and organisational dynamics

The growth of knowledge is the unifying theme, the ‘glue’ that binds the Penrosian synthesis. Penrose’s (1995a) reflections, in the Foreword to the Third Edition, underline this point, and make the critical connection between the knowledge dynamic and the facilitating role played by organisational factors:

‘[A] firm’s *rate* of growth is limited by the growth of knowledge within it, but a firm’s *size* by the extent to which administrative effectiveness can continue to reach its expanding boundaries.’ (Penrose 1995a: xvi –emphasis added)

Penrose was well aware of that this formulation was open to the charge of tautological argument, but her approach avoided it by elaborating a coherent process theory, something that was absent from existing, outcome-oriented definitions of growth (Clark 2000: 221) (Section 3.5). Penrose presented a, ‘learning by doing’ (Arrow 1962) view of the firm as a, ‘dynamic body of knowledge in action’ (Spender 1994: 355). She argued that organisations comprised different, but closely-related, forms of knowledge. ‘Objective’ knowledge was capable of formal transmission and in principle separable from specific individuals or groups. However, knowledge also took the form of ‘experience’, which was context-specific and thus neither transmissible nor separable (Penrose 1959: 53). While Penrose acknowledged the importance of objective knowledge, her Boulding (1956)-inspired analysis was focused on the unfolding of experience in organisations:

‘Once it is recognised that the very processes of operation and of expansion are intimately associated with a process by which knowledge is increased, then it becomes immediately clear that the productive opportunity of a firm will change even in the absence of any change in external circumstances or in fundamental technological knowledge. New opportunities will open up which did not exist at the time expansion plans were made’. (Penrose 1959: 56)

This opened the door to a new perspective on organisational knowledge as subjective, situated and emergent – a dynamic body of knowledge practices that generated their own unique historical path:

‘One of the primary assumptions of the theory of the growth of firms is that “history matters”; growth is essentially an evolutionary process and based on the cumulative growth of collective knowledge, in the context of a purposive firm’. (Penrose 1995a: xiii)

Penrose (1995a) acknowledged more recent work on the relationship between knowledge and organisation, giving particular emphasis to Loasby’s (1991) study *Equilibrium and Evolution*. Loasby had adopted a Penrosian conceptualisation of the firm to support his contention that ‘equilibrium’ at this level was itself, ‘the consequence of an evolutionary process during which managers learn to operate effectively together within a particular environment’ (Loasby 1991: 61). It was in this, ‘kind of temporary evolutionary equilibrium’ (Penrose 1995a: xiv), that the managerial team found time for conjecture regarding the application of productive services to perceived productive opportunities. Penrosian learning thus moderated the ‘perennial gale of creative destruction’ in Schumpeter’s (1954: 81-86) analysis. Internal selection complemented the external selection emphasis found in the mainstream of evolutionary economics, demanding a renewed focus on the firm. Kay’s (1997) distinction

between the market and the firm, highlights the latter's roles as an organising context for future-oriented decisions (Section 4.5):

‘What an organizational structure does is put into place capabilities for future decision-making [...] Effectively, hierarchy is a device for procrastination’. (Kay 1997: 53)

The Penrosian synthesis clarified the mechanisms that *generated* this organising context and highlighted the implications for the growth of the firm. The structuring of the firm's activities was the product of previous cycles of learning. Past internal selection processes had become embedded in its practices in the form of organisational routines (Nelson and Winter 1982), or in repertoires of recurrent action patterns (Clark 2000). The routinisation of these knowledge practices economised on what Penrose termed the firm's, ‘managerial’ and ‘entrepreneurial’ services (i.e. its capabilities). This provided the cognitive space in which managers could think about future courses of action. Loasby's (1991) temporary ‘equilibrium’ could thus be equated with Penrose's dynamic concept of a ‘receding managerial limit’. However, these managerial conjectures were doubly situated. First, because the productive services over which they ranged were the product of the firm's ‘unique’ history, entrenched in its interlocked actions and relationships (e.g. established manufacturing or logistical systems) (Whipp and Clark 1986). Second, because the managerial team's perception of productive opportunities, was also shaped by past experiences, and by the shared interpretive frameworks that these experiences had created (e.g. ‘dominant logics’, or sets of assumptions, regarding products, competitors etc.). These doubly situated managerial conjectures were not necessarily path dependent; entrepreneurial agency could ‘rage’ against structural constraint. However, their subjective and firm-specific qualities rendered them resistant to aggregated forms of analysis.

The Penrosian synthesis provided an explanatory theory to account for a dynamic and idiosyncratic process of knowledge generation and application. It also indicated how ‘Penrose Rents’ arose from the application of firm-level collective knowledge, with the implication that situated activity within the firm, rather than *ex ante* differences in acquired resources, lay at the heart of a firm’s competitive advantage (Foss 1997b, Spender 1994). The synthesis took the analysis of the growth process a great deal further than competing explanations (Sections 3.2 and 3.3). However, the integrated and concentrated nature of the ‘single argument’ has made it difficult to summarise, either verbally or visually.

4.4.4 Building on the Penrosian contribution

In the following chapters, the original Penrosian synthesis is both modified and re-applied in a way that can help to explain the growth of small artisanal firms in contemporary networks. Chapter 5 comprises a critique and a number of modifications, which extend Penrose’s argument beyond the conventional boundaries of the firm. As Penrose (1995a) had anticipated, the modifications incorporate Richardson’s (1972) paper, providing a coherent link with contemporary network literature and the connected firm.

CHAPTER 5 – BLURRED BOUNDARIES AND UNFOLDING ZONES OF MANOUEVRE: A MODIFIED PENROSIAN FRAMEWORK

I was once in the habit of telling pupils that firms might be envisaged as islands of planned co-ordination in a sea of market relations. This now seems to me a highly misleading account of the way that industry is in fact organised.

George Richardson
'The Organisation of Industry' (1972: 883)

Too much previous thinking has neglected the pre-existing stratified social reality and has presumed that discursive penetration is sufficient to transform existing organisations. Equally seriously, too much thinking about the future ignores the degrees of freedom and zones of manoeuvre. Robust analysis acknowledges the pre-existing, the unfolding and the future configuration of events.

Peter A. Clark
***Organisations in Action: Competition between Contexts* (2000: 292)**

The chapter outlines a modified Penrosian framework. Its aim is to incorporate the full scope of Penrose's thinking on the growth of the firm, to address specified limitations and to embrace the novel empirical challenges of explaining growth amongst connected firms. The main task identified is to extend the analysis beyond the boundaries of the firm, addressing the effects of network relationships. It begins by reviewing the literature addressing network morphology and dynamics. This is followed by a review of recent conceptual and empirical work on the co-evolution of firms and networks. The notion of co-evolution raises the underlying issues of spatiality and history, which are applied in the empirical study. The concluding section revisits Penrose's central concept of the 'interstices'. This concept is re-interpreted in a way that may help in overcoming the challenge of spatiality and, hence, provide a more informed explanation of the growth of connected firms.

5.1 Introduction: Penrose and the connected firm

5.1.1 'Metamorphosis': business networks and Penrosian theory

Penrose was frequently her own best critic, and in her final work she anticipated one of the most important extensions to the Penrosian synthesis. The Foreword to the Third Edition of *The Theory of the Growth of the Firm* concluded with a section titled 'Metamorphosis', an all-too-brief discussion of business networks and their implications for her theory. Penrose noted that network concepts first appeared in '19th century literature' in the form of industrial districts or clusters, but had become the basis for an expanding research field and a multiplicity of organisational forms:

'The term 'network' or 'business network' now technically refers to formal contractual arrangements or alliances among a limited number of firms bound together in an interrelated managerial framework sometimes even referred to a 'quasi firms' or 'virtual corporations. There are now a great variety of different forms for business networks involving technology licensing, franchising, R&D arrangements, information services, supply, marketing and advertising arrangements etc. The literature at the time of writing is at an early stage and is rapidly growing'. (Penrose 1995a: xix)

Penrose's explanation for the spread of inter-firm networking was conventional, linking it to empirical evidence on the growth of global businesses, the influence of computing and telecommunications technologies and related competitive pressures. However, her assessment of the impact of networks on individual firms was both distinctive and consequential. She recognised that networks blurred the boundaries of the firm, challenging one of the principal definitional tools used in *The Theory of the Growth of the Firm*:

‘The individual companies do not lose their “independent” identity but the administrative boundaries of the linked firms become increasingly fuzzy and the effective extent to which any firm exercises control is often not at all clear. Although formal contracts form the legal basis of such groups, their co-operative operations may not be based so much on the exercise of controls as on consensus emerging from shared goals and mutual dependence amongst the participants’. (Penrose 1995a: xix)

Penrose clarified this distinction in a business encyclopaedia entry on the ‘growth of the firm and networking’. She argued that criterion for determining whether, ‘any given arrangement’ was to be seen as part of a network or alliance or as part of a firm, was the capacity for managers to exercise control over resources and services, as depicted in her original, firm-level analysis:

‘The crucial point is the extent to which the administrative structure or “managerial reach” of the firm in question is believed to be significantly involved’. (Penrose 1996: 1722)

Penrose saw the consequences of increased networking in terms of a fluctuating balance of ‘costs’ and ‘benefits’ for firms. Network relationships might prove transitory, becoming undermined by exogenous changes, or by endogenous factors such as the growth of participating firms (Penrose 1995a: xx). However, it is clear that she regarded the network phenomenon as a potential challenge to her (1959) analysis. Penrose’s closing comments in the (1995a) Foreword signalled her concern:

‘The business network is very different from a cartel of independent firms in its structure, organisation, and purpose. It is clear that this type of organisation is likely to continue to spread for some time and continue to engage in a competition very different from that analysed between firms in so-called free markets. *This may call for a new ‘theory of the firm’ in economics* and changed views about the

behaviour of markets and the effects of ‘free market’ competition’. (Penrose 1995a: xx – emphasis added)

Similar wording was included in Penrose’s (1996) encyclopaedia entry. However, the (1995a) Foreword included the additional comment, italicised in the quotation above, to the effect that, ‘a new “theory of the firm” in economics’ might now be required (Penrose 1995a: xx). This statement might be interpreted as a reference only to the neo-classical theory of price and output (Section 2.2). However, Penrose’s decision to include it in the Third Edition of *The Theory of the Growth of the Firm* suggests that it was a call for her arguments to be reviewed in the light of these new organisational forms.

5.1.2 The approach adopted

The chapter discusses a number of modifications, building on Penrose’s later reflections. The discussion begins by outlining three limitations in the original Penrosian synthesis: addressing collaboration beyond the firm’s administrative boundaries; incorporating broader contextual influences; and conceptualising exchanges between levels of analysis. It continues with an outline of the proposed modifications, based around a critical review of the networks literature and some limited applications of relevant social theory. The primary objective of the exercise is to identify mechanisms that can have a *systematic* influence on the growth of connected firms. The operation of these mechanisms is explored in the empirical study (Chapters 6 to 8). Theoretical reflections on the outcomes are set out in Chapter 9, and the practical implications are reviewed in Chapter 10.

5.2 Limitations in the Penrosian synthesis

5.2.1 Revisiting the 'Hercules' study

The Hercules case study (Penrose 1960) was fundamental to the original theorising in *The Theory of the Growth of the Firm* (Section 4.2.1, 4.3.2). It serves, therefore, as an exemplar of the limitations discussed in this section. The Hercules Powder Company is the focal firm in this study. Hercules is located in an industry context, yet there is little analysis of factors beyond the firm and its immediate markets, and no sense of interaction or emergence. Penrose (1960: 3) portrayed relationships, 'in the chronology of the changing productive opportunity' of the firm. The mode of explanation was a direct expression of Penrose's thesis regarding the link between resources, services and productive opportunity:

'In the explanation of the course of expansion of a particular firm and of the limits to its rate of expansion, it is illuminating to put the chief emphasis on its "inherited" resources and productive services, including its accumulated experience and knowledge, for a firm's productive opportunity is shaped and limited by its ability to use what it already has'. (Penrose 1960: 3)

The narrative began at the firm's inception in 1913, as an 'amputated piece of Du Pont', the product of an anti-trust suit initiated by the Federal government in 1907. The end of the First World War was also identified as a source of unused resources, stimulating the redeployment of the firm's technological base towards new productive opportunities. However, other analysis of even the *market* context remained sketchy. The account of an 'extraordinarily versatile' cellulose gum, CMC illustrates this point:

‘The firm was much impressed with the properties of this chemical composition but was not sure to what use American industry could put it. Perhaps CMC could be used in the sizing of textiles (Hercules already produced some types of fabric coating). No one knew; nevertheless, advertisements were placed in trade papers describing the product and inquiring “What do you see in CMC?”. The product caught on. Here, surely, is an almost perfect example of the creation of consumer demand as a consequence of entrepreneurial desire to find a use for available productive resources’. (Penrose 1960: 8-9)

This account was plausible and engaging, but it did not move far beyond the *ex-post* rationalisations of the Hercules managers, to explore the phenomena that had given rise to their new market opportunities. More specifically, it addressed neither the temporality nor the situated nature of the processes that had generated these surface-level effects. This does not imply that research should probe each industry along an endless causal chain, rather that abstract analysis should incorporate any *systematic* contextual influence on the growth of the firm (Section 5.4). One of the strongest elements in the analysis was its repeated emphasis on interaction effects, between the market opportunities of the firm and the productive services available from its own resources (*ibid*: 14). The case traced six examples of product and market development, including agricultural chemicals, plastics and oil additives. However, the scope of each account was restricted to the boundaries of the firm. This was exemplified in Penrose’s account of an alliance, which appears to have been the source of new knowledge practices:

‘[I]n 1954 Hercules, together with the Alabama By-Products Corporation, set up the Ketona Chemical Corporation to produce anhydrous ammonia using by-product coke oven gas as a raw material, the first ammonia plant to use this process in the United States’ (*ibid*: 16)

The case contained no exploration of subsequent interactions between the partner firms. More specifically, it did not address the impact of this connection on the firm's resource base, its productive services or its perception of productive opportunity. Overall, there was a very limited account of the process in which firm-level entrepreneurial agency had been shaped by emergent factors that operated beyond its administrative boundaries. The limitation appears to derive from Penrose's research methods, which combined recollections of past and present Hercules managers with access to its internal documentation. These may have given an undue emphasis to her hypothesis regarding the 'inherited' resources and services of the firm (*ibid*: 3), and a corresponding under-representation of those inherited from its context.

5.2.2 Towards a 'deeper' ontology of growth?

The central theme of the thesis is to re-appraise the Penrosian theoretical framework and its application to small artisanal firms that are connected to production and consumption networks. The arguments presented have indicated how an over-emphasis on firm-level analysis is likely to obscure the fundamental interactions that extend beyond the 'blurred' boundaries of the firm. The critique has been divided into three related parts. The first is concerned with the absence of inter-organisational collaboration activity in the original framework. The second considers the absence of broader contextual factors. The third assesses the implications for conceptualising the multi-level processes that are implicated in the two preceding arguments.

5.2.3 Critique (1) addressing collaborative activity

The failure to address collaborative activity across firm boundaries is a major limitation in original Penrosian analysis, when it is applied to the ‘New Competition’ (Best 1990, 2001) and to the growth of connected firms. Hence, while Penrose *did* refer to collaborative agreements in the Hercules case study (Penrose 1960: 16), she did not explore the consequences for the firm (Section 5.2.1). Furthermore, the case study failed to address the antecedents of this alliance, a strategic choice that would appear amenable to a Penrosian interpretation:

‘For example, why did Hercules collaborate with Alabama rather than going it alone through internal expansion or acquisition? What did a joint venture offer that a simple contract did not? (Kay 1999: 83)

This particular omission has been explained on the grounds that, ‘it was not a major strategic issue’, either for The Hercules Powder Company or for other industrial firms of the period (Kay 1999: 83). Other plausible explanations include the influence of prevailing theoretical concepts and business practices. Penrose had derived her ideas on the focal role of managerial team from Barnard’s (1938) boundary-setting concept of a sphere of ‘authoritative communication’, and Boulding’s (1956) subjectivist elaboration (Section 2.5). She was also influenced by the firm and market dichotomy of neo-classical economics (Section 2.2). In addition, Penrose was writing at a time when strategic planning was in the ascendant. In short, Penrose was working in an intellectual climate that did not lend itself to the analysis of interaction across these administrative boundaries. The problems are evident in Penrose’s discussion of the ‘receding managerial limit’, one of the six principal arguments identified in the previous chapter (Section 4.3). Penrose (1959: 44) argued that, ‘Expansion does not take

place automatically; on the contrary, the composition and extent of an expansion programme, as well as its execution, must be planned'. The limit on this planned expansion was seen as arising out of the knowledge and attitudes of the '*existing* managerial personnel of the firm' (Penrose 1959: 45 – emphasis in original). The subsequent 'blurring' of the boundaries of the firm has provoked new epistemological questions that challenge this position (Section 5.1.1). How, for example, is the existing managerial 'team' (Penrose 1959: 45-49) to be defined if the sphere of authoritative communication extends beyond conventional administrative boundaries? What is the implication for the mechanisms underpinning the managerial limit to growth? These questions are consequential, since in the original Penrosian argument, it is the finite nature of the services available from the existing management team that limits the rate of growth of the firm (Penrose 1959: 45-46) (Section 4.3.7). Hence, the primary challenge in modifying the Penrosian synthesis is to establish the effect of network connectivity on the 'managerial reach' (Penrose 1996: 1712) of the firm.

5.2.4 Critique (2): incorporating broader contextual factors

The Penrosian synthesis also provides a limited account of what Clark (2000: 218) has termed, 'the capabilities of the context', including both the impact of the domestic context within which a firm has grown, and the effect of the different sectoral contexts of competitors and partners. This limitation can also be seen as resulting from Penrose's tendency to see the firm as the sole location for co-ordination, excluding the role of 'extra-firm authoritative organisations' in economic integration and the development of distinctive capabilities (Whitley 2000: 66). It is arguable whether this lacuna blunted the core analysis of a case study that was set in the corporate heartland of mid-20th century America. However, it

becomes a significant factor when the theoretical framework is applied to contemporary industrial dynamics. The coupling of convergent trends in global capitalism and persistent differentiation has been interpreted as a necessary corollary of the rise in global resource and informational flows:

‘It is true, of course, that the extraordinary efficiency of modern transportation and communication technologies has made possible many new and far-flung spatial configurations of the world economy. This possibility is realised, however, not through the elimination of the effects of geography, but in the concrete appearance of ever more finely grained patterns of locational differentiation and specialization and interregional trade. In the world we inhabit today, space has not become a less important factor in the structuring of economic processes; on the contrary, it has become considerably more important’.
(Scott 1997: 399)

Research into the relationship between spatial difference and economic processes has proliferated in a number of fields, including: neo-institutional theory, history, economic geography, strategy and regional studies (Nohria and Eccles 1992, Oliver and Ebers 1998). In its ‘varieties of capitalism’ interpretation, there is a direct linkage between closer integration of economic activity at an international level and increasing specialisation at the level of national industrial systems and sectors:

‘Indeed, in so far as the international economy does continue to become more integrated, it can be argued that societies with different institutional arrangements will continue to develop and reproduce varied systems of economic organization with different economic and social capabilities in particular industries and sectors. They will, therefore, “specialize” in distinctive ways of structuring economic activities that privilege some sectors and discourage others’. (Whitley 2000: 3)

Research of this kind can contribute to an elaboration of the Penrosian synthesis that incorporates the influence of context-specific factors on growth at the level of the firm. However, attention to context in empirical studies must be bounded according to the nature of the research question. As Penrose (1959: 15) commented with respect to neo-classical theory, it is not the ‘*degree* of abstraction’ that determines its appropriateness, ‘but rather the *kind* of abstraction’ undertaken. Hence, in the empirical study reported in the following chapters, the context is national rather than comparative, but the analysis refers to institutional factors operating over extended time periods and across national boundaries, where these are capable of generating systematic effects in the connected firm.

5.2.5 Critique (3): conceptualising multi-level interaction

The third limitation relates to linkages between levels of analysis. The Penrosian synthesis was located primarily at the level of the managerial team and for reasons stated previously, these processes cannot be readily extrapolated to higher levels (Section 5.2.1). However, the Penrosian concepts of ‘productive opportunity’ and the ‘interstices’ may offer some potential for extension. Any modification of these linkages also needs to take account of recent work on interaction effects between levels. This suggests firms ‘co-evolve’ with higher level organisational forms, such as business networks and industry sectors, thereby implicating broader contextual factors (Barnett and Burglemann 1996). The notion of co-evolutionary linkages challenges prevailing analyses of firm-level processes:

‘Currently there is considerable attention to the internal environment, but [...] it is *the co-evolution of context and firm* which should grip the attention of analysts and practitioners. Therefore, the emphasis

upon the resource based strategic approach needs to be thoroughly contextualised'. (Clark 2000: 213 – emphasis added)

Clark's (2000) critique raises a number of questions that are pertinent to the growth of the connected firm. For example: how is the interaction between firm, network and broader context to be explored?; what are the relevant factors and how do they articulate with the 'internal' processes discussed thus far? Several agenda-setting contributions have highlighted the challenge of multi-level analysis within a co-evolutionary framework (Aldrich 1999, Barnett and Burgelman 1996, Clark 2000, Lewin and Volderba 1999, Lewin and Koza 2001, McKelvey 1997). The position taken in this chapter is that a modified Penrosian synthesis has the potential to inform the new wave of multi-level and co-evolutionary research that is now emerging in the fields of organisation theory, industrial economics and strategy.

5.2.6 Modifying the Penrosian synthesis

The following sections introduce three main extensions of the Penrosian synthesis beyond the boundaries of the firm. In each case, the discussion focuses on the potential influence of that concept on the growth of knowledge within the connected firm (Table 5.1). The key to the proposed modifications is to build on her systematic treatment of growth and situated knowledge (Section 4.4):

'[G]rowth is essentially an evolutionary process and based on the cumulative growth of collective knowledge, in the context of a purposive firm' (Penrose 1995: xiii)

Table 5.1 Modifying the Penrosian synthesis

<i>Critique</i>		<i>Proposed modification</i>	<i>Section</i>
1	Addressing collaborative activity	Identify common ground between Penrosian synthesis and relevant elements in the literature on the structure and dynamics of inter-organisational networks.	5.3
2	Incorporating the broader context	Incorporate elements of the network and related literatures that address the role of spatial factors.	5.4
3	Conceptualising multi-level interaction	Explore the application of multi-level analytical techniques in order to address the co-evolution of firm, network and broader levels of analysis. Redeploy Penrosian concepts of productive opportunity and the interstices in order to extend analytical scope.	5.5

5.3 Collaborating beyond the boundaries

5.3.1 From Penrose to networks: Richardson's (1972) insight

Business networks are neither a new, nor a newly-discovered phenomenon. For example, Alfred Marshall's [1920] (1986) empirical and conceptual work on 'the location of industry' anticipated much of the recent work on spatial networks (Section 5.3.2). However, in the last two decades, business networks have been identified as a distinctive, if somewhat contentious, form of governance. The following definition is illustrative of current approaches in organisational research:

'Network governance involves a select, persistent and structured set of autonomous firms (as well as non-profit agencies) engaged in creating products or services based on implicit and open-ended contracts to adapt to environmental contingencies and to co-ordinate and safeguard exchanges. These contracts are socially - not legally - binding'. (Jones *et al.* 1997: 913)

Business network research has been prone to certain weaknesses, including a tendency to idealise network forms over markets and hierarchies, to under-represent the embedded nature of all three forms of economic co-ordination, and to blunt the critical analysis of property rights under these organisational forms (Rowlinson 1997: 74-78). The status of networks as a distinctive governance mechanism remains contested (Jones *et al.* 1997), yet there are strong assertions of its value in organisational analysis and many empirical exemplars (Ebers 1999, Nohria and Eccles 1992). Ebers and Grandori (1997) have argued persuasively that network research can be contribute more effectively to organisation theory by moving from crude typologising towards a more probing analysis of the variety of contemporary network forms:

‘Focusing on co-ordination mechanisms, we could develop a somewhat different and more fine-grained conceptualisation of networks and various forms of networking, as compared to those anchored in the two extreme ideal types of markets and hierarchical firms’. (Ebers and Grandori 1997: 267)

The renaissance of the network perspective has been associated with Michael Best’s (1990) ‘New Competition’ thesis (Nohria 1992: 2), and with evidence of associated technological and institutional innovation (Section 1.2). It has followed many decades during which industrial economics, strategy and organisation studies had either ignored or underplayed the importance of a firm’s external linkages (Grandori and Soda 1995). The lack of attention to inter-firm collaborative relationships was, in part, due to the well-protected dichotomy that had been established between ‘markets’ and ‘hierarchies’ (Section 2.2). While the distinction has retained some analytical value, its emphasis on extreme types has also proved an obstacle to the analysis of firm and industry dynamics:

‘I was once in the habit of telling pupils that firms might be envisaged as islands of planned co-ordination in a sea of market relations. This now seems to me a highly misleading account of the way that industry is in fact organised’. (Richardson 1972: 883)

The primary link between *The Theory of the Growth of the Firm* and the network literature is to be found in Richardson’s (1972) article. His pioneering contribution was to provide a plausible explanation for inter-firm co-operation, and to establish it as an ‘institutional fact’, which was obscured in the false choice between an ideal-typical hierarchy and market. Richardson’s production-oriented approach drew explicitly on Penrose (1959), and thus contrasted sharply with Coasian transaction cost interpretations (Williamson 1975) (Section 2.3). He retained Penrose’s resources-services distinction, but adopted the term ‘capabilities’ for the latter. The central argument can be paraphrased as follows. Economic activities have to be undertaken by organisations with appropriate capabilities. ‘Similar’ activities are those based on the same capabilities (e.g. carpentry skills can be used to make chairs and tables). ‘Complementary’ activities are those that represent different phases of one production process (e.g. growing trees, cutting timber, making chairs, selling chairs). Complementary *and* similar activities can be co-ordinated within a single firm. Complementary but *dis-similar* activities are normally co-ordinated beyond the firm, *either* through the market mechanism or by inter-firm collaboration. Hence, inter-firm collaboration is likely to displace markets where the activities requiring co-ordination are ‘closely complementary’ (i.e. they require ‘quantitative and qualitative’ co-ordination), but otherwise dis-similar. Richardson made no claim to a comprehensive explanation, observing rather that, ‘Theories of industrial organisation, it seems to me, should not try to do too much.’ (Richardson 1972: 896), yet his capabilities-based explanation appears consistent with contemporary industrial practice. Consider, for example, how fresh produce is supplied to multiple food retailers. Until the last

quarter of the 20th century, these activities were organised at a distance, through the medium of wholesale markets. Today, they are co-ordinated through close ‘partnership’ links between retailers and growers, who are engaged in dis-similar yet closely complementary activities. Inter-firm collaboration is necessary to ensure that an enormous variety of highly-perishable, weather-dependent products can be sourced and delivered within the precise quantity, quality, time and cost parameters demanded by the multiples (Blundel and Hingley 2001; Fearne and Hughes 1999; Harland 1996).

5.3.2 Spatiality and ‘situated’ knowledge

Richardson’s (1972) explanation used ‘resources-services’ to specify the generic conditions in which co-ordination is likely to operate through network relationships. However, his paper did not address other components of the Penrosian synthesis, including the extent to which other firm-level features might be replicated beyond its boundaries (Pitelis 2002: 312). His theory is thus complemented by work that has addressed the historical and spatial characteristics of network forms, and hence of the situated nature of the knowledge that they generate. The locational dimension is reflected in network terms such as ‘cluster’, ‘agglomeration’ and ‘milieux’, yet the treatment of contextual factors has been either rudimentary or somewhat ambivalent. The differences arise from the two broad approaches that have been adopted. The network analysis approach gives primacy to quantitative analysis in the sociometric tradition. This leads to a high degree of abstraction from specific contexts in favour of generalised, parsimonious explanations (Burt 1992a, 1992b, Tichy *et al.* 1979). The second strand tends to emphasise qualitative techniques, exploring network structures and dynamics as a special case of the ‘embeddedness’ of economic relationships (Granovetter

1985). Empirical studies in this strand have adopted a variety of methodological stances. These take account of contextual factors to varying degrees at different levels of analysis (Henry and Pinch 2000, Jones 2001, Lawson and Lorenz 1999). This chapter, and the empirical study that follows, are informed primarily by work conducted in the latter strand. However, following Granovetter (1985, 1992), the basic complementarity and inter-connection of the two approaches is acknowledged (Section 6.4).

The role of networks in the generation of situated knowledge can be traced the Marshallian ‘industrial district’, a term that is now applied somewhat loosely to localised networks of independent firms operating in related markets (Brown and Hendry 1997). Alfred Marshall devoted a chapter of *Principles of Economics* to the localisation of industry. His aim was to, ‘follow the fortunes of groups of skilled workers who are gathered together within the narrow boundaries of a manufacturing town or a thickly peopled industrial district.’ (Marshall [1920] 1986: 225). Marshall based his original concept on empirical research in several locations, including the Lancashire textile industry and Sheffield cutlery industry. These districts illustrated his general view that knowledge and organisation were twin ‘agents of production’, combining to provide a fundamental growth dynamic for capitalist economies:

‘Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants. Organisation aids knowledge; it has many forms. e.g. that of a single business, that of several businesses in the same trade, that of various trades relatively to one another, and that of the state providing security to all and help for many. The distinction between private and public property in knowledge and organisation is of great and growing importance: in some respects of more importance than that between public and private property in material things; and partly for that reason it seems best sometimes to reckon Organisation apart as a distinct agent of production’. (Marshall [1920] 1986: 115)

This model of economic development was based on a recognition that increasingly specialised knowledge (i.e. 'differentiation') was matched by increasingly complex forms of co-ordination (i.e. 'integration'). Marshall recognised that both 'internal organisation', within the firm, and 'external organisation', beyond the boundaries of the firm, were required in order for integration to be achieved. Effective internal and external networks were thus a prerequisite for economic development and a potential source of competitive advantage. Piore (1992) extended Marshall's argument to clarify the role of knowledge within networks. He employed Marx's distinction between the 'social' and 'detailed' division of labour. As Marshall had suggested, industrial districts represented one solution to the problem of (re-)integrating specialised knowledge (i.e. co-ordinating activities in order to produce a marketable product). Piore argued that industrial districts were based on a 'social' division of labour. This meant that each activity had, 'a distinct conceptual core' (e.g. a craft or technical specialism such as cheese-making, leather-working etc.). Social division of labour allowed people to reflect on their activity, deepen their knowledge and enhance performance. The factory system, by contrast, was based on a 'detailed' division of labour, as exemplified by the pin factory in Adam Smith's account. Here, the task allotted to each worker (e.g. pin heading, component assembly) had no independent meaning, it was simply part of a rationalised and mechanised process. The factory system 'solved' the problem of re-integration by bringing detailed tasks under one roof, where they were re-conceptualised by managers. Flexible specialisation, based on a social division of labour, solved the re-integration problem in a different, and arguably more effective, way:

'Network structure facilitates both the deepening [of knowledge] and the reintegration because to better integrate with other conceptual specialities, the specialists are forced to develop their own speciality more fully. The conceptual level of understanding in this form of growth permits horizontal co-

ordination, thus avoiding hierarchy, but the degree of interactions across specialties is too intense to permit a market'. (Piore 1992: 443)

Marshall's [1920] (1986) concept of 'external organisations' and Piore's (1992) application of the social division of labour provide a useful complement to Richardson's (1972) arguments, and lend inadvertent support to the contention that the Penrosian growth dynamic may operate in a similar fashion within and between firms. Both firms and networks can provide the stable setting for recurrent cycles of conjecture, experience and reflection:

'Reputations have to be earned, local institutions developed and skills practised in the varying circumstances of a trade. Learning by experimentation is continuous, and both internal and external organisations provide frameworks within which to learn'. (Loasby 1999b: 98)

Thus, in this interpretation, Penrosian learning has retained its situated character, whether it is operating within or beyond the boundaries of the firm.

5.4 Situating networks: spatial and temporal factors

5.4.1 Sources of spatial and temporal difference

From the earliest times, economic activity has had a strong local flavour. This section illustrates some of the most plausible sources of systematic spatial and temporal difference in network forms. The aim is not to produce an comprehensive inventory, but rather to indicate how the Penrosian synthesis, and the 'cumulative growth of knowledge' in particular, might need to be modified at the inter-organisational level in order to take account of structural

factors. The review is divided into four sections: ‘pre-existing’ structures; emergent structures; entrepreneurial agency; multi-level and co-evolutionary effects. Empirical studies have been selected in order to clarify the nature of each effect.

5.4.2 ‘Pre-existing’ structures

Four sources of pre-existing structure have been selected: natural resource configurations; ‘Upas tree’ effects; founding conditions and template effects. Each has been highlighted as exercising a formative influence on the nature of particular networks, and hence a source of persistent differentiation between networks.

(a) **Natural resource configurations:** The uneven distribution of natural resources, including geological formations, soil types, plant varieties and micro-climates, has provided an *initial* impetus for geographic specialisation, a characteristic identified in Marshall’s [1920] (1986) original conceptualisation of the industrial district:

‘Straw plaiting has its chief home in Bedfordshire, where straw has just the right proportion of silex to give it strength without brittleness; and Buckinghamshire beeches have afforded the material for the Wycombe chair-making. The Sheffield cutlery trade is due chiefly to the excellent grit of which its grindstones are made’. (Marshall [1920] 1986: 223)

The pre-existing configuration of natural resources has influenced the evolution of inter-organisational networks over extended periods. For example, Shropshire’s iron industry developed from at least the early 16th century to form part of a complex an inter-dependent network of firms, which extended from the Lake District to South Wales. Two centuries on,

its brief period of pre-eminence as the ‘cradle of the Industrial Revolution’ was also contingent on natural resource factors. The exploitation of more extensive coalfields in other parts of the country, coupled with its erratic transport route (i.e. the flood-prone River Severn), contributed to its decline throughout the first half of the 19th century (Trinder 1983). Population movements are perhaps the most obvious spatial ‘re-distribution’ of resources, whose influence may endure. Migrant communities contain many of the common precursors of entrepreneurial networking (Aldrich 1995, 1999, Birley 1985, Johannisson 2000) (Section 5.4.4). Hence, in Marshall’s [1920] (1986) characteristically bold assertion, the ‘mechanical faculty’ of (19th century) Lancashire might be traced to the (11th century) decision of Hugo de Lupus, a Norman duke, to relocate skilled metalworkers in the town of Warrington.

(b) **‘Upas tree’ effects:** Empirical studies have indicated that a history of large-scale manufacturing employment can inhibit the growth of inter-firm networks. Checkland’s (1981) metaphorical analogy of an ‘Upas tree’ effect, referred to a Sumatran tree that poisons surrounding land, restricting the growth of other plants. In this instance, the structural effect of past activities is identified in the absence of the requisite mix of institutions, culture and capabilities for network development. Examples of Upas tree effects have been identified in various manufacturing regions (Penn 1992). For example, a relatively low emphasis on firm-level learning in the Nottinghamshire textiles industry, was explained as being, ‘due in part to the historical dominance of the industry by the large retailing organisations that have in the past insisted on arms-length contracting arrangements.’ (Brown and Hendry 1997: 130).

(c) **Founding conditions:** Spatial and sectoral clusters may also exhibit the influence of their founding era, as initial – perhaps largely fortuitous – connections and patterns of interaction

become institutionalised (Stinchcombe 1965). The distinctive network morphologies are reproduced in the form of situated knowledge and organisational practices:

‘It seems that founding contains an unintended crystallization of societal propensities with economic relationships. This crystallization is often fateful, because it sets enterprises along some learning paths which may turn out to be inoperable’. (Whipp and Clark 1986: 27)

These structures and mechanisms are not directly observable, yet they can persist and elaborate over time. Similar effects were illustrated in Whipp and Clark’s (1986) analysis of the British automobile industry as a sectoral-regional cluster. The study indicated how a complex and distinctive pre-existing structure of social and economic relationships could modify network relationships, and thus influence firm-level practices and performance. In this instance, sector- and region- specific relational factors included: an independent grouping of vehicle distributors occupying an intermediary position between manufacturers and end-consumers; trade and labour association mediation of market-based interactions between skilled craft workers and employers; and weak ties between manufacturers and local higher education institutions. The resulting practices impeded the accumulation of knowledge in the region’s firms and related institutions. Furthermore, the capabilities of this context differed in profound and enduring ways from those of other sectoral or spatial clusters (e.g. English food or Detroit car manufacture) (Clark 2000: 205-210, Whipp and Clark 1986).

(d) **Template effects:** Some spatial and contextual differences are masked by the foreshortened time-frames of organisational research. They are, however, brought to light when historical tools are applied. Cottureau’s (1997) comparative historical account of silk manufacturing in London and Lyons illustrated the effect of pre-existing templates on the

evolution of networks. In the early 19th century these two geographically separated clusters adopted radically different network forms, with equally dramatic effect. The British pursued an aggressive modernisation strategy. Their response to deregulation measures in the mid-1820s was to pursue a model of large-scale vertically-integrated manufacture, borrowing from a template that had been pioneered successfully in Britain's cotton industry. By contrast, manufacturing in France was co-ordinated through localised networks of smaller firms, in what proved to be a more successful organisational form. Throughout the nineteenth century dispersed manufacturing in Lyons was successful, while silk manufacturing in London and then throughout Britain went into steep decline. (Cottareau 1997: 76)

5.4.3 Emergent structures

Structuring is also evident in the on-going processes of inter-organisational networking. Whatever the initial impetus, spatial and sectoral clustering provides a context in which the benefits of specialisation can be realised. A number of mechanisms appear to reinforce the initial basis of advantage, leading to distinctive structures. Marshall referred to this process as the creation of an 'industrial atmosphere':

'When an industry has chosen a locality for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from the near neighbourhood of one another. The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously. Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organisation of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus becomes the source of further good ideas.' (Marshall [1920] 1986: 225)

These 'industrial atmosphere' effects are long term, cumulative and dependent upon a degree of co-operation in the creation of and sharing of knowledge (Keeble and Wilkinson 1999: 297, Loasby 1999b: 98). Much of the recent work on spatial networks has been built around concepts that are essentially refinements of Marshall's 'industrial atmosphere'. In contrast to Marshall's strong emphasis on the individual efforts of individual entrepreneurs, recent research has placed much greater stress on the, 'collectivist and institutional basis' for co-ordination. (Keeble and Wilkinson 2000: 298). This can also be seen as a response to earlier interpretations of clustering, which had employed transaction cost analysis (Williamson 1975, 1985), so that proximity was seen primarily as a result of firm-level agency to minimise networking costs (e.g. Scott and Storper 1987; Scott 1988). Reaction against this 'radically undersocialised' approach took the form of a 'new institutional sociology', which emphasised networks of social relations and the often implicit forms of understanding that they conveyed (Amin and Thrift 1995: 100). Two of the most significant ideas in this tradition, 'institutional thickness' (Amin and Thrift 1992) and 'untraded interdependencies' (Storper 1995), are considered in the following paragraphs. Similar concepts are to be found in other areas of business network research, reflecting a broader recognition that economic activity is, to some extent, 'embedded' in particular institutional and the social relationships (Granovetter 1985).

(a) **'Untraded interdependencies'**: Storper's (1995) paper, which introduced this concept, included a critique of his earlier work. Untraded interdependencies were identified as localised and informal exchanges of information and support (e.g. neighbouring firms might offer one another advice, or loan a piece of equipment). They can be seen as both the product of 'complex', or 'multiplex' ties (i.e. where trading relationships overlap with those of family and personal friendship), and a way in which such are created and sustained. There are

obvious attractions to the notion of long-established cultures and patterns of inter-firm relationships, based on an implicit assumption that complex *local* ties enhance *local* economic performance. However, the explanatory mechanism (i.e. that untraded interdependencies generated trust and intimacy between firms, enabling tacit knowledge to be shared), did not provide a clear explanation of the various stages in the process:

The notion of “untraded interdependencies” has a subtle appeal, hinting at the presence of a hidden world of social relationships that provide the glue to the surface world of economic transactions [...] The question, however, is what relationship do “traded” and “untraded” dependencies have to one another? Does the development of one necessarily precede the other? How do they sustain each other?’ (Hendry *et al.* 2000: 140)

Further empirical studies are required to clarify these mechanisms. For example, comparative research conducted in opto-electronics industry clusters has challenged the view that local ‘traded’ interdependencies may be less important than their ‘untraded’ and spatially dispersed counterparts (Storper 1995). In the opto-electronics case, proximity appeared to be important in the *creation* of the cluster, but local untraded dependencies were out-weighed by the pull of national and international traded relations and collaborations (Hendry *et al.* 2000). However, that the strength of this ‘extra-regional’ pull was itself dependent on the technological trajectory of the sector – in this case ‘constantly broadening and creating new opportunities’ – and the direction in which its markets were developing (Hendry *et al.* 2000: 140).

(b) **Institutional thickness**’: One of the main thrusts of recent spatial networks research has been to explore the nature and significance of institutional supports in particular locations (Lawson and Lorenz 2000), with ‘institutional thickness’ as the most widely-cited

conceptualisation. However, as even its proponents concede, definition and measurement have remained problematic:

Institutional thickness is not an easy concept to grasp. It often seems very general, even vague. Yet increasingly, it seems that it is these kinds of liminal concepts that hold the key to the workings of the global economy. (Amin and Thrift 1995: 101-102)

Institutional thickness refers to two distinct but connected phenomena: first, the quantity and quality of support organisations associated with a particular cluster; second, the consequences of their combined action and common purpose. Amin and Thrift (1995: 102) isolated four factors that they see as particularly important in constituting institutional thickness. First, ‘a strong institutional presence’, which comprises a ‘plethora’ of public, private and voluntary institutions, ‘all or some of which can provide a basis for the growth of particular *local* practices and collective representations in social networks.’ (n.b. emphasis in original). Second, ‘high levels of interaction amongst the network of institutions in a local area ...’. These intense flows may lead in time to, ‘a degree of mutual isomorphism’ or similarity in terms of structure and practice. Third, ‘the development, as a result of these high levels of interaction, of sharply defined structures of domination and / or patterns of coalition.’ These institutions (e.g. trade associations, chambers of commerce) represent common interests of local businesses, share certain costs and impose norms on ‘rogue behaviour’. Fourth, ‘the development, amongst participants in the set of institutions, of a mutual awareness that they are involved in a common enterprise.’ Evidence for this includes, ‘a commonly held industrial agenda’, which may be re-inforced by other forms of identification, such as religion, gender or ethnicity. Identified benefits of institutional thickness include the establishment and reinforcement of a common language, behavioural norms and a progressive

build-up of trust. This, in turn, is thought to foster collaboration and the development of a capacity for collective learning (Keeble and Lawson 1998; Keeble *et al.* 2000; Lorenz 1996). Both institutional thickness, and the resulting capacity for collective learning may be the product of many years of localised practices, as in the City of London, for example. However, evidence from high-technology clusters suggests that it can be developed over much shorter periods (Saxenian 1991).

In summary, the basic thrust of Marshallian 'industrial atmosphere' has been re-interpreted and elaborated, stimulating additional efforts at empirical substantiation and refinement (e.g. Hendry *et al.* 2000, Henry and Pinch 2000). The main implication is that production systems can be configured in many ways. Economic actors operate within a, 'framework of foreseeable action', which is shaped by localised factors, reproduced over time (Storper and Salais 1997: 20). However, as Penrose asserted in relation to her closely comparable concept of productive opportunity (Section 4.3.6), the subjective framework needs to pass an objective test of economic coherence, in terms of firm-level profitability and international market share (*ibid*: 21-23).

5.4.4 Entrepreneurial agency and 'path creation'

The preceding emphasis on the structuring of networks can lead to 'over-socialised' and hence over-determined, 'path dependent' explanations (Granovetter 1985). In practice, this tendency is qualified by the exercise of strategic choice (Child 1972, 1982, 1997, Whittington 1989). The conjectural capacity of managers and entrepreneurs, within the organising context of the firm, generates strategising behaviour in pursuit of productive opportunity. Firms can

exploit the structures in which they are located, and redeploy available resources in order to break out of structural constraints. For example, Brown and Hendry (1997: 130) found that Upas tree effects could be countered through a combination of independent entrepreneurial activity and the emergence of new forms of institutional support.

The entrepreneurial networks literature has provided a number of relevant concepts addressing the 'path creation' activity of firms. The process of creating network ties has been identified as a key entrepreneurial activity, and is the subject of several empirical studies (Aldrich *et al.* 1989; Birley 1985; Gartner *et al.* 1992; Johannisson 1996; Larson 1992; Larson and Starr 1993). One of the initial findings, supported in subsequent research, was that entrepreneurs relied primarily on *informal* sources in their personal contact network (PCN) to mobilise resources before the formation of a venture:

The results were startling. Despite [...] St. Joseph County being relatively small, with a strong and active local community, the formal sources were hardly used. (Birley 1985: 113).

In a Kirznerian, opportunity-oriented view of entrepreneurship, the composition of a personal network takes on a key role (Kirzner 1980). It becomes an 'opportunity set', providing access to entrepreneurial and innovatory opportunities unavailable to other network actors (Aldrich and Whetten 1981, Conway 1997). At their core, personal networks comprise a small number of 'strong' ties, which shelter the focal entrepreneur from the opportunism and uncertainty of the market. For example, in a study by Aldrich *et al.* (1989), most owner-managers reported between three and 10 strong ties, primarily business associates plus a few close friends and family. Time and energy invested in 'pre-organisational' personal networks can generate future benefits for the emerging firms (Hansen 1989, cited in Larson and Starr 1993: 8).

These include the acquisition of ‘human capital’, in the form of relevant experiences, skills and knowledge, and ‘social capital’, such as being trusted by other parties. Trust engendered through strong ties can also facilitate access to resources (i.e. collaboration and sharing), and assist in overcoming institutional barriers to entrepreneurial activity. The extensive use of personal ties could result in a blurring of business and social life, with mixed consequences (Dubini and Aldrich 1991; Johannisson 1996). For example, reliance on particular individuals can lead to sudden, unpredictable and potentially disruptive, structural change:

That social and business become intertwined in individual ties means that network members are unique. If the individuals leave, the network will change. That is why the network and its ties are labelled *personal* rather than *social*. (Johannisson 2000: 370 - emphasis in original)

Entrepreneurial networking activity has also been distinguished from other forms of small firm and ‘managerial’ networking, on the basis that it is both pro-active and continuous:

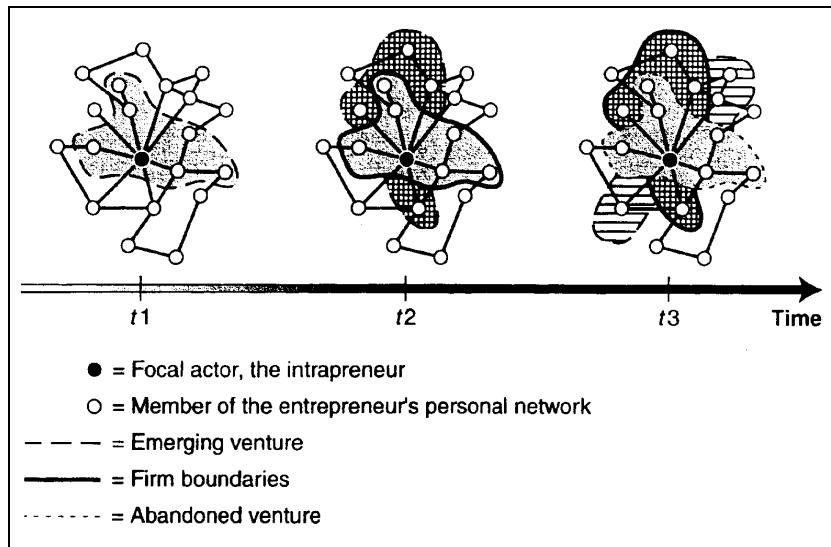
Within a *management* perspective, networks and coalitions, e.g. strategic alliances and joint ventures, represent just another calculated way to intermittently reduce environmental uncertainty. Entrepreneurial networking, in contrast, means expanding the action frame of the venturing process. Entrepreneurs *continuously* network as they pursue and react to new realities. (Johannisson 2000: 368 - emphasis added)

While all start-up businesses make some ‘entrepreneurial’ use of their personal networks, most small firms appear to settle down into an established and fairly limited pattern of interactions. Entrepreneurs, in contrast, continue to develop their networks, with the more or less explicit aim of expanding their existing firms or establishing new ones. This continuing process requires a broader ‘latent network’ (Ramachandran and Ramnaryan 1993), parts of

which are activated when required. This assertion is consistent with earlier findings regarding the morphology of entrepreneurial networks, notably their more extensive range and 'loose-knit' structure (Aldrich and Zimmer 1986, Leonard-Barton 1984). Figure 5.1 illustrates how the networking process might develop using a simple mapping sequence. The entrepreneur's personal contact network provides the foundation for several interlocking ventures over a period of time (i.e. represented here as $t1$ to $t3$). Each venture is a separate, yet linked outcome of the personal networking of an entrepreneur. By presenting entrepreneurial networks in a longitudinal perspective, it is possible to make connections between some forms of 'portfolio entrepreneurship' (i.e. where an entrepreneur operates several businesses simultaneously) and 'serial entrepreneurship' (i.e. where the entrepreneur sets up one business after another). The time dimension draws attention to the different temporal dynamics of entrepreneurial networks and those of other small firms:

In such a perspective individual ventures appear as condensations of nodes and ties in the personal network, demarcated in space and time. The birth of a venture may then be seen as the institutionalization of a part of the entrepreneur's personal network. (Johannisson 2000: 373)

Figure 5.1 Mapping sequence: personal networking and venture creation



Source: Johannisson (2000: 374)

As the entrepreneur engages in networking, s/he changes both the network structure and its connectivity or flows. Given this constitutive role, it is particularly important to understand any depiction of an entrepreneurial network as a ‘snapshot’, mapping the current state of an ongoing process. The latent effects indicated by Ramachandran and Ramnaryan (1993) also point to the possibility that entrepreneurial networking can arise intermittently, in response to other contextual factors.

5.4.5 Understanding the ‘situated’ network

The relative economic performance of firms and networks is predicated on a fine balance between co-operation and competition (Child and Faulkner 1998, Lado *et al.* 1997, Uzzi 1997). However, interaction effects between pre-existing structures, emergent structures and entrepreneurial agency have the potential to shift the balance, with variable consequences for particular network actors. Hence, while there may be some commonality in the basic

mechanisms governing business networks, their dynamics are always spatially situated and open to the unique contingencies of history. From an evolutionary perspective, this continuous and recursive interaction indicates the need for research designs that can integrate entrepreneurial process, context and outcomes (Aldrich and Martinez 2001). Furthermore, to understand situated and emergent networks, it becomes necessary to complement the abstractions of network analytical approaches with techniques that grasp their idiosyncrasy:

‘Claims made on the basis of network attributes alone miss a large part of the explanation for their effectiveness. This is not an original claim except that stereotypical descriptions of the business context have tended to predominate’. (Perry 1999: 204)

In short, if ‘history matters’ within the confines of the firm (Penrose 1995: xiii), it also needs to be taken into account when the scope of the Penrosian synthesis is extended beyond those conventional legal-administrative boundaries. The final section is a brief appraisal of recent conceptual and empirical research in a multi-level and co-evolutionary approach. The aim is to identify how these interaction effects might be incorporated into a modified framework.

5.5 Multi-level analysis and interaction effects

5.5.1 Multi-level analysis in a Penrosian framework: Garnsey’s approach

There have been few attempts to build multi-level analysis on a Penrosian framework. Elizabeth Garnsey’s (1998a) paper, ‘A Theory of the Early Growth of the Firm’ illustrates the challenges of extending Penrosian concepts to incorporate the firm’s external conditions. Its main focus was on interpreting initial growth phases through the identification of typical

growth processes, enabling a comparison across firms on the basis of a common set of concepts (Garnsey 1998: 525). Garnsey located the activity of the founding entrepreneur in an ‘open systems’ approach. The paper highlighted the potential of such an approach to introduce structural factors into an integrated, multi-level analysis:

‘An open systems approach can overcome the problem of emphasis on internal conditions to the neglect of external conditions for firm growth or vice versa. The firm and its environment are viewed as operating in systematic interaction; neither firm nor industrial structure are prior factors, nor is either relegated to a theoretically residual category. The firm can be conceptualised as an open system of activity, an input-output system drawing in resources from its environment and converting these into products or services for which revenue can be obtained through exchange’. (Garnsey 1998a: 526-527)

However, while the paper made reference to the influence of relationships established in earlier phases, competitive pressures from customers and distributors, and incentives for alliance-formation, such as access to complementary assets and new markets, it lacked a systematic analysis of interaction between firm and network levels. The re-application of specific concepts, such as productive services and productive opportunity, was insightful, but appears to have been constrained by the treatment of ‘external’ factors. Similar problems have been explained as a consequence of adherence to orthodox economics frameworks:

‘Currently, recognition is mounting of the importance of both internal and external factors (Porter 1991; Audretsch 1994; Teece and Pisano 1994). But theoretical frameworks in industrial and organizational economics have not facilitated integrated analysis of internal and external factors’. (Garnsey 1998: 549)

Garnsey’s concluding sentence directed future research attention towards the co-evolution of firms and production networks, the subject of the following section:

‘Penrose sought to uncover basic incentives for and constraints on growth in established firms. In extending her analysis, we can make use of the concept of the firm as an open system interacting with others in its environment. No firm is an island, and to understand its growth it is essential to understand the webs of interaction which make up its environment. Further work is needed on the way in which firms coevolve in production networks which create and respond to demand as they emerge and grow. This could allow progression from aggregate statistical associations and a theory of individual firm growth to a grounded understanding of the ecology of industrial renewal’. (Garnsey 1998: 553)

5.5.2 Introducing multi-level and co-evolutionary effects

The central claim of ‘co-evolutionary’ explanations is that they account for interactions between multiple levels of analysis, in this instance between those of the firm, network and wider context. Three examples of multi-level effects network have been selected to introduce the discussion: ‘Red Queen’ effects, network atrophy, and institutional and technological interactions. In each case the effect involves an interaction between activity at a relational level and that taking place within constituent firms.

(a) ‘Red queen’ effects: This refers to a biological evolutionary model, adapted to describe competitive interactions between firms. Firm-level responses raise the level of competition faced by rivals, triggering a self-reinforcing cycle (Barnett and Hansen 1996: 139-140). The focus of debate has been the degree of search, learning and adaptive response. For example, these may be limited by structural inertia at firm level, such as ‘competence traps’ (Levitt and March 1988), or at inter-organisational level, through competition-limiting agreements and alliances. Barnett and Hansen’s (1996) empirical study suggested that exposure to Red Queen competition was reflected in subsequent firm-level performance; ‘RBP Mark I’ (Foss 1997b)

isolationist strategies (Rumelt 1984) tended to trade uniqueness today with capability development for tomorrow:

‘Organisations that achieve an isolated strategic position lose the Red Queen in the process, and so will be disadvantaged over time. There seems to be a fundamental contradiction between the benefits of strategic position and those of Red Queen’. (Barnett and Hansen 1996: 154)

This study indicated a co-evolutionary relationship between what the authors term, ‘the ecological context of the organisation’ and the development of firm-level resources. Itami and Roehl (1987) drew out strategic prescriptions of these co-evolutionary interactions. Exposure to strong competitive environments was depicted as a strategic choice; ‘overextension’ strategies engendered the accumulation of ‘sturdy’ (*ibid*: 161-162) and ‘invigorating’ (*ibid*: 31) ‘invisible assets’ (i.e. firm-level resources and capabilities) (Section 4.3). They cited as an example the budding Japanese computer industry of the 1950s, in which six firms decided to take on IBM’s mainframe business. While some failed, there was a growth of ‘knowledge’ at the industry level and in the surviving firms:

‘When a firm participates in a market in which there are strong competitive pressures, it gains a great deal of information as a result. The pressure-cooker atmosphere of such markets provides high-quality feedback. The resources accumulated under these difficult conditions are usually sturdy’. (Itami and Roehl 1987: 161)

(b) Network atrophy: This might be regarded as the inverse of ‘Red Queen’ interactions. The mechanisms that generate ‘institutional thickness’ and ‘untraded dependencies’, with strong and long-established institutional frameworks, cultural homogeneity and reliance on a core of shared tacit knowledge, appear on occasion to overwhelm competitive mechanisms.

The resulting imbalance can have pathological effects, including insularity and resistance to innovation and the absence of new networking activity. The Swiss Watch industry is a frequently cited example, in which deeply-embedded craft traditions and institutions are hypothesised as playing a decisive inertial role (Glasmeier 1994). Past success is no guarantee of survival, as the phenomenon of ‘competence traps’ (Levinthal and March 1993) is reproduced at the network level. As Loasby (1999: 142) has remarked, each of the industrial districts in which Marshall gathered his evidence have since collapsed:

‘Although such a district typically permits greater variety than is possible within a single firm, effective interchange between its firms requires a broad basis of agreement, often tacit, and so radical ideas are rarely welcome. Moreover, the very effectiveness of such interchange in fostering the prosperity of the group discourages its members from looking outside; *they may be so busy learning from each other that they have neither the time nor the incentive to learn from outsiders*. Thus a successful district may be no less vulnerable to competence-destroying innovations than a single firm; indeed, it may be even more vulnerable to innovations which require major changes to be closely co-ordinated’. (Loasby 1999: 142 – emphasis added)

Individual firms may resist network-level decline, at least for a time. For example, in the late 20th century, the Northamptonshire-based shoe-maker, R. Griggs Ltd, built an international niche brand, *Dr. Martens*, against a climate of widespread factory closures in a long-established industrial district. Over several years it acquired employees and facilities from former rivals. However, at the time of writing, the firm was moving production abroad. There is little empirical evidence on the ‘defiant idiosyncracies’ of these survivors (Whittington 1989). However, it seems likely that entrepreneurial networking may counter the negative effects of a declining district (Section 5.4.4).

(c) **Institutional and technological interactions:** Knowledge and organisational practices are also subject to the influence of institutional and technological factors. For example, empirical research in high-technology clusters has highlighted the inadvertent impact of intensified appropriability regimes, introduced to ‘protect’ intellectual property. The commercialisation of universities has led to an internalisation of research activity, restricting what had previously been a relatively free exchange of knowledge between network actors:

It may well be that conflicts relating to interest positions in the [Minneapolis] region are encouraging both the university and local producers alike to reflect on customary practices which have determined the diffusion of knowledge across their boundaries, and hence have impacted on the distribution of regional quasi-rents. [...] What remains to be seen is the longer-term impact of such changes on regional growth and performance. (Lawson and Lorenz 1999: 314)

Technological innovation has also influenced network morphology and dynamics, with complex and indirect effects on the growth of connected firms. This was illustrated in a comparative study of the creation of two industrial sectors, frozen foods in the 1950s and chilled meals in the early 1990s (Cox *et al.* 1999). Product development in the frozen foods industry of the 1950s was co-ordinated within the boundaries of a few large corporations, with Unilever as a pivotal firm. However, the introduction of chilled meals in the early 1990s, gave rise to a new network configuration. Manufacturing and product development were undertaken through collaboration between multiple retailers and small firms, including, ‘micro-kitchens’ employing less than five people (Cox *et al.* 1999: 12). The relatively short shelf life of the product, combined with a perceived demand for variety and differentiation, led to the use of small batch manufacturing rather than continuous process methods. Scheduling of deliveries was facilitated through the use of generic IT systems, developed

with the assistance of a trade association (Bamfield 1994). This organisational template contrasted with that adopted for the development of frozen foods in the 1950s, generating productive opportunities in this sector for a new breed of connected firm.

5.5.3 Multi-level and co-evolutionary analysis

The fields of organisation theory, industrial economics and strategy have made several shifts of emphasis between firm, industry and intermediate levels of analysis. The recent extension of resource-based theorising to address industry dynamics has prompted researchers to evoke multiple levels of analysis. The contemporary trend for ‘co-evolutionary’ analysis reflects a conjunction of this desire to tackle multiple levels and earlier evolutionary theorising, most of which was conducted at a macro-level (Section 3.4). The term ‘co-evolution’ was derived from biology, continuing a long-established tradition of metaphorical analogising of the growth process (Section 3.3). In the biological sciences, the co-evolution of *distinct species* has been presented as a complex, yet non-purposive, process of mutual adaptation:

‘A classic example of symbiotic coevolution is the acacia tree and *pseudomyrmex* ant species. Ants need acacias for nectar and shelter. Acacias depend on the ants stinging to protect them from herbivores. Over time, the acacia has evolved to make it easy for the ants to hollow out thorns for shelter and to have access to its flowers. Similarly, the ants have evolved into a shape that makes it easier to enter the acacia flower’. (Eisenhardt and Galunic 2000: 92)

The spirit of Penrose (1952) should prompt a cautious application of this metaphorical analogy, giving due attention to the ontological differences between these forms of organisation (Boulding 1956) (Section 3.2). Some researchers have attempted to refine the

concept. For example, McKelvey (1997: 360) has differentiated social co-evolution processes within the firm (i.e. ‘micro-co-evolution’) and between the firm and its niche (i.e. ‘macro-co-evolution’). Recent empirical studies have tended to address the latter type, albeit in a number of different contexts, embracing different levels of analysis (Table 5.2).

Table 5.2 Co-evolutionary empirical studies: levels of analysis

<i>Empirical context</i>	<i>Levels of analysis</i>	<i>Indicative study</i>
Investment trusts, United States, 1934-1984	Firm capabilities, inter-firm relationships, industry structure	Levinthal and Myatt (1994)
Semiconductor and biotechnology sectors, United States, contemporary (unspecified time period)	Technology, industry structure, supporting institutions	Nelson (1995)
Multi-business firm, United States, contemporary (unspecified time period)	Strategic business units, corporate leadership of multi-business firms	Galunic and Eisenhardt (1996)
‘Motorsport valley’, England, 1945-2000	Individual, firm, spatial cluster	Henry and Pinch (2000)
Television production, Germany, mid-1980s-2000	Organisational practices, inter-organisational practices, industry practices	Windeler and Sydow (2001)
Music industry, international, 1877-1990 and 1990-1997	Firm capabilities, competitive regime, industry structure	Huygens <i>et al.</i> (2001)
Formula 1 racing, international, 1967-1982.	‘Component’ [product], firm, ‘system’ [industry sector]	Jenkins and Floyd (2001)
Film studios, United States, 1890-1930	Entrepreneurial careers, firm practices, socio-economic trends, institutional rules, competitive dynamics	Jones (2001)

Sources: various – as stated.

Lewin and Volderba (1999: vii) distinguished empirical co-evolutionary research from other forms of longitudinal research on the basis that co-evolutionary studies incorporated several characteristics ‘simultaneously’. The authors identified a number of empirical studies, which exemplified particular characteristics; this indicative listing has been enhanced to incorporate other relevant examples (Table 5.3). In their introduction to the *Organization Studies* special

issue on multi-level analysis and co-evolution, Lewin and Koza (2001) argued that there was both great promise and a great empirical challenge in conducting co-evolutionary research:

‘It is our assessment that the co-evolution framework has the potential to integrate micro- and macro-level evolution within a unifying theoretical and empirical approach that incorporates multiple levels of analyses and contingent effects, leading to new insights, new theories, new empirical methods, and new understanding’. (Lewin and Koza 2001: v)

Table 5.3 Characterising empirical co-evolutionary research

	Characteristics	Indicative studies
(a)	Longitudinal time series of microstate adaptation events and studying organization adaptations over a long period.	Barnett and Hansen 1996, McKelvey 1997, Levinthal and Myatt 1994*
(b)	Organization adaptation within a historical context of the firm and its environment.	Child and Smith 1987*, Kieser 1989, Stinchcombe 1965, Whittington 1989*
(c)	Multidirectional causalities between micro- and macro- co-evolution, where the distinction between dependent-independent variables becomes indeterminate, and where changes in any one variable may be caused endogenously by changes in the other.	Baum and Singh 1994, Henry and Pinch 2000*, McKelvey 1997
(d)	Mutual, simultaneous, lagged and nested effects, which are unlikely to be linear.	Baum and Singh 1994, Jones 2001*,
(e)	Path dependence that enables and restricts adaptation at the firm and population level.	Kieser 1989, Whipp and Clark 1986*,
(f)	Changes to the institutional systems within which firms and industries are embedded.	Jones 2001*, Windeler and Sydow 2001*
(g)	Economic, social and political macro-variables that may change over time and influence the deep structure within which micro- and macro- co-evolution operate.	Boisot and Child 1999*, Nelson 1995*

Source: Lewin and Volderba (1999: 526-528), Lewin and Koza (2001: vii) – adapted (n.b. those studies marked with an asterisk have been identified by the present author to indicate work displaying similar characteristics).

However, despite the authors’ emphasis on integration between firm, industry, institutional and ‘macro’ environmental levels, the agenda-setting was striking for its familiar, static depiction of the relevant interactions, and for an emphasis on aggregated data analysis techniques, such as event-history modelling (*ibid*: x). Perhaps of more concern, is the

temptation of adopting the term, ‘co-evolutionary’ to refer to any form of emergent interaction within organisations. For example, Eisenhardt and Galunic (2000) applied the concept of co-evolution to the management of multi-business companies. It distinguished a, ‘shifting web of relationships’ (*ibid*: 92) from those found in traditional collaborative arrangements, on the basis of a blend of collaboration and competition, which generated an internal, auto-poetic dynamic:

‘While traditional corporate managers plan collaborative strategies from the top, corporate executives in coevolving companies don’t try to control or even predict it. They set the context and then let collaboration (and competition) emerge from the business units’. (Eisenhardt and Galunic 2000: 92-93)

This highly voluntaristic account was written for a managerial audience. However, it begs the vexed question of how the complex interaction of structure and agency are to be incorporated into a multi-level, co-evolutionary framework. The following sections comprise a brief review of the main responses to this epistemological challenge.

5.5.4 Incorporating structure and agency

It is clear that, in order to develop a plausible explanation the growth of the connected firm, the analysis must address links between managerial actions and the context in which those actions occur. This is simply a particular case of the age-old debate regarding the relationship between human agency and structural constraint:

‘If we accept that for analytical purposes it is useful to distinguish between macro-structural and micro-individual levels, then the explanatory task of any sociological theory consists of either providing an

explanatory mechanism accounting for how structure is converted by individuals into social action, or how such social actions aggregate to constitute social structures, *or both*'. (Van den Berg 1998: 205 – emphasis in original)

Karl Marx's iconic dictum that, 'Men make their own history, but not under circumstances chosen by themselves', expresses the essential tension with admirable brevity, yet there remains little consensus over application in the social sciences:

'The "agency/structure" debate refuses to lie down or quietly fade into obscurity. It raises fundamental questions about the nature of social reality, the manner in which it is conceptualized and the theoretical means most appropriate in explaining the relationship between its constituent elements'. (Reed 1997: 21)

Reed (1997) constructed a position statement on the structure/agency debate in organisation studies, arguing that its methodological implications could not be ignored by 'empirical social scientists' wishing to get on with the business and research 'unencumbered by epistemological angst'. In practice, his primary target was those who have turned away from the challenge of explaining the relationship between the macro and micro levels:

'Once these analytical elements were conceptually separated, then they had to be linked or re-aligned through an explanatory logic accounting for their interplay and the emergent outcomes that it generated'. (Reed 1997: 23)

He identified a refusal to engage in this task amongst organisation theorists who have adopted a variety of 'interpretivist' approaches, including ethnomethodology, actor-network-theory and post-structuralism. The 'flat' ontologies underpinning these approaches were criticised

on the grounds that their exclusive focus on micro-level processes conflated agency and structure, reducing it to an account of, ‘localized social practices bereft of any institutional underpinnings’. (*ibid*: 25). Giddens (1984) developed a theory of structuration with the ambition of filling precisely this gap between the ‘institutional realm’ and the ‘realm of action’ (Barley and Tolbert 1997: 97). Structuration theory dissolved the structure-agency dichotomy into the notion of a ‘duality of structure’. Human actors were portrayed as agents with varying degrees of knowledge about their situation (i.e. ‘discursive penetration’). The relationship between actors and structures consisted of recurrent practices which derived from past structuring, and which contributed to new structures. In Giddens’s (1984: 25) terms, ‘The structural properties of social systems are both medium and outcome of the practices they recursively organise’. Criticism of structuration theory concerns its tendency to collapse structure into agency, its overemphasis on general theory at the expense of action and contextuality and lack of attention to the formulation and testing of empirical propositions (Bryant and Jary 1987, Van den Berg 1998). Attempts to apply structuration theory to organisational phenomena have elicited similar responses:

‘Structuration theory [...] explicitly focuses on the dynamics by which institutions are reproduced and altered, an issue that has been largely neglected by institutional theorists. Nevertheless, as it is currently formulated, structuration theory provides little guidance on how to investigate the way in which everyday action revises or reproduces an institution’. (Barley and Tolbert 1997:112)

Barley and Tolbert’s (1997) solution to this challenge involved a fusion between structuration theory and institutional theory’s long-established empirical agenda. Their concept of ‘scripts’, defined as ‘observable, recurrent activities and patterns of interaction characteristic of a particular setting’ (*ibid*: 98), substituted for Giddens’s more abstract notion of modalities:

‘The task then, as we see it, is to translate Giddens’ essentially static portrayal of structuration into a more dynamic model that links action to the maintenance and change of an institution and that provides feedback for empirical research’. (Barley and Tolbert 1997: 100)

However, as the authors suggested, the challenge for the researcher is ‘formidable’, both in recognising an emerging institution (n.b. or ‘structure’) and in securing the data required to document these interactions. The final section introduces a ‘neo-realist’ approach to structure and agency, which draws selectively on both critical realism and Giddensian structuration theory, while emphasising primacy of empirical research and the search for plausible explanatory mechanisms. The implications for a ‘neo-realist’ research methodology are discussed in the next chapter (Section 6.3).

5.5.5 Towards a ‘neo-realist’ research approach?

In a critical realist ontology the ‘stratified’ nature of reality is reflected in distinct domains of the ‘empirical’, the ‘actual’ and the ‘real’ (Bhaskar 1978, Collier 1994, Sayer 1992, 2000). Critical realists contrast their ontological position with that of conventional or ‘empirical’ realism, in which the world is seen as comprising only, ‘observable atomistic objects, events and regularities among them, as if objects had no structure or powers, and in particular, no unobservable qualities’ (Sayer 2000: 11). In contrast to empirical realism (Donaldson 1997), and to pure interpretivist approaches such as actor-network theory (Harrisson and Laberge 2002), critical realist research is concerned to identify causal mechanisms operating beneath surface events:

‘In distinguishing the real, the actual and the empirical, critical realism proposes a stratified ontology in contrast to [...] ‘flat’ ontologies populated by either the actual or the empirical, or a conflation of the two. Thus, empirical realism assumes that what we can observe is all that exists, while ‘actualism’ assumes that what actually happens at the level of events exhausts the world, leaving no domain of the real, of powers that can be either activated or remain dormant. Furthermore, critical realism argues that the world is characterised by emergence, that is situations in which the conjunction of two or more features or aspects gives rise to new phenomena which are irreducible to those of their constituents, even though the latter are necessary for their existence’. (Sayer 2000: 12)

The ‘deep’ ontology of the critical realists appears to have explanatory potential in tackling the multi-level analytical task that has been outlined in this chapter. However, its incorporation of unobserved phenomena into conceptual schema remains strongly contested. Empirical realists have argued that this elaboration mystifies and undermines the scientific project. An early expression of this view is refers to the introduction of unobserved phenomenal in natural science research; Auguste Comte’s passionate language captures the essence of his critique:

‘What scientific use can there be in fantastic notions about fluids and imaginary ethers, which are to account for phenomena of heat light, electricity and magnetism? *Such a mixture of facts and dreams can only vitiate the essential ideas of physics, cause endless controversy, and involve the science itself in the disgust which the wise must feel at such proceedings*’. (Comte [1913: 243], cited in Bird 1998: 122 – emphasis added)

Is there a case for identifying Edith Penrose, and more specifically, *The Theory of the Growth of the Firm*, with the critical realist perspective? The question has become pertinent, because critical realists have begun to acknowledge Penrose’s contribution (Lawson 2000). In addition, such a discussion would help to clarify the ontological basis for a modified

Penrosian framework. Penrose was not a philosopher by inclination; Pitelis (2000), for example, has recollected her strong aversion to notions of ontology and epistemology. The evidence must therefore be drawn from Penrose's research practice, as outlined in the previous chapter. One of the strongest indications of common ground with critical realism can be found in a discussion of the respective roles of economic theory and economic history in capturing the 'nature' of the multinational enterprise (Penrose 1989). As the following quotation illustrates, Penrose recognised the need to probe beneath the empirical 'surface' in search of unobserved causal mechanisms:

'Our picture is a moving one and the camera must so select the facts it puts together as to depict the undepictable: the causal, unobservable relationships between facts. This is exactly what social science in general is usually fundamentally concerned to uncover, and the field in which its practitioners in their several areas are most qualified to dig'. (Penrose 1989: 8)

In addition, her early critique of Alchian's evolutionary theorising exemplifies the critical realists rejection of deterministic accounts, which abstract human cognition and agency (Section 3.4.5):

'Once human will and motivation are recognized as important constituents of the situation, there is no *a priori* justification for assuming that firms, in their struggle for profits, will not attempt as much consciously to adapt the environment to their own purposes as to adapt themselves to the environment'. (Penrose 1953: 10)

The following chapter develops a new research methodology, based upon the modified Penrosian framework. The approach had been termed 'neo-realist', in order to signify a qualified application of critical realism's distinctive philosophical and methodological

positions (Section 6.3). This approach is informed by many previous attempts to tackle the interaction of structure and agency in organisational research (e.g. Barley and Tolbert 1997, Child 1997, DiMaggio 1992, Stinchcombe 1965, Whittington 1994). The position adopted is that, while there is some common ground between critical realist, structurationist and institutionalist positions (e.g. Reed 1997, Stones 2001), additional empirical work is required to substantiate what has become a largely social theoretic argument.

5.6 Conclusions

5.6.1 Re-asserting Contextualism

The preceding discussion of Penrose's work has addressed processes occurring within the 'black box' of the firm. As its title suggests, the main concern of the chapter is what lies beyond its 'blurred boundaries'. In the Introduction to the thesis, the research approach was associated with the Contextualist tradition, noting its strong associations with three universities in the English Midlands (i.e. Aston, Birmingham and Warwick) and in work of John Child, Peter Clark, Andrew Pettigrew and Richard Whittington, amongst others (Section 1.4.1). In addition, it highlights connections between Penrose's approach and the industrial dynamics represented by business networks, a path that was also suggested in Best's (1990, 2000) studies (Section 1.2):

'The integration of [Adam] Smith's principle of increasing specialisation with Penrose's dynamic process of capability development is a major step in the extension of the resource creation perspective into a theory of industrial organisation'. (Best 1999: 118)

5.6.2 Uses and limitations of the network literature

The business networks literature has taken organisational and economic analysis beyond the confines of the firm, but much of it is compromised by an inadequate treatment of context. Evidence from contemporary spatial clusters, such as Motorsport Valley, indicates the complexity of network dynamics. The importance of proximity varies by sector, and over time, as the network evolves. The process is multi-level, influenced by factors within a localised network, but also subject to changes occurring far outside its notional boundaries. Networking beyond the immediate locality, typically through global supply chains, can have an important bearing on the development of a cluster and the firms that it comprises. In multi-level analysis, it is important to separate mechanisms giving rise to advantage through locational context and others that may derive from sectoral characteristics:

‘Because a variety of mechanisms may be at work, one should be wary of collapsing divergent processes into one convenient category, such as proximity-cum-co-operation’. (Staber 2001a: 339)

The performance and longer-term prospects of today’s industrial districts are not amenable to generalised comment or prescription. The benefits attributed to flexible specialisation may be achieved in certain contexts, but do not represent a universal panacea. The wider implication is that industrial dynamics are always spatially and historically contingent. The social theoretic debate over structure and agency has provided some pointers to empirical research practice, but progress has been curtailed by its chronic abstraction:

‘One of the peculiarities of the literature on space and social theory is the persistence of attempts to write about this topic in the abstract when such discussions appear to be able to yield little beyond

concepts like space-time compression and locale, and sensitizing researchers to take it into account in concrete studies'. (Sayer 2000: 106)

In other words, generic approaches multi-level and co-evolutionary analysis must be balanced by a more context-specific and historically-informed analysis. The theme is developed in the empirical study that is presented in the following chapters.

CHAPTER 6 - EMPIRICAL RESEARCH QUESTIONS AND METHODOLOGY

Methods work hand in hand with theories in the verification process.

Norman K. Denzin

The Research Act in Sociology (2e) (1978: 72)

In epistemological debates it is tempting to operate at the poles. But in the actual practice of empirical research, we believe that all of us – realists, interpretivists, critical theorists – are closer to the center, with multiple overlaps.

Miles and Huberman

Qualitative Data Analysis (1994: 4)

This chapter revisits the three sets of research questions (conceptual, methodological and empirical) introduced in Chapter 1, and explains how they have been pursued in the empirical work that follows. The first section reviews the methodological implications of the previous chapters, with specific reference to the task of theorising the growth of the connected artisanal firm. It develops the argument presented in Chapter 5, that the explanatory potential of a modified Penrosian framework may best be realised in a neo-realist framework. Having established a methodological basis for the empirical work, the discussion moves to the selection of appropriate research methods. Data collection and analysis methods are outlined. The format of the research findings, a combination of 'analytically structured narrative' and network mapping sequences, is introduced and related to the preceding discussion.

6.1 Reviewing the research questions

6.1.1 Establishing a 'Penrosian' research methodology

Edith Penrose did not deal explicitly with the issue of research methodology in *The Theory of the Growth of the Firm*. It was also omitted from her main empirical application, the Hercules Powder Company case study (Penrose and Pitelis 1999: 14, Penrose 1960). Furthermore, her subsequent writings, and the recollections of former colleagues, suggest a somewhat dismissive attitude towards epistemological and ontological argument (Pitelis 2000). However, on closer inspection, this apparent lack of methodological reflection disguised a sophisticated and far-sighted response to the challenge of theorising the growth of the firm. For example, Penrose's (1959) appraisal of the neo-classical theory of the firm contributed to the long-running epistemological debate on the explanatory value of 'models' and 'histories' (Section 2.2). Her (1952) critique of Alchian's evolutionary theorising (1950) explored the ontological status of biological analogies of growth (Section 3.4.5). Common to both of these contributions, was her concept of the firm; an area of 'authoritative communication' (Barnard 1938) in which productive services were conjectured in the light of the managers' 'image' of the environment (Boulding 1956). Penrose's related concepts of 'productive opportunity' and 'interstices' anticipated aspects of social constructionist and critical realist perspectives on organisational theory. It is not easy to locate Penrose's original (1959, 1960) work in terms of contemporary research methodology. Her eclectic, holistic and systematised approach does not sit easily in today's greatly expanded, yet minutely partitioned field. However, such an engagement is a necessary precursor to an empirical application of the modified Penrosian synthesis.

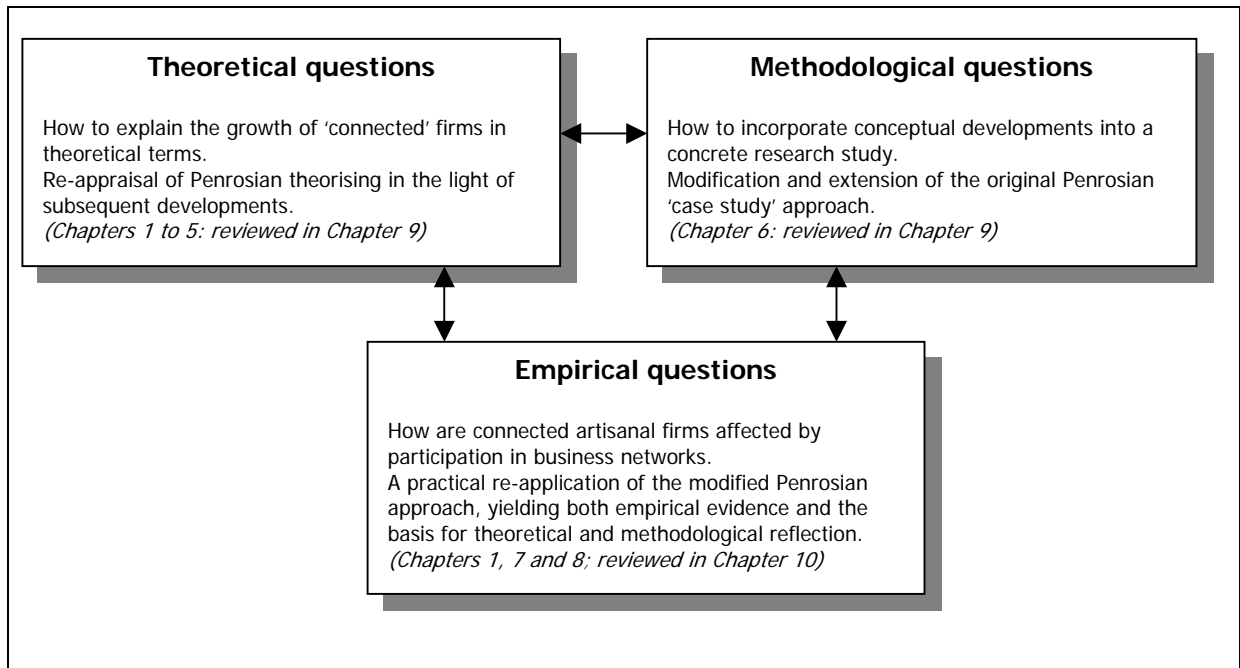
6.1.2 Aims of the empirical study – methodological and ‘practical’

The empirical study, which is reported in the following chapters, is designed to accomplish the following tasks. First, to establish an explicit research methodology that reflects the reappraisal and modification of Penrosian theory that has been undertaken in this thesis. Second, to illustrate the explanatory potential of the modified Penrosian framework and its associated methodology. Third, to address a number of substantive empirical questions regarding the growth of connected artisanal firms:

- How is the growth of connected firms (in this instance, artisanal food producers) affected by their participation in the contemporary business networks?
- What is the relationship between growth processes at the level of the connected firm and those found at the level of the business network?
- In what ways are these (multi-level) growth processes related to underlying mechanisms and structures?

These questions explore a particular instance of connected firm activity, and reflect a vigorous debate regarding the impact of networks and networking activity on small firms (Chell and Baines 2000, Curran *et al.* 1993). The close relationship between the theoretical, methodological and empirical questions, first noted in Chapter 1, is re-presented in Figure 6.1. The methodological discussion acknowledges that further reflection on Penrose’s original approach can be informative (Kor and Mahoney 2000, Pitelis 2001), but its primary focus is on empirical application of the *modified* Penrosian framework, as presented in Chapter 5.

Figure 6.1 Research questions: inter-relationships and approach



6.1.3 From theory to practice in three stages

This chapter makes the transition from abstract theory to empirical research practice in three stages. The first stage comprises a reflection on the methodological implications of the modified Penrosian synthesis that was introduced in Chapter 5. This leads to an appraisal of the critical realist perspective, in terms of its explanatory value and suitability as the foundation for a more explicit Penrosian research methodology (Section 6.2). The second part of the chapter introduces the research techniques employed in the empirical study (Chapters 7 and 8). This comprises an account of the 'analytically structured narrative' and network mapping sequences constructed in the results chapters, prefaced by a discussion of the role of narrative data (Section 6.3). The final stage is concerned with implementation and

comprises critical review of data sources, collection and analysis (Section 6.5). The chapter concludes with a visual summary of the approach adopted.

6.1.4 Re-application versus induction?

There is a fundamental difference between the approach adopted in Edith Penrose's original fieldwork and that found in the present study. The Hercules Powder Company fieldwork, which was conducted during the Summer of 1954, preceded an extended period of theory-building that culminated in *The Theory of the Growth of the Firm* (Section 4.3). The empirical research reported in the following chapters makes use of an established, though modified, Penrosian framework (Sections 4.4 and 5.4). The modified framework has been re-applied in the novel context of the connected firm, using newly-acquired empirical data. Hence, while the empirical study may share the inductive approach of Penrose's original (1959 and 1960) research, it is not directed at a blank canvas. This inversion is consistent with the view that empirical research and theory should operate in close inter-relation (Denzin 1978: 3). Hence, while this study can be seen as part of the same 'research act', the respective roles of methods and theory have altered in order to accommodate the tasks of theory modification and verification, which inform the discussion in Chapter 9:

[R]esearch methods provide the fundamental test of all theories. It is through their use that the data necessary to test any theory are gathered. Through the use of research methods elements of the causal proposition are brought together, and new observations are brought forth to modify, verify and change the theory under examination. Methods work hand in hand with theories in the verification process'. (Denzin 1978: 72)

6.2 Selecting an appropriate methodology

6.2.1 Penrose's original research approach

By drawing on earlier chapters, it is now possible to reconstruct the essential elements of the methodology that is implicit in *The Theory of the Growth of the Firm*. Penrose's instinctive approach was to combine inductive research methods with disciplined analysis; her preference was for holistic or systemic modes of explanation (Section 4.4). Her theory-building was based on a process of selective abstraction from the empirical data, which was itself guided by the purpose of the research (Section 2.2 and 4.4). The principal components of her 'single argument' indicated a willingness to incorporate both subjectivism (i.e. the concept of 'productive opportunity'), and objectivism (i.e. the concept of 'interstices' and the recognition that pre-existing industry structures operated as a constraint on the growth of smaller and newer firms) (Section 4.3). The operation of the interstices also introduced an element of multi-level analysis (Section 5.5). These ontological characteristics have prompted the assertion that Penrose's methodology reflects aspects of the critical realist perspective (Lawson 2000) (Section 5.4). In the qualified, 'neo-realist' approach adopted in the present study, elements of the critical realist research programme are adopted without an *ex ante* commitment to its entire philosophical and methodological position (Section 6.3.4).

6.2.2 Methodological debate: 'Mode 2' and the postmodern condition

Research methodologies are the product of a long history of competing ideas in which the authority and vested interests of established groups are challenged by emerging bodies of

knowledge. However, debate in the field of organisational research has become increasingly divergent and dispersed (Grant *et al.* 1998: 13, Reed 1999: 26). Traditional university-centred 'Mode 1' knowledge production in the 'scientific' mode (Gibbons *et al.* 1994) has been challenged from without, as organisational knowledge creation migrated to the more transitory and heterarchical, 'Mode 2' settings (Huff 1999), but also from within, through the introduction of a 'postmodern condition of knowledge' (Lyotard 1984), which endorsed similar notions regarding the situated, relativised and provisional nature of knowledge practices (Hassard and Kelemen 2002). In the late 20th century, postmodernist perspectives combined with an expansion in the literature on social theory, contributed to a period of introspection and conflict between competing paradigms of organisation (Burrell 1996, Chia 1995, Clegg 1990). The demonstrable limitations of 'traditional' Mode 1 methodology – in Huff's terms, it is, 'too slow, too inward-looking; it gives priority to pedigrees' (*ibid*: 291) – are matched by those of its erstwhile challengers. In the case of Mode 2, the dangers lie in its unreflective pragmatism, reinforced by a lack of perspective, beyond immediate task requirements. Such characteristics are already evident in some management sub-specialisms, which have become characterised by recurrent 'fads' and 'fashions' (Clark 1999, Scarbrough and Swan 1999).

The limitations of the postmodernist endeavour are more complex. In its 'defeatist' version (Stones 1996: 2), it can be seen as little more than a colourful retreat from the modernist agenda in the face of a complex world. Weick argued that the paradigm wars had generated an unprecedented level of introspection, turbulence and perceived senselessness. While acknowledging the temptation to, 'give war a chance', he was also mindful of the dangers:

‘While it is hard to fault a plea for deeper awareness, it is easy to fault the consequences that can follow if people are unable or unwilling to bound or voluntarily terminate their reflecting. These darker consequences include things like narcissism, self-indulgence, an inability to stop the regress of doubting the doubting and the doubts [...] an inability to act because self-consciousness is paralyzing, and heightened concern about making mistakes’. (Weick 1999: 802)

Such concerns have prompted Weick (1999: 799) to raise the fundamental methodological question, ‘How do we write legitimate knowledge in an era of postmodernity?’. The proliferation of competing perspectives has prompted three broad categories of response from researchers; inverted commas have been used to indicate that these descriptors remain both contentious and provisional. ‘Modernists’ (or ‘positivists’) have re-asserted the value attached to objective knowledge in these disciplines, and have defended traditional social science methodologies in the face of the perceived ineffectual relativism, or ‘social poetry’ identified in counter-modernist research practice (Donaldson 1997, Pfeffer 1993, Sokal and Bricmont 1998). In a related modernist critique, proponents of ‘grand’ social theory are taken to task for a similar retreat from traditional tenets of social science (Abell and Reyniers 2000, Van den Berg 1998). The ‘counter-modernist’ (or ‘constructivist’) response has been to celebrate the resulting methodological diversity, often combining this with assertions of the ‘incommensurability’ of competing paradigms (Burrell 1996, Case 2002). Counter-modernism is thus at odds with Pfeffer’s ambition of producing a discrete organisational analysis paradigm comprising clearly articulated practices and standards (Hassard and Kelemen 2002: 332). The third grouping has taken an intermediate or ‘neo-realist’ position, drawing selectively on the ‘postmodern turn’. They have adopted the counter-modernists more self-conscious, or ‘reflexive’ view of the research process, and have incorporated

subjectivism into their explanatory frameworks. However, they have also retained a sceptical stance on the counter-modernist rejection of ‘aperspectival’ objectivity as a research aim:

‘Defeatist postmodernists tend to assume that because the world is so open, diverse and complex, nothing of lasting or universal application can be said about it, and because theory is so contestable and yet difficult to test, anything goes. Critical realists accept the premise but argue for a different conclusion: that notwithstanding the daunting complexity of the world and the fallible and situated character of knowledge, it is possible to develop reliable knowledge and for there to be progress in understanding’. (Sayer 2000: 30)

The present study explores the explanatory potential of the critical realist perspective. It rejects the view that the subjectivist-objectivist dualism associated with modernist and counter-modernist positions can be resolved at a ‘grand theoretic’ level (Table 6.1), emphasising instead the importance of empirical research as the essential pre-requisite for further theoretical development (Penrose 1989, Van den Berg 1998). More specifically, in tackling the apparent trade-offs required to create process theory, it recognises that insufficient empirical work has been conducted to establish with confidence where these trade-offs actually occur (Pentland 1999: 721). For these reasons, the research that is reported in Chapters 7 and 8 is as much an assessment of the proposed methodology as an exploration of the substantive empirical questions. The broader social theoretic implications of this research methodology are addressed in Chapter 9.

Table 6.1 Beyond false divides?: subjectivist and objectivist assumptions

<i>Counter-modernists</i>		<i>Modernists</i>
<i>The subjectivist approach to social science</i>		<i>The objectivist approach to social science</i>
Nominalism	←——— Ontology ———→	Realism
Anti-positivism	←——— Epistemology ———→	Positivism
Voluntarism	←——— Human nature ———→	Determinism
Ideographic	←——— Methodology ———→	Nomothetic

Source: Burrell and Morgan (1979: 3, Figure 1.1 – modernist and counter-modernist titles added)

6.2.3 Empirical research and ‘construct objectification’

The paradigm wars stimulated debate over the appropriateness of various theoretical tools, and increased recognition of the ‘theory-laden’ nature of all research efforts. However, the neo-realist position is that meaningful research can only proceed on the basis of a clear and coherent methodological framework. The aim of this discussion is to reflect on the diverse theoretical paths opened up by the paradigm wars, and to justify the chosen methodology in relation to the objectives of the empirical research. This requires a return to more practical concerns. As Czarinaawska (1998) has commented, there are more serious dangers in life than dissonance in organisation theory:

‘We may as well abandon this self-centred rhetoric [of incommensurability] and concentrate on a more practical issue: it seems that we would like to be able to talk to one another, and from time to time have an illusion of understanding what the Other is saying.’ (Czarinaawska 1998: 274, cited in Weick 1999)

Weick (1999) cited Czarina's argument in order to support his contention that theory construction should become an exercise in 'disciplined reflexivity', even at the cost of some 'boldness' on the part of the theorist:

'My feeling that boldness is missing [from current theorising] may be filed away as one more instance of the insane pursuit of originality that got us into this proliferation mess in the first place'. (Weick 1999: 803)

However, while it may be helpful to retreat from some of the excesses of (grand) theorising (Van den Berg 1998), the solution is not simply to elaborate theories through a process of 'disciplined reflexivity'. From the neo-realist perspective adopted in this study, paradigm incommensurability is essentially a problem of inadequately researched constructs. The main requirement, therefore, is to complement abstract theorising with appropriate empirical work, in order to develop better conceptualisations of the relevant constructs:

'[T]he low construct objectification that presently characterizes many organisation theory constructs is a problem, and therefore we should strive for greater construct objectification in our field. Greater construct objectification is important because it provides abstract constructs that adequately reduce the complexity of empirical reality and can be treated as credible, clearly delineated phenomena to study'. (McKinley 2002)

The conceptual problems that arise from a lack of empirical grounding are common to other social science disciplines, and were exemplified in Coase's (1992) comments on a research text in industrial economics:

‘If you look at the various chapters and ask, “why was it that I couldn’t relate what was said in one chapter to what was said in others?” the tentative conclusion I have come to is that most of them were lacking in empirical content [...] and it was very hard to know what in practice the concepts that were being employed really meant’. (Coase 1992: 333, cited in Buckley and Michie 1996: 17-18)

Constructs are an unavoidable element in explanation. They are abstractions from ‘reality’, however this is defined, which are needed in order to identify common elements and to facilitate informed debate (Section 2.2). The process of abstraction, in both the natural and social sciences, has been subject to constructivist critiques (e.g. Burrell 1996, Case 2001). However, it is possible to mount a robust neo-realist defence of objectivity in organisational research, while accommodating a degree of subjectivism:

‘[In this position] objectivity remains a valued characteristic and retains the aperspectival connotation [...], but it is transformed from a static assessment of measurement quality to a dynamic evaluation of how construction of organization theory phenomena by organisational scholars takes place’. (McKinley 2001)

Table 6.2 offers a tentative assessment of the varying degree of objectification in the organisation theory constructs that are central to the empirical study. A second dimension has been added to indicate the degree of stability exhibited in each case. The differences illustrated in this table echo Merton’s (1984) distinction between established constructs and what he termed ‘proto-concepts’:

‘[A] proto-concept is an early, rudimentary, particularized, and largely unexplicated idea [...]; a concept [on the other hand] is a general idea which once having been defined, tagged, substantially generalized, and explicated can effectively guide inquiry into seemingly diverse phenomena.’ (Merton 1984: 267)

Table 6.2 Objectification of relevant organisational constructs

<i>Organisational construct</i>	<i>Standardisation and stability of construct definition</i>	<i>Comment and related discussion (see also: Chapter 9)</i>
Size	HIGH/STABLE	Quantifiable measures adopted in many studies, including employee numbers and sales revenues. Researchers familiar with these measures and aware of data collection issues (Chapter 3).
Manager	HIGH/STABLE	In most situations, a readily identifiable individual or grouping (Chapter 2); some related concepts (e.g. nature of receding managerial limit) more contestable (Chapter 4).
Firm	MEDIUM/STABLE	Legal and financial definitions are relatively clear (Chapter 2); construct challenged by empirical evidence of 'blurred boundaries' (Chapter 5) and counter-modernist ontological challenge (Chapter 6)
Growth	MEDIUM/UNSTABLE	Quantifiable, size-based measures have gained a degree of consensus, but this has been undermined by critiques that highlight qualitative dimensions (Chapter 3)
Resources	MEDIUM/UNSTABLE	Treated as an uncontentious construct in much of the 'RBP Mark I' literature, but criticised elsewhere insufficiently well-defined (Chapters 2 and 4) (see also: 'capabilities')
Capabilities	LOW/UNSTABLE	Many competing conceptualisations; Penrosian resources-services distinction, clarifying nature of capabilities, often ignored in subsequent citations (Chapters 2 and 4)
Business network	LOW/UNSTABLE	A range of interpretations, from realist ontology underpinning 'network analysis' approaches to subjectivist interpretations such as 'actor network theory' (Chapter 5)
Knowledge	LOW/UNSTABLE	Efforts to objectify and standardise driven by prescriptive studies with a performativity emphasis. Associated terminology, including 'intellectual capital' and 'knowledge management', has been problematised by organisation theorists (Chapters 3 and 4)

The implications for the present research study can now be clarified. In pursuing its empirical research questions, the study operationalises a number of Penrosian concepts (or constructs) that have achieved varying degrees of objectification in the relevant research literatures. One of the strongest arguments against attempts to construct formal models of the growth of the firm, based on the present state of knowledge, is that key constructs are insufficiently well-defined. Coase's (1992) reflections on a premature recourse to formal models in the emerging field of inter-organisational contract economics are instructive in this regard:

‘I think you can be too precise too soon and that this is a situation you are liable to be in when you are very ignorant. And I think that we are very ignorant in this field [...] To have a model that simply incorporates what you know (or think you know) at an early stage may, in fact, by producing results that are very misleading, prevent useful research from taking place’. (Coase [1992: 335-336], cited in Buckley and Michie 1996: 18)

Given this danger, the role of the methodological questions is to create a better understanding of the relevant concepts and their interaction. In doing so, the study also aims to shed light on the growth of two connected firms. These parallel tasks can only be achieved by recourse to appropriate research methods. A combination of methods has been chosen for the study. A comparative, case-based analytically structured narrative (ASN) is supported by a sequence of network maps. This combination was selected on the basis of its capacity to present process-related data in a way that could support theoretical reflection and modification (i.e. ‘theory-building’). The next two sections substantiate these choices, outlining the characteristics and application of each technique. This is followed by a review of the source data, its collection and initial analysis.

6.3 The analytically structured narrative (‘ASN’)

6.3.1 Theorising from process data

This thesis explores mechanisms associated with the growth of connected artisanal firms in a modified Penrosian framework. It is concerned, therefore, with a particular class of *process* theory. The following discussion assumes a relatively clear distinction between ‘process’ and ‘variance’ theories (Langley 1999, Miles and Huberman 1994). In its most basic form,

addressed in the earlier critique of the characteristics approach to growth (Section 3.2), the distinction is between explanations based on associations between variables and explanations that identify patterns in event sequences:

‘Whereas variance theories provide explanations for phenomena in terms of relationships among dependent and independent variables (e.g. more of X and more of Y produced more of Z), process theories provide explanations in terms of the sequence of events leading to an outcome (e.g. do A and then B to get C). Temporal ordering and probabilistic interaction between entities are important here [...]. *Understanding patterns in events is thus key to developing “process” theory*. (Langley 1999: 691 – emphasis added)

Various research strategies have been employed in order to build theory from organisational process data. While each seeks to understand ‘patterns in events’, these approaches vary in the extent to which they probe beyond the events (i.e. the surface-level) in order to understand the patterns (i.e. sources of particular configurations). Langley’s (1999) methodological reflections provide a basis for locating the methods selected in relation to plausible alternatives. Two distinct approaches to process data can be identified:

‘One group of researchers has chosen to address these dynamics by formulating *a priori* process theories and testing them using coarse-grained longitudinal time series and event-history methods. Another group has chosen rather to plunge itself into the processes themselves, collecting fine-grained qualitative data – often, but not always, in real time – and attempting to extract theory from the ground up [...] the philosophy of this camp is that to truly understand how and why events play out over time, we must examine them directly’. (Langley 1999: 691)

The most common application of Penrosian concepts, the formalisation of the ‘Penrose curve’ (Section 3.5), falls into the first camp. While quantitative modelling of this kind has explanatory value, it does not provide a sufficient depth of understanding of the intermediate processes:

‘Quantitative time series constitute rather coarse-grained outcroppings of events and variables over time: they skim the surface of processes rather than plunge into them directly’. (Langley 1999: 691)

To satisfy the three sets of research questions, the empirical study adopts methods associated with the ‘process’ camp. They make use of narrative data, the bare minimum definition of which is, ‘pure event sequence’ (Pentland 1999: 713), yet with the intention of converting the raw material of the ‘story’ into explanatory theory. The narrative needs to be grounded in the practical sensemaking of managers (Weick 1979). However, in order to reflect the critical realist perspective, it also needs to probe for deeper structures that are not directly observable (Clark 2000, Pentland 1999, Sayer 1992, 2000). The ASN has the potential to probe beyond the ‘surface-level’ data that characterise both traditional variance modelling in the economics and small firms’ literatures (Section 3.2), and the richly textured but often atheoretic accounts associated with ‘interpretivist’ organisational studies and some business histories (Clark and Rowlinson 2001, Jones 1998, Partington 2000, Reed 1996, Rowlinson and Procter 1999).

6.3.2 The ASN: characteristics and explanatory purpose

Clark (2000: 119-121) has proposed the analytically structured narrative (ASN) as a practice that enables researchers to conduct empirical work within a neo-modern political economy perspective, an approach that equates with the neo-realist position adopted in this study. The

ASN has been described as generating, ‘case-like cameos in which the temporality of events and placeness of spatiality are implicated’ (Clark 2000: 113). This requires an inductive research approach, in which the author’s, ‘immersion into the history of the industry being studied’ (Jones 2001: 918), yields contextual awareness. ASNs are constructed using a wide range of research techniques, including archival searches, semi-structured interviews, analysis of secondary data and participant observation, providing the basis for subsequent abstraction and theory-building. Exemplars include Whipp and Clark’s (1986) periodised analysis of product, process and organisational innovation in the Rover car manufacturing company and Kieser’s (1998) reconstruction of the links between disciplinary practices at societal, organisational and individual levels in 18th century Germany. The major challenge in constructing an ASN is to embrace the complexities of unfolding structure and agency, while retaining a high degree of analytical clarity. The researcher is engaged in a self-conscious effort to synthesise subjective and objective elements in the narrative in order to:

‘[S]trike a balance between untheorised common-sense empirical accounts of what actually happened, and over-theorised accounts which explain structural necessity underlying events that have already been recounted by historians’. (Clark and Rowlinson 2001: 5)

More specifically, it demands that greater attention be paid to the various properties of the narrative and their potential contribution to explaining social processes.

6.3.3 Characteristic narrative properties

Pentland (1999) identified five characteristic properties of narratives that need to be addressed when applying this research method for the purposes of causal explanation (Table 6.3). He

argued that researchers could have ‘better constructs and better stories’, and hence better process theory, by taking a more critical stance towards these characteristics. How, for example, does the analysis take account of sequence in time, or broader issues of temporality? How are the focal actors selected, and how far has the researcher abstracted from their distinctive identities, roles and relations? How is the ‘story’ affected by the implicit assumptions that constitute its evaluative frame of reference? Each of these properties can assist in distinguishing the ASN from more conventional organisational narratives, such as practitioner accounts, business histories and ‘Harvard’-styled case studies. As a consequence, each poses a significant methodological challenge.

Table 6.3 Narrative properties and organisational theory

<i>Narrative property</i>	<i>Indicator for questions regarding ...</i>
(a) Sequence in time	Patterns of events, temporality
(b) Focal actor(s)	Identity, relationships and social networks, roles
(c) Narrative voice	Contrasting perspectives, politics and power
(d) Evaluative frame of reference	Cultural values, moral codes, assumptions, expectations
(e) Other indicators of context	Other constructs informing the process

Source: Pentland (1999: 713, Table 1 - adapted)

Not all of the properties is equally relevant to every question and the construction of a narrative is likely to involve the researcher in trade-offs (i.e. greater attention to one property necessitates a reduced emphasis on another) (Pentland 1999: 713). Pentland’s typology can now be applied, with the aim of clarifying the narrative properties addressed in this study.

(a) Sequence in time: One of the most common criticisms of case-based narrative is that it obscures or distorts the temporal dimension. The most obvious limitation arises from an

over-emphasis on recent event sequences at the expense of those that are more distant in time. Analysis needs to be flexible enough to explore the continuing influence of such factors:

‘Serious attention to the analysis of the pre-existing situation requires a time perspective which searches backward, probably over decades and generations. The genealogical element should be based on a series of hypotheses about which traces are carried forward and the likelihood that tendency will continue.’ (Clark 2000: 119)

In constructing an ASN, the researcher periodises the account, an analytical intervention that mediates between the ‘historical’ narrative and the ‘theoretical’ analysis. The external and internal boundaries of any narrative are necessarily ‘artificial’, in the sense of being imposed by the narrator. However, boundary decisions should reflect the outcomes of analysis, rather than unrelated pragmatic or presentational factors. For example, there is a general tendency to bracket narrative histories on the basis of calendar years, decades and centuries. Two distorting effects arise from this unreflexive application of calendar time. First, it discounts longer- and shorter- term processes. Second, it imputes unsubstantiated causal significance to start- and end-points:

‘There is a leap from the founding period across time to the present so that there is grossly simplified periodisation into founding and the foreshortened extended present. It is rare to find an analytically sound periodisation of episodes’. (Clark 2000: 115)

One of the contributions of counter-modernist critique, informed by similar interventions in the literary theory, has been to contest the convention of linear narrative structure, often on the basis of its assumed connection to the ‘totalising’ modernist project. However, in contrast to literary texts, historical sources must be constructed before the process of deconstruction

can begin (Rowlinson and Procter 1999). Premature attempts to resolve the challenge of constructing historical narrative through *ex ante* deconstruction are likely to sacrifice coherence without any obvious benefit to understanding. Disruption of linearity does not immunise the researcher from the fundamental explanatory issues, including the challenge of periodicity. As Sayer (2000: 150) has noted, ‘It would be easy to dismiss the achievements of conventional narrative form and replace them with anarchic textural forms which hid poor reasoning and explanation and which merely confused the reader or limited the readership to a tiny number of *congnoscenti*’. Organisation theories have a great deal to learn from historians regarding the application of concepts such as temporality and periodisation (Clark and Rowlinson 2001). For example, one of the tasks of the *Annales* school of the mid-20th century was to explore the different speeds at which historical processes unfold (Braudel 1972). The research attracted criticism for an exaggerated emphasis on continuity, inadequate articulation between different ‘levels’ of time and limited interest in causation. However, it contributed to the methodological debate by problematising the nature of ‘historical’ time:

‘[T]he point here is that it made explicit, in a way that had seldom been done before, the manner in which historical time differs from linear time. It is in many ways the opposite: not a given, unchangeable, taken-for-granted series of dates, but a construct for which the historian has to argue’.
(Evans 1997: 155)

The narratives constructed for the present study invoke causal mechanisms that operate at several levels, with distinct temporalities. The challenge of articulating between these levels is addressed through the critical realist technique of retrodution (Section 6.6).

(b) Focal actor(s): In a purely ‘event-sequence’ approach (e.g. population ecology modelling and multivariate analysis of antecedents of small firm growth), the analysis of process data abstracts away from specific actors in the narrative. This has important methodological and theoretical implications, because inattention to particular identities, roles and relationships is likely to impair our understanding of the processes in which these factors are exercised. Hence, the ASNs constructed in the present study invoke specific characters, in the form of individuals, firms and other organisations. The central narrative focuses on the growth of two small artisanal firms in a modified Penrosian framework. Consequently, the focal actors are two named cheese-making firms, Appleby’s Cheese and Belton Cheese (Section 8.1). The voices of individual actors are primarily those of the dairy farmers who manage these two firms. However, the ASN and network maps are constructed in a way that incorporates the role of many other actors, including suppliers, consumers, regulatory agencies and informal ‘social’ networks, to the extent that they exert an influence on the process of growth in the focal, connected firm.

(c) Narrative voice: The ASN is constructed by the researcher, who bounds the narrative and abstracts from the source data for the purposes of analysis and theory-building. The theory generated in the present study does not claim to be grounded, in the sense of being derived directly from empirical data (Eisenhardt 1989, Glaser and Strauss 1967, Partington 2000). The narrative voice reflects the influence of the Penrosian framework, which it is also seeking to appraise, and of the neo-realist perspective informs the research methodology. Counter-modernists have re-emphasised the familiar argument that, ‘[S]tories vary depending on who is doing the telling’ (Boje 1991, Pentland 1999: 715). In this study, the narrative voice is used to tell stories from three main viewpoints. The central narrative, or ‘Tale of two cheese-

makers' (Chapter 7), while drawing on multiple sources, was constructed around the accounts provided by the managers of the two focal firms. The two historical narratives, 'Cheese-making in England' and 'Consuming English cheese' (Chapter 8), in contrast, were constructed on the basis of contemporary and archival data, combined with published historical accounts. By deploying the narrative voice in this non-unitary manner, it is possible to explore tensions between these narratives and to guard against accusations of matching the evidence to a pre-determined argument. Inevitably, despite the inclusion of multiple narratives, some voices are privileged while others are silenced (Pentland 1999: 715). In this study, the primary criterion for inclusion has been potential contribution to the research questions. However, the narrative format provides scope for subsequent deconstruction in order to locate other silent voices.

(d) Evaluative frame of reference: Narrative data can provide insights into the values and expectations of the focal actors, contributing to the analysis of processes in which these factors are enacted, allowing the researcher to examine the ways in which culture guides action (Pentland 1999: 715). In this study, the central narrative (Chapter 7) paid particular attention to the perceptions of the focal firm managers, consistent with the Penrosian concept of productive opportunity. The historical narratives (Chapter 8) concentrate on contrasting values at a societal level, in terms of their impact on the focal firms and their business networks. The production narrative explores a long-standing tension between values associated with industrial and artisanal modes of production. The consumption narrative is also probed for evidence of continuity and change in societal attitudes towards its food and the manner in which it is produced.

(e) **Other indicators of context:** Narratives are often criticised for their lack of attention to the context in which they are set (Section 5.4). The arguments reflect those discussed in relation to time and temporality. Researchers are engaged in similarly inevitable boundary decisions, providing ammunition for the critics (Whipp and Clark 1986). The problematic nature of contextual boundaries is illustrated by Braudel's (1972) study, *The Mediterranean and The Mediterranean World in the Age of Philip II*. His account was criticised for taking the natural environment of the region as a given, rather than exploring it as the product of human activity that encompassed a wider area (i.e. the deforestation that accompanied the supply of timber for shipbuilding, construction and fuel) (c.f. Evans 1997: 155). The ASN constructed for this study has been located within the Contextualist tradition (Section 1.4), and is therefore sensitive to a boundary-setting critique from within this school:

‘The Contextualists define their contexts too narrowly. Though these authors may sometimes refer to national cultural characteristics – as for instance in Pettigrew's (1985) linking of Organisational Development's success within ICI in the 1960s to a general cultural atmosphere of liberalism and tolerance – they fail to connect such factors to any systematic account of the wider social structure’.
(Whittington 1989: 70)

Whittington's point was that detailed empirical work had been conducted at the cost of analytical breadth, so that, ‘The deeper they have burrowed and the greater the empathy of their accounts, the more their concerns have become confined to those of the companies themselves’ (Whittington 1989: 68). The novel and the problematic nature of what Pettigrew (1985) termed, ‘the outer context’, was revealed in the following introductory comment:

‘This is the third level of analysis in the study, the one most novel to the analysis of organisational change [...] and the one most difficult empirically and theoretically to handle’ (Pettigrew 1985: 48)

In a critical realist perspective, contextual boundaries should extend beyond the primary subject, to include structures functioning at these higher levels. The critical realist philosopher, Bhaskar (1979) introduced the concept of ‘totalisation’ to describe this process. Whittington’s (1989) analysis of the strategic conduct of firms during periods of economic recession and recovery illustrates an attempt to apply a critical realist perspective incorporating these broader generative mechanisms. For its proponents, the process of totalisation, ‘powerfully enlarges the researcher’s capacity for explanation’ (Whittington 1989: 117). The implication is that such an approach can exceed the analytical constraints of organisation-level studies:

‘Institutional analysis does not [...] confine itself to particular local structures embodied within the firm but extends beyond it in space, to include wider structures of domination (such as class and patriarchy) and in time, to incorporate the historical production of these structures’. (Whittington 1989: 117)

However, while the ambition is commendable, empirical application remains a thorny issue. This is acknowledged in the following caveat, which retained Bhaskar’s (1979) ontological claim, while conceding a degree of empirical pragmatism:

‘Naturally, the process of totalization in describing a particular conjuncture may be more or less complete – each time we explain a strategic decision, we need not reconstruct the origins of capitalism – but the existence of totality remains’. (Whittington 1989: 117)

In short, while the decisions on the scope of contextual analysis are not arbitrary, they are subjective and ultimately a matter of professional judgement on the part of the researcher. The historian faces a similar challenge. Boundary-setting decisions are inevitable, but

selection criteria should be rationalised in terms of the research questions and the quality of evidence obtained:

‘The contexts which historians choose to bring into play are far from arbitrary, however roughly the seamless web of history is torn asunder. Historians usually stop looking for explanatory contexts once they reach areas that are so remote from what they are trying to explain that the connection becomes minimal.’ (Evans 1997: 159)

While it is neither feasible nor desirable to ‘reconstitute’ entire historical contexts, the task of abstraction does not leave the researcher free to create a work of fiction. There are two main sources of constraint. First, the research questions imply that certain sets of contexts need to be examined. For example, in the present study, explaining the growth of small English cheese-making firms required research in the fields of agriculture, food manufacturing, food retailing and consumption. Second, the researcher’s provisional boundary-setting decisions may be overturned by evidence generated in the course of the research.

6.3.4 From narrative to cause: ‘which motor is running?’



One of the main critical realist critiques of narrative in an interpretivist mode concerns the under-specification of causal mechanisms (Clark 2000, Sayer 1992, 2000). However, in presenting a causal explanation based on narrative data, the researcher is confronted with the problem of relating surface events to the underlying generating mechanisms. The fundamental question, ‘How can we tell which motor is running?’ (Van de Ven and Poole 1995) has been addressed in various ways, but the common feature of all approaches is a process of analytical abstraction. The corollary of abstraction is that the researcher is engaged

in the familiar trade-off between simplicity, accuracy and generality (Weick 1979). Conceptualisation brings some distortion, but this is a necessary part of moving from the raw narrative towards a stage where explanatory mechanisms are visible:

‘The belief in explanations that provide accounts of what happens as it actually happens has pervaded the sociological literature for decades and has produced an abundance of detailed descriptive narratives but few explanatory mechanisms of any generality. It is through abstractions and analytical accentuation, however, that general mechanisms are made visible. But these abstractions also distort by their very nature the descriptive account of what actually happened, by accentuating certain aspects of the situation and by ignoring others.’ (Hedström and Swedberg 1998: 15)

Pentland (1999) tackled transition from core event sequence to explanatory process theory by linking three levels of narrative with Van de Ven and Poole’s (1995) taxonomy of prototypical generating mechanisms (or ‘motors’) (Table 6.4).

Table 6.4 Levels of structure in narrative: how do we dig deeper?

<i>Participants' stories</i>	<i>Level of analysis</i>	<i>Definition</i>	<i>Researchers' stories</i>
	Text	Particular telling of a story by a specific narrator [or source].	
	Story	Version of a fabula from a specific point of view.	
	Fabula	Generic description of a particular set of events and their relationships.	
	Generating mechanisms	Underlying structures that enable or constrain the fabula.	

Source: Pentland (1999: Figure 1 - adapted)

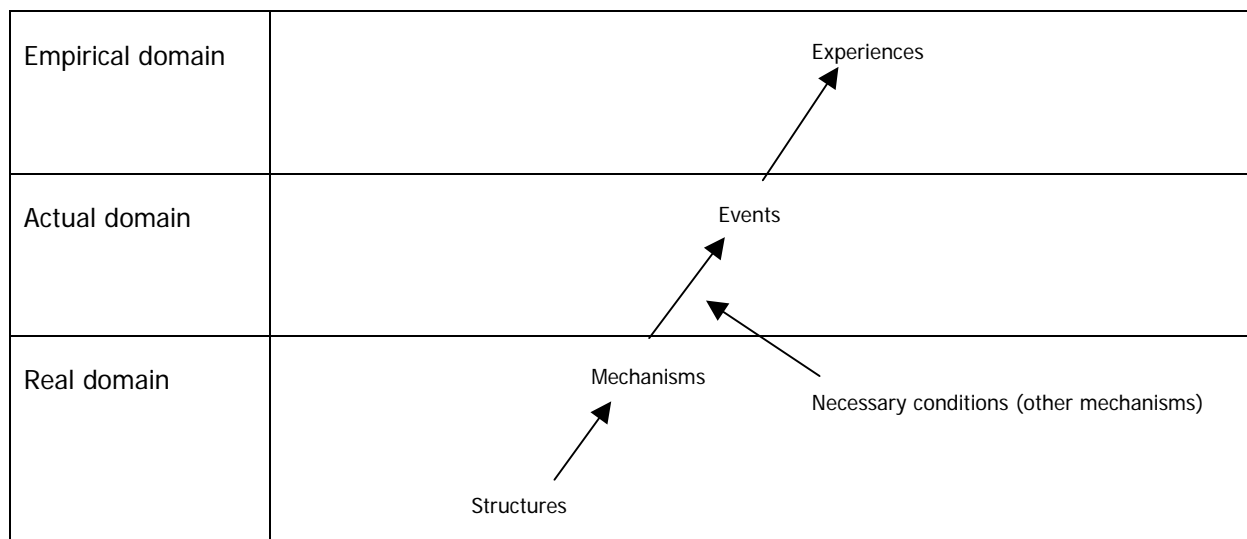
The challenge has been summarised in terms of bridging the ‘distance’ between surface data and underlying causal mechanism:

‘In organizational research we generally have data from the surface (text, discourse, or something equally superficial, like a survey). In terms of [Table 6.5], these data are quite distant from the objective story (fabula), let alone the underlying generating mechanism.’ (Pentland 1999: 721)

Pentland (1999: 721) presented ‘three kinds of answers’ to this challenge (i.e. that researchers, ‘need to pay attention to all aspects of the narrative – not just the sequence’; ‘be aware of the fact that stories may be their own best explanation’; and ‘understand that explanation is basically a process theory’), which serve as an indicator of the provisional state of research methods in this field. In variance-based studies, which concentrate on co-variation in ‘surface-level’ data, conflicting indicators (e.g. contrary results from two surveys) are typically controlled for by computing validity and reliability measures, or by triangulation with other data sources. Similar approaches can be applied to the *initial* stages of ASN construction (Section 6.5). However, the more problematic epistemological issues arise when

process research moves to the abstract level, and attempts to secure some kind of linkage between surface data and lower levels. For critical realists, this involves an analytical technique termed ‘retroduction’ (Bhaskar 1978, Tsoukas 1989a), which probes beyond the ‘empirical’ domain to the ‘actual’ and the ‘real’ structures beneath. A simplified, composite of these three domains is presented in Figure 6.2. The diagram illustrates how necessary conditions operate contingently between structures, mechanisms and the events (or effects) they can generate. The critical realist ontology is based on an assumption that ‘real’ structures persist independently of direct human experience. The implication is that pursuit of empirical regularities through extensive methods applied to taxonomic groups cannot provide an adequate explanation of complex social processes; intensive research based on causal groups is needed to grasp how mechanisms operate in concrete situations (Sayer 2000: 24).

Figure 6.2 ‘Stratified reality’: a critical realist view of causation



Source: Bhaskar (1978: 13), Tsoukas (1989a: 553, Table 1), Sayer (2000: 15, Figure 1.2 – adapted)

The critical realist injunction is that that researchers need to engage in, ‘repeated movement between concrete and abstract, and between particular cases and general theory’. (Sayer 2000:

23). However, by asserting the ‘stratified’ nature of reality (i.e. that social structures, like those in nature, are not reducible to their component parts), critical realists impose an additional, and arguably insurmountable, epistemological burden on the researcher (Tsoukas 1989). Hence, given the provisional state of empirical research practices, a qualified, neo-realist stance has been adopted in this study (Section 6.2.1). In short, it takes the more cautious and pragmatic view that such lofty issues are, like the Weickian trade-offs among simplicity, accuracy and generality, only to be resolved through cycles of empirical work and theoretical reflection, rather than exclusively through abstract argument. As a consequence, the retrodution of the ASN is discussed in Section 6.6, while reflection on its empirical application and explanatory value is reserved for Chapter 9. The next section addresses the use of network maps, as a visual complement to the ASN.

6.4 Network mapping: illustrating the narrative

6.4.1 Network map sequences

Network maps form an integral part of the research design. The objective of the maps is to illustrate and to contrast the major changes in the network architectures of two focal firms during the period 1950-2000. This technique can be seen as a useful configurational complement to the linear form of the ASN:

‘[M]ost forms of communication (with the partial exception of pictures or diagrams), whether written or spoken, have a linear, sequential form which inevitably favours the expression of the episodic over the configurational. [...] Grasping the whole is more difficult than grasping what happens next in the story’. (Sayer 2000: 149)

Network maps can be drawn in a variety of ways, depending on the objectives of the research study and the predisposition of the researcher(s). In preparing a network map, researchers have to address a number of issues, which echo those discussed in relation to the narrative text. In the following paragraphs, the relevant methodological issues are addressed and related to the empirical study; the issues are also summarised in Table 6.5. Additional guidance on interpreting the maps is included in the opening section of Chapter 7.

Table 6.5 Network mapping: some relevant methodological issues

<i>Issue</i>	<i>Example</i>
Level and scope of analysis	Dyad or network?; direct or indirect links?
Basis for abstraction	Ego-centric / focal or socio-centric network?
Network morphology	Density, range, reachability
Nature of connectivity / flows	Complexity (uniplex and multiplex ties),
Network dynamics	Depicting the network as a 'moving map'?

6.4.2 Boundary setting (a): level and scope of analysis

The fundamental boundary issues in this research technique concern the actors and relationships that are to be represented in the network map. The issues echo those discussed with respect to the ASN (Section 6.3.3). A potentially limitless set of linkages, sometimes termed the 'total network', stretches out from each individual and organisation (Mitchell 1969). The researcher exercises a subjective judgement in establishing an appropriate 'cut-off' point. The resulting 'partial' network must be 'big' enough to be meaningful, in relation to the phenomena investigated, yet 'small' enough to meet the practical constraints of data collection and analysis (Conway and Steward 1998). There are various approaches to

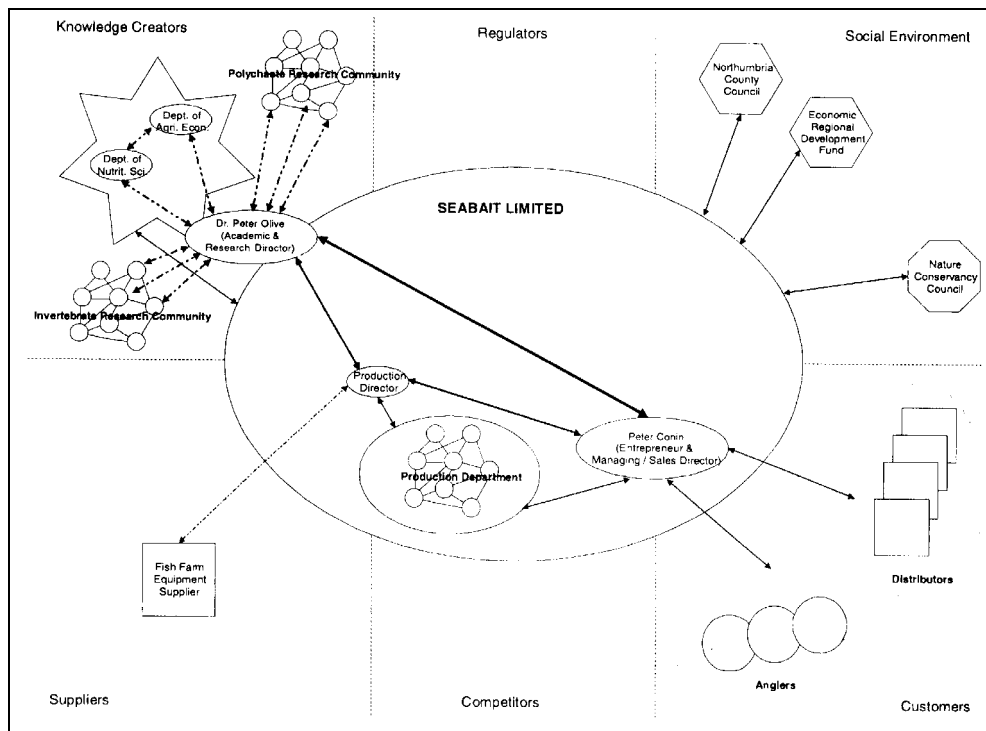
selecting (or abstracting) a ‘partial’ network, the choice depending on the research question. One of the major criticisms of previous network research is the tendency for analysis to be limited to individual linkages (i.e. ‘dyads’), ignoring the wider pattern of network relationships (Anderson *et al.* 1994, Shaw 1998). There are obvious practical reasons for this kind of ‘dyadic reductionism’, notably the difficulties and time involved in collecting data from all the relevant actors (Harland 1996). Some researchers may also be pursuing well-defined questions, which do not require a broader ‘network’ perspective. However, in the present study, in order to incorporate the multi-level analysis identified in the Penrosian synthesis (Chapter 4) and its modification (Chapter 5), there is a strong case for mapping to extend beyond the individual dyadic links to consider the impact of indirect connections in the wider network.

6.4.3 Boundary-setting (b): basis of abstraction

There are two generic forms of network map, the ‘focal’ (or ‘ego-centred’) form and the ‘socio-centric’ form. Again, the basis of abstraction is dependent on the nature of the research subject. For example, studies of entrepreneurial ventures are typically based on ‘ego-centred’ networks (Johannisson 2000). In other words, it is ‘anchored’ on the personal contacts of one individual, or a small and cohesive entrepreneurial team, and fans out from that point to show all of the principal linkages identified for the focal actor(s). This is the approach adopted in the empirical study, where the small cheese-making businesses form the focal point of the network map (Section 8.1). The innovation network depicted below (Figure 6.3) is also based on a ‘focal’ firm. The map is segmented according to broad categories of network actor, which emerged from the research. Individual actors are identified using graphical symbols.

Connectivity and flows are described using different line types and arrow-heads. The alternative basis for abstraction is termed, ‘socio-centric’. The intention in socio-centric mapping is to include all of the relevant actors within a particular field of activity. For example, research into the economic development of a region might suggest a spatial criterion for abstraction. The resulting socio-centric network map, would thus encompass all of the firms and other organisations within a defined area.

Figure 6.3 A focal firm network map: analysing an innovation network



Source: Conway and Steward (1998: 244)

6.4.4 Describing network morphology

The ‘shape’ of a partial network is normally described in relation to the following criteria: density, range and reachability. ‘Density’ describes the number of connections between actors (i.e. a network may be ‘tight’ or ‘loose’). ‘Range’ describes the extent and

heterogeneity of a network. For example, it may comprise a few, similar ties or many varied ones. 'Reachability' describes the extent to which connections between actors are direct, or via intermediaries. There is some evidence of systematic differences in network morphologies. For example, entrepreneurial networks are sometimes characterised as combining a tight core surrounded by a much looser, wide-ranging and heterogeneous set of linkages. This contrasts with the more homogeneous and circumscribed structure of an established small business. Morphological analysis indicates that certain positions within a network, termed 'structural holes', enable the occupants to exercise power. This arises because the actor is a 'go-between', providing the only point of connection for other actors in the network (Burt 1992a, 1992b, 2001).

6.4.5 Characterising network connectivity and flows

Connections between two network actors are variously termed, 'dyads', 'linkages' or 'ties'. The nature of the connection, or 'connectivity' can be described in terms of its strength, content, complexity and latency. A 'strong' tie describes a connection between two network actors that is either socially embedded or formalised. This is contrasted with a 'weak' tie, in which these features are absent (Granovetter 1973). The content of a network connection is referred to as a network 'flow'. Network flows involve the transfer of content, which may include: knowledge, financial resources, emotion/friendship and power. 'Complexity' describes the number of dimensions that are identifiable in a connection between two network actors, and in the flows that are associated with that relationship. For example, a 'uniplex' connection may involve a single item of content (e.g. a purely financial transaction). This contrasts with a 'multiplex' connection, which involves several items (e.g. economic

resources and friendship). Lastly, 'latency' refers to the possibility that some connections may be identified without associated flows; these latent connections may, however, be re-activated in response to certain contingencies. This is a characteristic phenomenon in entrepreneurial networks, for example (Ramachandran and Ramnayaran 1993).

6.4.6 Depicting network dynamics

There is an inevitable tendency for any mapping format to imply a degree of stability in the phenomena depicted. This becomes problematic in studies such as that presented in this thesis, where the research questions are concerned with network-related processes. In common with other organisational forms, networks are assumed to express structural continuity, but are also known to be vehicles for change (Staber 2001b). This presents the researcher with the challenge of conceptualising the network as a 'moving map'. Johannisson's (2000) approach to depicting entrepreneurial networking illustrates one approach (Section 5.4.4). In this study, the solution has involved the construction of two focal firm network map sequences, each periodised in relation to the central narrative (Sections 6.5, 6.6 and 7.1). The concluding sections of the chapter consider the research methods and implementation, from the selection of appropriate data sources to the construction of the analytically structured narratives and network map sequences.

6.5 Research sources and implementation

6.5.1 An overview of the sources

The analytically structured narrative and network mapping sequences were prepared using an extensive range of primary and secondary sources. Historical accounts, archival data and material from contemporary publications is interwoven with primary research. Each of these categories of source material is discussed in the following sections. The aim is to achieve an acceptable degree of triangulation within and between methods, while constructing an informed narrative account (Section 6.4).

6.5.2 Secondary sources (a): historical and archival

The historical narratives reported in Chapter 7 draw on a range of secondary sources. These were selected in order to provide the researcher with a broad grounding in the relevant areas of food production and consumption. Two main categories of secondary source material were used in this part of the study. Historical accounts of dairy farming, cheese-making, food retailing and food consumption were reviewed. The selection criteria emphasised material relating to England and the United Kingdom, but account was taken of sources originating in other countries, particularly where there was an evident impact on domestic production or consumption patterns (e.g. historical trends in cheese exports and imports). The degree of objectivity evident in the historical sources was variable. For example, several accounts (e.g. Rance 1982), were written by strong advocates of traditional cheese-making. It was therefore important to cross-reference factual material against a range of sources and to interpret their

meanings appropriately. Some complex issues were clarified through discussions with industry specialists and during the main fieldwork visits (Sections 6.5.4 to 6.5.7). In addition, special use was made of contemporary and historical accounts of cheese-making, produced by advocates of traditional and specialist, artisanal cheeses. These sources were treated as artefacts in their own right, serving as indicators of periodic attitudinal changes, particularly in relation to the perceived limitations of 'industrial' food products.

6.5.3 Secondary sources (b): contemporary

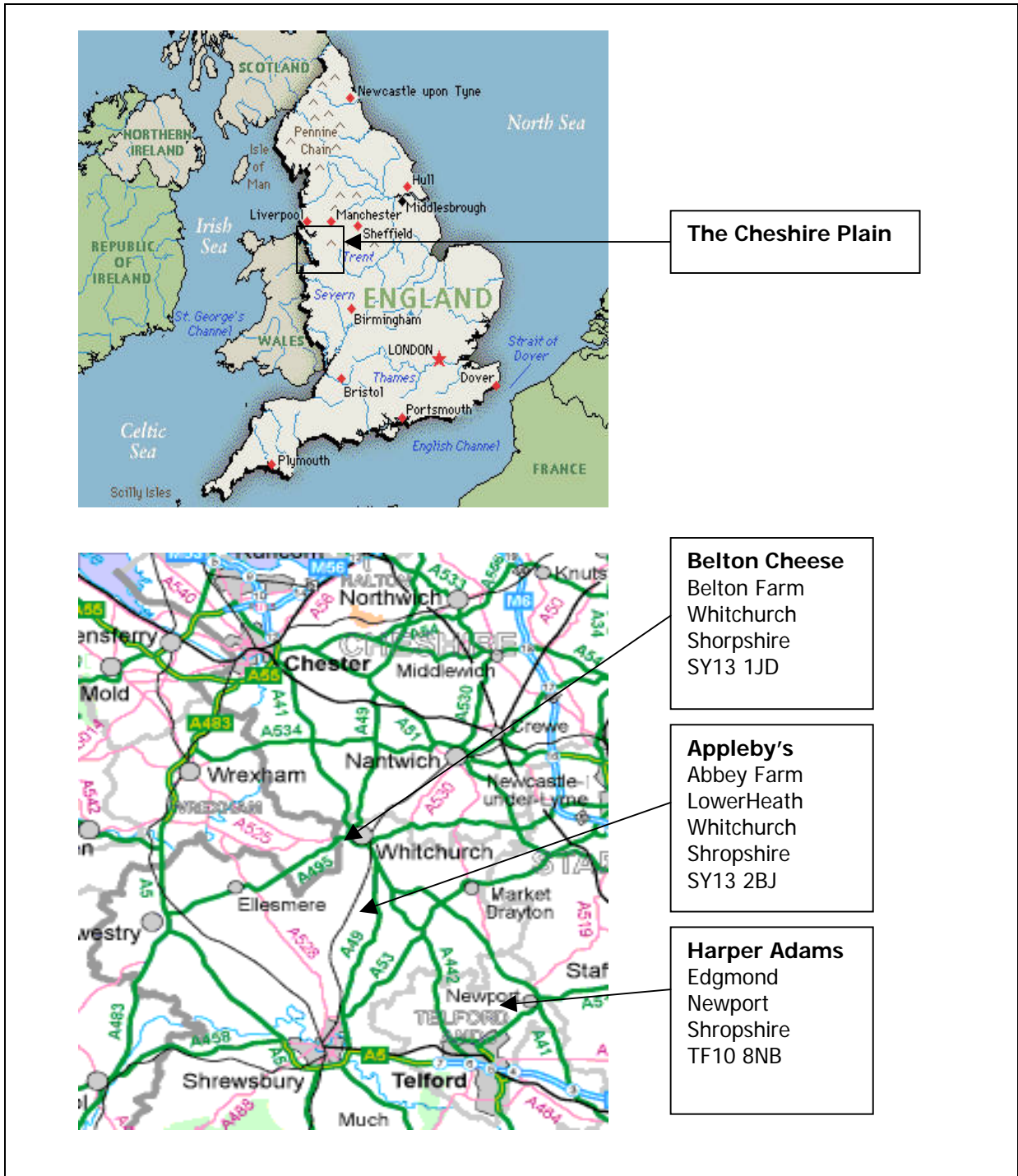
Several categories of contemporary source material have informed the narratives. Industry sector and marketing research data was used to identify trends in cheese production and consumption. Data was obtained from the commercial survey companies and from official statistics. In addition, the annual cheese market report published by a major producer, Dairy Crest, provided both a source of quantitative data and qualitative evidence of corporate approaches to food marketing. A review of the trade press (e.g. *Dairy Industry News*, *The Grocer*) was also instructive. Particular emphasis was given to the specialist cheese retail market, wholesale markets and the relationship between specialist and 'mainstream' cheese production and consumption figures. Academic research on consumer behaviour, specialist food marketing, supply chain and retailing contributed to the production and consumption narratives. Technical information on cheese production and marketing was obtained from a number of sources, including reference books, The Specialist Cheesemakers Association (SCA), Food From Britain (FFB) and Ministry of Agriculture Fisheries and Food/Department for Food and Rural Affairs (MAFF/DEFRA) publications. Additional information was obtained from primary sources, as noted above. Promotional materials used by specialist

cheese-makers and retailers were obtained during fieldwork visits, from Internet searches and when attending agricultural shows, retail outlets and cheese fairs. These were used to inform the consumption narrative by indicating the changing competitive position of the producers. In addition to secondary data, including samples of specialist cheese retailing formats, Internet searches produced material that was incorporated into the primary research. For example, one search introduced new evidence on distribution channels for one of the research subject's products. During the second stage interviews, printed copies of these pages were shown to the cheese-makers, stimulating a discussion of their perceived role and importance. This revealed that some of the outlets were unknown to the cheese-makers, indicating an otherwise hidden connection in the firm's network map (Section 8.1).

6.5.4 Primary sources (a): preliminary interviews (Autumn 1997 - Spring 1998)

Initial familiarity with the issues, and provisional evidence was obtained through a series of interviews and informal discussions with industry specialists, including agricultural industry researchers, farmers and retailers. These interviews, in combination with the interim literature review, provided the basis for the checklists used in the first phase of the fieldwork (Section 6.5.5). At the beginning of the empirical study (September 1997), the researcher had been employed for six years as a lecturer and researcher at one of England's largest agricultural colleges in the higher education sector, Harper Adams. As a consequence, he had gained experience of rural, agricultural and food industry issues, obtained through a combination of teaching, research and consultancy activity (e.g. Blundel and Custance 1993, 1995, Blundel *et al.* 1994). The location of the college, to the South of the Cheshire Plain, also provided familiarity with, and access to, the main fieldwork sites (Figure 6.4).

Figure 6.4 Maps of the main fieldwork locations



6.5.5 Primary sources (b): 'Phase One' fieldwork (Spring 1998)

The fieldwork, which provided the main source of primary data, was based around visits to several small cheese-making businesses and related organisations. Two cheese-makers were selected to provide the focus for the main empirical study and the analytically structured narrative upon which it draws. The first set of interviews and visits took place in March 1998, with a second set of visits in August 2000. On each occasion, semi-structured interviews were conducted over several hours, using an *in-vivo* approach. The informal checklist of topics was used, giving scope for respondents to express views in their own terms (Miles and Huberman 1994, Strauss 1987). The researcher also spent time observing the cheese-making process at each farm and made visits local retail outlets in order to follow-up issues relating to the distribution of the cheeses. Checklist topics were prepared in consultation with dairy sector specialists and were piloted with the help of a dairy farmer and cheese-maker (Section 6.5.3). Each interview was tape recorded and subsequently transcribed in full. In each case, it was possible to verify details for the earliest period (i.e. the early 1950s) with family members who were directly involved in operating the business. Follow-up calls were made to confirm the accuracy of the transcript material and to resolve a number of outstanding technical issues.

6.5.6 Primary sources (c): 'Phase Two' fieldwork (Summer 2000)

The 'Phase Two' visits took place during mid to late August 2000, that is, almost two and a half years after the initial fieldwork. The aim of these visits was to collect data on changes that had occurred in the intervening period, to generate additional data on the history and

networking activities of each firm and to clarify a number of points raised during the first phase. The interviews also provided an opportunity to outline the main arguments emerging from the research, and to seek the respondents' views on their explanatory value and practical relevance. Given the practical constraints, notably the respondents' limited availability for face-to-face interviews, questioning was again based around a prepared semi-structured checklist. Some firm-specific questions were added. These were based on a review of the original transcripts, in the light of subsequent developments in the firms (e.g. a venture into organic cheese by Belton Cheese) and in the wider context (e.g. the growth in Internet-based retailing of specialist food products). In addition, respondents were asked to assist in two practical exercises. First, they were asked to clarify and to add relevant details to a simple chronological chart that had been prepared for each firm. Second, they were asked to comment on the initial draft sequences of the focal firm network maps. The drafts had been prepared by the researcher, based on his understanding of the 'critical events' in the history of the business. This was obtained from analysis of the 'Phase One' interview transcripts, combined with a thorough review of relevant secondary sources. During the 'Phase Two' interviews, the researcher took care to explain the basic format of the maps, and to emphasise that they were provisional and open to revision. The researcher's script encouraged respondents to comment freely on the hand-drawn drafts and to propose any changes they considered appropriate. In the event, the respondents were keen to assist in re-drawing the network maps, both during the interviews and in a series of exchanges of correspondence in the following weeks. The draft maps were also used during the interview as prompts to inform the concluding questions, which focused on network flows and dynamics and their impact on managerial perceptions and action. The revised maps were subsequently re-drawn

using the computer graphics software package *Visio*®, and have been presented alongside the central narrative in Chapter 8.

6.5.7 Commentary on source materials

The diversity of the primary and secondary source material, and focused nature of the study (i.e. sector and location-specific) enabled the researcher to gain a detailed understanding of the issues facing the two firms at the heart of the narrative. It was also possible to triangulate qualitative and quantitative evidence from different sources, using an associated variety of collection methods. The triangulation of data sources and method has provided stronger substantiation of the relevant constructs and hypotheses (Denzin 1978, Eisenhardt 1989, Miles and Huberman 1994). For example, it has enabled the researcher to investigate the Penrosian concept of situated ‘productive opportunity’ from a number of different perspectives. It also acted as a counter to the previously-stated concern regarding the uncritical ‘matching’ of evidence to support an existing (Penrosian) theoretical framework (Section 6.1.4). Some effort was made to read the historical and archival material ‘against the grain’, notably in relation to prevailing assumptions regarding the status of ‘traditional’ and artisanal foods. Multiple investigators were used to conduct two of the ‘Phase One’ interviews, providing additional perspectives and helping to keep the main investigator from premature closure (Eisenhardt 1989: 538). The final selection of two firms for the primary research was based on their theoretical usefulness in relation to the research questions (Eisenhardt 1989: 533-537, Wilson and Vlosky 1997: 60). Several other firms were investigated during the project, and a first phase interview with an additional cheese-making

firm was conducted and analysed. However, the focus on two firms facilitated the required depth of analysis of two distinct patterns of growth:

‘As Pettigrew (1988) has noted, given the limited number of cases which can usually be studied, it makes sense to choose cases such as extreme situations or polar types in which the process of interest is “transparently observable”. Thus, the goal of theoretical sampling is to choose cases which are likely to replicate or extend the emergent theory’. (Eisenhardt 1989: 537)

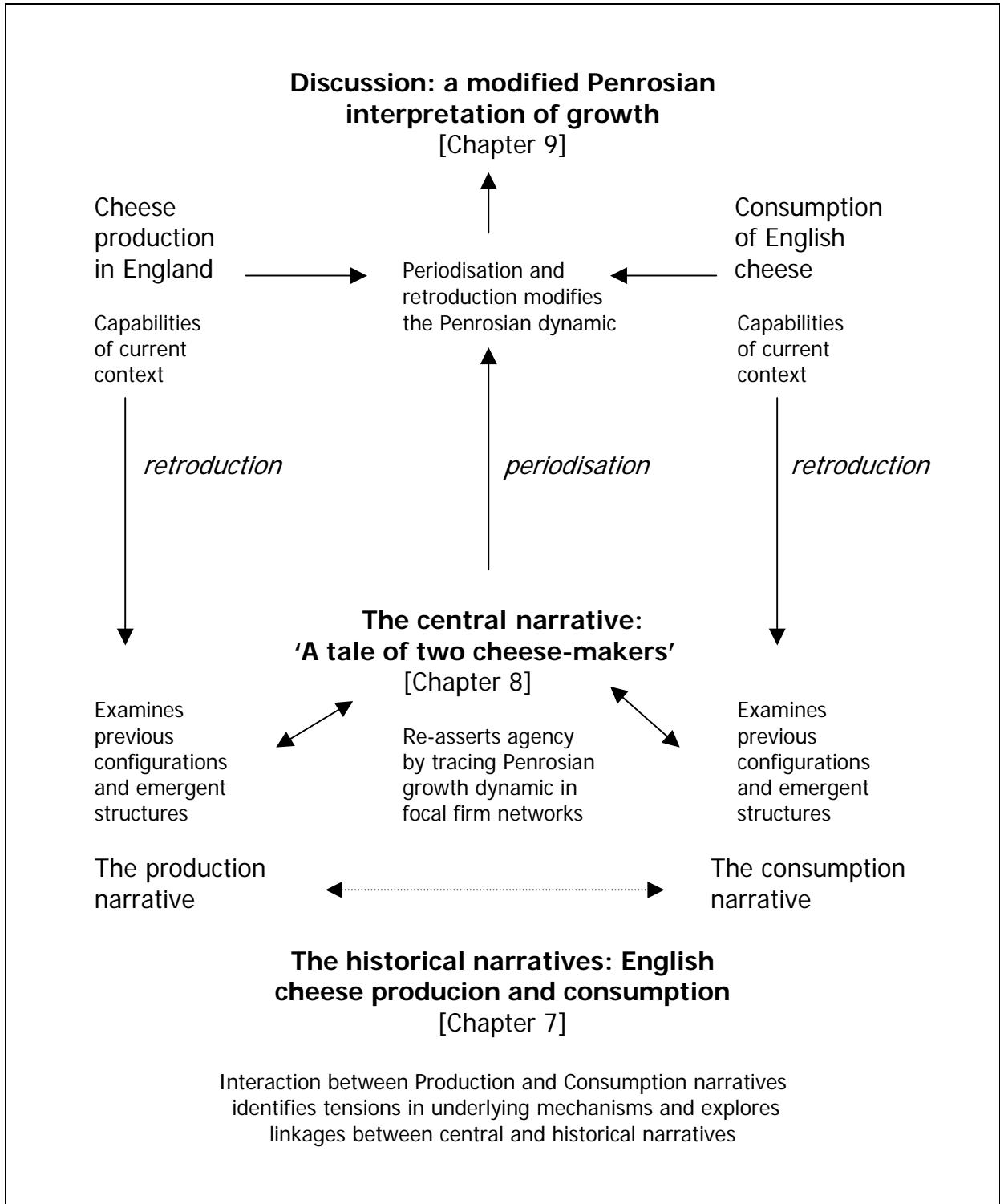
The case-based material, that formed the basis for the ASN, was prepared in the light of established methodological procedures regarding this qualitative research method (Yin 1994, Miles and Huberman 1994). Some limitations in the source materials should be noted. The most obvious relates to the use of original archival materials from the businesses concerned. Some promotional documentation was obtained, but as is common in research of this kind, it was not possible to view farm accounts or similar financial data. Over-reliance on actors’ accounts was countered through the use of secondary sources, and through the two-phase comparative approach, which enabled the researcher to compare data obtained between firms and between time periods. In addition, while the theoretical emphasis of the study directed attention towards qualitative dimensions of the growth process, some quantitative measures were obtained to act as a proxy for financial data. These comprised data on each firm’s product range, including cheese varieties, volumes and pack sizes, and on the principal input measures (i.e. the volumes of milk used by each firm at various points in time).

6.6 Analysis methods and implementations

6.6.1 Constructing the analytically structured narrative ('ASN')

The initial stage of the analysis is reflected in the ASN, which has been constructed in three connected parts in order to explore the theoretical questions (Section 6.1). The overall approach is outlined below (Figure 6.5). The central narrative is titled, 'A Tale of Two Cheese-makers', and comprises a detailed account of the growth process in two focal firms (Chapter 8). The narrative is structured around a number of episodes between the inception of each cheese-making business and the end of the second phase of the primary research. The central narrative is preceded by two interwoven historical accounts, the 'production' narrative and the 'consumption' narrative (Chapter 7). This approach is based on two propositions. First, that 'production' and 'consumption', though intrinsically linked, are amenable to a degree of separate analysis. Second, that the principal mechanisms influencing the growth of the firms in this study may be clarified by exploring the articulation between these narratives. Efforts to synthesise the narratives give rise to a number of causal propositions. The aim is to provide a clear indication of the distinctive and dynamically contingent structures that have confronted the firms in this study. In contrast to some 'firm in sector' studies, similar weight is attached to production (i.e. 'industry') and consumption (i.e. 'market') aspects in constituting the context for managerial action.

Figure 6.5 The research approach in outline: a three-part ASN



The explanatory potential of this historically-informed perspective is that it can provide a degree of detachment, in which the actual choices of the two cheese-makers (i.e. an account of their strategic agency) can be appraised, leading to a more complete understanding of their changing zones of manoeuvre (Blundel and Clark 2001, Clark 2000: 119). In each part of the ASN, informal content analysis was used to identify important examples, themes and patterns in the source material. The network maps, which were drafted by the researcher and refined during extended discussions with the firms' managers, also contributed to the analysis. The interval of more than two years between 'Phase One' and 'Phase Two' interviews provided an opportunity to probe for changed perceptions of productive opportunity and to relate any changes in each firm's resources and productive services to knowledge flows through the firm and its business network. These changes could also be related to continuities and changes identified in the wider context (e.g. in relation to the on-going production and consumption narratives depicted previously). The analytically structured narrative presented in Chapters 7 and 8 is thus linked at various points to the modified Penrosian framework. These links are refined in Chapter 9, where the narrative is reviewed at a higher level of abstraction, drawing on the critical realist technique of retroduction.

6.6.2 Retroducing the analytically structured narrative

The aim of retroduction is to clarify the complex, layered processes under investigation through a process of conceptualisation and abstraction (Sayer 2000: 23). The technique presupposes the existence of causal mechanisms and persistent social structures, which are not observable directly in surface level events (Section 6.4). Retroduction is achieved by

connecting concrete research, using intensive methods, with abstract research and the use of more extensive methods (Table 6.6).

Table 6.6 Intensive and extensive research: a summary

	<i>Intensive</i>	<i>Extensive</i>
Research question	How does a process work in a particular case or small number of cases? What produces a certain change? What did the agents actually do?	What are the regularities, common patterns, distinguishing features of a population? How widely are certain characteristics or processes distributed or represented?
Relations	Substantial relations of connection.	Formal relations of similarity.
Types of groups studied	Causal groups.	Taxonomic groups.
Type of account produced	Causal explanation of the production of certain objects or events, though not necessarily representative ones.	Descriptive 'representative' generalizations, lacking in explanatory penetration.
Typical methods	Study of individual agents in their causal contexts, interactive interviews, ethnography, qualitative analysis.	Large-scale survey of population or representative sample, formal questionnaires, standardized interviews, statistical analysis.
Limitations	Actual concrete patterns and contingent relations are unlikely to be 'representative', 'average' or generalizable. Necessary relations discovered exist wherever their relata are present (e.g. causal powers of objects are generalizable to other contexts as they are necessary features of these objects).	Although representative of a whole population, they are unlikely to be generalizable to other populations at different times and places. Problem of 'ecological fallacy' in making inferences about individuals. Limited explanatory power.
Appropriate tests	Corroboration	Replication

Source: Sayer (1992: 243, 2000: 21, Table 1.1)

During the retrodution process, the researcher probes, 'below the domain of experiences', to identify the generative mechanisms and contingent factors producing experienced events (Tsoukas 1989a: 556). The initial analysis and retrodution involved in the construction of the ASN can thus be mapped onto three stages of a critical realist research agenda (Table 6.7).

Table 6.7 Constructing the ASN: initial analysis and retrodution

<i>Stage</i>	<i>Research activity</i>	<i>ASN construction</i>	<i>Output</i>
1 Explain surface phenomena	Resolve the actions into their constitutive components. Theoretically re-describe components to reveal their 'inner constitution' (Bhaskar 1978)	Initial drafts of the narrative, which may be based on secondary sources or exploratory interviews. Iteration between first and second stages in order to refine narrative, including initial periodisation.	Fieldwork notes
2 Obtain actors' accounts	Ask actors why the actions under investigation have taken place Relate explanations to governing rules, through which they can be made intelligible	Primary research, including interviews with actors. Iteration between first and second stages in order to refine central narrative, including initial abstraction/analysis.	Chapter 7
3 Conduct abstract analysis	Explain rules in terms of underlying structures, generative mechanisms, causal powers Explain the contingencies leading to the exercise of structures, mechanisms, powers	Further abstraction and analysis of the central narrative, through links to historical narratives and application of 'retroduction' to the ASN (Sayer 1992, 2000).	Chapter 8

Source: Tsoukas (1989a: 556-557 – original text adapted and tabulated, ASN construction text added)

The analytical work involved in the construction of the 'central narrative' (Chapter 7), can therefore be seen as an initial stage in the process of retrodution. The 'historical narratives' (Chapter 8) comprise the third stage of abstract analysis, which challenge and extend the results reported in the central narrative. More detailed comments on this stage are provided in the chapter introduction (Section 8.1). While research results are presented in a linear (i.e. chapter-by-chapter) sequence, the underlying research activity involved a series of iterations between the three stages depicted in Table 6.7. The narrative elements of the ASN provided a basis for the analysis, but were also refined in the light of the emerging causal explanation. In each of the narratives, the researcher retained a close link between analytical abstraction and the 'ambient contingencies' detected in the source data:

‘Abstract analysis should be coupled with an account of the empirically researched contingencies, within which a specific link of causal powers has taken place. [...] These causal powers must be defined, and where they emanate must be shown. [...] Empirical research will reveal the patterns of interaction between the postulated causal powers and the ambient contingencies’. (Tsoukas 1989a: 558)

Tsoukas (1989a) provided a summary of the role of comparative ideographic research of the kind conducted in this study, clarifying its purpose from a critical realist perspective:

‘From the realist view, comparative ideographic research, concerned with producing explanatory knowledge, is not equivalent to detective work, namely merely establishing similarities and differences between units of analysis; rather, it is simultaneously active at two levels. First, researchers seek to redescribe their object of explanation in a theory-important way, postulating the existence of multiple generative mechanisms that are potentially responsible for the events under study. These generative mechanisms are examined via abstract research. Second, these researchers look for the contingent ways in which the postulated mechanisms are inter-twined, which will generate the flow of experienced events. And such a view is achieved only by concrete empirical research’. (Tsoukas 1989a: 559)

Penrose appears to have adopted a similar purpose in her approach to empirical research, which was also characterised by close interaction between induction and analytical theorising:

‘She appears to have based her work on the belief of [*sic.*] a dynamic interaction between induction and deduction, however, in the context of a history-based, path dependent evolutionary change, shaped by the conscious actions of economic actors’. (Penrose and Pitelis 1999: 15)

The parallel is illustrated by Penrose’s original intention to incorporate the Hercules case study into the *Theory of the Growth of the Firm* (Section 4.3). It is also highlighted in one of her rare contributions to the methodological debate. Penrose was responding to an economic

historian, who had argued, ‘the “lesson” of history appears to be that the reality of things is much more complicated than “theory”, or attempts at theorising, would lead us to expect. Useful and systematic generalisation seems almost impossible’ (Supple 1989: 2-3). Penrose contested this view, emphasising the potential for a close and symbiotic relationship between theory and history:

‘[I]t seems to me that theory is needed precisely because reality is so complicated; events that are accidental to the connections we want to study often intervene in such a way that without “theory” we cannot isolate from the seamless web the facts relevant to the questions we want to ask of history. “Theory” is, by definition, a simplification of “reality” but simplification is necessary in order to comprehend it at all’. (Penrose 1989: 11)

As Penrose acknowledged, a contradiction between theories and histories is only likely to arise where theory is interpreted as, ‘a universal, comprehensive generalisation purporting to explain all aspects of economic reality in one grand model’ (Penrose 1989: 11).

6.6.3 Commentary on the analysis techniques

Though calendar dates have been used to refer to the episodes, it is important to note that these periodisations relate to the underlying processes, and as a consequence, both the episodes and the related network mapping periods differ between the two firms. Similarly, while the overall duration of the central narrative (i.e. a period of approximately 50 years between 1950 and 2000) may appear to indicate a calendar-based heuristic, the dates are purely coincidental and do not reflect the structure of the analysis. The interview transcripts and other sources were subjected to an informal content analysis, guided by the research

questions and informed by the literature review. The use of more formal content analysis techniques, including the application of qualitative data analysis software, such as *Nud-ist*® and *Invivo*®, was considered. However, it was felt that these techniques lacked the flexibility and subtlety required in order to make sense of such a diverse range of source material. The main critique of case-based analysis techniques relates to the limited generalisability of the analysis and findings, in comparison to conventional hypothesis-testing studies that adopt randomised statistical sampling procedures (Yin 1994, Hedström and Swedberg 1998: 15). The small number of cases selected has been justified in relation to the research objectives (Section 6.1). The analytical value of the approach lies in its capacity to develop plausible explanations of the relevant growth processes. In conducting the analysis, the researcher was conscious of the dangers of rhetorical and monocausal explanation. The implication of this critique for the present study is that the empirical sources may be interpreted in a way that serves only to reflect and endorse a Penrosian theoretical framework. However, as the preceding discussion has indicated, the ASN and its retrodution have been the product of a self-conscious negotiation between the idiographic (i.e. the empirical sources) and the nomothetic (i.e. the Penrosian synthesis, and competing explanations of the growth process). Efforts were made to ensure that abstract theorising arising from the ASN remained open to refutation in the face of contradictory evidence, whether this was produced from historical or from contemporary sources. Additional rigour was imposed through the triangulation of research methods and sources of evidence (Denzin 1978, Langley 1999), employing the critical capacity to read the evidence ‘against the grain’ (Section 6.5.7). The process and findings remain open to scrutiny and refutation, as part of a dialogue essential to any social science research activity (n.b. Section 7.1.3 gives further details of the retrodution applied to the historical narratives; Chapter 9 includes a broader reflection on this methodology).

CHAPTER 7 - RESULTS (A): THE HISTORICAL NARRATIVES - ENGLISH CHEESE PRODUCTION AND CONSUMPTION

It has always been problematic to try to standardise the empirical by scientific rulings, especially with so arbitrary a process as cheese-making.

Val Cheke

The Story of Cheese-making in Britain (1959: 158)

There are few parts of England which do not remember cheeses extinct or nearly extinct. Not all of them, I dare say, deserve resuscitation.

Sir John Squire

Cheddar Gorge - A Book of English Cheese (1937: 13)

This chapter is based on two parallel narratives, 'English Cheese Production' and 'Consuming English Cheese'. They are analysed in a neo-realist perspective as structural configurations generating events or effects identified in historical accounts, archival sources and related records. This combination of episodic and configurational dimensions allows a more systematic assessment of causal connections giving rise to the unique 'context' of the central narrative (Chapter 8). The analysis reveals enduring patterns and abrupt discontinuities, the product of complex interactions between consumption and production over many centuries. These interactions and 'connecting principles' are analysed with specific reference to the production and consumption of two varieties, Cheddar and Cheshire, the latter providing a more direct link to the firms investigated in the central narrative. The concluding section presents an alternative approach to abstracting the historical narrative, invoking the Penrosian knowledge dynamic and the 'RBP Mark I' concept of isolating mechanisms.

7.1 Introduction

7.1.1 Cheese production today: craft and industry

Cheese-making operates under two radically different modes of production, industrial and artisanal (Boisard and Letablier 1999, Kupiec and Revell 1998). Today, the vast majority of cheese is produced in large processing plants, known as ‘creameries’. For example, in contrast to the Italian original, ‘English’ Mozzarella is made on an industrial scale, primarily as an intermediate product for the food manufacturing sector (i.e. as an ingredient in pizzas and similar products) (Bianchi 2001, Galizzi and Venturini 1996). Industrial cheese production accounts for approximately 98 per cent of the total volume of cheese produced in England. Production is dominated by a single cheese variety, Cheddar, which alone represents more than half of the cheese produced in this country (Table 7.1) (n.b. ‘long-life’ refers to pressed cheeses, including Cheshire, which can be matured over longer periods; blue veined cheeses, such as Stilton, occupy a distinct market niche).

Table 7.1 UK wholesale cheese production by major variety (1999)

	Cheddar	Other long-life territorials	Short-life territorials	Blue vein	Mozzarella	Other	Total
<i>Volume (thousand tonnes)</i>	209	28	18	10	43	53	360
<i>percentage share</i>	58.1	7.7	5.0	2.7	11.9	14.7	100

Source: MAFF (2000: table 8 – n.b. excludes farm cheese production)

Small artisanal producers represent a small proportion (i.e. approximately 2 per cent) of total production volumes. However, these small cheese-makers have proved to be a resilient

grouping. While cheese production as a whole has been stable, or in slight decline, over the last decade, artisanal cheese-making has experienced growth in terms of volume, variety and numbers of producers. There are currently more than 140 artisanal producers in England, including long-established farmhouse cheese-makers (e.g. J. Quicke & Partners and Wyke Farms), new farm-based ventures (e.g. the ewe's milk cheese-makers, Ram Hall Dairy and Shepherd's Purse) and hybrid or delicatessen-based firms (e.g. Neal's Yard Dairy, Oxford Cheese Company). One of the most consistent indicators of revival is the annual British Cheese Awards. While the entries include some of the larger producers (e.g. Dairy Crest, Glanbia Foods), the vast majority of entries are from small, artisanal firms. Strong indicators of artisanal production include the figures for buffalo, ewe, goat, organic and raw milk cheeses, none of which are normally produced on an industrial scale (Table 7.2).

Table 7.2 The revival of English artisanal cheese-making

<i>Year</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>
Cheeses entered	296	475	486	506	594	623	688	729
Producers represented	97	137	138	141	156	144	148	146
<i>Cheeses by milk type:</i>								
Cow	243	361	340	393	462	497	541	561
Buffalo	-	1	1	3	6	12	16	19
Ewe	20	42	44	46	55	44	44	48
Goat	32	72	64	64	69	69	83	95
Mixed	-	-	1	-	2	1	2	3
Raw milk	60	126	144	151	187	159	192	205
Organic	4	14	14	17	28	41	58	74
Vegetarian	253	403	380	453	561	589	655	703

Source: British Cheese Awards (2001) [n.b. milk types include overlapping categories]

7.1.2 Contextualising the Penrosian growth dynamic

The chapter aims to establish a context for the Penrosian growth dynamic depicted in the focal firms of the central narrative (Chapter 8). In its original guise, Penrose (1959, 1960) took little account of the institutional context (Section 5.2.1). The central narrative stretches the boundaries of the firm in order address collaborative activity in focal firm networks (Section 5.2.3). However, the focal firms are also subject to broader and more complex institutional factors, which have shaped the context for these collaborative activities (Section 5.2.4). The theoretical challenge is to integrate a causal explanation at the contextual level with a more detailed analysis of the growth process in the focal firms. In order to enhance the explanatory potential of the original Penrosian framework, it is necessary to abstract *systematic* contextual influences (Section 7.3), from the vast accumulation of available data and the correspondingly large number of competing explanations for the observed phenomena. The abstraction was achieved through the critical realist technique of retrodution (Section 6.6); the following section provides an additional commentary its application in this part of the study.

7.1.3 The approach: balancing the configurational and episodic

The task of compiling historical narratives for this chapter generated a strong impetus towards the episodic over the configurational (Sayer 2000: 143). This was reflected in the initial drafts of these narratives, which accounted for the development of cheese production and marketing in two extended linear sweeps. The final draft aims to restore a balance by presenting the historical narrative as a series of structural configurations that are posited as generating the events (or effects) identified in the archaeological, historical and archival

record. The first configuration is concerned with the emergent properties of natural objects (i.e. climate, soil and milk). The task of identifying causal responsibility in a critical realist mode suggests (*contra* Sayer), that certain social phenomena (i.e. in this instance, the growth of artisanal cheese-makers in the 21st century) can only be explained as the product of enduring causal powers residing at the level of natural objects:

‘[W]hile we don’t have to go back to the level of biology or chemistry to explain social phenomena, this does not mean that the former have no effect on society [...] we are embodied beings, and the interaction of the social with the physical needs to be acknowledged’. (Sayer 2000: 13)

The use of the term ‘basic structures’ to refer to the natural causal powers explored in Section 7.2, does not imply the search for an ultimate cause or ‘founding moment’ (Sayer 2000: 95). In accordance with critical realist assumptions, the purpose of stratification is to differentiate between mechanisms rather than events. Emergence is the product of a one-way hierarchy of mechanisms. Hence, while there can be no biological mechanisms without chemical ones, the reverse does not hold (Collier 1994: 108). Higher-level mechanisms (e.g. economic systems) are thus rooted in, and emergent from, more basic mechanisms (e.g. biological systems). Explanations of events with reference to higher-level mechanisms may therefore incorporate lower-level mechanisms, but are not reducible to the latter. In methodological terms, the theory of stratification rejects both atomistic and holistic reductionism (Collier 1994: 116-117), and is thus amenable to dialectical explanation (i.e. the interplay of structure and agency in the social realm). Hence, in the present narrative, the historical narratives explore how the exercise of these causal powers has been mediated, and the objects themselves modified, through interaction with other contingently-related phenomena (Sayer 2000: 95). These interactions have been periodised as five social structural configurations (Table 7.3).

Table 7.3 The five structural configurations in outline

<i>Period</i>	<i>to 18th century</i>	<i>18th century to 1850s</i>	<i>1850s to 1930s</i>	<i>early 1930s to late 1980s</i>	<i>late 1980s to present</i>
Configuration	Localised pre-industrial	Commercial pre-industrial	Formative industrial-artisanal	Regulated industrial-artisanal	Divergent industrial-artisanal
Section	7.3	7.4	7.5	7.6	7.7

The ‘capabilities of the context’ (Clark 2000) are thus explored in terms of a series of modifications to the basic structures imposed by climate, soil, livestock and milk. Developments in cheese production and consumption are tracked with particular reference to two regional varieties: Cheshire and Cheddar. Cheshire cheese, the primary product of the firms featured in the central narrative, demands particular attention. Discussion of the Cheddar variety focuses on its decisive role as the world’s first and most successful ‘industrialised’ cheese. The narrative begins with an overview of current patterns of cheese production and consumption in this country. Though attention is focused within the conventional borders of England, the underlying mechanisms are not constrained within these administrative boundaries (cf. Smith 1995a). As a consequence, it is necessary to consider related issues, notably the distribution and consumption of imported cheeses and the export of English cheese, with particular emphasis on artisanal products.

7.2 Current patterns of production and consumption

7.2.1 A profile of the industry

UK milk production for 2001 was 14 billion litres, slightly below the current European Union quota and representing about 95 per cent self-sufficiency (DEFRA 2002). This output is divided almost equally between the liquid milk market and manufacture (i.e. including cheese-making, which absorbed 3.5 billion litres). Dairy farming represents approximately 22 per cent of UK agricultural production by value. Dairy farming is fragmented, relative to food manufacturing and retailing, comprising 30,000 primarily sole trader or family farming businesses. Average farm and herd sizes have increased over recent years. Many smaller farmers have left the industry, citing the combined pressures of declining milk prices, increasing regulatory burdens and recurrent crises (i.e. most notably, bovine spongiform encephalopathy (BSE), bovine tuberculosis (TB), and the foot and mouth disease epidemic, experienced in the spring and summer of 2001). Current annual UK cheese production is estimated at 385,000 tonnes, representing 65 per cent of UK new supply, the balance comprising imports and exports (DEFRA 2002) (Section 7.2.2). Three broad groupings of producers can be distinguished. The largest cheese-makers, former MMB dairy processor, Dairy Crest, and four international firms, Glanbia, New Zealand Milk, Kraft Jacobs Suchard and Kerrygold, account for the bulk of domestic cheese production. In the last decade, these companies have also begun to act as 'category managers' (i.e. first-tier suppliers to specific multiple retailers, co-ordinating supplies for a particular product area) (Frances and Garnsey 2000, Hogarth-Scott 1999, Wilson 1996). The category managers select, cut, pre-pack and distribute cheese on behalf of their multiple retailer customers. This often involves them in

sourcing and packaging cheese supplied by third parties, including smaller artisanal producers. The second group of cheese-makers comprise approximately small-medium firms, is generally farm-based, but source milk more widely and usually have specially built cheese-making facilities. Belton Cheese, one of the firms investigated in the central narrative, now corresponds with this intermediate category. The third group is usually distinguished on the basis that cheese is made on dairy farms, using only milk from the farm herd. However, the picture is confused by the fact that a few of the small artisanal producers, including some new entrants, do not maintain their own dairy herds. Farm-based cheese-makers tend to produce local, territorial cheeses, but product ranges may include varieties originating in other areas and newer 'speciality' cheeses (e.g. 'additive' cheeses, incorporating fruit or herbs). Cheese output from small, farm-based cheese-makers is estimated at approximately 8,000 tonnes per annum, representing just two percent of total UK production (MAFF 2000). Appleby's, the other firm featured in the central narrative, is in this category (Section 8.1).

7.2.2 The cheese market: 'replenishment' and 'specific choice'

Cheese is a ubiquitous food product, with a consumer penetration base of 98 per cent of UK households (Dairy Crest 2001: 2). Market analysts have identified two basic approaches to cheese-buying, 'replenishment' and 'specific choice', which equate broadly to the idea of cheese as a functional necessity, and as a quasi-gastronomic preference. The retail sales value of cheese in the United Kingdom is approximately £1.5 billion (Euro 2.5 billion), estimated to represent some 315,000 tonnes of cheese (*ibid*: 4). Cheddar accounts for 58 per cent of retail sales by volume (*ibid*: 5). This long-standing dominant market position is also reflected in domestic cheese production data (Table 7.4). These figures are augmented by significant

volumes of imported Cheddar, including 22,000 tonnes from Australia, New Zealand and Canada, and 50,000 tonnes from Ireland (Mintel 1999).

Table 7.4 Cheese shopping behaviour: decision processes

'Replenishment'	'Specific choice'
Cheese for everyday use and bought to rebuild low stock in the home. Shoppers are interested in quality, value and choice. They expect this cheese to be used at several different types of eating occasions. Shoppers will have a need for one or more of the following segments:	Cheese bought for special occasions, recipes or treats. Shoppers are less sensitive to price in this area. Having made a decision between delicatessen (i.e. loose) and cheese fixture (i.e. pre-pack), shoppers will next make a decision on the following product groups:
<p><i>Everyday blocks</i> A decision to buy at the delicatessen or fixture may be influenced by habit or price. Then choice will be between regional or cheddar, followed by taste and territory.</p>	<p><i>Blue</i> Bought by loyalists and for special occasions. Stilton, in particular, is purchased even by non-consumers [i.e. for consumption by invited guests at dinner parties].</p>
<p><i>Snacking</i> Whilst all replenishment cheeses are used in some snacking occasions, these cheeses are packaged specifically so that they can be taken out of the home as a snack. Shoppers distinguish between products for Kids and Adults.</p>	<p><i>Cheddar</i> When shoppers are making a specific purchase of an unusual or niche Cheddar, the strength and source of the cheese become important considerations.</p>
<p><i>Convenience</i> Most cheeses are 'ready to use' but the shopper can distinguish products that have added value convenience such as: grated, spreadable or pre-sliced. Grated cheese is segmented into Cheddar and other, then categorised on the basis of strength. Spreadables include, cheese spreads, cream cheese, curd cheese and cottage cheese. Low-fat becomes a consideration for some spreadables and slices.</p>	<p><i>Regional</i> These cover a range of textures but are primarily known to the consumer by the region of origin.</p>
	<p><i>Continental</i> The shopper perceives hard and soft as a further grouping of continental cheese. They also buy continental as a special ingredient in meal preparations (e.g. parmesan, mozzarella).</p>

Source: Dairy Crest (2001: 16 – adapted)

In comparison to other European countries, the UK's retail cheese market includes a high proportion of imported products, with strong growth in particular varieties such as Brie and Parmesan. Much of the imported cheese is now sourced in other EU countries, notably France and the Netherlands. Small quantities of fine cheese have been imported for many centuries. This trade continues, alongside the larger volumes of cheeses produced by international food firms, including branded cheeses, such as *Philadelphia* (Kraft Jacobs Suchard) and *Boursin* (Unilever), and supermarket 'own-label' products. Exports from the

UK to other EU countries doubled during the 1990s, from a low base. However, this was offset by a larger volume increase in imported cheese over the same period (Table 7.5):

Table 7.5 UK Cheese trade: production, imports and exports (thousand tonnes)

<i>Year</i>	<i>Domestic production</i>	<i>EU imports</i>	<i>Non-EU imports</i>	<i>EU exports</i>	<i>Non-EU exports</i>	<i>Total new supply</i>	<i>Increase in stocks</i>	<i>Total for domestic useage</i>
1990-92 average	320	191	18	27	20	483	1	481
1997	377	210	30	43	10	563	2	561
1998	366	225	32	45	10	567	(10)	577
1999	368	236	41	49	13	584	1	583
2000	340	225	30	48	10	536	-	536
2001 provisional	385	241	32	55	11	593	14	579

Source: DEFRA (2002: Table 5.18 – n.b. includes farm cheese production)

Consumption of territorial cheeses has declined steadily in recent years, but residual regional loyalties mean that that per capita consumption of the Cheshire variety, for example, is higher in the North West than in the South East of England. Large quantities of cheese are now purchased and consumed in the form of food product ingredients (e.g. to be grated onto a quiche or pizza), rather than as a separate product. This trend in cheese consumption, and the associated retreat from England’s indigenous cheeses is illustrated by the rise of Mozzarella, which is now the most common type produced in the UK, after Cheddar (Table 7.1). Most of the cheese retailed in England is pre-packed, accounting for more almost 85 per cent of the market by value and volume (Dairy Crest 2001: 5). Loose cheese, sold from the specialist delicatessen is therefore regarded by retail marketing analysts as a minority sector (Mintel 1999). Overall volume sales of most English cheeses are currently either stable or in decline. However, there are variations. For example, sales of stronger-tasting ‘extra mature’ cheddar

have increased by about 20 per cent per annum during the late 1990s, contrasting with some decline in sales of mild and mature cheddar. There has also been an increased demand for organic cheese in this period, though it remains a small proportion of retail sales (Dairy Crest 2001). Artisanal cheeses are a small sub-sector in the larger speciality cheese market, representing products that are made on a small scale using traditional techniques and a limited degree of mechanisation (Harbutt 2001, Kupiec and Revell 1998, Rance 1982). These cheeses are normally sold loose in the delicatessen sector, but can be found in both loose and pre-packed formats in multiple retail and convenience stores (n.b. contemporary consumer purchasing behaviour is addressed in more detail in Section 7.7.2.).

The remaining sections of this chapter identify factors shaping the present patterns of cheese production and consumption in England, from the perspective of the artisanal cheese-maker. The historical narrative is presented in a broadly chronological sequence, identifying characteristics of the five configurations (i.e. ‘localised pre-industrial’, ‘commercial pre-industrial’, ‘formative industrial-artisanal’, ‘regulated industrial-artisanal’ and ‘divergent industrial-artisanal’) in which activities have been organised.

7.3 The basic structures: climate, soil and fermented milk

7.3.1 Natural resource endowments: spatial variation

Natural systems have had an enduring influence on cheese-making, though the spatial effects arising from these structures have been modified through human agency. Milk-yielding ruminants require moderately fertile grasslands. However, while sheep can safely graze on a

variety of terrain, dairy cattle are rather more fastidious. Hence, when milk production transferred from ewe to cow (Section 7.3.1), areas of lowland pasture became associated with more extensive dairying activity. For example, the English counties of Cheshire and Somerset have long been regarded as prime dairying regions (Cheke 1959). It also appears that cheese-making in Cheshire was based on cow's milk from a much earlier period than was common elsewhere. This may have been due to the terrain, which is relatively flat, well-watered and well-drained, and to the damp and mild climate. In addition, the local cattle, an ancient breed called the Welsh Blacks, were relatively small in stature and therefore 'easier to catch and control' (Smith 1995b: 34). Until the 17th century, most areas retained their local cattle breeds, and little attention was given to their selection or breeding for milk production (Cheke 1959: 101). The dairy farmers of the Cheshire Plain were able to benefit from these natural structures by the simple expedient of breeding more productive dairy cows than their counterparts in other counties. In addition, Cheshire's rich salt deposits provided it with an industry that dates to before the Roman occupation, the importance of which is reflected in the names of several towns in the area (i.e. Nantwich and Middlewich). Salt is an important component in cheese-making, and some of the distinctive qualities of Cheshire cheese have been attributed to the influence of these localised deposits (n.b. salting provides added flavour to the cheese; it also has practical value, helping to draw out moisture, and to inhibit bacterial action during maturation):

'The reason that it cannot be imitated is that it derives its peculiar qualities from the fact that the soil of Cheshire contains rich deposits of salt, which impart a very high degree of salinity to the milk of most Cheshire-grazed cattle. It is probably this salinity which gives Cheshire cheese its strongest characteristic, namely that of slow ripening'. (Holland, 1937: 62)

7.3.2 Inherent value and variability: the nature of milk and cheese

Cheese production originated with the domestication of ruminant animals, such as sheep and cattle. Nomadic and settled farming practices became established in the broad span of years between 9,000 BC and 6,000 BC. The early herders and farmers learnt that milk produced for suckling young animals could be diverted for human consumption, providing a valuable additional source of food. It seems likely that the processes of cheese-making were a fortuitous discovery. Rennets were obtained, from the earliest times, from the stomach tissue of ruminant animals. The digestive juices of these animals contain the enzyme *rennin* (Chymosin), which is retained in the stomach lining (or 'maw skin'). When a portion of this material is added to raw milk, enzymatic activity (i.e. bacteria feeding on the milk sugars, or lactose) results in the liquid coagulating. In nomadic communities, liquids such as milk and water were carried in simple bags made from the stomachs and intestines of the herd animals with which they co-existed (e.g. sheep, goats, yaks, llama, buffalo, reindeer). The fermenting milk would have been agitated as it was transported, curdling it and giving rise to this novel food product. This combination of a natural process and the human capacity for experimentation gave rise to a more stable range of fermented food products that continue in production today:

'There would be a painful process of trial and error as *Homo sapiens* experimented to discover which fermented substances were palatable and which poisonous, and another long period while he tried to reproduce the palatable versions with reasonable consistency'. (Tannahill 1988: 28-29)

Fermented milks became an integral part of the diet of nomadic peoples. Human efforts to control the fermentation process resulted in various soft, yogurt-like products. Typically, these were produced by the partial evaporation of milk in shallow earthenware vessels to form

‘acid’ curds, such as the *taetta* of Scandinavia. Dried milk powders were also produced in this way. Cheese can be distinguished from other fermented dairy curds by the process of straining off surplus liquid, known as the ‘whey’. With the exception of some soft, fresh cheeses (e.g. Scottish ‘Crowdie’) in which curdling is induced by the acid alone, it also relies on the use of rennet to encourage coagulation of the curds, creating products with firmer textures and lower moisture content. Cheese offers important practical benefits over other fermented milks, notably its ease of transportation and the potential to store the product for extended periods. The essential processes of cheese production are relatively straightforward:

‘The process of cheese-making is based on lactic acid fermentation of milk. Specific bacteria or starter cultures are added to milk. This ferments the milk sugar and produces lactic acid. When sufficient acidity is produced, casein within the milk is coagulated, normally using rennet. The curd is then cut leaving a mixture of curds (the solid constituent) and whey (the liquid). After heating, liquid whey is drained off. The curds are then subjected to different processes, such as pressing, resulting in the production of cheese’. (Specialist Cheesemakers’ Association 1999: part 2)

The main challenge for cheese-makers has always been that of controlling the inherent variability of the ingredients, and of the natural processes that transform them. Milk is a living product with many inherent sources of variability and spoilage. Milk composition varies between species (e.g. ewes’ milk is more homogenous and has a higher fat content than cow’s milk), by season (e.g. when over-wintered stock are first turned out onto spring pastures) and by time of day (e.g. ‘evening milk’, obtained after a day’s grazing, tends to contain more cream than ‘morning milk’). Subject to the initial composition and condition of the milk, the cheese-maker has several options for modifying the quality of the end-product: introducing a starter, managing the level of acidity, adding rennet and salt, draining, pressing,

and storing the cheese. The process is also open to the accidental influence of biological mechanisms. For example, major causes of variability and spoilage include the effect of other enzymes present in the rennet and contamination of raw milk in the dairy. In early cheese-making, the fermentation process was ‘started’ by the spontaneous and unpredictable action of whatever bacteria was present when fresh milk was exposed to the air. The resulting curds might therefore turn out to be pleasant on one occasion, yet unpalatable on another. Cheesemakers found that better results could be achieved by introducing small amounts of fermented milk, which provided – albeit inadvertently – a more controlled source of bacteria to initiate the process. Variable levels of acidity in the curd posed another enduring challenge. At certain levels, lactic acid inhibits the proliferation of organisms that spoil the product, through taints and excessive moisture, and which can also lead to food poisoning. In the absence of technological aids, maintaining an appropriate level of acidity was a matter of judgement and experience. The use of rennet-based coagulants is long established, being recorded, for example in the work of the Roman agriculturalists. Vegetable-based rennets have also been in regular use since the earliest times. In the British Isles, Teasel (*Dipsacus sylvestris*), Artichoke (*Cynara scolymus*) and Ladies Bedstraw (*Galium Verum*) were favoured at various times. The latter, known in Cheshire as ‘the cheese-rennet herb’, was also used by the Jewish community, whose dietary laws prohibited the mingling of meat and dairy products.

7.3.3 Commentary on this configuration

In summary, the biological mechanism of fermentation in milk has generated value (i.e. nutritional quality, storage and transportation capacity) and variability. In combination, these structures have driven two distinct but inter-related streams of knowledge creation. The first,

depicted in the production narrative, has been directed towards *controlling variability*. The second, represented by the consumption narrative, has been concerned with *constructing and exploiting variety*. These basic structures have remained significant factors in the production, trading and consumption of cheese over an extended period (Section 7.2).

7.4 The localised pre-industrial period

7.4.1 Early production knowledge

Rudimentary systems of cheese-making spread from the Middle East into other parts of the world, including Northern Europe. Until the advent of the railway, it was essential to produce perishable foods locally. Hence, for many centuries, milk production and cheese-making were widespread activities. In what is now England, the first cheeses were based primarily on ewes' milk. Cheese-making was typically one of the duties of shepherds, alongside guarding and milking the flock. In a pre-scientific era, production-related knowledge was acquired by an iterative process of trial and error. For most of this period, knowledge practices were retained and reproduced in localised communities. Each element of the cheese-making process permits considerable scope for variation. However, once a reasonable degree of consistency in these production methods had been achieved, the more successful 'recipes' became entrenched in particular communities, shaped by natural resource factors, and further reinforced by geographic isolation, emerging gastronomic preferences and location-specific traditions. The persistence of these recipes has contributed to the regionally distinctive products that are still in evidence today.

The first major advances in English cheese-making arose as a consequence of the Roman occupation. Garrison towns, such as Chester, became centres for cheese-making and marketing. Roman influence is reflected in the English language, 'cheese' being a derivative of the Roman word, *caesus*. This was originally a term of endearment, broadly equivalent to 'darling'; the French and Italian equivalents are derived from another Latin term, *forma*, meaning a cheese mould or strainer (Smith 1995b: 3). Roman cheese-making practice was spread through the common practice of discharging soldiers with a grant of land around the garrison towns. The detailed instructions found in Columella's agricultural treatise *De Rustica* (circa AD 50), was an early codification of production knowledge (n.b. *De Rustica* was written for fellow soldiers-turned-farmers; it was lost to later generations, along with the Roman physical infrastructure of long-distance road connections and markets). During the centuries that followed the fall of Rome, practices were maintained in religious communities. Itinerant monks travelled throughout England, spreading the Christian gospel as well as their practical skills (Smith 1995b: 4). Cheese-making practice was thus refined and disseminated:

'The monastic houses especially influenced the practices in the countryside around them, and founded methods of farming and making of products, which later became local crafts. For example, the monks of Jervaulx Abbey in Yorkshire possessed a method of making cheese from ewes' milk from which was eventually evolved the famous cheeses made in the Yorkshire Dales'. (Cheke 1959: 83)

The monasteries were major production centres. For example, it has been estimated that the three Yorkshire abbeys (Jervaulx, Fountains and Rivelaux) each yielded 10,000 fleeces a year (cited in: Smith 1995b: 5). Cheese was also commonly produced by surrounding farmers as tithes (i.e. rents) that were paid to religious communities in their role as landowners. The dissolution of the monasteries in the mid-16th century transferred the bulk of cheese

production out into the farms. The dissolution and selling-off of the monastic estates stimulated a general shift in milk production from sheep to cow, as the wool industry came to dominate the rural economy. This transition reinforced an earlier influence on farming practices, when Viking invaders had introduced new breeds of cattle in their longships, along with the selective breeding practices that were ultimately to generate specialist dairy stock. At the same time, cheese-making became the prerogative of women, more specifically the farmer's wife and daughter. This change in responsibility was signalled by the first references to 'dairymaids'. In one of the first agricultural journals, Thomas Tusser's (1573) *The Fieue Hundredth Pointes of Good Husbandrie and Housewiferie*, the author adopted verse form to instruct the notional dairymaid, 'Cicely', in essential practices, such as salting the cheese:

'Leave *Lot* with his pillar, good Cicely alone, Much salt in white-meat is ill for the stone [i.e. kidneys]'.
(cited in Cheke 1959: 93)

7.4.2 Early consumption knowledge: the origins of choice

Wherever food has been more than a matter of subsistence, certain products have acquired the attributes of social status. Olive oil, for example, has long been associated with metropolitan sophistication. The Greek and Roman civilisations were heavily reliant on the olive, prompting the Roman commentator Anaxandrides to dismiss butter as the food of barbarian pastoralists, or in his mock-ironic phrase, 'your butter-eating gentry'. (cited in Tannahill 1988: 78). Cheese has on occasion enjoyed a higher status. For example, it was found amongst provisions deposited in the tombs of the Pharaohs, indicating its importance in the lives of elite groups. Cheese has also been found in Sumerian tombs of 2,500BC, where it was included in offerings made to a moon god, an association that proved remarkably

resonant and enduring (Smith 1995b: 2-3). Product differentiation, related to elite consumer preference can be identified in the earliest recorded instances of cheese trading. For example, by the first century AD, Greek cheese was exported to Rome. One of the best-known varieties was called ‘Cynthos’, after the island on which it was produced:

‘Pliny described it as being made from ewes’ milk and considered its good quality to be largely dependent on the shrub cytissus [...], which was extremely palatable to sheep and produced especially good milk’. (Cheke 1959: 63)

The interaction of consumption and production knowledge in pursuit of economic rent is also evident in this period. For example, cytissus was grown subsequently as a crop for cheese-making purposes in the islands and mainland of Greece (Cheke 1959: 63). The economic value and strategic importance of cheese has also been long-established. It was an ideal military ration, being both portable and ready to eat, without recourse to a cooking fire:

‘When Alexander the Great defeated Darius at Damascus in 331 BC, the lives of 13 cheese-makers from the Persian monarch’s entourage were spared, doubtless because of their value to the Military’. (Smith 1995b: 3)

Its status as a functional and strategically important food product contributed to the first of many instances of state regulation and intervention, when the Roman emperor Diocletian fixed maximum retail prices for cheese (n.b. Diocletian’s price controls recorded an early instance of product branding, making reference to ‘*Lunar*’ cheese – an apparent reflection of its earlier associations – with the distinctive trademark of a ‘horns of the moon’).

While Roman branded cheeses were accorded high status, in other contexts cheese played a more mundane, functional role. The rural population of pre-industrial England depended on so-called ‘white-meates’ (i.e. eggs and dairy products) as a primary source of protein. The wealthy preferred meat, and correspondingly viewed white-meates as the inferior food of the poor. The crude economics of farming left most farm workers dependent on the by-products of the cheese- and butter-making, skimmed milk, buttermilk and whey. Semi-skimmed and skimmed milk cheeses were also produced as a secondary product, and was seen as a poor-man’s food. Thomas Tusser’s 16th century journal decried the use of milk that was, ‘floted to nie’ (i.e. skimmed to excess), since it produced a poor quality cheese that dried out quickly, rendering it hard and unpalatable. Popular distaste for hard (or ‘flet’) cheese entered the English language as a signifier of misfortune.

7.4.3 Commentary on this configuration

The early evidence indicates few direct connections with contemporary social structures, given the major discontinuities of the intervening years, including the fall of Rome, transition from ewes’ milk to cows’ milk, and from the monastery to the farm. However, these historical sources can be interpreted in a critical realist perspective as the product of the basic structures interacting with processes of knowledge creation, in ways that resonate with more recent events.

7.5 Commercial pre-industrial period

7.5.1 Production knowledge: localised collaboration

The open field system had not been conducive to producing surplus milk, a pre-requisite for the creation of a wider cheese trade. However, from the 17th century, there was an increase in the amount of land in enclosure and a generalised move from ewes' milk to cow's milk production as the wool industry came to dominate England's rural economy. Expropriation of common land destroyed the livelihoods of smaller farmers, while owners of enlarged estates began to focus their attention on ways of increasing the returns from agricultural enterprises, including dairying. The spirit of agricultural improvement was captured in Houghton's (1727) treatise, *A Collection for the Importance of Husbandrie and Trade*, which saw enclosure as a necessary condition for more efficient milk production:

'Among them [cows] a great many small ones, which are hardly worth keeping, but the encouragement is, and many pernicious commons we have which, for the flush of milk in a few summer months, makes the poor buy cows, to starve them in winter, and to spend much time running after them, as would earn twice the worth of their milk by an ordinary manufacture; when as, if the commons were enclosed, some would feed them well all summer [...] whereby there would always be a tolerable plenty of milk, from which would spring many more considerable dairies'. (cited in Hickman 1995: 18)

Enclosed land was 'improved' by ditching and hedging that was better suited to the rearing of cattle. This allowed greater control over livestock, including selective breeding and managed feeding, which served to increase yields (Hickman 1995:18). England's best dairying, the

counties of Cheshire and Somerset, developed very large ‘dairies’ (herds of milk cows) and a surplus of raw milk:

‘In 1658 it was noted that the Cheshire farmers made ‘a greate store of butter and cheese ... beyond what was required for domestic use’. Cheddar cheese was acquiring popularity (a fact noted by Samuel Pepys), for the wealthy townspeople were beginning to enjoy the superior products sold off the farms’.
(Cheke 1959: 101)

Localised collaborative methods of cheese production were adopted in such areas, as a means by which this highly perishable surplus could be converted into a marketable product. The Cheshire dairy farmer of the mid 17th century enjoyed an enhanced capacity to produce milk, a healthy surplus over immediate needs, which could have supplied a much wider geographic market for liquid milk. However, prior to the advent of steam railways in the 19th century, it remained impractical to transport raw milk in liquid form. Other uses were required for the surplus milk. Farmers in the Cheshire Plain can be seen, therefore, as pioneering volume production for the emerging mass market. Their novel production methods, and the processes of knowledge sharing and capability development that they implied, were recorded by a late seventeenth century traveller and diarist, Celia Fiennes. The following extract illustrates her apparent surprise at the Cheshire farmers’ co-operative approach making their ‘greate’ (i.e. large) cheeses:

‘Thence I went to Nantwich five long miles [...] from Nantwich to Chester town fourteen long miles the wayes being deepe [...] this is a pretty Rich land but what I wondered at was that tho’ this shire [i.e. county] is remarkable for a greate deale of greate Cheeses and Dairys, I did not see more than twenty or thirty Cows in a troupe feeding, but on Enquiry I find ye Custome of ye Country to joyn their milking

together of a whole village and so make their greate Cheeses'. (Fiennes [c. 1695-1697] cited in: Cheke 1959: 109, Smith 1995b: 35)

The natural advantages the Cheshire Plain, and the production capabilities of its dairy farmers, gave rise to a greater milk surplus than that found in other areas, with the exception of Somerset. The surplus provided a spur to wider marketing of the Cheshire and Cheddar varieties, and the twin adaptations in production practices of communal production and the manufacture of large (i.e. 'greate') cheeses. The 'legend' of the Cheshire cheese, which can be found in many variants, reflecting this period of regional self-confidence:

A Cheshire Cheese Song

A Cheshireman sailed into Spain to trade for merchandise;
When he arrived from the main, a Spaniard him espies.
Who said, You English rogue, look here!, what fruits and spices fine
Our land produces twice a year, Thou hast not such in thine.
The Cheshireman ran to his hold, and fetched a Cheshire cheese,
And said, Look here, you dog, behold!, we have such fruits as these.
Your fruits are ripe but twice a year, as you yourself do say,
But such as I present you here, our land brings twice a day.
(Burdett, O [undated], cited in Holland 1937: 70)

7.5.2 Consumption knowledge: markets, transport and intermediaries

The export of English cheese can be traced to the Roman occupation (Smith 1995b: 4). However, but major developments in the structures and mechanisms of selling did not occur until the 17th century, when a combination of demand and supply conditions initiated the first

mass market in cheese. On the supply side, sufficient surpluses were being produced in favoured regions, notably Cheshire and Somerset. The demand for cheese was also changing as England began its rapid transition into predominantly urban country with a large industrial workforce, divorced from the land and from direct connection to its agricultural production. These changes gave rise to significant variations in the price of the leading varieties. Rance (1982: 129) noted that by the 1720s, 'Stilton' cheese had begun to secure a high premium, with prices of 2s 6d (25 pence) a pound being recorded. Cheddar, still both scarce and highly valued, was priced at between 6d (3 pence) and 8d (4 pence) a pound. By contrast, Cheshire had become a higher volume, lower margin product, priced at around 2½d (1 pence) a pound. Mediating between production and consumption were the technologies of transportation and marketing. In the 17th and 18th centuries, improvements in the road network, together with the newly-emerging system of canals, provided new distribution channels and markets for cheese and other agricultural products. William Cobbett (1763-1835) provided a contemporary commentary on the impact of the canals on trade between rural and urban areas, notably the 'Wen' (i.e. literally, wart or tumour) of London. These views have been drawn upon and elaborated at various times by proponents of artisanal cheeses and similar products (e.g. Cornford 1988, Ellis 2001, Rance 1982, Squire 1937):

'The land here, and all around CRICKLADE, is very fine. Here are some of the very finest pastures in all England, and some of the finest dairies of cows, from 40 to 60 in a dairy, grazing in them. [...] I saw in *one single farm-yard here* more food than enough for four times the inhabitants of the parish; and this yard does not contain a tenth, perhaps, of the produce of the parish; but, while the poor creatures that raise the wheat and the barley and cheese and the mutton and the beef are living upon potatoes, an accursed *Canal* comes kindly through the parish to convey away all the wheat and all the *good food* to the tax-eaters and their attendants in the WEN!'. (Cobbett [1830] 1973: 362-363)

The potential value generated by the new technologies were anticipated and exploited by a variety of new entrepreneurial agents, producing a new commercial configuration in England. One of the main characteristics of the new configuration was the consolidation of distribution and marketing under the control of a few large cheese factors (i.e. wholesalers), such as the London Cheesemongers, who co-ordinated storage and transport to the major urban markets. The scale of the enterprise is indicated by contemporary farming surveys and port receipts; these suggest that in the 1770s Cheshire cheese production was around 9,000 tons per year, of which approximately 60 per cent (5,700 tons) was being shipped to London (Rance 1982: 35). Other characteristics of the commercial configuration included imitative behaviour, and interventionist governance mechanisms, reflecting efforts to secure and to protect these new sources of economic rent. These characteristics were displayed in the case of 'Red Cheshire' cheese. Coach travellers on the busy transport artery between London and Holyhead (n.b. the major coastal port North Wales for sailings to Ireland) were supplied with Cheshire cheese. The popularity of this variety prompted some unscrupulous local farmers to 'pass off' their products as Cheshire. This imitative challenge encountered a surprisingly strong appropriability regime (Teece *et al.* 1997), yet its effects were undermined by the characteristic unpredictability of consumer preference:

'Pressure was applied to make the Welsh farmers colour their product red so as to distinguish the inferior cheese from true Cheshire, but, just to show how contrary customers can sometimes be, the red colouring proved so popular that the Cheshire makers found themselves obliged to add it to their cheese'. (Smith 1995b: 35-36)

The red colouring failed in its initial task. However, it provided the basis for an additional, though inadvertent, source of differentiation, when artisanal producers of Cheshire cheese

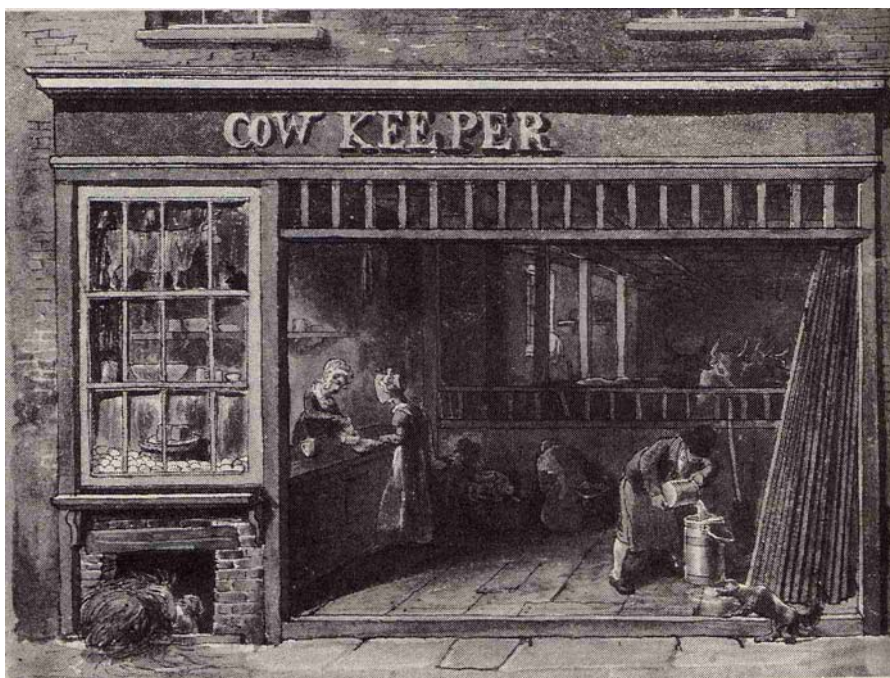
exploited this image-related isolating mechanism in the ‘industrial’ era (Section 7.7). Similar interactions are evident in the ‘invention’ of Stilton as a distinct cheese variety at the end of the 17th century. A combination of technological and entrepreneurial factors transformed a diverse group of local cheeses into a standardised and widely-traded commercial product. Nobody made cheese in Stilton. The name derived from the place of sale, rather than that of manufacture. Stilton was a small village on Ermine Street, a Roman road that formed the main link between London and the Scottish Borders (i.e. ‘The Great North Road’). Approximately 70 miles from London, Stilton was an ideal stopping point, where horses and drivers could be refreshed or changed. In preceding centuries, a range of pressed and unpressed cream cheeses had been sold in the town’s inns, including some that would have been similar to today’s characteristic blue-veined cheese. ‘Stilton’ cheese was the product of a combination of factors, including entrepreneurial agency, in the form of a marketing agreement between the Cooper Thornhill, a grain factor who owned The Blue Bell Inn, and a nearby cheese-maker, Frances Pawlett. Thornhill’s trading connections, efforts to standardise and promote the ‘Famous Stilton Cheese’ in London, and the construction of an extensive supply network, reinforced the original initiative. The growth of Stilton was also assisted by the introduction of the mail coach in 1784, which increased traffic through the coaching inns. By the mid-19th century, the market for ‘Stilton’ was satisfied by cheese-makers from several counties, including Leicestershire, Rutland and parts of Lincolnshire and Nottinghamshire.

7.5.3 Commentary on this configuration

The production of ‘greate’ (i.e. large) Cheshire cheeses signalled the emergence of regionalised markets in pre-industrial England. The basis for competitive advantage in these

early markets arose from a combination of pre-existing natural resource endowments (i.e. fertile grasslands, and in the case of Cheshire, salt deposits), the cumulative growth of localised capabilities (i.e. primarily in breeding productive dairy cattle and in cheese manufacture) and other locational factors, including proximity to population centres and transport connections. Product differentiation, based on the growing reputation of particular cheeses, such as Cheshire and Cheddar, provided an additional isolating mechanism in this period. The interaction of these mechanisms has been illustrated with reference to the creation of the 'Red Cheshire' and Stilton cheese varieties in this period.

Figure 7.1 Liquid milk retailing: commercial pre-industrial configuration



Source: Burnett (1989: 240, Fig 2a)

A combination of technological innovation, entrepreneurial agency and new governance mechanisms (i.e. state intervention, regulating commercial transactions and protecting the interests of the new entrepreneurial capital) modified the 'basic structures' (Section 7.3),

facilitating a wider trade in cheese. However, the inherent characteristics of liquid milk continued to dictate its patterns of distribution in the early industrial era. For example, the pioneering urban dairy foods retailer, the ‘cow keeper’, brought liquid milk into the new urban spaces by the simple expedient of keeping dairy cows at the back of the shop, and selling their milk direct from the pail (Figure 7.1). This co-location proved to be a temporary phenomenon, becoming redundant as innovation in rail transport facilitated a reliable supply of liquid milk from farm to urban centres.

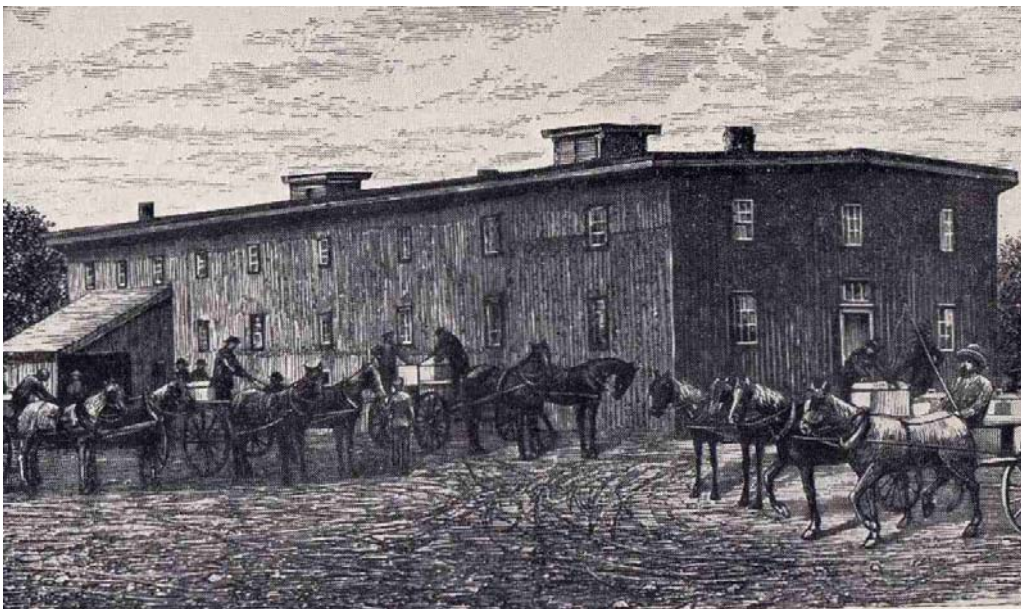
7.6 Formative industrial-artisanal period

7.6.1 Cheese factories and the Cheddar system: the application of science

Throughout the second half of the 19th century and in the early years of the 20th century, all of the main English regional varieties were influenced by the application of scientific methods in the pursuit of more consistent and reliable products, with lower wastage. However, Cheddar was in the forefront of this strong re-assertion of the control imperative. Cheddar was identified as being particularly amenable to ‘improvement’, and the methodical experiments of several Cheddar makers were formalised into ‘systems’ involving precise control of key variables such as temperature and acidity. Cheese production and consumption in England remains dominated by the Cheddar variety (Section 7.2). Innovation in production methods was driven by increased competition from imported cheeses, initially from the Netherlands. However, England’s new industrialised methods were open to imitation. Entrepreneurial manufacturers in Canada, the United States, New Zealand and Australia adapted the Cheddar system for efficient large-scale manufacture. The new production capabilities were

reproduced and elaborated with the help of knowledgeable agents, who established strong connections between the old and new locations. For example, one of the leading innovators was a West Country cheese-maker, Joseph Harding. One of Harding's sons, exported the improved Cheddar system to Australia, while another introduced the system to the Scottish lowlands. Emerging transport and storage technologies, notably railways, steamships and refrigeration, stimulated the growth of an international trade in industrial cheese (Figure 7.2).

Figure 7.2 Milk arriving at a 19th century cheese factory



Source: Cheke (1959: 180, Plate 22)

The expansion of industrial cheese production led to an influx of cheap imported cheese, which satisfied the growing demand of England's increasingly urbanised population. Foreign competition prompted moves to establish domestic 'cheese factories'. However, resistance from established interests in the existing configuration contributed to a slow introduction of domestic industrial production methods. England's first cheese factory opened in 1870, approximately 20 years after the inception of the factory system in North America. As Cheke

(1959: 185) noted, ‘it is perhaps significant that an American from New York came over to advise on its working and administration’ (Figure 7.3).

Figure 7.3 The first English cheese factory, Longford, Derbyshire



Source: Cheke (1959: 180, Plate 23)

Cheese factories in England took on a different role from their counterparts in Canada, the United States and other industrialised countries. Most English factories operated as a pool for unwanted raw milk, rather than as a dedicated base for continuous production. This subsidiary role reinforced their relatively minor contribution to domestic production in the period (broadly, the 1870s to 1930s). The variability of the raw milk, *ad hoc* nature of production and lack of continuity in marketing relationships resulted in a reputation for inferior quality output. The relative failure of English cheese factories was reflected in market data. By 1911, only 18 per cent of cheese for domestic consumption was home-produced. Furthermore, most of this home-produced output was still sourced from farm-

based cheese-makers (Cheke 1959: 244, Rance 1982: 132). Hence, the primary competitive threat faced by artisanal producers was from *imported* factory products:

‘Farmhouse cheese was still accounting for some three quarters of the country’s output [in the late 1920s], and the best of it fetched a higher price on a specific market than the imported cheese. [...] Unfortunately, only a proportion of the farmhouse cheese was of the highest standard, the remainder was very variable and often inferior in quality [to factory and imported cheese]’. (Cheke 1959: 250)

Thus, while a minority of farm-based cheese-makers survived, increased penetration of imported cheese, primarily Cheddar derivatives, and the availability of cheap imported mutton and beef, contributed to the decline and exit of many artisanal producers. The main selection mechanism operating at this point was locational. Many ‘old’ cheese varieties are recorded as disappearing. Exits were concentrated in those locations where cheese production was marginal in relation to pre-industrial structures, which gave rise to spatial variations in milk yields. Increased demand for liquid milk across the country reduced the attractions of cheese-making in lower-yielding areas. Rural labour shortages, instability in the milk market and other disruptive events, notably the First World War, accelerated the withdrawal from farm-based artisanal production. The basis for competitive advantage amongst surviving artisanal producers included a capability to service premium markets associated with particular varieties such as Stilton and Red Cheshire (Rance 1982), often via long-established linkages with specialist wholesalers. Other strategic positions were based on residual local loyalties (e.g. Caerphilly cheese was popular in the densely-populated coal-mining districts of Wales).

7.6.2 Early multiple retailing and the commoditisation of taste

Developments in the rationalisation of cheese production were echoed in by changes taking place in other parts of the supply chain. The development of modern retail practice began in the mid-19th century, with the expansion of the specialist shop (Jeffreys 1959). Later in the century, there was an expansion in multiple retailing of grocery (e.g. Liptons, Sainsbury), pharmaceutical (e.g. Boots), stationery (e.g. W.H Smith) and other goods. While other retailing models persisted (i.e. there was not a sequential ‘evolution’ from ‘basic’ to more ‘advanced’ forms), the larger multiple retailers were characterised by a logic of standardisation, based on packaged, often branded mass-market products, such as *Camp* coffee and *Bournville* chocolate (Benson and Shaw 1992). Cheese was still sold loose, but the consistent quality and supply of imported cheddar was well-suited to the requirements of the emerging multiple retailers. The combined effect of large-scale mechanised production, efficient international distribution and expanding retail networks was to disseminate generic products across the country, with little regard for traditional local preferences. These events prompted periodic expressions of concern from elite consumers, seeking to address what one commentator described as, ‘the neglect of English cheese generally, and to the gradual attrition of English cheeses by foreign invasion and native indifference and ignorance’ (Squire 1937: 11). Sir John Squire’s polemical text illustrates the role of contingency and its interaction with emergent causal powers in this configuration. His book arose from correspondence in *The Times*, initiated by a French connoisseur who had complained that, during visits to England, he was unable to obtain Stilton cheese. The connoisseur’s complaint was misplaced (i.e. the absence of Stilton was due to seasonal factors, which still prevailed), yet it brought these effects to wider attention, both at the date of publication and as a

reference for later critiques. Squire's was a minority voice, but other sources (e.g. Cheke 1959), suggest that he painted an accurate picture of the English cheese market at this time:

'There are few parts of England which do not remember cheeses extinct or nearly extinct. Not all of them, I dare say, deserve resuscitation; the evidence suggests, for instance, that the man who ate Suffolk cheese might just as well have been eating old motor tyres. But it was possible a century ago to travel throughout England and sample local cheeses everywhere. Today most of them are unobtainable unless in small quantities from eclectic merchants. Even in first-class chop houses [i.e. restaurants] the only English cheeses on offer will be Stilton, Cheddar or Cheshire; in most places only Cheddar and Cheshire, more likely than not American. Gorgonzola (often, even before sanctions, made in Denmark) is more familiar to many English people than any English cheese; and such a notable cheese as Double Gloucester is known to few but epicures'. (Squire 1937: 13-14)

Squire's variety-seeking rhetoric lacked a coherent programme of action. It was to prove ineffectual in the face of a much stronger resurgence of the control dynamic, which characterised the next configuration.

7.6.3 Commentary on this configuration

This configuration has been termed 'formative industrial-artisanal' because it saw the first phase in which the two modes of production co-existed in England. The expansion of the 'cheese factories' and the Cheddar system can be regarded as a strong assertion of the rationalising, control dynamic, which had been freed from the institutional constraints of the domestic context. The retreat of artisanal production and the relative failure of the domestic factory system were both highly visible events in this period. This prompted a number of state-sponsored and sectoral initiatives, which sought to redress the balance. These included

increased investment in the agricultural education infrastructure (e.g. establishing Dairy colleges and awards systems) and generic product promotions (e.g. the English Cheese Council's pamphlets, 'All about English cheese', published in 1919). However, these initiatives proved largely unsuccessful. By the mid-1920s, only a quarter of cheese (by volume) consumed in the country was home-produced, of which approximately 70 per cent was still made on farm (Cheke 1959: 249). Domestic factories had largely failed to compete, but much of the country's farm-produced cheese had itself become more standardised, stimulating articulate, but largely inconsequential complaints from elite consumers.

7.7 Regulated industrial-artisanal period

7.7.1 The Milk Marketing Board and strategic control

The next configuration was shaped by state intervention. The failures of domestic production in the previous period were attributed, in large part, to the high and variable cost of the primary ingredient, raw milk. Following extensive research, statutory authorities for the milk and dairy industry were established in 1933. The Milk Marketing Board for England and Wales (MMB) remained in existence until 1994. This re-configuration included two periods (corresponding to the years 1934-1939 and 1954-1984), in which there was an effective suspension of competitive interaction between artisanal and mechanised production. This was due to tight controls imposed on the quantity, quality and volume of cheese production, and similar controls on milk supplied for manufacturing. However, the period was also marked by a major discontinuity, resulting from the high economic and nutritional value attached to cheese. During the Second World War, the Ministry of Food introduced unprecedented

controls on the dairy sector and on cheese manufacture. Large quantities of liquid milk and ‘reserved’ labour were allocated directly to production. All available storage facilities were requisitioned to ensure a controlled period of ripening under standard conditions. There was a complete cessation of farmhouse cheese-making, and all farm milk was transferred to the cheese factories. Finally, only six designated pressed cheese varieties were manufactured (i.e. Cheddar, Cheshire, Dunlop [a Scottish variety], Lancashire, Derby, Wensleydale). These policies had profound and lasting effects on both production and consumption knowledge in this context. In the post-war period, artisanal production resumed on a much reduced scale. Volume production was concentrated in cheese factories, which were now known as ‘creameries’ (Table 7.6). The MMB imposed production quotas, pooled milk supplies and standardised grading procedures. Each of these measures re-inforced the control dynamic, with a corresponding suppression of variability and variety. The fixed pricing system, based on the grading of cheese supplied to the MMB, removed firm-level incentives for product differentiation.

Table 7.6 Discontinuity: Farmhouse cheese-makers in 1939 and 1948

Year	Cheshire	Lancashire	South West (inc. Cheddar)	Wensleydale
1939	405	202	514	176
1948	44	29	61	9
<i>Exits</i>	361	173	453	167
<i>Percentage change</i>	(89%)	(86%)	(88%)	(95%)

Source: MMB / Ministry of Agriculture register of cheese-makers – cited in Rance (1982: 133)

7.7.2 Shaping consumer demand?

The knowledge of consumers was also shaped by an extended period of rationing. During wartime, supplies of imported meat were curtailed; cheese and other dairy products resumed their long-standing role as a primary source of protein:

‘With human perversity, the public groaned at the small allowance of its cheese ration, and would have been shocked to know that the now rigorous limit equalled the voluntary peace-time consumption of a few months before’ (Cheke 1959: 257)

Rationing required that cheese could be divided into small, equal-sized portions. This could not be achieved if the product was too loose-textured. Cheshire, whose distinctive qualities included its ‘crumbly’ texture, was reformulated to meet these requirements. In general, all varieties migrated towards the Cheddar system, which best complied with the state-imposed requirements for ease of cutting, nutritional value and storage capability. Consumers also became accustomed to uncoloured cheese, which was discontinued during this period. Hence, the lasting effect on consumer purchasing behaviour was to reinforce a pre-existing mass market preference for Cheddar and the other designated varieties, and to acculturate consumers to a generic and nationally-source product, standardised in terms of portion size, texture and organoleptic quality. Wartime conditions generated some sporadic consumer reaction, which contrasted with the broadly apathetic consumer tastes of the pre-war period (Cheke 1959: 258).

7.7.3 Commentary on this configuration

This penultimate configuration corresponds with the founding period of the firms depicted in the central narrative (Section 8.1). It was characterised by a substantial modification of the basic structures, with correspondingly dramatic effects in the historical record. In contrast to the previous configuration, the state became the main agent for change. The visible signs of intervention under the MMB system and during the extreme conditions of wartime included the introduction of standardised grading systems and national distribution networks. Cheese production was now concentrated in the factories, which had become integrated into the state-regulated architecture of milk purchasing and dairy product marketing. These changes were accompanied by enduring modifications in knowledge practices at the level of the firm, and amongst other actors, including retailers, dairy farmers and end consumers.

Figure 7.4 English cheese varieties in the mid-20th century



Source: Cheke (1959: 261, Plate 35)

Cheese promotions of the period illustrate the degree of standardisation that had been achieved under the regulated industrial-artisanal configuration (Figure 7.4). However, this display of traditional, cylindrical cheeses points to a subsequent rationalising development. The introduction of block cheese in the 1960s challenged traditional practices and was to prove a major influence on artisanal cheese-making in the next configuration (Section 8.3).

7.8 Divergent industrial-artisanal period

7.8.1 Control re-asserted: the rise of the multiples

Patterns of production and consumption in this configuration were outlined earlier in the chapter (Sections 7.1.1, 7.2.1 and 7.2.2). They reflected major structural changes in food production and distribution in the second half of the 20th century. The scale and pace of restructuring has varied between supply chain levels, but increased industry concentration and closer vertical co-ordination were evident at every level, from ‘plough’ to ‘plate’ (Galizzi and Venturini 1996). For small-medium food producers, including artisanal cheese-makers, the most significant aspect of these changes has been the increasing domination of the retail market by a few large firms, coupled with their active pursuit of upstream links. The four largest multiple food retailers (Tesco, Sainsbury, Asda, Safeway) now represent approximately 50 per cent of UK grocery sales, though there is a significant variation in concentration statistics according to product category, region and size of store (Competition Commission 2000: 12, Dobson Consulting 1999: 129, IDG 1999). Multiple retailers have taken on the role of ‘channel captain’, shaping the overall structure of their supply chain in pursuit of their ‘traceability’ and continuous consistent quality (CCQ) requirements (Traill

and Pitts, 1998). Research conducted in the meat sector has highlighted the knock-on effects of multiple retailers' sourcing and product specification decisions, which are conveyed up the chain, via category managers (i.e. large meat processors, who co-ordinate supply and packaging for this product area) to farms and farm inputs suppliers (Fearne 1998). The intensification of these vertical supply chain relationships has been associated with a steady decline in traditional distribution channels, comprising wholesale markets, multiples and smaller, independent retailers. The decline has been attributed to the superior buying power of the multiples, which restricted smaller firms' access to consistent quality and regular supplies and eroded profit margins (Competition Commission 2000, Hughes 1996, Wilson 1996). Similar processes have been identified in the dairy sector, following the de-regulation of cheese marketing in 1981, and of milk marketing in 1994. One of the consequences of the initial liberalisation was that the former MMB creameries became semi-independent entities, trading as Dairy Crest. The second liberalisation completed this process, while also enabling all cheese-makers to purchase their milk supplies direct from farmers (Bates and Patisson 1997). The de-regulated dairy markets facilitated the extension of multiple retailer control over these supply chains, with the larger creameries acting the role of category manager (Section 8.2).

7.8.2 In search of variety: the periodic resurgence of taste

This configuration has also seen a new phase in the consumption narrative. Efforts to re-construct and exploit the variety inherent in the cheese-making process (Section 7.3.3), have been reflected in a small but well-publicised revival in localised distribution systems, via organic 'box' schemes or 'farmers' markets'. There has also been increased interest in the

direct marketing of regional and speciality products through conventional mail order and, more recently, in conjunction with Internet sites. There have been several episodes, following the initial industrialisation of cheese production in the 1850s, when consumer pressures have surfaced, re-asserting the importance of variety against the production-oriented dynamic of control. Recorded instances can be found at the end of the 19th century (English Cheese Council 1919), and the 1930s (Burdett 1935, Simon 1936, Squire 1937), with a more concerted campaign emerging from late 1970s to date (Ellis 2001, Freeman 1998, Rance 1982, Tannahill 1988). Two distinct variants of the resurgent interest in food have surfaced, both separately and in combination. One strand is primarily gastronomic, with a correspondingly narrow focus on the organoleptic qualities of the end-product, sometimes reinforced by a limited commentary on provenance. This textual detail is used to highlight the distinctive or exclusive nature of the product. For example, the following account is from the owner of a North American delicatessen, reported in the food section of the *Seattle Times* newspaper and website:

‘Mrs Appleby’s Cheshire. Cook says this is the last real, unpasteurized Cheshire in the world. It can’t be duplicated, he says, because the mold spores in the air are found nowhere else but in that county-by-the-sea of northwestern England. The ocean air and the saline quality of the ground there give this full-bodied, flaky cheese its sharp, tangy quality. (Mrs. Appleby – yes, there really is such a person – also makes a Double Gloucester that is as smooth and full-flavoured as they come’. (Triesch Saul 1999)

The other strand is more concerned with production, emphasising the inherent values of traditional, artisanal techniques and skills. This may incorporate a more radical critique of highly mechanised modes of production, based on its negative environmental impact or its association with large-scale corporate capitalism. These arguments have been particularly

resonant where they have been crystallised around a particular incident, such as cheese-maker Humphrey Errington's high-profile campaign in defence of his raw (i.e. unpasteurised) ewe's milk 'Lanark Blue' cheese, following an Environmental Health Officer's report of high levels of *Listeria monocytogenes* (Lm) in retail samples (Errington 1996). The lasting impact of these developments on consumer purchasing behaviour is complex and beyond the scope of the present study. However, the limited research conducted in the area of speciality and artisanal foods suggests some counter-intuitive outcomes. For example, a marketing survey conducted in Scotland found that the *Listeria* scare had a 'positive' effect on both retailer and consumer respondents:

'Of the retailers interviewed 61 per cent reported increased purchases of the blue cheese, 36 per cent did not notice a negative effect on the business and only 4 per cent admitted to a decrease in sales of this cheese. Furthermore, according to the consumer respondents, the publicity had a positive effect on the purchases of the cheese as many decided to buy it for the first time, and were continuing to buy it regularly in support of the producer'. (Kupiec and Revell 1998: 241)

However, such findings need to be set against the consumption data outlined in the earlier, 'scene-setting' paragraphs of this chapter, which identified the continuing dominance of the Cheddar variety, the growth in popularity of pre-packaged cheese and the corresponding decline in the delicatessen counter. The critical divide is between routine, or 'replenishment' purchasing and speciality, or 'specific choice' cheeses (Section 7.2.2). For artisanal producers, the worrying characteristic identified amongst consumers in the specific choice area is an apparent lack of loyalty to particular brands or types. In the Scottish survey, only 31 per cent of artisanal cheese consumers said they purchased a particular brand regularly (Kupiec and Revell (1998: 242), a finding that the authors attribute to a combination of

production and consumption factors. On the ‘production’ side, they note the wide variety of domestic and imported cheeses available and the lack of regularity of supply from small artisanal producers to the retail level. They interpret the ‘consumption’ side in terms of ‘post-modern’ consumer behaviour, characterised as a search for plurality, diversity and originality, guided by ‘informational stimuli’, which may be unrelated to the intrinsic quality attributes of the product (Brown 1995, Firat Fuat and Schultz 1997).

7.8.3 Commentary on this configuration

The divergent artisanal-industrial configuration has highlighted the continuing tension between the two strands of knowledge creation, *controlling variability* and *constructing and exploiting variety* (Section 7.3.3.), and pointed to its effects under the contingencies of the period. The exercise of control was exemplified by the increased scope of multiple retailer’s agency, which was conveyed via strengthened network connections. Multiple food retailers perpetuated an existing knowledge dynamic, in pursuit of rationalising changes in product specifications. The decline of established distribution channels was accompanied by a resurgent interest in traditional cheese-making practices, based on gastronomic preferences and a broader critique of the industrialised production. The reconstruction of developments in this configuration can be presented as posing a clear strategic choice for artisanal cheese-makers, between closer engagement with the multiple retailer-dominated supply chains and the pursuit of the newly-emerging distribution channels. However, by probing these divergent strategies at the level of the focal firm network, the central narrative reveals a more complex and ambiguous growth process (Sections 8.2 to 8.4).

7.9 Summarising the narratives

7.9.1 Creating artisanal knowledge: the five configurations

The historical narrative has investigated the ‘recombinability and interpenetration’ of different forms of economic organisation (Sabel and Zeitlin 1997: 2), through an examination of one industry sector over an extended period. The analysis has sought to clarify the complex interactions that have shaped artisanal knowledge creation over a period in which mechanised processes have come to dominate the food industry. Penrose identified similar, though shorter-run, interaction effects as a key to analysing changing productive opportunity. In the Hercules Powder Company case study, an account of the firm’s growth over four decades was followed by a section entitled ‘Interaction Between Technological and Market Bases’ (Penrose 1960: 13-19). This chapter has taken a longer-term perspective, exploring the development of artisanal cheese-making in England in terms of production and consumption narratives. Retroduction of the narrative has identified five configurations, which have emerged from interaction between the basic structures, inherent in the biological systems underpinning cheese-making, and necessary conditions or contingencies. These configurations are summarised below (Table 7.7). The narrative summary has been constructed on the basis of principles outlined in an earlier discussion regarding the combination of ‘RBP Mark I’ and ‘RBP Mark II’ insights (Foss 1997a) (Section 2.4). The aim is to connect the mechanisms of knowledge creation, arising from the Penrosian resource-capability dynamic to the prevailing source of rents identified by the ‘RBP Mark I’ concept of isolating mechanisms.

Table 7.7 The five configurations: an integrated summary

<i>Period</i>	<i>Isolating mechanism(s)</i>	<i>Knowledge creation</i>
Localised pre-industrial (to 18 th century)	Natural resource endowments Transportation systems	Primarily communal and localised practices, including consumption Marginal elite consumer preferences
Commercial pre-industrial (18 th century to 1850s)	Natural resource endowments Transportation systems Localised market preferences Reputation and image of premium varieties amongst elite consumers Quasi-statutory controls on imitation	Primarily communal and localised practices, including consumption Nascent territorial markets Elite consumer preferences disseminated more widely (e.g. Cheshire, Stilton, Cheddar)
Formative industrial-artisanal (1850s to early 1930s)	Natural resource endowments Transportation systems Localised market preferences Increasing competitive pressure exerted by domestic 'cheese factories' and imported industrial production (primarily Cheddar) Intermittent reputational and organoleptic differentiation advantage arising from counter-industrial revivals	Farm-based practices, some interaction with external actors (education, fairs, wholesale trade) Exit of many artisanal producers, loss of 'traditional' varieties and increased penetration of mass market industrial products Recurrent 'revivalist' movements amongst elite consumers increase awareness of distinctive varieties and organoleptic qualities
Regulated industrial-artisanal (early 1930s to late 1980s)	State regulation of milk and cheese prices, volume quotas and quality specifications State-imposed cessation of farm-based cheese-making and specification of varieties produced during Second World War.	Farm-based practices, MMB as sole intermediary, production divorced from consumption Continuing interaction with other external actors (education, fairs) Disappearance of several cheese varieties and associated practices
Divergent industrial-artisanal (late 1980s to present)	Reputational and organoleptic differentiation amongst enlarged elite consumer market 'Social reconstruction' of traditional, locational factors Stronger legal restrictions related to traditional locations (PDO) Stronger legal restrictions related to aspects of product specification and traceability	(a) Farm-based practices, new interaction with emergent network of external actors (specialist food wholesale/retail/end consumer) influencing marketing capabilities (b) Farm-based practices, continued interaction with MMB successors. Isomorphic pressures exerted by multiple retailers via channel captains/category managers countered by efforts to reclaim artisanal practices.

[Note: MMB = The Milk Marketing Board for England and Wales]

This combination of ‘RBP Mark I’ and ‘RBP Mark II’ has considerable explanatory potential, in efforts to explore the co-evolution of firms, networks and industries (cf. Koza and Lewin 2001), through its capacity to connect isolating mechanisms to firm-level activity:

‘Strategic isolating mechanisms are central to the resource-based view; however, few studies explore the processes by which firms gain or destroy them’. (Jones 2001: 937)

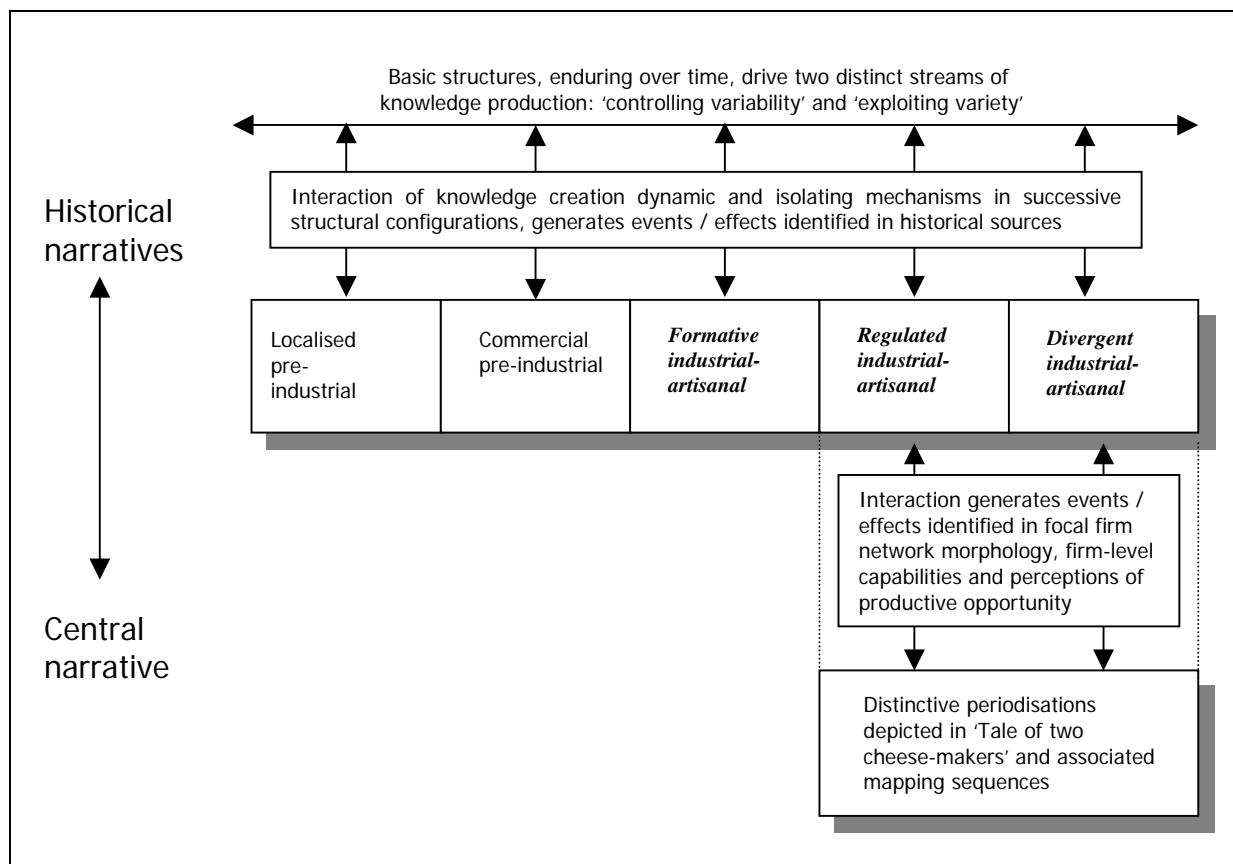
In the present study, the connection has been achieved by applying the modified Penrosian framework in a neo-realist perspective. This has allowed an exploration of firm-level agency to be extended into a multi-level analysis, embracing the firm, focal firm network and its unfolding context. The closing section considers the challenge of integrating these narratives.

7.9.2 Beyond idiosyncrasy: integrating the narratives

An important and long-recognised limitation in narrative-based research is that complexity and idiosyncrasy have tended to ‘crowd out’ fundamental mechanisms and relationships. One of the claims of the critical realist perspective is that it provides a basis for theoretically-informed abstraction, reflecting Marx’s notion of an *histoire raisonnée* (Schumpeter 1954: 44), and an analytically sound periodisation of episodes (Clark 2000: 115) (Section 6.3.3). In the neo-realist approach adopted for this study, the basic structures or generative mechanisms have been isolated and their effects traced over the course of the historical narratives (Table 7.7). The causal powers of the basic structures were emergent from the biological systems inherent in milk and cheese. These powers have been expressed as an enduring tension between *controlling variability* and *constructing and exploiting variety* (Section 7.3.3). This tension has been explored through two knowledge-related narratives, one centred on cheese

production and the other on its consumption. In summary, the historical narratives have identified the ways in which artisanal knowledge practices have been reproduced, modified and exploited in five structural configurations. It was also possible to explore interaction between artisanal and industrial modes of production and associated processes of knowledge creation during three of these configurations. The analysis isolated changes in prevailing isolating mechanisms due to the agency of particular actors, including government agencies and multiple retailers, and to ‘structure-loosening events’ (Madhavan *et al.* 1998), such as wartime regulation and market liberalisation in the 1980s and 1990s. The central narrative (Chapter 8) is a detailed re-examination of these interactions, at the level of the firm and focal-firm network. The relationship between the narratives is summarised in Figure 7.5.

Figure 7.5 Superimposed narratives: basic structures to firm-level periodisation



The task of integration between the different levels of analysis is achieved by superimposing the broad scope of the historical narratives onto a more fine-grained central narrative, which focuses attention on the two most recent configurations (i.e. 'Regulated industrial-artisanal' and 'Divergent industrial-artisanal'). The sequential order of Chapters 7 and 8 is based on the assumption that it is easier for the reader to comprehend the experience of particular firms in the light of a broader understanding of context in which they are operating. However presentation in this conventional format does not imply a simple causal progression in which macro-level historical processes set the stage for the micro-level activity depicted in the central narrative and network mapping sequences. This interpretation is contrary to the critical realist assertion that the world is characterised by emergence and contingency; consequently, explanations of emergent phenomena, such as the growth of firms, need to account for the *interplay* between levels of analysis (Reed 1997: 23, Sayer 2000: 12). It also suggests a narrower view of strategic choice than that developed in the modified Penrosian framework, since it fails to address the shifting zones of manoeuvre produced by a firm's interaction with the pre-existing context (Clark 2000: 303). Double arrow-heads between the historical and central narratives in Figure 8.5 indicate the intention of integrating the narratives in a way that addresses the interaction between different levels of analysis. The methodological review includes an assessment of the superimposed narrative approach to multi-level analysis (Section 9.4).

CHAPTER 8 - RESULTS (B): THE CENTRAL NARRATIVE - 'A TALE OF TWO CHEESE-MAKERS'

Entrepreneurs creating new organizational forms face rather different conditions than those operating in the relative security of simply reproducing old forms. The "reproducers" operate in a vast sea of trust, compared to the "innovators" [...]

Howard Aldrich
Organizations Evolving (1999: 218)

Within a *management* perspective, networks and coalitions, e.g. strategic alliances and joint ventures, represent just another calculated way to intermittently reduce environmental uncertainty. Entrepreneurial networking, in contrast, means expanding the action frame of the venturing process. Entrepreneurs *continuously* network as they pursue and react to new realities.

Bengt Johannisson
'Networking and Entrepreneurial Growth' (2000: 368 - emphasis added)

This chapter collates information from several primary and secondary sources in order to produce an account of the growth of two English cheese-making firms and the business networks in which they are embedded. The central account, 'A tale of two cheese-makers', spans a period of half a century, beginning at the formation of the businesses in the early 1950s. The narrative flow of this account is structured on the basis of distinct episodes, characterised by significant structural and processual change at both firm and inter-firm levels. Two network map sequences are used to highlight the distinct pattern of linkages formed by each firm. The perceptions of the managers of each firm are contrasted with material drawn from the historical narratives in order to explore the antecedents and consequences of connection. Interaction between subjective and objective elements is analysed in terms of the modified Penrosian framework, with the aim of clarifying intermediate processes. The concluding section broadens the scope of the narrative to address the arrival and departure of other artisanal cheese-makers in the most recent configuration.

8.1 Introduction to the two firms

8.1.1 Location and background

The two cheese-making firms presented in the following narrative are both located on dairy farms in the Cheshire Plain. This is located in the North West of England, approximately mid-way between the cities of Birmingham and Manchester, close to the Welsh border (Figure 6.9). As such, both farms share in a long tradition of dairy farming in one of England's most productive dairying regions (n.b. these traditions are elaborated in Chapter 8).

8.1.2 Two farming businesses

The Appleby family can trace its history of cheese-making in this area over several generations. Lance and Lucy Appleby, purchased Hawkestone Abbey Farm in 1943. The farm is located in countryside, approximately five miles from the local market town of Whitchurch, and within two miles of major transport routes (i.e. the A41 and A49 trunk roads) (Figure 6.4). In 1951, the Appleby's started making cheese in a converted stable adjacent to the farmhouse kitchen. They have continued to live at the farm, maintaining an active interest in its dairying and cheese-making enterprises; now in their nineties, both Lance and Lucy were recently awarded the O.B.E for their services to farming. Lucy Appleby has had a particularly strong involvement in the cheese-making activities, and is the 'Mrs Appleby' referred to in firm's cheese brand. At the time of the fieldwork research (1998-2000), day-to-day operations are in the hands of the Appleby's son, Edward and daughter-in-law, Christine. Drawing on many years' experience of dairy farming, they have built on their

parents' enthusiasm for traditional cheese-making practices. The couple's grown-up children are either working or studying away from the farm. However, other members of the family manage a second farm in the area, and have been involved in some aspects of the cheese-making business. Following a common practice in English agriculture, the farms have been organised in the form of a partnership. The cheese dairy produces 80 tonnes of traditional, cloth bound cheese per annum, using 800,000 litres of raw (i.e. unpasteurised) milk from their own dairy herd. This production volume has been fairly constant over several years. The current product range comprises three varieties of Cheshire – white, coloured and smoked – and a Double Gloucester cheese in various sizes. In addition to family involvement, the business employs an experienced cheese-maker and one assistant. On the basis of European Commission definitions, Appleby's Cheese could be classified as a 'micro' business. However, since the enterprise forms an integral part of a larger farming portfolio, it may also be treated as a small firm (Carter 1998). Appleby's is distinctive, being the only Cheshire cheese-maker in England that continues to use traditional methods of production and raw milk from the farm.

Cheese has been made at Belton Farm since the early nineteenth century. In the 1920s, Stanley Beckett left the family textile business in Manchester to work at Belton Farm as a farm student (i.e. apprentice). He was promoted to farm bailiff, became a tenant and subsequently purchased the farm. In 1953, Stanley Beckett revived cheese-making at Belton. In the early years, the cheese dairy was sited in a traditional location, at one end of the farmhouse, and relied on milk produced from the farm. During the 1970s, the farm and cheese-making businesses were taken over by Stanley's son John. Today, his son, Justin Beckett manages Belton Cheese from offices in the farmhouse; the dairy is located in a newer

building across the yard. Justin Beckett is an energetic man in his late thirties, who has combined the pursuit of traditional cheese-making activities, including participation in regional cheese shows and competitions, with the introduction of new production technologies and processes. Justin Beckett is supported by a small team of managers and specialist staff, including a quality manager and laboratory technician. Belton reported a production volume of 4,500 tonnes for the year to September 2000. This represented a doubling its 1995 volume output (Dairy Industry News 2000). Belton produces nine territorial varieties and several different sizes of cheese, including traditional cylinders and the large blocks used for pre-packed cheese. The cheese is cut and packed by Dairy Crest, a large creamery that deals directly with multiple retailers and other customers. Belton Cheese has established an Internet site (www.beltoncheese.co.uk) to promote its products to wholesalers and retailers. The firm, which currently employs approximately 30 people, continues to operate from Belton Farm, located on the edge of the market town of Whitchurch, adjacent to the A41 trunk road (Figure 6.4).

Figures 8.1 and 8.2 illustrate each firm's primary network ties during its initial period of operations. These periods commence with the establishment of on-farm cheese production, following the ending of wartime restrictions in the early 1950s (Section 7.7.1). For Appleby's, this network architecture prevailed until the early 1980s, while for Belton it persisted until the mid-1990s. A standardised format has been adopted to depict the network mapping sequences, revealing two distinct morphologies that emerged in subsequent periods (Figures 8.3 to 8.6). The focal firm is shown within a grey shaded circle, comprising the dairy farm and the on-farm cheese-making operation. The maps show the principal network links, as perceived by the focal firm managers (Section 6.4). 'Upstream' actors (i.e. suppliers)

are located towards the top of each map and ‘downstream’ actors (i.e. customers) towards the bottom. Regulatory and advisory agencies are grouped together on the left side of the map and social or other more informal links to the right side. Where there are links between the focal firm and several similar actors, the relevant symbol is repeated three times (e.g. three overlapping squares), irrespective of the number of connections. Further explanation is provided in the text. ‘Blind’ links are defined as those where the focal firm exchanges resources with an actor (e.g. a dairy farmer supplying milk via the MMB), but has little or no direct access to and / or knowledge of that actor.

Table 8.1 Key to the network map sequences

Actor (node) types	
Square	Firm
Triangle	Regulatory body
Star	Advisory body
Circle	Other organisations and individuals
Tie (line) types	
Thin	Perceived by focal firm managers as lower intensity relationship
Thick	Perceived by focal firm managers as higher intensity relationship
Solid	Formal / contractual relationship
Broken	Informal / non-contractual relationship
Dotted	‘Blind’ relationship (n.b. see explanation below)
Acronyms	
ADAS	Agricultural Development and Advisory Service
BSI	British Standards Institute
DEFRA	Department for the Environment, Food and Rural Affairs (formerly MAFF)
DHI	Dairy Hygiene Inspectorate
EFSIS	European Food Safety Inspectorate Standard
EHO	Environmental Health Officer
FCA	Farmhouse Cheesemakers Association
HSI	Health and Safety Inspectorate
ISO	International Standards Organisation
MAFF	Ministry of Agriculture, Fisheries and Food (subsequently DEFRA)
MMB	Milk Marketing Board
SCA	Specialist Cheesemakers Association
TSO	Trading Standards Officer

Figure 8.1 Appleby's: network map 1951-1982

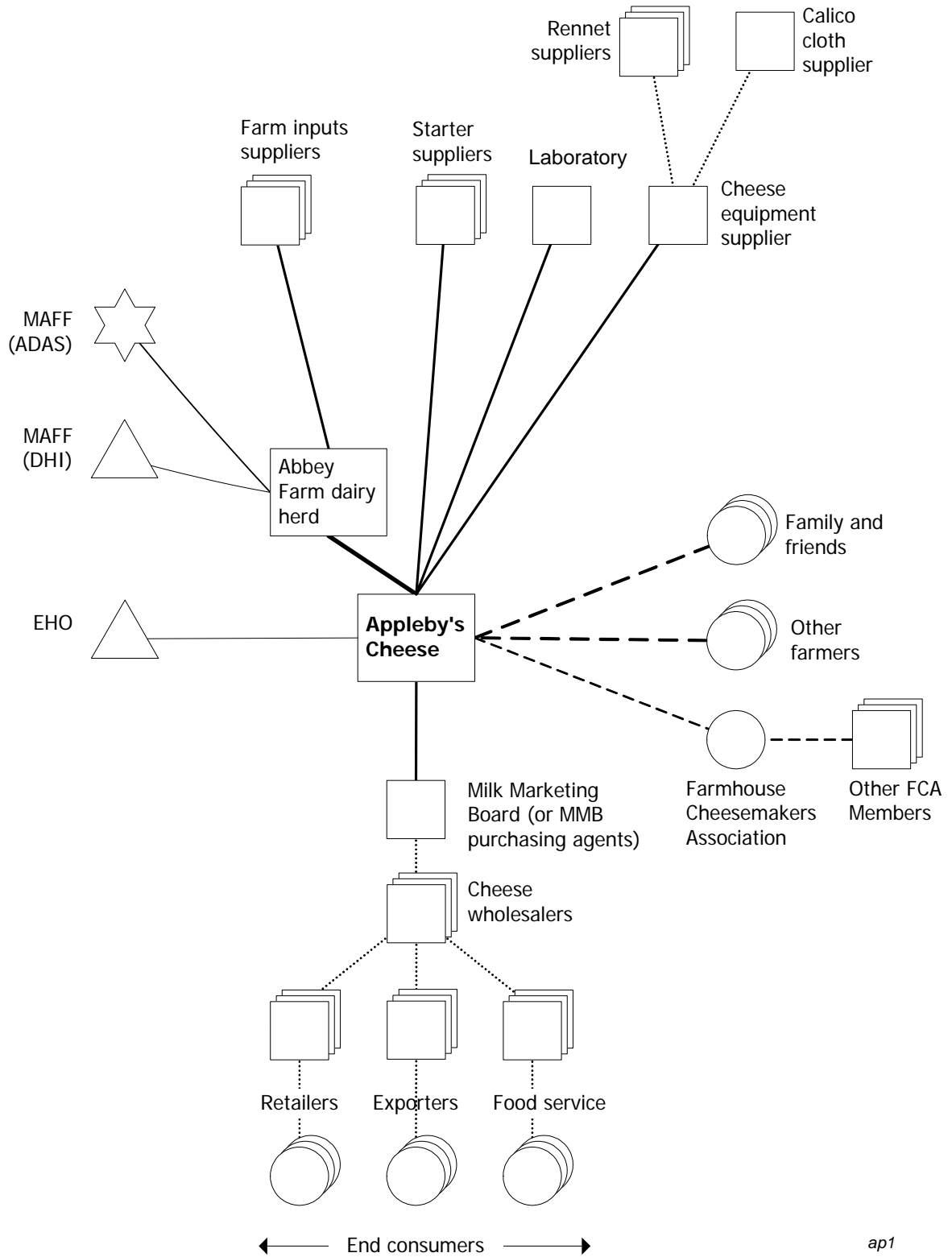
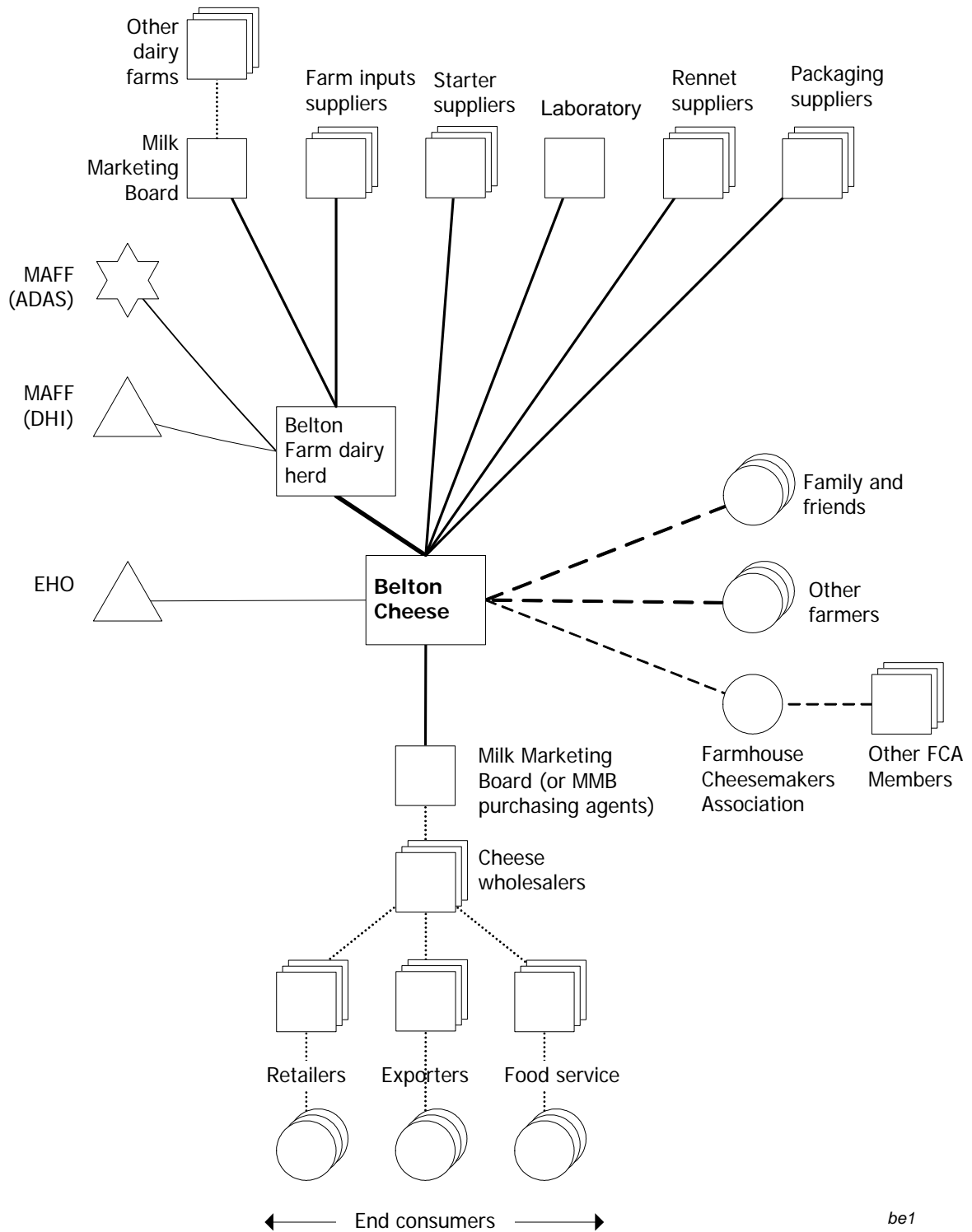


Figure 8.2 Belton: network map 1953-1994



8.2 The tale of two cheese-makers (1): regulated configuration

8.2.1 Entering a regulated market: 1951 to 1982

Both the Appleby and the Beckett families began their cheese-making businesses in an intensely regulated market, presided over by an organisation which exerted monopoly powers over milk purchasing and supply. The Milk Marketing Board (MMB) was a statutory body, established in England and Wales in 1933 as the sole purchaser of milk from its farmer members, and the sole seller of milk to the processing sector. In addition, all farm-made cheese was sold exclusively through the MMB and its agents (Section 7.7.1). Under this configuration, the focal firm networks of both cheese-makers comprised similar ‘upstream’ and ‘downstream’ connections (Figures 8.1 and 8.2). The most obvious difference was the upstream link between Belton and the Milk Marketing Board. This was the source of Belton’s additional milk supply for cheese-making. The current owner-manager’s grandfather displayed his entrepreneurial skills in securing supplies from this highly regulated monopoly, by making use of existing on-farm storage facilities:

INTERVIEWER: You mentioned that your grandfather was very good at getting extra milk.

JUSTIN BECKETT: [H]e managed to work the milk up [i.e. obtain larger amounts]. What would happen with the Milk Marketing Board Board system was that, if you were able to take volumes of milk in at the weekend, bank holidays, Christmas and Easter - we always had plenty of storage capacity here - and he always made a point of always buying it, never saying no. (B: 2000).

This capability would help to shape subsequent developments in Belton's focal firm network (Section 8.2.4). In contrast, Appleby's restricted their cheese production to milk from the farm's own dairy herd, choosing not to supplement it from outside sources. However, despite these initial differences in sourcing and scale of production, Appleby's and Belton produced a similar product according to the same customer specifications. Their typical product was a large (50 lb / 22.7 kg), cylindrical cheese, which was collected on a weekly basis by the MMB, or its agents. Payments to cheese-makers were on a fixed scale, based on a pool price. Cheeses were graded by the MMB, on the basis of which a bonus payment was calculated:

INTERVIEWER: [F]rom your point of view, you didn't see any more of the cheese.

EDWARD APPLEBY: No, once it had left the farm, we just went to see it graded; that was it.

CHRISTINE APPLEBY: They collected it every week, so we had no cheese storage facilities whatever. So we made, in those days, about twelve 50 lb [22.7 kg] cheeses, only the one size, and they would come every week and collect it, and then somebody would go to the warehouse and grade it. It was graded into three grades, wasn't it, originally?

EDWARD APPLEBY: Yes, 'superfine', 'fine' and 'ungraded', wasn't it.

INTERVIEWER: And they decided about cutting it and packaging it?

CHRISTINE APPLEBY: Yes, in the [19]60s it still went as a whole cheese, and after that the supermarkets came in and they started to quarter it. (A: 2000)

As a consequence, neither firm had control over, or awareness of, the subsequent cutting, packaging, distribution and retailing of their product (i.e. these were 'blind links', indicated by dotted lines in Figures 8.1 and 8.2).

8.2.2 Responding to the emergence of multiple food retailers: 1960s

The similar network architectures outlined in Figures 8.1 and 8.2 were stable for thirty years. However, this apparent continuity masks some important changes in the wider network, which both firms are able to trace the early 1960s. Appleby's, for example, detected an increasing pressure from the supermarkets for cheese to be supplied in different formats, primarily to rationalise the pre-packing of large volumes of cheese, and for ease of storage. Following the initial quartering of the traditional cylindrical cheeses, there were two major innovations: hard territorial cheeses were formed into large rectangular blocks and some cylindrical cheeses were given a protective wax coating:

INTERVIEWER: So was there any incentive to change? We were talking last time about innovation, new products you might have developed. Did you make any changes to the product over that time [i.e. 1951-1982]?

EDWARD APPLEBY: No incentive at all, no. I think the first real incentive that came in was the early [19]60s when waxing came in, when the supermarkets started and they wanted blocks, because they wanted to be able to cut two ounce [55 g] pieces. That was when the first innovations came in, but other than that, no, everybody made 50lb [22.7 kg] cheese, and that was it.

INTERVIEWER: So you did make the block versions?

EDWARD APPLEBY: No, we never made blocks (A: 2000).

At this point, the flow of products through the network began to change, though the structure itself remained intact. Some farm-based cheese-makers, including Belton, began to supply cheese in the block format, suited to pre-packing. Other firms, including Appleby's and about nine Cheshire cheese-makers continued to produce only the traditional cylindrical cheese (i.e. 'trads' or 'wheels'). The group was further differentiated, with some beginning to supply waxed cylinders, while others retained the traditional calico cloth binding:

CHRISTINE APPLEBY: That was when it started splitting up. There was people like ourselves who remained traditional, making calico [i.e. cloth-wrapped cheese], there was traditional cylindrical cheeses that started to wax, and then some of them expanded and made block cheeses. So, instead of all making traditional calico-bound cheeses, this is farmhouse makers now, it split into three categories really, and that is how it has remained now, just leaving ourselves [...] [T]here were about eight or ten of us through the [19]60s who continued to make cylindrical cheeses, and one by one they dropped out. And now there's only four of us left, of which we're the only ones cloth binding (A 2000).

This three-way product categorisation illustrates the operation of an isolating mechanism, albeit one comprising both 'strategic' and 'institutional' aspects (Rumelt 1984, Oliver 1997). One effect of this mechanism was to draw the block cheese-makers into a closer relationship with multiple retailer-dominated supply chains. The result was that some, including Belton, grew in volume output terms and came to occupy an intermediate grouping of small-medium producers (Section 7.2.1), while others did not survive. Early effects of the mechanism were signalled by the introduction of new production and distribution methods. For example, John Beckett took over Belton farm in 1970. Three years later, the family built a new cheese dairy across the farmyard, and cheese-making moved out of the farmhouse for the first time. The

dairy supplied waxed and block cheeses alongside traditional wheels and cylinders. The firm also expanded their product range, supplying a number of different English territorial varieties. The impact on artisanal cheese-makers that did not adopt block cheese production was also mixed. Several small artisanal producers, including Appleby's, managed to develop their businesses in the intervening years, while retaining traditional practices. There have also been new entrants, reviving historic cheese varieties or developing new products that are based on a similar, artisanal ethos (Section 8.1.1). However, the experience of the Cheshire cheese-makers, cited in the previous quotation, is indicative of many exits from the group that persisted with traditional practices (Section 8.3.3). The aim of the central narrative is to probe the shifting pattern of network connection underpinning these events, and to relate them to the broader transition from a regulated to a divergent artisanal-industrial configuration (Sections 7.7 and 7.8). The next section focuses on changes in the two focal firm networks during the first phase of milk market liberalisation, which dealt with the sale of manufactured dairy products, including cheese (Figures 8.1 and 8.3).

8.3 The tale of two cheese-makers (2): divergent configuration

8.3.1 The liberalisation of cheese marketing: early 1980s

Until the early 1980s, the Appleby's continued to sell all of their cheese direct to the Milk Marketing Board (MMB). Their standard product was still the large (50lb / 22.7kg) cheese, at a volume of approximately 12 cheeses per day over a five-day week. In 1981, as a precursor to full liberalisation of the milk market, the MMB's processing and manufacturing activities were transferred to a separate division, called Dairy Crest. In a related development, cheese-

makers were allowed to sell their products direct to the market. The Appleby family took this opportunity. In 1982 they established contact with a specialist retailer in London. Members of the family began delivering cheeses direct to several retail and wholesale customers, transporting them to London in the back of the farm's Land Rover. This proved to be a very effective promotional device, and additional customers were obtained primarily by word-of-mouth. In 2000, Appleby's had a customer base of between 60 and 70 specialist retailers and distributors. This broad spread of customers had a pragmatic logic (i.e. that 'nobody owes us very much at any one time'.), but it also reflected the family's ethos, which was to build close relationships with firms committed to supplying a traditional product. The family has continued to deliver personally, though the original Land Rover has been replaced by an insulated van. They have always sought to retain the direct connection between farm and customer. This extends beyond relationships with both their 'own' retailers, to a number of other retailers who are supplied indirectly via specialist wholesalers. The relationships are reinforced through personal visits and by arranging regular cheese tastings in retail outlets. The episode of entrepreneurial networking that began in 1982 was reflected in Appleby's much-altered focal firm network (cf. Figure 8.2, Figure 8.3). Furthermore, while this new network morphology was to remain fundamentally stable during the subsequent two decades, its new connections would spark fundamental changes in the business. The main growth dynamic can be traced to the firm's new downstream connections. The family's engagement with these hitherto unknown network actors has proved to be a source of new productive opportunity and productive services, facilitated by close personal ties. Neal's Yard Dairy, was acknowledged by the Appleby's as a particularly strong influence. This downstream actor was itself a pioneering venture, reflecting the periodic resurgence of consumer concern with food's gastronomic qualities and provenance (Section 8.8.3). Neal's Yard combined

specialist retailing with a wholesaling role, providing smaller producers with access to domestic and overseas specialist retailers who shared its ethos. In the Appleby's own reflections on this period, there was a clear recognition that connections of this kind had enabled the family to differentiate their product, introducing an effective defence against the prevailing climate of commoditisation and price competition:

CHRISTINE APPLEBY: To be quite honest, we've got a very good reputation in the marketplace, that we've built up over 20 years, and we offer a very good product, a very good service, and we control supply and demand very finely. We've never got too much cheese in stock so that we have to sell it off cheaply or feel under pressure from our buyers. We never feel under pressure from our buyers [...] If you've got 20 per cent more cheese than you've really got a market for, then you're soon in trouble, aren't you.

EDWARD APPLEBY: Basically, we've built a brand, haven't we? [Christine Appleby: 'Yes']. In this day and age, brands are wonderful things! (A: 2000)

Belton's focal firm network was largely unaffected by the liberalisation of cheese marketing. The Beckett family decided to retain close downstream connections between Belton and the inheritor of the MMB's dairy processing operations, Dairy Crest. (Figure 8.4). As a consequence, the events of 1982 marked the point at which long-standing differences in the internal operations of Appleby's and Belton were translated into tangible differences between their respective networks. Divergence between industrial and artisanal production, associated with the most recent configuration (Section 7.8), was echoed at the level of the firm and the focal firm network. Artisanal cheese-makers such as Appleby's forged new connections with firms that were pursuing a resurgent consumer interest in gastronomy and provenance.

Figure 8.3 Appleby's: network map 1983-1998

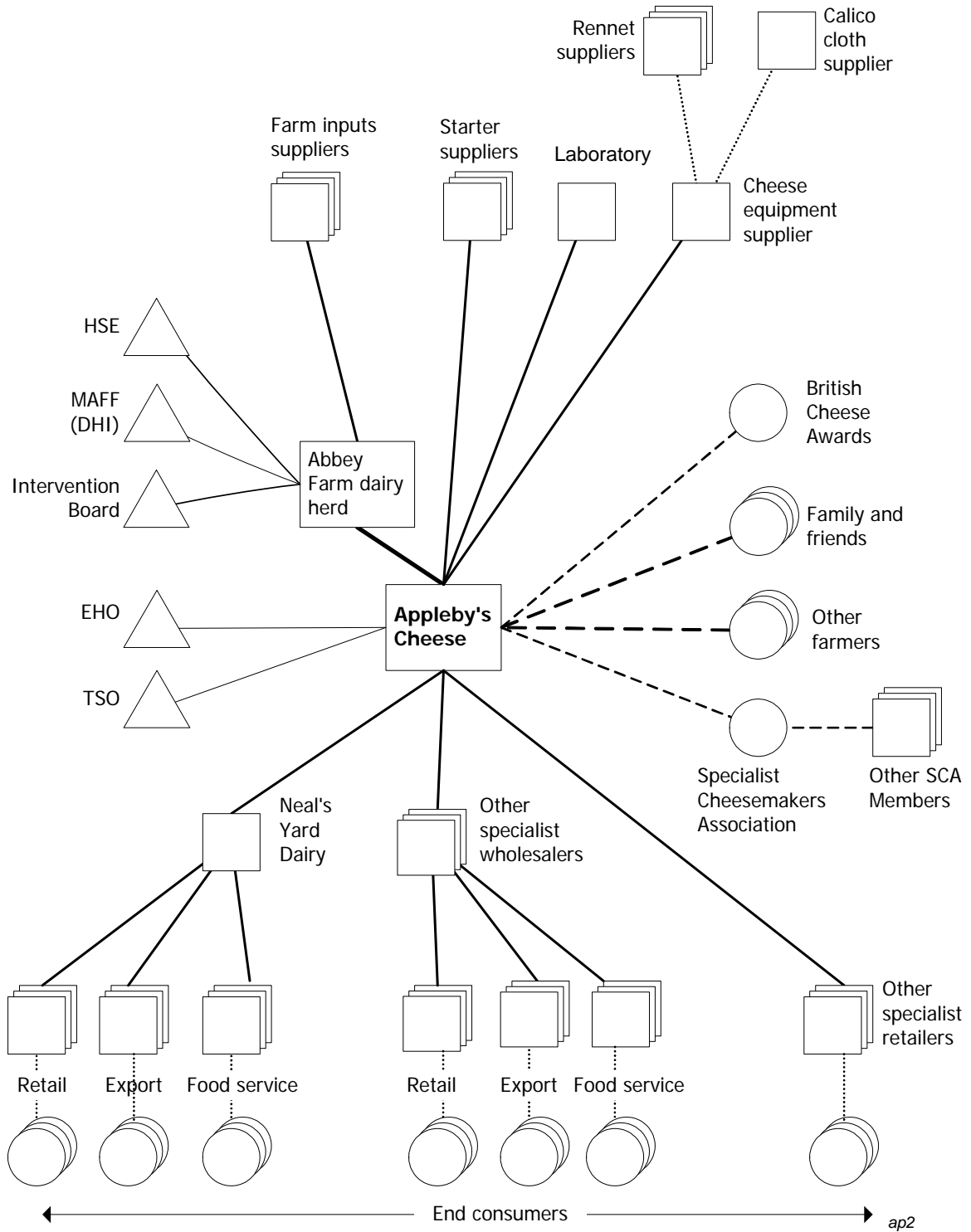
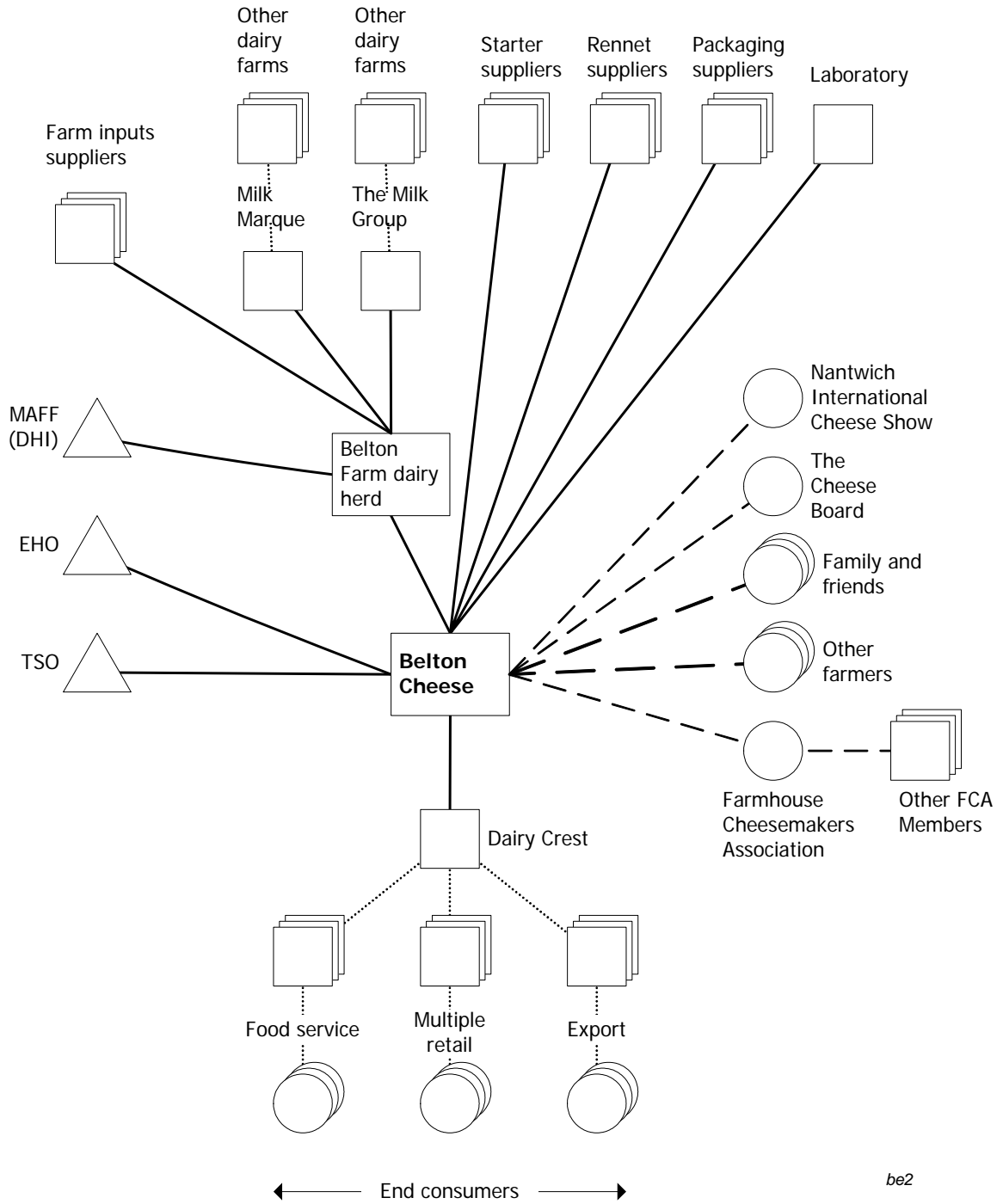


Figure 8.4 Belton: network map 1994-1998



For other cheese-making firms, including Belton, there was a semblance of continuity. However, by leaving their downstream network connections unchanged, these firms had committed themselves to a different journey. This would expose them to the increasing influence of multiple food retailers and other large customer firms, contributing to further episodes of restructuring in the following decade.

8.3.2 Liberalisation of milk marketing and its aftermath: 1994-1998

In November 1994, there was a second liberalisation. The UK milk market was deregulated and the MMB was disbanded. Initially, its role was taken on by a voluntary farmers' co-operative called Milk Marque, which recruited farmers accounting for more than 65 per cent of milk production in England and Wales. However, there was intense competition for supplies from liquid dairies and food companies. Milk prices were variable, with premiums available for particular specifications (e.g. high butterfat or protein content, as required for some manufacturing processes). These factors contributed to more dynamic relationships, as farmers moved between milk purchasers in order to secure the best price for their output (Bates and Patisson 1997).

At the start of this period (1994-1998), Belton's network architecture was largely unchanged, its primary upstream and downstream connections being with the former MMB organisations operating under their new names. Belton retained Milk Marque as a supplier, though milk was also obtained from a new regional producer co-operative, The Milk Group. It also continued to sell most of its cheese through its long-established packer, Dairy Crest (Figure 8.4). In contrast, Appleby's response was to sever their remaining links with Dairy Crest:

CHRISTINE APPLEBY: We stopped supplying them virtually completely [...] By this time we had got our own price list, as opposed to them buying and paying us what they were paying, we'd got a price list and immediately they were disinterested, because they wanted to buy it, obviously, at their price. (A: 2000)

This decision had implications in other parts of the firm's network. For example, Appleby's relationship with the Farmhouse Cheesemakers Association was terminated (membership was restricted to Dairy Crest's suppliers), and new links were created through the newly-formed Specialist Cheesemakers Association (Figure 8.3).

8.3.3 Recent developments: 1998-2000 - Belton builds a milk field

It was not anticipated that major changes in network architecture would occur in the relatively short interval between the interviews (March 1998 to August 2000). However, during 1998 and early 1999, Belton reviewed its position as a milk purchaser, deciding to end its relationship with the MMB successor, Milk Marque, and to build its own 'milk field', comprising direct supply links with local dairy farms. In 1998, Justin Beckett commented that some large creameries were creating these network links:

JUSTIN BECKETT: So originally [in 1994] Milk Marque had about 80 per cent of the milk, and I think that is now [in 1998] about 50 per cent. What has happened is that certain people - some of the bigger players - have actually gone and got their own milk deals, direct supplies. (B: 1998)

The subsequent change in Belton's network architecture could be explained as resulting from a number of technical factors, relating to the cheese-making process. However, one of the

key problems identified by the managers was ‘traceability’, or access to information on the source of individual products and their ingredients (Section 7.8.1). Managerial perceptions of this issue were investigated in 1998, during an interview with Belton’s quality control manager, Brian Guest:

INTERVIEWER: And the milk is traceable as far as Milk Marque?

BRIAN GUEST: The milk is traceable to the tankers – we don’t get the farm [identification] numbers from Milk Marque, but they have got [information regarding milk from] the farms on that tanker. They don’t tell us do they? [Laboratory technician replies: ‘No’] Unfortunately – but the others, the Milk Group and our own [milk] we know that daily. [With] Milk Marque, if there was a problem, we would have to ask them to furnish us with the information. (B: 1998)

The following sequence illustrates how the dynamics of one set of connections influence another, in this instance through the medium of externally-imposed routines. Pressure for traceability was exerted from Belton’s downstream packers and retailer customers. An inability to communicate this pressure upstream, to Milk Marque, prompted the breakdown of this relationship and Belton’s decision to create an entirely new pattern of ties (Figure 8.5):

JUSTIN BECKETT: And towards the end [of the relationship with Milk Marque], right at the end when we said, ‘look, you know, you’ve just got to, this is no good, we need to get Farm Assurance on board, we’ve got to prove due diligence and all the rest of it, and improve our quality and the consistency of the cheese, you know, we need it’. And even at the end they wouldn’t give us that. And it was just the last straw, I think, was [...] in the summer of 1998, we were getting tanker loads of 3.7 per cent butterfat, so it was completely out of balance, the compositional quality of the milk. We had no way of persuading the producers who were on those routes to improve it, as they were in a predominantly ‘white water’ region [i.e. where most milk is sold as fresh liquid milk, rather than for processing]. (B: 2000)

This change in upstream relationships provided Belton with a greater degree of control over the compositional quality and consistency of its milk supply. The firm introduced a milk purchasing system, similar to that of much larger processors, in order to control its milk field. It has also extended its capabilities in order to manage this new arm of its focal firm network. A former dairy farmer has been recruited to reproduce Belton's internal 'template' of linked routines, which include external certification, staff training and regular auditing, beyond its own boundaries and into other farms within the milk field:

JUSTIN BECKETT: So we decided to put a milk field together in April 1999 and we picked up our first farms on 1st April 1999. We have 35 farms [supplying] direct, within a 20 mile radius of [Belton Farm], collected daily, all Farm Assured, all RSPCA Freedom Foods approved. We've put in - we have a guy who's an ex-producer who did a lot of training, who has put manuals on farms, so all our nutritional and health records, all our farms are audited with the National Dairy Scheme, and we spend a lot of time with our producers, in producer meetings [...] they wanted to join us because we offer quite a good bonus scheme to encourage them. We also take big discounts off if anybody isn't up to scratch - low butterfats and proteins. And we've seen tremendous results from it, both in yield and in consistency of the make. (B: 2000)

8.3.4 Organic milk and the Belton network

In 1998, the managers at Belton were fully aware of the productive opportunity presented by organic cheese, in the form of a premium arising from the supply shortfalls and rising consumer demand. They also perceived many capability-related obstacles, including the conversion of a modern dairy herd, which operates with low levels of farm labour:

JUSTIN BECKETT: The only premium they [i.e. retailers] are prepared to pay is on organic, and they will pay anything if they can get it - and they can't get it, that's the problem [...].

INTERVIEWER: [...] With organic produce becoming a premium product, with customers willing to pay more for that, will it feed through from organic milk into organic cheeses?

JUSTIN BECKETT: It is being consumer-driven, definitely. I mean, it is not something that we want to do. [...], the growth is huge - we are being asked by our customers to produce organic [...] It's a very difficult area. I mean, it's going to come, I think, but it's being resisted. (B: 1998)

Since that time, the pace of change has been rapid. Soon after the move into direct purchasing of local supplies, Belton built its first international links to secure supplies of organic milk for cheese-making. Downstream pressures have thus contributed to a further extension of Belton's upstream network. The multiple retailers have encouraged Belton's expansion into organic cheese production. Pressure has been exerted directly, through personal contacts with retail buyers, and indirectly, through the category managers. Belton's response also illustrates how newly-developed capabilities (i.e. in negotiating direct supply contracts) can be deployed in order to grasp an emergent productive opportunity:

INTERVIEWER: So how does the organic supply fit into this new system?

JUSTIN BECKETT: One of the problems with organic was that we just could not get supplies of English organic, and we tried. I've been trying for 18 months, two years to try to get milk, English milk, and I just couldn't. So we took the decision to start buying milk in from the Continent and mainly to supply one retailer with organic initially and then it developed on that we were talking to the category manager and they were very keen on it, so we took the plunge really, and quite a risk in that we - we brought milk in from Belgium and we rejected it, [...] it had problems [...] so we rejected it, turned it back. We actually found that the best milk was from Denmark. It comes over now on the

ferry, it takes 17 hours to Immingham, and then goes from Immingham to here which is about five hours. So it is actually fresher than every other day collected Milk Marque milk. (B: 2000)

One perceived advantage of Belton's diversification into organic cheese was that the firm's efforts to foster relationships with other category managers, and to engage more directly with retailers, were strengthened (Figure 8.5). However, the firm was not standing still. In 2000, it was in the process of converting its own dairy to organic production, and was also helping members of its milk field to convert. This is another example of the complex layering of an evolving network. The newly-formed network connections were already channelling knowledge practices that seemed set to prompt a further round of structural change. In this instance, capability development was stimulated by the ability of Justin Beckett and his managerial team to anticipate future customer requirements (i.e. an increasing demand for locally-sourced organic milk that will take effect once the current domestic production shortfall has been overcome). A similar process of reflection and redeployment was illustrated by Beckett's retrospective assessment of developments in the period preceding liberalisation. He acknowledged that traditional differences between territorial cheeses had been eroded, reducing the scope for product differentiation. The problem was interpreted as the result of more standardised production methods and the displacement of traditional sources of regional variation, such as 'starters' (i.e. bacterial cultures that set the cheese), by generic substitutes. The managerial team was responding to this by making new connections, in a conscious effort to recover some of its lost artisanal practices:

JUSTIN BECKETT: We have been working closely with a lab down in the South West, and we have been looking at different [starter] strains. Some of these strains, of these 'mother cultures', have come originally in the 1960s, have come from up here. So they were the original Cheshire cheese strains and

would have been developed. So they have actually been frozen in nitrogen and propagated. So we are actually looking – we know a lot of these strains, and that's been very exciting for people like [named retailers], who have been very excited about some of the work we have been doing here. The other thing we have been keen to do over the last few years, with Brian and Jim now, is that we have been developing the [starter] strains, and the way we actually make the crumbly cheeses, and actually going back to the traditional recipes.

INTERVIEWER: So it's a kind of rediscovery?

JUSTIN BECKETT: Yes, I think that was lost in the 1970s, 1980s and early 1990s. There has been a lot of cheese that just wasn't - didn't happen really. So now I think that's really interesting, the way that it is coming back [...] We believe now, and certainly in the tasting panels that our customers are doing, there is a difference. We've worked on that. (B: 2000)

In summary, this period saw an intense pattern of interaction between upstream and downstream actors in Belton's focal firm network, giving rise to several new productive opportunities. In pursuing these opportunities, the firm has extended the scope and complexity of its network (Figure 8.5). These structural changes have been facilitated by a simultaneous extension in the range of its capabilities, or productive services. The other striking change in the Belton network during this period was the increase in links to regulatory bodies. The firm has obtained certification for food safety, food quality and traceability, including environmental and animal welfare issues connected to the manufacturing process (i.e. RSPCA Freedom Foods, Soil Association, Farm Assurance, European Food Safety Inspection Service (EFSIS), and ISO9000). As with the upstream developments, the imperative of extending the firm's existing capabilities has been met by employing a manager who was previously located in another part of its network. Belton recruited a quality manager, formerly employed by one of its category managers.

Figure 8.5 Belton: network map 1998-2000

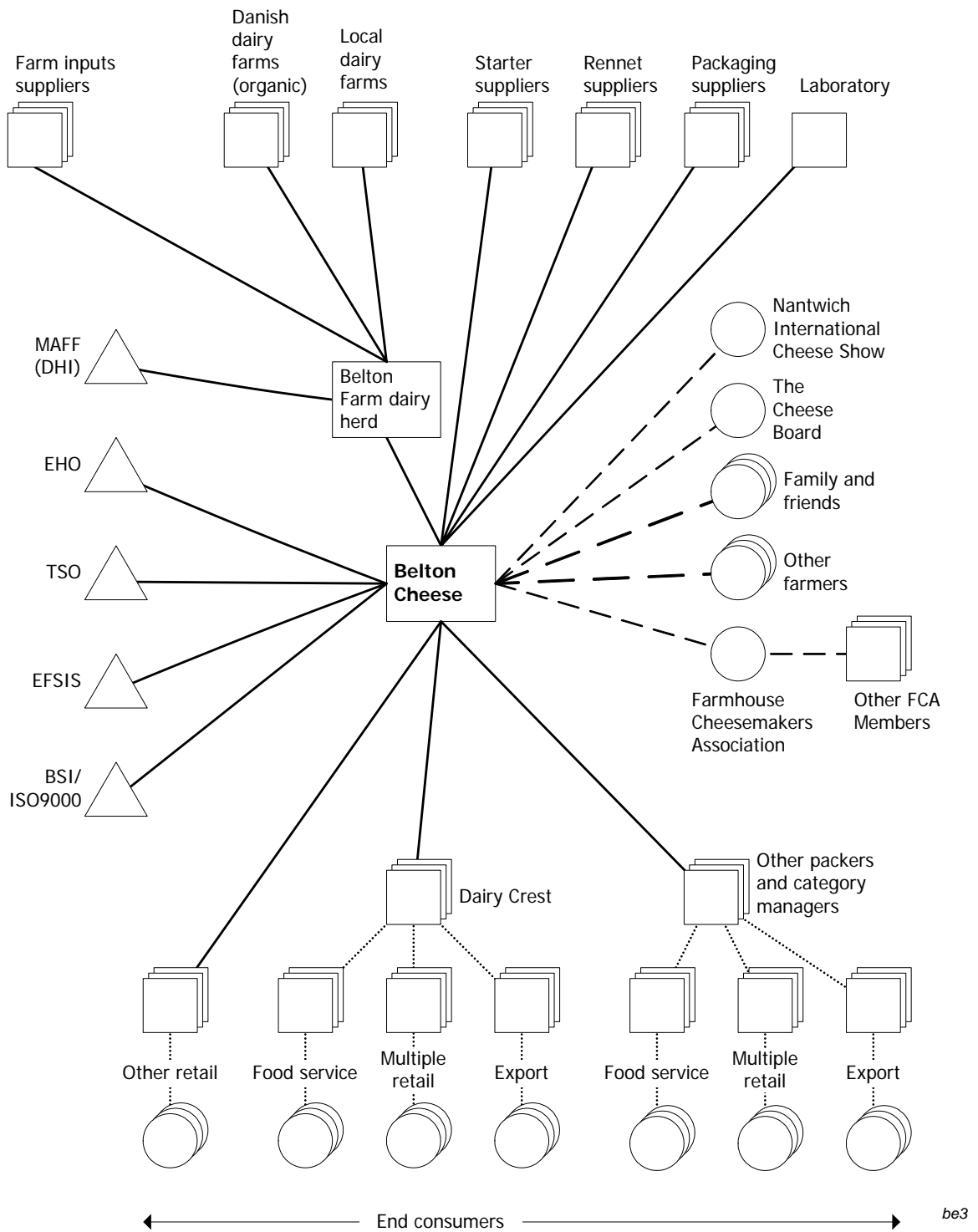
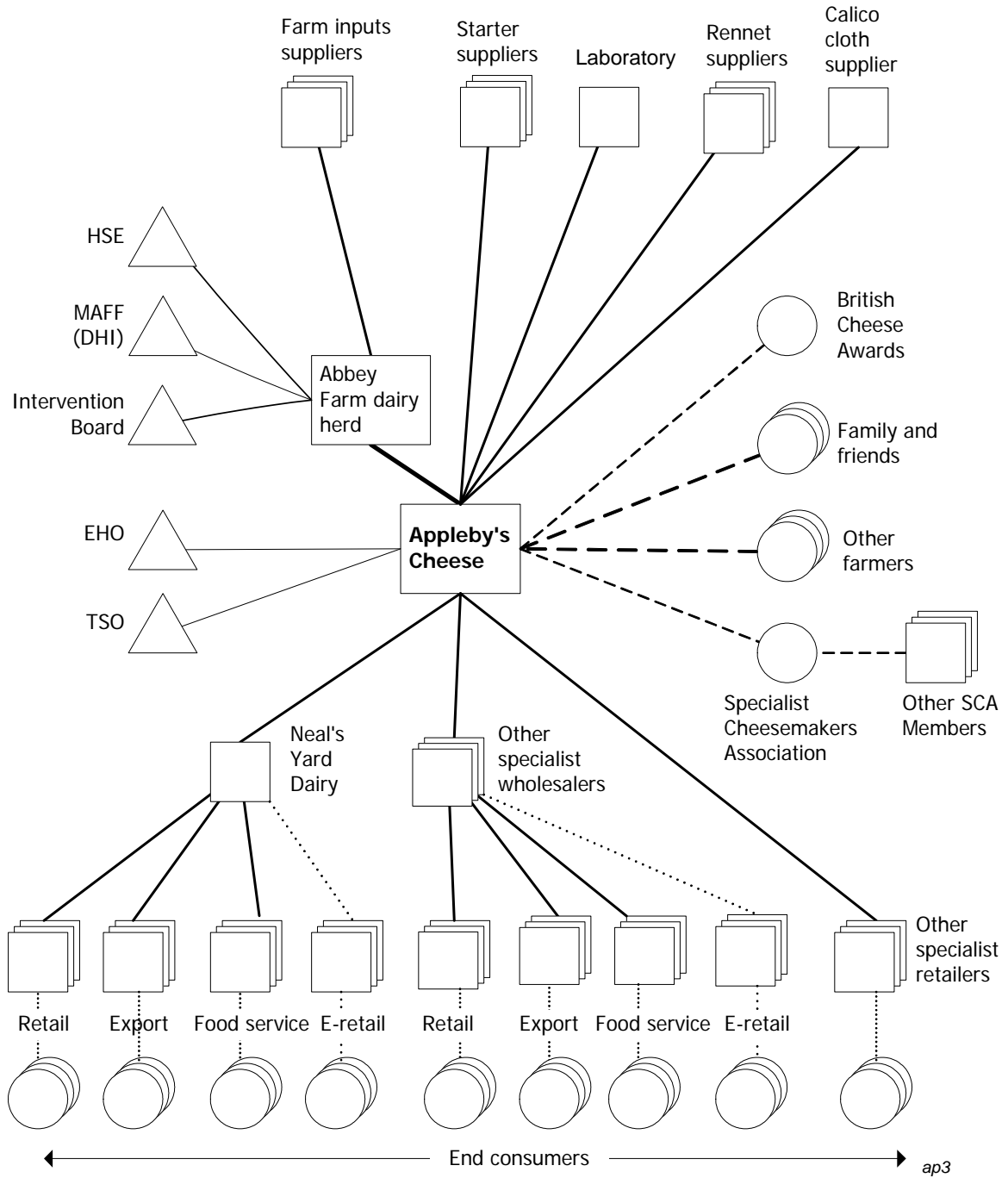


Figure 8.6 Appleby's: network map 1998-2000



8.3.5 Change in Appleby's network: 1998-2000

In contrast to Belton, Appleby's focal firm network was stable during the period 1983-1998 (Figure 8.3), and the cheese-making business saw no significant volume growth. However, as in the 1960s, further probing revealed a more dynamic picture, that was effectively masked by the apparent calm and continuity at the surface. Some firm-level effects were already evident at the time of the 'Phase Two' fieldwork interviews, indicated by minor changes in network morphology (Figure 8.6). In other cases, it was possible to isolate factors that appeared likely to exert an impact on the focal firm network in the near future. This section outlines three developments, relating to: food industry regulation, equipment sourcing and Internet retailing. It traces the relevant network connections, exploring their influence on managerial perceptions of productive opportunity and on the creation of new productive services.

8.3.6 A different experience of regulation and rationalisation

The first change identified in August 2000 was a perceived intensification in the regulatory pressure exerted on small artisanal cheese-makers:

CHRISTINE APPLEBY: Talking about change, there was very little pressure from Environmental Health Officers in those days [the 1960s], very little pressure to pasteurise cheese, all this sort of thing. Whereas now it is quite different, there are pressures from these groups. There's pressure from the public, pressure from the media, pressure from the Environmental Health Officers, all the time, isn't there? (A: 2000)

This trend was identified in the historical narratives, where it was associated with the resurgence of the ‘control’ dynamic in the current configuration (Section 7.8.1). However, the fieldwork revealed that the two firms had experienced this resurgence in entirely different ways. Furthermore, the contrasting subjective experience of this dynamic at firm level was a product of the earlier divergence in their network morphologies. For Belton, downstream connections with category managers played the major role, encouraging the firm to embrace a number of certification schemes, each of which required detailed quality assurance procedures (Section 8.2.5). For Appleby’s, the experience of regulatory pressure was focused on long-established ties with governmental regulators, notably the local environmental health and trading standards agencies, rather than through its wholesaler and retailer customers. The differing nature of these connections was reflected in the capabilities developed in each firm. While Belton had incorporated highly-formalised practices, derived from industrialised producers such as Dairy Crest, Appleby’s had retained traditional practices of product and process control, making much greater use of tacit knowledge. For example, by drawing on the experience of the farm’s herdsman, the firm is able to assess the health of its dairy cows, controlling for one of the key determinants of milk quality. Avoidance of certain practices, such as seven-day production and combining cheese-making with butter-making in the dairy, has also enabled the firm to avoid serious problems in the cheese. However, the managers were becoming sensitised to the increasing cost of regulation and the threat that it might pose to the integrity of its artisanal product. The nature of the challenge was typified by the unresolved debate regarding pasteurisation, crystallised in highly-publicised events, such as the ‘Lanark Blue’ controversy of the mid-1990s (Section 7.8.2). Appleby’s postponed transition from Imperial to Metric measurement illustrated a less serious aspect of this contested territory, pitching generic control and regulation against local tradition:

INTERVIEWER: You still work in Imperial?

CHRISTINE APPLEBY: Yes, at the moment. We're due to go metric on the first of September [2000], but we've postponed it.

INTERVIEWER: Is that a requirement?

CHRISTINE APPLEBY: Well, we've spoken to the local weights and measures people, and they say, alright, [...] we've invested in metric scales about three or four months ago, so we're just waiting for a suitable date to convert. But at the moment, we're still in pounds and ounces.

INTERVIEWER: It must be very difficult ...

CHRISTINE APPLEBY: The trouble is, it's just mental change really. I mean, most of our cheese goes into the wholesalers in pounds and ounces, and goes out in metric anyway; nobody's ever complained, they're quite happy – and yet we sell our milk in litres, it goes into the vat in litres [laughs] and comes out in pounds, it's ridiculous really, but that's the way it is, isn't it? (A: 2000)

Appleby's has also been under some pressure to rationalise production. The main focus for innovation has been to increase efficiency on the Appleby's dairy farm, rather than in the cheese-making business. For example, in 1994, a computer-controlled floating rotary milking parlour was installed. This allocates precise rations to the cattle, based on each animal's lactation and related factors. This productive opportunity was the result of informal network connections; members of the family saw a similar parlour in operation while visiting friends in Australia. The period 1998-2000 saw several minor changes to the cheese-making equipment and process (e.g. replacing wooden shelving and cheese molds with modern equivalents; revising working procedures). The catalyst for innovation in the cheese dairy

was a change in the firm's *internal* network rather than its external connections. In 1998, following the sudden departure of a long-standing cheese-maker, Edward Appleby spent several months making the cheese. This unexpected experience led the family to modify certain artisanal practices:

CHRISTINE APPLEBY: So little things, little old-fashioned, silly things we were doing. Yes, we've learned, when we got hands-on in there; it's amazing.

EDWARD APPLEBY: You've got to do it yourself first.

More fundamental change was constrained by a strong ethos of making cheese in a traditional way, rather than 'for a price'. However, the continuing tension between network-level pressures towards rationalisation and the family's desire to protect artisanal knowledge were evident as the conversation continued:

CHRISTINE APPLEBY: Yes, we haven't actually altered the product, but we took away a few things we did because we had always done them, but which haven't affected the product in any way.

EDWARD APPLEBY: Because, like everything else, you've got to cut costs; and I don't know where that ends (A: 2000).

8.3.7 Appleby's and its suppliers: the cloth sleeve experiment

The second change arising in this period was that the Appleby's had formed a closer connection with one of its key suppliers. During the 1998 fieldwork interviews, the firm was having technical problems with a new type of cloth sleeve, which was being tested as a cost-

effective replacement for traditional calico binding cloths. The new sleeve (or 'stocking') was not providing an adequate covering to the cheese, resulting in surface damage that would be unacceptable to the firm's wholesalers and retailers. By the time of the 'Phase Two' interviews, the firm had returned to its traditional bindings. However, in the intervening period, efforts to solve the sleeve problem had led Appleby's to make direct contact with the cloth supplier and both firms had worked closely to seek a solution. Following this experience of close collaborative work, the new connection was formalised, by-passing a long-established intermediary:

INTERVIEWER: In 1998 you were talking about moving into cloth sleeves for your cheese. I wondered about that, as one of those changes you were making.

CHRISTINE APPLEBY: Yes, well we've gone back to binding it, as we actually found that there was quite a lot of bruising on the cheeses with the sleeves. [...] And we're very particular about sending our cheese out looking absolutely perfect, so that wasn't successful really, the initial experiment.

INTERVIEWER: Presumably the people that are supplying those, they can't have that many customers can they? It's quite a specialist product.

CHRISTINE APPLEBY: Well, surprisingly enough, they're an old-fashioned company that are still in business. We've actually now switched all our calico purchases, like we buy rolls of calico plus strips, to this [named company].

INTERVIEWER: So it's the same company? [i.e. 'Calico cloth suppliers', shown as an indirect network connection on the draft network map, finalised version reproduced as Figure 8.3]

CHRISTINE APPLEBY: Yes, but whereas before, we were buying through an agency, who we buy our rennet and everything else from, now we buy direct from them. Basically, just one of those situations where we used to buy from the cheese supply company and now have sourced it direct and are getting a better price. And it came about from doing this experiment, and work with the stockings [i.e. the cloth sleeves].

INTERVIEWER: Oh, I see; because you started talking to them directly?

CHRISTINE APPLEBY: Yes, right, because they offered the service of making everything we wanted. They do their own stitching, so they made what we wanted. (A: 2000)

This sequence of events can be rationalised in terms of the simple economic imperative of pursuing, 'a better price' by buying direct. However, the process through which the price was secured exemplifies the close interaction between the Penrosian learning dynamic, exercised across a dyadic relationship, and subsequent structural change in the focal firm network.

8.3.8 Artisanal cheese-making and the Internet

The third change was associated with the introduction of specialist food retailing via the Internet. The Appleby's had experienced this in the form of increasing requests to supply smaller, packaged cheeses that could be distributed directly via mail order. The source of the pressure appeared to be from existing retailers, who were in the process of establishing web sites. The family equated this development with previous demands to cheese in block format:

INTERVIEWER: So I was just wondering if there had been any changes to [the product range] since 1998.

CHRISTINE APPLEBY: No, it hasn't actually, exactly the same. A lot of pressure to make a smaller cheese – but we haven't – particularly for the web sites and for that market, but we haven't actually gone into for that yet [...] They want a whole cheese, they don't want to get into cutting and packaging it. So they want the two and a half, two and a quarter pounds are a bit too big. So they want something much smaller. But then, you know, it goes back to the [19]60s, are you going to make a product at a price or are you going to stick to making a product that is, you know, of the quality that you are happy with (A: 2000).

Despite Appleby's previous emphasis on maintaining strong personal relationships with downstream network actors (i.e. specialist wholesalers and conventional retailers), there had not been any direct contact with the new breed of Internet-based retailer; in network mapping terms, these remained 'blind' links (Figure 8.6). However, in discussion it was apparent that Appleby's was making use of its existing informal ties in order to assess the productive opportunity arising from this new and untried distribution channel. Farming friends, who had already experimented with the retailing of other specialist foods via the Internet, were the main influence on current managerial perceptions and conjecture. These interactions raised concerns over the technical and market potential of E-retailing, while also highlighting certain limitations in the firm's existing capabilities. As a consequence, they remained alert to the possibilities but understandably cautious:

CHRISTINE APPLEBY: You see, we've got one or two friends who are marketing [...] various things through the internet, and just watching the space really, to see if its – you know, if you've got half a person on the premises and you need to utilise them and there is a margin there. But sometimes you can be running around, and distribution is a problem, distribution is expensive and you're talking about guaranteeing next day delivery and all this sort of thing. Well, we're not – it's not something we're geared up necessarily to do ourselves, but we've got to support these people who are trying to do it,

really, and make sure they have got the products to do it. I don't know if it is going to be as wonderful as everyone makes out, is it? [laughs] (A: 2000)

In a subsequent conversation regarding likely Internet developments, the Appleby's discussed their first impressions of the new delicatessen websites, which had begun to promote 'Mrs Appleby's Traditional Cheshire Cheese' to consumers in England, the United States and across the world. The discussion highlighted the different ways that Appleby's and Belton had achieved their initial presence on the Internet. Appleby's was visible as a result of the independent activity of e-retailers, none of which were known to the firm. Belton's presence was the result of the firm creating its own site. This did not include any retailing facilities, since its primary purpose was provide information to trade customers, such as the multiple food retailers (Section 8.1.2).

8.4 A reflection on the narratives

8.4.1 Structure and agency in the connected firm

The central narrative has explored the growth of two artisanal firms over an extended period, with a particular focus on the role of the focal firm network as an embedded social structure, constraining and enabling action at the level of the firm (Granovetter 1985, Johannison and Monsted 1997). In the modified Penrosian interpretation, network connections facilitate an extension of firm-level learning, beyond the confines of the managerial team. The attempt to trace the resulting interactions over time can be seen as an elaboration of Kogut's (1993) argument regarding the influence of network position on learning:

‘Firms learn, but in the context of what they can know. The disposition of the availability of knowledge is structured by the structure of social relations. What firms know is determined by their position in an industrial network’. (Kogut 1993: 145).

In its modified Penrosian variant, Kogut’s structuralist argument is complemented by an emphasis on the managerial agency, exercised across conventional legal-administrative boundaries. This provides the basis for a more dynamic, multi-level explanation of growth in the connected firm. For example, the narrative indicates how Belton’s strong ties with its category manager, Dairy Crest, enabled it to acquire the new knowledge practices. However, Belton’s managerial team deployed these productive services in ways that enabled it to maintain a degree of differentiation, enlarging its scope for independent action. Appleby’s pursued a different course, but the firm’s capacity to forge and maintain connections with a number of specialist retailers and wholesalers enabled it to capitalise on its artisanal product range, securing higher margin markets and learning how to ‘build a brand’. The central narrative has explored the profound impact of different forms of connection on the growth of these two firms over half a century. However, it has shown that neither firm was the passive recipient of network-level forces. The interweaving of the historical and central narratives represents a challenge to the determinist flavour of many industry-level evolutionary interpretations, bringing into sharper relief the countervailing impact of entrepreneurial networking (Johannisson 2000). Its path creating effects were exemplified by Appleby family’s decision to load their Land Rover with traditional cheeses, establishing an entirely new pattern of network relationships. The crude evolutionary counter-argument would be that Appleby’s have simply occupied a classic market niche, shielding them from the harsh forces of environmental selection. From this perspective, the existence of an isolating mechanism would be treated as a sufficient explanation of the observed effect. This ‘RBP Mark I’

interpretation offers an inadequate explanation of growth, since it relies on a retrospective reading of the evidence that fails to address the actual *process* of occupation (Sections 2.4.3 and 2.4.4). More specifically, it sheds no light on the way in which productive services and productive opportunity have interacted (i.e. how capabilities were developed and applied), as the firm sought to maintain itself in relation to the isolating mechanism. Clearly, there are dangers of the intentionality of particular network actors. One might also question the extent to which firm-level learning was imposed, rather than being the product of independent action. However, these tendencies have been mitigated by examining the unfolding process over an extended period, and by seeking to triangulate the narratives across different levels of analysis (Section 6.5.7).

This concluding section of this chapter broadens the scope of the central narrative to include some hitherto ‘silent voices’ (Section 6.3.3). It is divided into two parts, addressing the departure of some long-established artisanal firms and the arrival of a new generation of cheese-makers during the current configuration. Reflection on these ‘other tales’ provides a further opportunity to assess the modified Penrosian perspective and its capacity to analyse the interplay of structure and agency in connected artisanal firms.

8.4.2 Other cheese-making tales (a): departures

The central narrative has focused on two firms that have continued to grow and prosper over a turbulent half-century. In common with Penrose (1959, 1960), it has not sought to address the decline or exit of connected firms. The original Penrosian analysis had assumed that some firms could grow, then sought to outline the principles that governed the process amongst this

class of firm (Penrose 1959: 7). The final chapters of *The Theory of the Growth of the Firm* granted one small concession to those concerned with pathological processes. Penrose explained how larger firms could block, remove or invade interstices, destroying the productive opportunity of their smaller counterparts (*ibid*: 228) (Section 4.3.9). However, the modified Penrosian framework can be used to trace the operation of these processes in the firm and network. They have been signalled by well-publicised events in the current configuration, including recurrent crises and failures amongst long-established artisanal cheese-makers and official criticism of an industrial structure that appears hostile to smaller firms (Competition Commission 2000, Elliott 1999, Errington 1996, Scott 2000). This section accounts for the departure of one leading artisanal cheese-maker. While any detailed explanation is bound to include firm-specific elements, it has been possible to isolate a systematic set of influences. In the course of the 'Phase Two' fieldwork, a prize-winning Cheshire cheese-maker, V.J. Hares & Son, announced that it would cease production. The chairman of the Specialist Cheesemakers Association commented on this event in the following terms, 'It's a terrible tragedy for British cheese-making that a champion cheese-maker cannot stay in business [...] But he is typical of many tenant farmers and small cheese-makers, particularly territorial specialists.' (cited in: Crosskey 2000a: 8). Like Appleby's and Belton, the firm had been established in the early 1950s and was subsequently passed on to the next generation of the family. The current owner, Richard Hares, was a tenant farmer, milking 160 cows and producing approximately 170 tonnes of Cheshire cheese (n.b. this volume may be contrasted with Appleby's production of 80 tonnes and Belton's much larger output of 4,500 tonnes). The firm was notable for the quality of its output; in the Summer of 2000, it was voted Supreme Champion at the Nantwich International Cheese Show, the fifth occasion that it had received this award. However, production capabilities alone provided no

defence against competitive pressure, conveyed through the focal firm network. The owner's rationalisation of these events made reference to price competition in the multiple retail supply chain:

'We made a good product, but you can't sell it. We've had to make a business decision – you can't run a business on the volume we're making [...] Last week the value of my cheese sold through Mendip Dairy Crest was £3,100 but three years ago we used to do £7,000 a week. That's how it's changed. I presume the housewife's been totally brainwashed to buy Cheddar and we're just left with the delicatessens. I don't know what's happened to our market – its disappeared.' (Richard Hares cited in Crosskey 2000a: 8)

Other cheese-makers and food industry contacts have endorsed this view, arguing that commoditisation posed a fundamental threat to artisanal producers, which was exacerbated by a precipitous fall in the milk price. Firms that lacked the protection of an established brand identity were unable to maintain a premium for their product in either multiple retailer or delicatessen markets:

CHRISTINE APPLEBY: The difference between ourselves and somebody like Hares is that his cheese price has gone down with the commodity milk price, whereas our cheese has been able to maintain its price, and hasn't gone down with the big fall in the milk. Which has made the difference between ourselves still being here and Hares not still being here. (A: 2000)

However, this short-term effect was the product of multi-level interactions spanning a much longer period of time. Attention to processes of decline helps to reveal the 'dark side' of network connection, notably the tendency for close ties to lock firms into unproductive relationships, or to preclude alternative courses of action (Gulati *et al.* 2000b: 210-211). In

this case, the process was governed by a three-way product categorisation introduced the early 1960s, which interposed an isolating mechanism between existing artisanal cheese-makers (Section 8.2.2). The short-hand explanation for the decline of firms such as V.J Hares & Sons is that they pursued an *intermediate* course, between that of Appleby's and Belton, whereby they retained both traditional artisanal practices and pre-existing downstream links. These connections generated an unsustainable tension between the productive services of these firms and the requirements of the powerful network actors to whom they were now exposed. While the inherent, organoleptic qualities of their product was not in question, production costs were much higher than those of creameries, and of farmhouse cheese-makers that had adopted quasi-industrial practices. Multiple retailers conveyed their demands (i.e. compliance with the control-oriented template of 'continuous, consistent quality') through the MMB's successor, Dairy Crest. Artisanal cheese-makers in this intermediate group experienced the re-assertion of the control dynamic as an increasingly hostile regulatory burden, requiring uneconomic levels of investment in plant, equipment and traceability regimes:

JUSTIN BECKETT: I think that probably, for someone like [named cheese-maker]. He would have so much legislation on him, so much testing, product testing, that if you're only producing 150 tonnes of cheese a year, you're just completely burdened by all this, all these regulations, that you've got to be producing something very different, and at £6,000 or £5,000 per tonne, to be able to cope with all that.

INTERVIEWER: You mentioned that you have just taken on a new production guy, and you have got a quality person. I suppose he would not have had as many people in the team as you have got?

JUSTIN BECKETT: The structure in place, no. So it's becoming harder for them, I think, to be able to get around all of that.

The tale of these cheese-makers carries a strong undercurrent of path dependence. In short, they appear to have become bound into an unchanging set of knowledge and organisational practices. Similar outcomes have been variously depicted in the strategy literature in terms of the operation of institutional isolating mechanisms (Oliver 1997), the existence of core rigidities (Leonard-Barton 1992), and adherence to industry recipes (Spender 1989). In the modified Penrosian framework, the process can be interpreted in a way that incorporates managerial agency, by highlighting the cumulative effect of interaction between productive services and productive opportunity in the focal firm network. For example, in the Appleby's case, this interaction led to the creation of a new *strategic* isolating mechanism, based on the firm's capacity to build a specialist distribution channel and a distinctive brand identity. Firms that retained their familiar downstream links spawned a different set of connections. These revealed a contrasting set of productive opportunities and set in train a different cycle of managerial conjecture and agency. As the central narrative has indicated, the effects of these processes may not become apparent until for an extended period. Block cheese production was introduced in the early 1960s, yet the resulting divergence of firms such as Appleby's, Belton and Hares would not be fully revealed until the 1980s, 1990s and beyond. Was the departure of a prize-winning firm like V.J Hares & Sons inevitable? The concealed nature of capability development has been seen as both a basis for competitive advantage and a caution against excessively voluntaristic prescriptions (Section 2.4). The modified Penrosian framework has highlighted another facet of the process, namely its temporal and spatial complexity of the process. The cumulative nature of Penrosian learning, which draws on existing connections but also helps to create new ones, suggests that cheese-makers like Richard Hares were faced with increasingly restricted zones of manoeuvre. By the time of the initial liberalisation of the early 1980s, their modified production practices had already

rendered them less well-disposed to the kind of entrepreneurial networking undertaken by more self-consciously artisanal firms like Appleby's. Once these new connections were in operation, they became predicated on a growing brand identity and established personal relationships. Firms that had remained wedded to the old, volume-based distribution channels would have found them increasingly difficult to pursue. By the mid-1990s, these intermediate firms were competing against farm-based firms with three decades' experience of pursuing the productive opportunities arising from block cheese manufacture. They faced the same rationalising and regulatory pressures, but had not developed from their downstream connections the managerial and entrepreneurial services available to firms like Belton. Under two contrasting configurations, spanning half a century, these complex firm- and network-level interactions have yielded fundamentally different outcomes for outwardly similar firms.

8.4.3 Other cheese-making tales (b): arrivals

The divergent artisanal-industrial configuration was also marked by the entry of many new cheese-makers and associated firms (Sections 7.1.1 and 7.8.2). For example, Smart's Traditional Gloucestershire Cheeses was established in 1986 by a person with no prior experience of cheese-making. At the age of 60, Diana Smart acquired an existing business and was taught the traditional methods by the former owners, two elderly sisters whose family had been making cheese for several generations. The firm now supplies specialist retailers, including Neal's Yard Dairy, Fortnum & Mason and Paxton & Whitfield. There has also been an increasing interest in non-dairy cheese-making, including Stephen Fletcher's 'Ram Hall Dairy Sheep' in the West Midlands and Judy Bell's 'Shepherd's Purse' in Yorkshire. Both of these firms produce distinctive ewe's milk cheese for specialist and multiple food

retailers (Harbutt 2001, Hughes 2001). The historical narrative made reference to the 'periodic resurgence of taste' in this configuration (Section 7.8.2). However, the arrival of these new firms was itself instrumental in re-asserting the consumption narrative, 'constructing and exploiting variety' (Section 7.3.3). Gastronomic critique had proved relatively ineffectual under the formative industrial-artisanal configuration, and was effectively silenced by state intervention and wartime imperatives in the ensuing era (Sections 7.6 and 7.7). However, from the 1970s, elite consumer concerns were mobilised through entrepreneurial networking. The initial focus was on distribution, and a re-invention of the intermediary role formerly occupied by cheese factors (Section 7.5.2). There were several influential figures, including Patrick Rance and Randolph Hodgson. Rance transformed a passion for fine cheese into an evangelical enterprise, supported by speaking engagements, books and articles (e.g. Rance 1982); his pioneering specialist cheese shop, located in Streatley-on-Thames, inspired many similar ventures. Hodgson was the founder of Neal's Yard Dairy, a specialist food wholesaler and retailer in Central London that acted as a catalyst for many small producers, including Appleby's. Neal's Yard Dairy has concentrated on the distribution of raw milk cheese from artisanal producers. Its worldwide mail order and wholesale service has extended the market for these idiosyncratic products (Section 7.8.2). Two other events have influenced the revival, the formation of the Specialist Cheesemakers Association (SCA) and the creation of the British Cheese Awards. The SCA was founded in February 1989, in response to the Minister of Agriculture's announcement that he intended to ban the sale of unpasteurised cheese. This membership organisation is a forum for those involved with the specialist cheese market, including 111 cheese-makers and more than 90 wholesalers, retailers and other members. The British Cheese Awards were created in 1994. They have a broader remit, promoting excellence in quality and distinctive regional character

to national and international audiences. However, while the industrial manufacturers have a strong presence at the Awards, they have become a particularly important show-case for artisanal producers (Section 7.1.1), not least as an indirect effect of their sponsorship by a multiple food retailer (i.e. initially Tesco and, from 2001, Waitrose) and a specialist consumer magazine (i.e. 'BBC Good Food Magazine').

The following interview extract provides a graphic illustration of the process of conjecture and deployment of productive services in pursuit of a new productive opportunity, as perceived by one of the new generation of cheese-makers. The interview was conducted as part of the exploratory fieldwork, in Spring 1998 (n.b. the material has been anonymised at the request of the respondent):

INTERVIEWER: Can you tell us how the business got started?

CHEESE-MAKER: Our main, core enterprise was dairy cows and the introduction of quotas had left us with limited opportunities to expand that business – although we wanted to. It co-incided with me leaving college [...] we built the (dairy cow) herd up to accommodate me coming home, but we had not got sufficient quota, so we had to look around and one thing led to another; I can't really put my finger on why we went for sheep, but we were keeping a few sheep, dairy cows were at that time still profitable. We'd heard about sheep milk – that was about as far as it went then. I looked into it and was a bit sceptical but still kept looking at it – something just kept drawing me towards it, you know? To cut a long story short, we bought about 40-odd sheep in 1988 and started up in January 1989 and we milked cows and sheep on the farm together until the autumn of 1995 when we took our herd of cows out of production, sold the cows and leased the milk quota out, because at this time the sheep were expanding quite rapidly and we just couldn't physically accommodate the two enterprises. It looked as though cows were – as it turned out, are – not going to thrive, at the moment, anyway.

The interview explored the connections made by a newly-formed artisanal firm. The cheese-maker's account suggests a similar pattern of entrepreneurial networking to that undertaken by Appleby's in the early 1980s. In both cases, Neal's Yard Dairy played a similar intermediary role. The firm's presence at cheese competitions was also identified as the basis for new connections, by providing direct exposure to commercial buyers and journalists. Success in several competitions re-inforced the firm's commitment to cheese-making, displacing a number of other speculative ventures:

INTERVIEWER: How do you market [the cheese]?

CHEESE-MAKER: Initially, it was foot-slogging. My mother did 60,000 miles in two years, just going round in the car, and then it was before we started serious cheese-making. Then we were selling sheep's milk in cartons, doing yogurt, a bit of ice cream, a bit of soft cheese – we were just 'throwing mud at the wall and seeing what stuck' [...]. So, we then were successful at some cheese competitions in '91 and '92, and have been ever since, and that has helped us possibly more than anything else; it has sort of pushed us in front of certain people. [...] Being members of the Specialist Cheesemakers Association gave us the chance to go. They organise an annual cheese festival, whereby you went, you had a little stand, half the size of this table, three foot by three foot, and they invited the trade in, and you put out your wares and they could come and taste. And that was about the first real catapult, because it gave us the chance to put our cheese in front of serious cheese buyers. [...] That was the first opportunity – that went down very well. The biggest single influence was Neal's Yard taking it on, because they have such a wide web of influence, especially, you know, in the affluent South, South East area. That has put us in front of a few people. And then Juliet Harbutt, who organised the British Cheese Awards, she's been very good. She's been enthusiastic about it, and I think likewise, she's involved in so many various cheese promotions, [our cheese has] got a foot under the noses of various other people. And we've appeared in *BBC Good Food Magazine* – not us, the cheese has, I should say – and *Country Life*. It has [also] been in some of the national Sunday supplements. And we've got written about by various other people. [...] And so we've done it – that's really the way it's gone.

The concluding extract introduces a final twist in the cheese-maker's tale. In common with several 'new generation' artisanal cheese-makers, this firm had formed a relationship with one of the largest multiple food retailers, supplying pre-pack and delicatessen counter ewe's milk cheese for its premium foods range. The retailer had introduced a new 'partnership' approach, which allowed for a gradual increase in the number of stores supplied, joint promotions in local stores and technical support. The new cheese-maker's perceptions of this relationship were measured, recognising the limits of this productive opportunity and the potential for counter-productive effects. However, the artisanal cheese-maker's sense of control over connections with much larger firms is in sharp contrast to the recent experience of incumbents, such as V.J. Hares & Son (Section 8.4.2):

INTERVIEWER: How do you see the balance of power between yourself and the big retailers, in the sense of the long-term relationship, with [named retailer]?

CHEESE-MAKER: I think the balance of power is, funnily enough, with us at the moment, because they want it and we've got it, and we haven't got enough of it, but that's only, obviously, a very short term situation [pause]. I suppose that in the short term it is fairly evenly balanced because they are going to take speciality cheeses from different parts of the country and put it into stores in that area, so you know – they're happy, we're happy. I think if it went too far, say, in their favour, we would then be struggling to have – how shall I put it? – people would start and desert our specialist customers, because they could find the speciality cheeses in the supermarkets – and it's the convenience thing, you know, that's all been well documented. So, I mean, the specialist retailers, like specialist cheese shops, are benefiting, because – you've seen specialist cheese counters in supermarkets, they're terrible, you know; it's cheddar, cheddar, cheddar, cheddar [laughs].

As Belton's foray into organic cheese-making has demonstrated, smaller firms can indeed gain a temporary advantage through the standard 'RBP Mark I' formula of scarcity and

inimitability. The more interesting question is how they will seek to maintain their isolating mechanism. The outcome is as yet unresolved. However, it is clear that the process will involve these new firms in a delicate negotiation between downstream connections that straddle the specialist market and the industrial supply chains of multiple food retailers.

8.4.4 Conclusion: growth and re-configuration in connected firms

The central narrative has illustrated how a modified Penrosian approach to studying the growth of firms can encompass both the firm and its focal network. The growth process in connected firms has been treated as a complex phenomenon that needs to be viewed at multiple levels over time. The narrative has explored the interaction of ‘control’ and ‘variety’ under the regulated and divergent configurations. In the former, the primary agent for the ‘control’ dynamic was the State. In the latter, this role was taken up by the multiple retailers, forming part of a rationalising logic that has been unfolding since the late nineteenth century. In the 1960s, multiple retailer agency had the effect of dividing cheese-makers into three distinct strategic groups, giving rise to divergent patterns of Penrosian learning. However, neither the network- nor the firm-level consequences of this divergence became apparent until the milk market liberalisations of 1982 and 1994. These re-structuring events co-incided with a resurgence of the ‘variety’ dynamic, initially in the hands of an emergent network of specialist distributors and retailers, but which has gained increasing attention from the multiple food retailers. The narrative has traced the growth process through the experiences of established firms that have managed to navigate the divergent configuration, others that have not survived, and new entrants that are still coming to terms with the implications of connections they have made.

CHAPTER 9 - DISCUSSION: A MODIFIED PENROSIAN APPROACH TO GROWTH

One of the primary assumptions of the theory of the growth of firms is that 'history matters'; growth is essentially an evolutionary process and based on the cumulative growth of collective knowledge, in the context of a purposive firm.

Edith Penrose

Foreword to the Third Edition: The Theory of the Growth of the Firm (1995a: xiii)

Her discussion of knowledge is quite advanced and worth a much deeper analysis. Penrose [...] insisted that economists interested in industrial dynamics cannot allow themselves to neglect the systematic analysis of this 'slippery' subject.

Bengt-Åke Lundvall

'National Business Systems and National Systems of Innovation' (1999: 71, note 14)

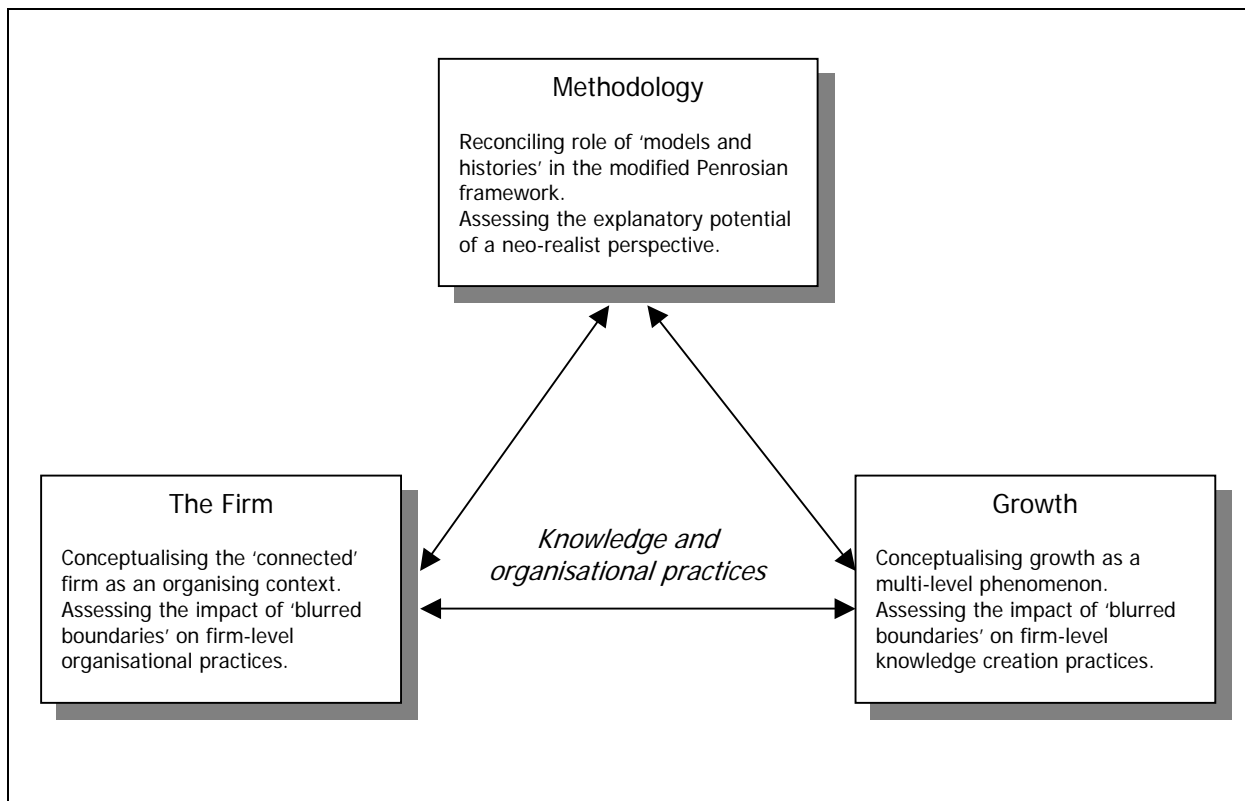
This chapter reviews the theoretical and methodological research questions, with reference to the findings of the empirical study. The discussion is presented in three related parts, which address the firm, growth and methodology respectively. The sections relating to the firm and growth each begin with a recap of relevant issues from the literature review, focusing on those that have helped to calibrate the Penrosian synthesis against rival interpretations. This is followed by an assessment of the modified Penrosian framework, illustrated with material from the analytically structured narrative. The methodological review is concerned with the explanatory potential of the narrative techniques adopted for the empirical study, and of the neo-realist approach to abstraction that was employed. In each section the discussion makes links to other recent work on knowledge and organisational practices and locates them to a broader historical tradition.

9.1 Themes for discussion

9.1.1 A discussion in three parts: the firm, growth and methodology

This chapter draws out the major themes of the thesis. It focuses on the theoretical and methodological questions that have been raised concerning the growth of connected firms (Sections 1.3 and 6.1); a commentary on the empirical questions is included in Chapter 10. There is also an opportunity to review relevant constructs introduced in the methodological discussion (Section 6.2). The present discussion is structured in three related parts, which address the firm, growth and methodology respectively (Figure 9.1).

Figure 9.1 Three themes: the firm, growth and methodology



The sections relating to the firm and growth begin with a recap of relevant issues from the literature review, focusing on those that have helped to calibrate the Penrosian synthesis against rival interpretations. This is followed by an assessment of the modified Penrosian framework, illustrated with material from the analytically structured narrative. The review of methodology is concerned with the explanatory potential of the narrative techniques adopted for the empirical study, and of the neo-realist approach to abstraction that was employed.

9.1.2 Unifying theme: knowledge and organisational practices

The recurrent and unifying theme in this thesis is the dynamic interplay between knowledge and organisational practices (cf. Grandori and Kogut 2002, Orlikowski 2002, Spender and Grant 1996). This is, in part, a reflection of Penrose's pioneering work on the role of knowledge in business organisation (Nonaka 1995). Different facets of these knowledge and organisational practices are revealed in the following discussion (i.e. situating the practices in the connected firm section, tracing the unfolding processes in the growth section, and explaining systematic features in the methodology section). Each section incorporates references to more recent work, locating the discussion within current research literature, while also providing a link to its historical precursors.

9.2 Connected firms in a network society

9.2.1 Challenging established perspectives on small firms

In Chapter 1, the Galbraithian image of an industrial landscape populated by two discrete and disconnected groups of firms was contrasted with that of the New Competition. In the former landscape, all of the action was concentrated in the hands of a few hundred, ‘technically dynamic, massively capitalised and highly organised’ corporations (Galbraith 1967: 21). An undifferentiated grouping of ‘small and traditional’ firms occupied a static, residual category that added little to our understanding of the modern economy. This appears to have been a fairly accurate account of the small firm population in the United States at the height of the ‘big business’ era (Best 1990, Chandler 1962). Furthermore, it remains an accurate reflection of many contemporary small firms, which appear disengaged from major corporations and from other organisations in their sector and locality (Curran *et al.* 1993, Curran and Blackburn 1994). However, in this thesis, attention was focused elsewhere. It focused on a proposition emerging from research into the New Competition (Best 1990, 2001), that a sub-category of small firms, here termed the connected firm, was playing an increasingly consequential role in contemporary industrial dynamics. The theoretical challenge was to provide an effective conceptualisation of this phenomenon that could be applied in an exploration of its growth.

9.2.2 The connected firm in a modified Penrosian perspective

Machlup’s (1967: 30-31) pragmatic assessment was that the appropriate theory of the firm, and hence the basis for abstraction, depended on the nature of the research problem. Penrose

(1959) took a similar position, arguing that a theory of the growth of the firm demanded a process of abstraction that retained a firm with ‘insides’ (Penrose 1995a: 11). The Penrosian firm was distinguished on the grounds that it was an integrated and dynamic system, a strategic decision-making unit in which the tripartite interaction between resources, services and opportunity took place under the ‘authoritative communication’ of its managers. These characteristics have been maintained in the modified Penrosian perspective. However, the challenge of explaining a growth process that extends beyond the blurred boundaries of the firm has imposed additional demands. In short, it was necessary to provide the firm with ‘outsides’. The problem was addressed using a variety of perspectives, drawn from the organisation theory, industrial economics and strategy literatures, including those informed Penrose’s original analysis. Perhaps the most influential source, in both the original and modified Penrosian frameworks, was Boulding’s (1956: 59-60) case against analogising between lower-level systems, such as thermostats, and higher-level systems such as the firm. Social systems were differentiated on the basis of their enduring adaptive structures, mediated by the locally-constructed (and hence, situated) ‘image’ (Section 2.2). Boulding’s argument, and Penrose’s re-interpretation, were invoked at various points in the review of subsequent conceptualisations of firms, networks and the growth process (Chapters 3 to 5).

9.2.3 Connected firms in the empirical study

The central narrative of the empirical study provided many examples of both original and modified Penrosian firm characteristics. Three of these, authoritative communication, productive services and productive opportunity, are considered in the following paragraphs.

- **Authoritative communication:** The Belton case illustrates the Penrosian concept of the firm as an area of authoritative communication (Section 4.3.4), and shows how it has been modified in the connected firm. For example, the account of Belton's developing relationship with its distributor, Dairy Crest, revealed how isomorphic pressures, such as the imperatives of certification and traceability, were conveyed through the network. The area of authoritative communication extended, in some instances, to both direct and indirect network ties, the latter arising from multiple retailer demands translated by Dairy Crest in its role as a category manager. The reproduction of knowledge that facilitated these isomorphic effects provided a further example of 'blurred' managerial boundaries. Belton's decision to employ a former Dairy Crest manager to control its quality systems highlighted the close interaction across the vertical links of the supply chain. This was further underlined by the decision to deploy this manager in its milk field, increasing awareness and developing capabilities amongst the dairy farmers who supply the firm. While both decisions reflected firm-level managerial agency, they supported a legitimacy strategy (Jones 2001) that had been determined at the level of the network.
- **Resources and services:** The modification of Penrose's original concept (Section 4.3.5) has extended substantially her concern with knowledge unfolding within the boundaries of the firm. The extension was explored and clarified with reference to the changing nature of the artisanal knowledge in English cheese-making, which was summarised in Figure 7.6. The historical narratives indicated how knowledge was reproduced differently under each configuration. For example, with the emergence of a commercial configuration in the 17th and 18th centuries, there were early instances of firm- (or, more precisely, farm-) level practices being modified to satisfy the requirements of non-proximate markets.

Examples included the adaptation of communal cheese-making in Cheshire, associated with the production of the 'greate' (i.e. large) cheeses of the period (Section 7.5.1), and the subsequent imitative threat to this variety, which led to the consumer-driven creation of a coloured cheese, Red Cheshire (Section 7.5.2). The emerging role of intermediaries in shaping firm-level capabilities was also traced to the commercial, pre-industrial configuration, where strong ties between cheese factors (i.e. wholesalers) and farmers were reproduced through regular interaction at regional cheese markets. The formative industrial-artisanal configuration was marked by a general decline in these close vertical connections, as the primary source of value shifted from domestic production to imported factory cheese (Section 7.6). The central narrative traced the restoration of strong downstream connections in the subsequent 'regulated' configuration. In the MMB era, monopoly power was used to reinforce the stream of knowledge creation that had, since the earliest times, been directed towards the control of variability (Section 7.3.3). The analysis of Appleby's and Belton characterised different ways in which Penrosian processes (i.e. deploying resources to productive services, based on managerial conjecture regarding productive opportunity) had unfolded in the two firms. In each case, the explanation was clarified with reference to the firm's 'outsides', through a combination of network mapping and retroduction, which was related to the intermediate concept of isolating mechanisms (Section 9.5). For example, under the 'divergent' configuration, organisational and knowledge practices at Appleby's had been directed to consumption-related strategic isolating mechanisms, a perception captured in Edward Appleby's comment, 'Basically, we've built a brand, haven't we? [...] In this day and age, brands are wonderful things!' (Section 7.2.3).

- **Productive opportunity:** Each of the focal firms demonstrated how managerial agency at the level of the firm can both mitigate and *anticipate* agency exercised by other network actors. In each case, managerial perceptions of productive opportunity (Section 4.3.6) were shaped by pre-existing structures (i.e. the current bundle of productive services and set of network ties). However, they were also the product of agency exercised at other levels in and beyond the business network. For example, Appleby's decision to develop its own distribution channels was an extension of its existing capacity to engage with local retailers, which also exploited latent and informal ties in its focal firm network. In addition, it was facilitated by a liberalisation of the milk marketing regime, and by a resurgence of interest in artisanal food products, both of which have been traced to the much deeper structures of the historical narrative (Section 7.3).

9.2.4 The connected firm: summary and outstanding issues

The Penrosian definition of the firm has been modified in order to address the kinds of 'connectedness' that are already evident in the more prominent 'high technology' territories of the New Competition. The empirical study investigated the less familiar ground of the artisanal firm, revealing a complex and dynamic web of connection. The findings suggest that today's small, connected firms cannot be adequately represented by Penrose's original elaboration in the final chapters of *The Theory of the Growth of the Firm*. Their role is not simply to fill the interstices left behind by the asymmetric expansion of larger firms. The dynamic would be better represented using current practitioner terminology, such as 'partnership' (e.g. the multiple retailer, J. Sainsbury's 'Partners in Produce' scheme), to reflect the interactive nature of the connection. This would not imply equality of status or the

absence of power relations. However, as part of the modified framework, it would provide a better conceptualisation of the connected firm. There are two reasons for this. First, because it accords with the empirical evidence. Second, because, in contrast to the original ‘interstices-filling’ concept, the interactive version is more consistent with other elements in the Penrosian synthesis. In short, if firm boundaries were blurred, the area of authoritative communication would extend to include, perhaps partial or intermittently, other network actors. Hence, it would be consistent with Penrose’s (1950) general theory if processes previously associated with the managerial team (e.g. resources-to-services decisions, the receding managerial limit), were also identified at the inter-firm level.

9.3 Growth: from symptom to process

9.3.1 Growth in conventional accounts

In Chapter 3, a review of the more common analogies and measures of growth was illustrated with reference to several research programmes. The Penrosian conceptualisation of the firm was used to calibrate these alternative approaches to growth, highlighting the continuing influence of neo-classical ‘black box’ assumptions. For example, criticism of the characteristics approach to growth (e.g. Barkham *et al.* 1996, Hall 1995, Storey 1994, Storey *et al.* 1988) centred on its ontological limitations. Research in this tradition was characterised by a ‘thermostatic’ analogue of the firm (Boulding 1956), which was not capable of reflecting the complexities of the growth process. The problems were compounded by a positivistic epistemology based on the search for empirical regularities at the level of the ‘representative firm’. Hence, a series of ‘internal’ (i.e. firm-level) and ‘external’ (i.e. environmental)

variables were captured at $t1$ and compared to change in a dependent variable (i.e. 'growth') between $t1$ and $t2$. Growth was normally assessed through proxies such as change in number of employees or sales turnover over a finite period, typically as short as five years (e.g. Barkham *et al.* 1996: 21). Multivariate techniques were used to explain variation in the aggregated data. However, causality was necessarily obscured by abstraction from particular firms, contexts and temporalities. The characteristics approach tended to typologise firms (e.g. distinguishing 'flyers' and 'trundlers'), thus assuming an inherent stability in firm characteristics, based solely on performances captured by these short-run datasets (Section 3.2). The critique of biological analogues of growth focused on the teleological assumptions associated with the 'life-cycle' theories (Churchill and Lewis 1983, Greiner 1972). This limited their explanatory potential. For example, it rendered them incapable of dealing with periods of low or arrested growth, including extended periods of maturity (Child and Kieser 1980: 46). Evolutionary theorising, based on the processes of variation, selection and retention, have offered a much richer ontological basis for conceptualising the growth of the firm. Their emphasis on emergence and indeterminacy has presented the strongest challenge to neo-classical assumptions (Loasby 1991: 12-13) and to more voluntaristic areas of organisational research, such as strategic management (Section 3.4.2). Penrose (1952) anticipated the primary focus for debate, the impact of agency on the three evolutionary processes. However, her strong assertion of firm-level variety generation, selection and retention resulted in an under-emphasis on interaction with the higher-level evolutionary processes addressed by other researchers in this tradition.

9.3.2 Examining growth in a modified Penrosian perspective

The modified perspective retained the position that, while some firm-related research issues might be tackled more parsimoniously, the *growth* of the firm could only be understood as the product of systematic interactions (Sections 2.2 and 4.4). The Penrosian synthesis was extended in order to incorporate processes operating at multiple levels of analysis. This can be seen as part of a broader effort to develop theories of growth that transcend the levels associated with particular disciplines. For example, the re-incorporation of production factors in mainstream economics has been constrained by the absence of multi-level analysis. While ‘new growth theory’ (Romer 1986) represented a first step in treating knowledge generation as an endogenous factor, its ‘relentlessly macro [economic]’ theory failed to address productive processes at lower levels of aggregation, such as the region, the network and the firm (Best 2001: 5). The corollary is that business organisation and industrial dynamics would be much better served by a more integrative framework, capable of addressing growth processes operating at national, regional and organisational levels:

‘[W]ithout an account of business organization, growth theories are ill equipped to address experiences like the decline and rebirth of American industry or rapid growth in knowledge poor regions of the world. Policy, too, suffers as such economic theories address matters of public policy but are silent on matters of business policy’. (Best 2001: xii)

The modified Penrosian framework, developed in Chapter 5, contributed to this effort by establishing links between firm, network and industry-level processes. The discussion was built around the assumption that economic development can be understood through capabilities, and the knowledge and organisational practices that support them (Loasby

1999b: 67). The Penrosian firm provided an area of ‘authoritative communication’ (Barnard 1938, Penrose 1959: 20) in which differentiated knowledge was co-ordinated through the purposive action of managers. However, comparable processes could be identified at the level of the inter-firm network, an extension of Penrosian thinking that had been omitted from much of the literature:

‘In considering the firm as a set of capabilities (sometimes, significantly, described as an option set), some writers neglect the possibility of structuring capabilities within a *network* of firms’. (Loasby 1999b: 96 – emphasis added)

These arguments were traced to their classical exposition, in Marshall [1920] (1986: 115), and to Piore’s (1992) re-interpretation of Marx’s concept of a ‘social’ division of labour, in which the network facilitated co-ordination between activities with a distinct conceptual core. Alchian’s (1950) concern with selection at a population level could therefore be reconciled with Penrose’s (1952) assertion of adaptation at firm level. ‘Blurring the boundaries’ of the firm allowed a powerful extension of the evolutionary analogy, encompassing Penrosian learning processes. Growth was re-conceptualised as an inherently multi-level phenomenon that transcends both neo-classical ‘black box’ and the extremes of evolutionary theorising:

Neo-Darwinians seek to confront us with a stark choice between design and natural selection among blind mutations; standard economic theory opts decisively for design, occasionally supplemented by appeals to selection processes to ensure that the design is optimal. Both are corner solutions in the space of theoretical strategies; industrial dynamics avoids corner solutions by choosing a sequence of *ex-ante* decisions and *ex-post* realisations that may lead to fresh decisions’. (Loasby 2001: 12)

The modified Penrosian approach was also proposed as a way in which the many qualitative dimensions of growth could be explained, overcoming the limitations of quantitative approaches (Section 3.5). In contrast to the original formulation, the growth of small firms was not explained as a unilateral process of ‘filling-up’ the interstices left by larger firms (Penrose 1959: 222-223) (Section 4.3.9). Connected firms were seen as path-creating entities, actively engaged in entrepreneurial networking (Johannison 2000, Larson 1992); growth was thus a product of multilateral interaction across network dyads (Section 5.5).

9.3.3 Growth of connected firms in the empirical study

The analytically structured narrative explored aspects of the growth process in the modified Penrosian framework. The following paragraphs highlight three of the more challenging conceptual issues arising from the study.

- **Growth as a multi-level learning process:** The Belton case exemplified the ways in which externally-imposed routines can generate new knowledge and organisational practices at the level of the firm, network and sector. The ‘traceability’ imperative (i.e. an ability to specify the source of specific product components along a vertical supply chain) originated in the agency of multiple retailers, translated through that of their category managers, such as Dairy Crest. In the 1990s, the long-standing knowledge dynamic of controlling variability (Section 7.3), was reinforced by necessary conditions, in the form of recurrent food safety, food quality and animal welfare issues (Section 7.7). This stimulated a variety of knowledge-based routines. They comprised broad conceptual innovations (e.g. total quality management, producer partnerships), which were

operationalised as sector-specific rules and practices (e.g. microbiological tests, cleaning procedures), and legitimised through audit and certification schemes (e.g. ISO9000, EFSIS, Soil Association). As noted above (Section 9.2.3 ‘authoritative communication’), the case indicated how knowledge and organisational practices were reproduced through close liaison across network dyads. The modified Penrosian growth framework is thus consistent with Spender’s (1994: 359) analysis of collective knowledge, and with Orlikowski’s (2002) focus on ‘organisational knowing’ as constituted in practice, in contrast to conceptualisations of knowledge as ‘embedded’ or ‘sticky’:

‘The “knowing how” that is constituted in practice is not effectively understood as “stuck” in or to that practice. That would be like saying that the words of this sentence are “stuck” to it, when in fact they constitute it. [...] Rather, sharing “knowing how” can be seen as a process of enabling others to learn the practice that entails the “knowing how”’. (Orlikowski 2002: 271)

Orlikowski’s (2002) study was informed *inter alia* by Spender’s (1996) observation that, ‘knowledge is less about truth and reason and more about the practice of intervening knowledgeably and purposefully in the world’, and by Giddens’s (1984: 4) definition of human knowledgeability as, ‘inherent within the ability to “go on” within the routines of social life’. Spender (1994) distinguished collective knowledge in similar terms, drawing explicitly on Penrosian learning. However, in the modified Penrosian framework, the learning dynamic has been incorporated into a more comprehensive, multi-level analytical framework that can encompass both ‘RBP Mark 1’ and ‘RBP Mark II’ (Sections 2.4 and 4.4). This extended the analysis, providing access to the paradox that, since ‘Penrose rents’ can be secured only through learning by doing, their development renders them appropriable by other parties (Spender 1994: 365). The paradox was addressed analytically by linking the Penrosian ‘knowledge and organisational practices’ dynamic

(i.e. 'RBP Mark II'), with the 'RBP Mark I' concept of isolating mechanisms. This allowed the (re)constitution practices to be traced across networks and over time.

- **Latent and unobserved growth dynamics:** Both cases illustrated how network structures exerted latent and unobserved influence on the connected firm, so that growth processes became separated in time from their empirically verified growth 'effects'. For example, a strong latent effect was identified under the 'regulated' MMB configuration, where the three-way product categorisation (i.e. block, waxed and traditional cylindrical), introduced at a sectoral level, created the *basis* for a strategic isolating mechanism. It is important to note that the categorisation, in itself, could not be a source of Pareto rents (Spender 1994: 365). The potency of the isolating mechanism was the result of firms pursuing knowledge and organisational practices that were directed towards one or other of its product categories. Hence, the block cheese-makers diverged from the path taken by the 'traditional' cylindrical cheese-makers, developing different capabilities and perceiving different productive opportunities. Furthermore, this change would produce little or no observed effect for almost two decades. It was, however, evident in the period following de-regulation in the late 1980s, when Appleby's began an intense episode of entrepreneurial networking, while Belton experienced the strong isomorphic pressures of the multiple retailers and category managers (Sections 7.2.3 and 7.2.4). Effects of this kind are precisely those lost to conventional research approaches (Sections 3.2, 3.3, 9.3), where temporal complexity is obscured beneath the unitary veneer of calendar time (Clark 1985: 44, 2000: 116). Growth modelling approaches have made some use of lagged variables in an effort to address timing differences at the surface. However, these

empirical adjustments in pursuit of linear regularities are unlikely to enhance current understanding of the growth process in connected firms.

- **Growth and the capabilities of the context:** The modified Penrosian framework retained Penrose's (1959: 25) 'resources-services' interaction, in which knowledge and organisational practices constituted emergent capabilities, as the key growth dynamic in the connected firm. However, it also extended the search for mechanisms influencing this process, to include those operating in the broader context (Clark 2000: 218). Such an exercise is open to the critique that the search for background laws has been abandoned in favour of the rich description of idiosyncratic phenomena (McKelvey 1997). This was mitigated through the use of a retroductive abstraction, applied to a fairly narrow empirical target (i.e. artisanal cheese-making and consumption in England). The neo-realist methodology was thus employed to identify *systematic* contextual influences on capability development (Sections 8.2.1 and 8.8.2). For example, in the commercial pre-industrial period, the spatial distribution of natural resource endowments contributed to patterns of communal production in areas of surplus, notably Cheshire and the West Country. These organisational practices gave rise to distinctive regional capabilities in volume production (i.e. making the 'greate' Cheshire cheeses) guided by productive opportunity in the form of new distribution channels and expanding urban markets (Section 7.5). During its long co-existence with industrial modes of production, capability development in artisanal cheese-making firms has been subject to a production-oriented logic. In the formative period it was bolstered by England's unique relationship with its colonial (and former colonial) territories. This facilitated both the rapid appropriation of the cheddar system in the mid-19th century, and the subsequent penetration of cheap

imported factory cheeses. The role of state agency (i.e. MMB regulation from the 1930s to the 1980s, plus direct intervention during the Second World War) was to exacerbate the decline in cheese varieties. It also exercised an inadvertent influence on domestic consumption patterns, notably the overwhelming preference for cheddar and the continuing demand for block and pre-pack cheese (Section 7.6). However, while national and regional contexts could be envisaged as the source of capabilities, the study also indicates that they did exercised neither a monolithic, nor a deterministic influence on the connected firms. Productive opportunity and the receding managerial limit acted as a countervailing mechanism, providing the managers of individual firms with the space in which they could conjecture alternative ways forward (e.g. Belton's venture into organic cheese production). These conjectures provided the basis for heterogeneity, as they were converted into firm-level practices. While the environment could reject the outcomes of the firm-level conjectures, selection at this level could not in itself provide a systematic explanation of the growth of the firm (Penrose 1959: 41, 1995a: xiii). The firms were part of a connected system, but since connections can be made in an infinite number of ways, there was always an opportunity to generate variety:

‘Because new knowledge, new institutions and new organisations must all develop from connected systems (at some level) that already exist, change is always path-dependent; but this dependency may vary greatly in both degree and kind, often leaving much scope for imagination’. (Loasby 2001: 13)

9.3.4 Summary and outstanding issues

The literature review challenged conventional conceptualisations of growth from the perspective of Penrose's (1959) synthesis. An alternative approach was presented, based on a

modified Penrosian framework, which has been applied to an empirical study of connected firms. The study has highlighted the importance of Penrose’s ‘resources-services’ distinction, and noted the implications for the one-dimensional interpretations of resources and capabilities found in ‘RBP Mark I’ and ‘RBP Mark II’. The capabilities discussion has also clarified the distinction between forms of organisational knowledge, emphasising the importance of the category Spender (1994) terms collective knowledge as the basis for both the original and the modified Penrosian growth framework (Table 9.1):

‘The quality of coordination between resources may be crucial. This emerges as the firm’s managers grapple with the challenges of implementing decisions which draw heterogenous resources and skills into a system of directed practice. The result is a resource of a quite different type, one that inheres in the activity itself, is firm- and context- specific, and is intimately connected to, though not determined by, the existing pattern of skills and resources’ (Spender 1994: 360).

Table 9.1 Different types of knowledge in organisational analysis

	<i>Individual</i>	<i>Social</i>
<i>Explicit</i>	Conscious	Objectified
<i>Implicit</i>	Automatic	Collective

Source: Spender (1994: 360, Figure 1, 1993: 39)

Perhaps the most obvious omission in the preceding analysis has been with regard to the *quantitative* aspects of growth. Of the two focal firms, Belton had become larger over the period of the central narrative, according to conventional measures such as production volume, sales revenue, employee numbers and fixed asset base. For example, Belton doubled its production volumes in the period 1995-2000 (Section 8.1). In contrast, Appleby’s

remained a similar size throughout the narrative, at least in volume terms, though there were quantitative increases in areas such as distribution channels and value added per unit. The construct, 'firm size' has been identified as subject to a high degree of objectification, based around standardised definitions that are reinforced by statistical agencies engaged in data collection (Section 6.2.3). However, the empirical study has demonstrated that the Penrosian growth dynamic operates independently of such quantitative measures, raising some fundamental and unresolved issues. This finding does not imply that the profit motive can be disregarded for the purposes of explaining growth. However, it does raise novel questions regarding the relationship between growth, profit and firm size. Penrose (1959: 27-29) had assumed that long-run profit would be a universal motive in the industrial firm. On this basis, she argued that, 'it does not matter whether we speak of "growth" or "profits" as the goal of a firm's investment activities', (Penrose 1959: 30) since they are equivalent in the longer term. She acknowledged that other objectives (e.g. 'power, prestige, public approval or the mere love of the game'), were often present in the managerial team. However, profitable growth was identified as the main motivation, with the implication that it was the only factor exerting a systematic impact on managerial agency:

'There can surely be little doubt that the rate and direction of the growth of a firm depend on the extent to which it is alert to act upon opportunities for profitable expansion'. (Penrose 1959: 30)

These questions may be resolved with reference to the concept of isolating mechanisms. The empirical study illustrated how artisanal knowledge has been reconstituted in each configuration order to secure rents from the prevailing isolating mechanisms. The nature of artisanal knowledge in the contemporary economy was thus fundamentally different from that found in the pre- or early industrial eras. While the basic structures governing cheese-making

were unaltered, the necessary conditions for growth changed dramatically over these periods. In the most recent configuration, market mechanisms had emerged as the decisive factor in preserving craft-based production methods. The historical narratives related this phenomenon to the periodic resurgence of a variety-seeking consumption dynamic, while the central narrative traced the consequences as new productive opportunity was generated in the two focal firms (Sections 7.8 and 8.2). The analysis of changing knowledge and organisational practices amongst these artisanal cheese-makers highlighted the context-dependent nature of the learning process, in which perceptions of productive opportunity were shaped through each firm's interactions within its pattern of network ties. The empirical study illustrated how Penrose's universal profit motive could be moderated, to varying degrees, by institutional isolating mechanisms (Oliver 1997). In this instance, the pursuit of productive opportunity has been systematically constrained by the firm's attachment to long-held artisanal norms. For example, Appleby's reluctance to produce small cheeses for mail order and e-retailing purposes was justified on the basis that the firm's owners maintained by a strong ethos of making cheese in a traditional way, rather than, 'for a price' (Section 8.3.3.). It seems likely that similar isolating mechanisms are operating in non-artisanal connected firms. The role of a specifically artisanal constraint on size-related growth requires further empirical research. However, the more general, epistemological proposition is that a causal explanation of the *growth process* can be differentiated analytically from conventional quantitative measures of *growth outcomes*. The modified Penrosian framework is at odds with Penrose's (1959) analysis in this respect, yet the modification appears more consistent with the empirical evidence, at least in respect to this category of connected firm.

9.4 Methodology

9.4.1 Reflecting on the methodological questions

The thesis has been concerned with the challenge of incorporating developments in the conceptualisation of firms and growth, as reviewed in Chapters 1 to 5, into a concrete research study. It has also addressed the related problem of how the original Penrosian ‘case study’ approach might be modified in order to address conceptual and methodological developments of the intervening years. This final section isolates three methodological strands from the preceding discussion and reflects on the relationship between the present empirical study and other contemporary research programmes. The first strand concerns the recurrent tension between the nomothetic and the idiographic, sometimes characterised as a contest between ‘models’ and ‘histories’. The second concerns the practical application of multi-level and co-evolutionary analysis techniques in an empirical study. The third is based on the experience of interpreting the evidence in a neo-realist perspective.

9.4.2 ‘Models’ versus ‘histories’: some general lessons

Penrose recognised that the constraining effects of a firm’s environment were variable, in part because of the different ways that managers perceived ‘their’ environment. However, she did not attempt to specify the ways in which the ‘idiographic’ features of a specific firm environment interacted with ‘nomothetic’ mechanisms in order to generate different growth outcomes, both quantitative and qualitative, for the firms concerned. The empirical study adopted a suitably Penrosian multi-disciplinary approach (Kor and Mahoney 2000) in order to

pursue this challenge. The subjectivist modification, inspired by Boulding (1956), shifted the balance towards the idiographic, which complicated the analysis. As the neo-classicists have indicated (Section 2.2), resistance to subjectivist modifications to theories of the firm are based upon the twin assertions of parsimony and disciplinary purity:

‘A limitation of Penrose’s approach is that it may not satisfy the positivist criterion of providing the most parsimonious theory that predicts well. Another limitation, pragmatically speaking, is that the incentive systems in research universities can make the theoretical pluralism and methodological triangulation a risky research agenda during the early years of the research scholar.’ (Kor and Mahoney 2000: 130)

Complexity increased in the present empirical study as its analytical scope was broadened beyond the relatively well-defined boundaries of the firm. However, the spatial and temporal extensions were dictated by the research problem, which concerned the growth of *connected* firms, and further substantiated by the neo-realist perspective that informed the methodology:

‘We need to know not only what the main strategies were of actors, but what it was about the context which enabled them to be successful or otherwise. This is consistent with the realist concept of causation and requires us [...] to decide what it was about a certain context which allowed a certain action to be successful. Often the success or failure of agents’ strategies may have little or nothing to do with their own reasons and intentions’. (Sayer 2000: 26)

Ultimately, these methodological issues boil down to a question of evaluation. In short, to what extent does the analysis obtained from the empirical study inform the research question? Isolated, subjective accounts have no referent and hence no cumulative explanatory power. Historical narratives have the potential to deliver plausible explanations of a particular

unfolding of events, including an assessment of causes and consequences. However, social scientific explanation has been distinguished by its claim to generalisability beyond the particular (McKelvey 1997, McKinley 2001). At the empirical level, this is normally evidenced through the replicability, and consequent potential for falsification, of research findings. At a conceptual level, social scientific explanation has pursued various forms of analytical abstraction from the empirical in pursuit of causal explanation. The fundamental difference between critical and empirical realism concerns the latter's assumption of a 'regularity' conception of causality, whereby a regular relationship between cause and event effects is a necessary condition for identifying causality (Sayer 2000: 94). This contrasts with the critical realist task of positing structures that have causal powers capable of generating the events or effects in question:

'Progress in terms of cumulative knowledge is unlikely to come from replication of quasi-experimental studies in the hope of producing universally applicable findings in terms of empirical regularities between programmes and outcomes. Instead, it needs intensive research, repeated movement between concrete and abstract, and between particular empirical cases and general theory'. (Sayer 2000: 23)

The idiographic-nomothetic debate will continue to exercise the minds of social theorists and reflective practitioners. However, for the most part, empirical researchers would be better employed in adopting a more pragmatic approach, recognising those research problems, or aspects of problems, in which nomothetic approaches are feasible and those where the idiographic is required. The qualified application of critical realist practices adopted in the present study appears to provide the essential middle-ground, supporting more effective empirical research designs than those associated with empirical realist or countermodernist agendas (Sections 6.2.2. and 6.2.3). In the following sections, the explanatory potential of

this methodology is assessed by comparing two of its distinctive features, multi-level analysis and retroductive abstraction, with prevailing approaches.

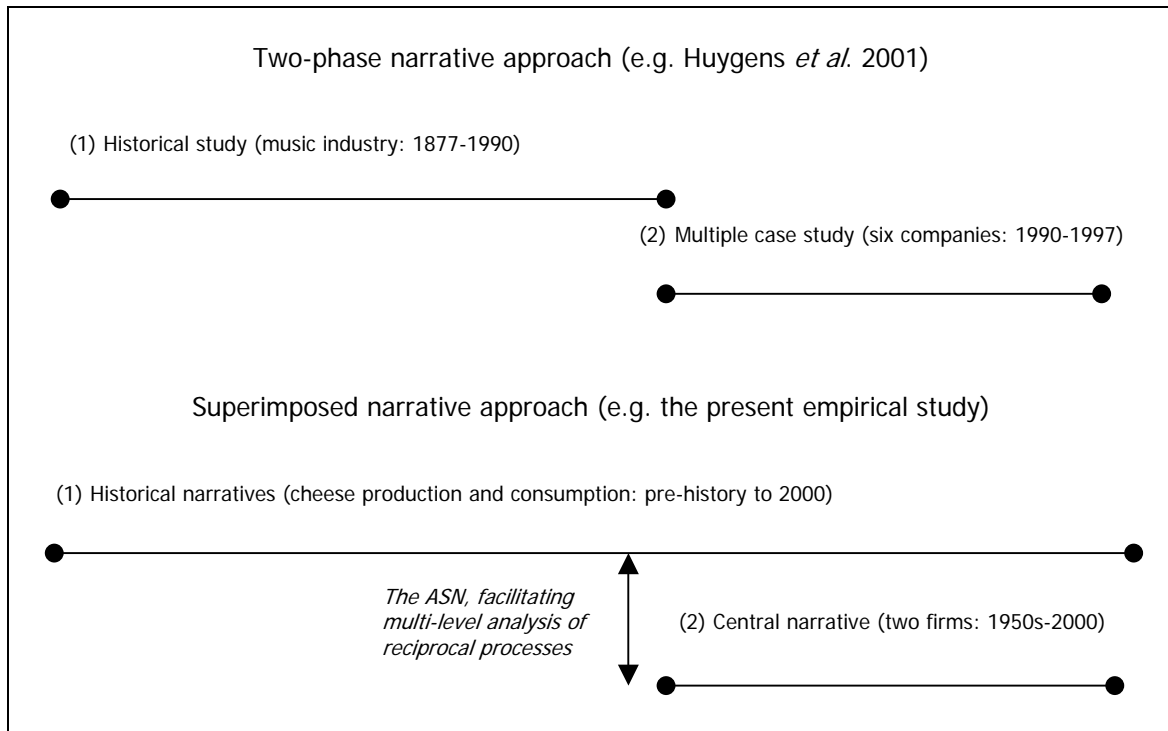
9.4.3 Multi-level analysis in a narrative approach

There has been a wide-ranging debate regarding the role of multi-level and co-evolutionary analyses, reflected in several special issues, including the *Strategic Management Journal* (Barnett and Burgelman 1996), *Organization Science* (Lewin and Volberda 1999), and *Organization Studies* (Lewin and Koza 2001). While there is a broad agreement on the need to move beyond cross-sectional correlations in favour of a more active pursuit of causal mechanisms, co-evolutionary studies have sometimes appeared stronger in their aspiration to span levels of analysis than in empirical realisation. For example, Huygens *et al.* (2001) is an intensive study of the co-evolution of firm capabilities and industry-level competition in the music industry. The authors' integrated conceptual framework deployed Nelson and Winter's (1982) concept of routines, and their distinction between local and distant search behaviour, which was equated with March's (1991) paradox of exploration versus exploitation. Firm and industry levels of analysis were combined in the proposition that, 'co-evolution of firm capabilities and industry competition manifests itself in a *reciprocal process* between the emergence of new organizational forms at firm level and new business models at industry level' (Huygens *et al.* 2001: 981 – emphasis added). The research methods comprised an historical study of the music industry, yielding a classification of the competitive regimes existing in the period 1877-1990, and a multiple case study of six firms during a subsequent competitive regime, covering the period 1990-1997. The data and analysis are rich and insightful. However, the research approach is problematic in terms of its stated aim of

conducting a multi-level, co-evolutionary analysis. The issue is highlighted when these narratives are contrasted with the ASN approach adopted in this thesis (Figure 9.2). The music industry study presented the industry and firm levels of analysis in two separate phases. By contrast, the parallel historical narratives of the cheese industry study were superimposed on the finer-grained central narrative, allowing an exploration of reciprocal processes unfolding over time. In addition, in the absence of retroductive abstraction, the music industry study excluded the influence of mechanisms operating at levels other than those of the industry and the firm. As the authors have acknowledged, ‘Although we discuss the co-evolutionary effects of external influences such as radio and the importance of intellectual property rights [i.e. both industry level phenomena], we do not emphasize the institutional features of government, the structure of the capital markets, and national culture. These attributes may influence various relationships in the proposed framework’ (Huygens *et al.* 2001: 1004). Lastly, there seems to be a strong case for applying Penrosian insights to this data, beyond the single reference to managerial resources (*ibid*: 977). This proposal is prompted by the following comment from the authors, which appears to deny the possibility of detecting co-evolutionary processes:

[T]he focus of attention in our framework and empirical analysis was on the *type* of capabilities developed at firms. There was only limited insight into how these capabilities are actually *generated* and *refined* over time.’ (Huygens *et al.* 2001: 1005 – emphasis added).

Figure 9.2 Superimposed narratives and multi-level analysis



Sources: Huygens *et al.* (2001: 982-985 – represented graphically; this study (Sections 6.3 to 6.6).

9.4.4 Retrodution: explanation in a neo-realist mode

The empirical study has examined the explanatory potential of critical realism, albeit in a qualified, neo-realist form. One of the attractions of the critical realist perspective is that it provides a more sophisticated spatial and temporal language that may be incorporated into the chronically ahistorical frameworks of organisation theory, strategy and industrial economics. Historical and archival sources gain a new importance in a neo-realist analysis, since it becomes legitimate to distinguish structures, causal mechanisms and effects across time. Hence, while critical realists would endorse Evans’s (1997) defence of historian’s role against the relativising critique of countermodernist historiographers, their approach to temporality challenges the more conventional depiction of historical sequence, in which causes always precede effects:

‘The idea of a cause depends rather obviously on the concept of sequential time. Something that causes something else generally comes before it in time, not after; thus the causes of the French Revolution of 1789 are to be found in the years 1788 and before, not 1790 and after’ (Evans 1997: 140)

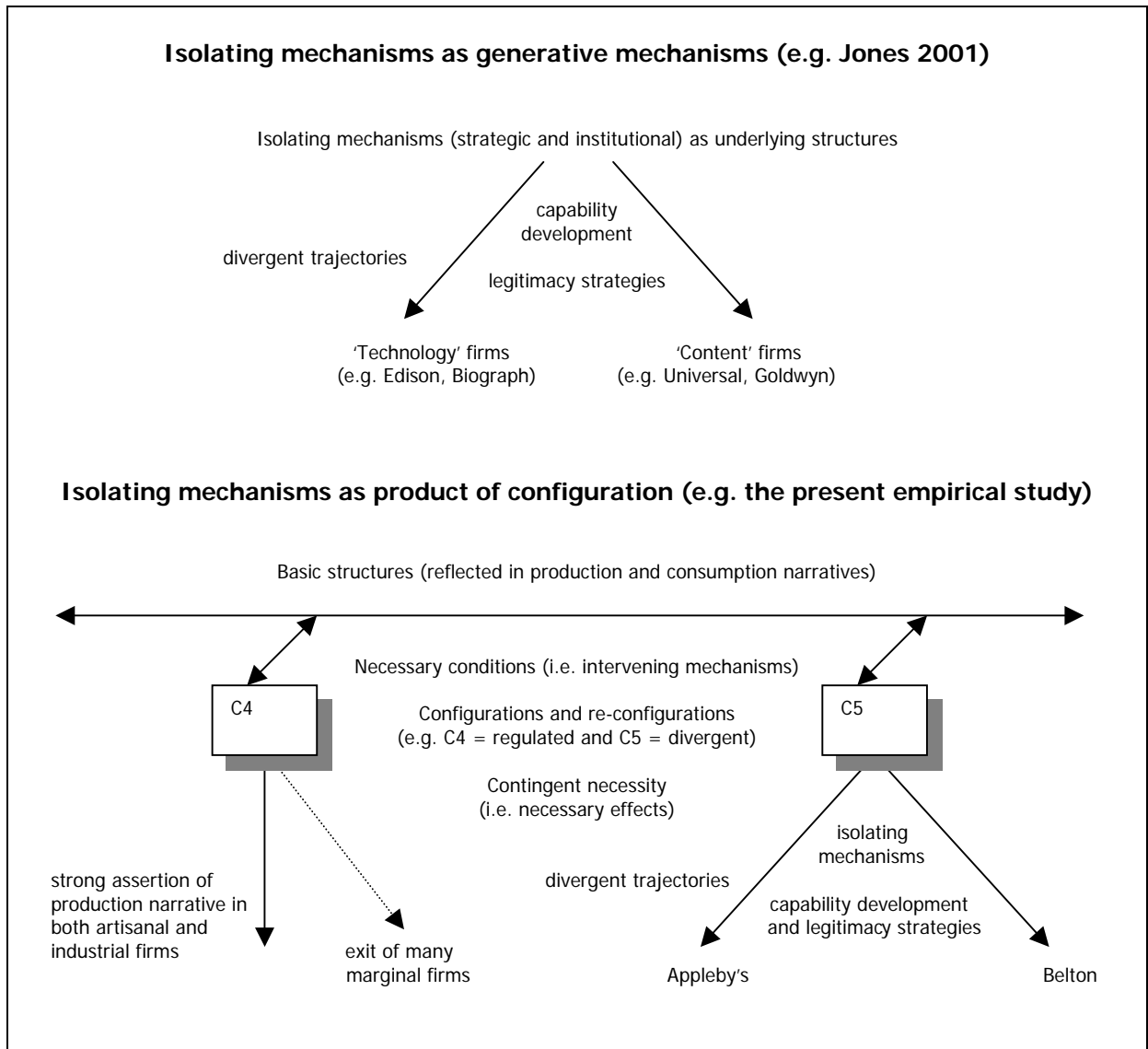
While Evans’s underlying argument remains valid, critical realists would point the persistence of basic structures and their causal powers over extended periods of time. Thus at least part of the ‘cause’ of an event in the historical record at $t1$ may be detected in the retrodution of events recorded at $t2$, $t3$ etc. This approach to causality was illustrated in the empirical study where, for example, the inherent biological properties of cheese have generate two distinct and persistent strands of knowledge creation (Section 7.3). These strands have been re-invoked in order to explain the five historical configurations depicted in the historical narrative, and to link organisational and knowledge practices at firm level to those constituted in other institutional fields (e.g. the state, elite consumer groups, colonial cheese factories). This suggests a more complex conceptualisation of context than that found in some of the leading co-evolutionary studies. For example, Jones’s (2001) analysis of the American film industry adopted a similar combination of critical realist and narrative elements and was an important influence on the implementation of the present empirical study, particularly in relation to the role of entrepreneurial activity in reconfiguring networks the incorporation of isolating mechanisms. However, the study took a different approach to identifying generative mechanisms in the narrative data:

‘Generative mechanisms are the underlying structures that drive processes (Pentland 1999) and in this study, they are firms’ institutional and strategic isolating mechanisms’. (Jones 2001: 913)

This statement appears to reflect a boundary decision, indicating that the search for causal explanation was to be restricted to the level of the isolating mechanisms. In contrast, the present study took a more open-ended approach, pursuing the critical realist technique of retrodution to its logical conclusion (i.e. identifying basic structures emergent from the biological processes inherent in milk and cheese highlighting geographic and climatic factors influencing a spatial differentiation in cheese-making practices). This approach extended the analysis beyond the level of specific isolating mechanisms. Instead, these were seen as characteristics of the five configurations identified in the historical narrative (Sections 8.3 to 8.7). The advantage, for analytical purposes, is to open up the possibility of examining interaction between prevailing isolating mechanisms and the growth of knowledge and organisational practices in each configuration (Figure 9.3). The configuration approach gives rise to what is arguably a deeper ontology, probing beyond the immediate context of the industry in pursuit of systematic influences. This approach can be criticised as adding unnecessary detail and complexity, which is avoided in a more circumscribed analysis such as that presented in Jones (2001). In short, the model/theory is being sacrificed in favour of history/narrative. However, the technique of retrodution demands that the process of abstraction is linked to the task of theorising. In practice, this has imposed a strong corrective on wayward story-telling. The contexts that organisation theorists choose to bring in to play are, like those of the historian, far from arbitrary (Evans 1997: 159). This effort to theorise the growth of connected firms has involved a great deal of incidental detail. As natural science has demonstrated, the real challenge is how to abstract appropriately from the complexities that are presented:

‘To produce a really good biological theory one must try to see through the clutter produced by evolution to the basic mechanisms lying beneath them.’ (Crick 1989: 138)

Figure 9.3 Isolating mechanisms in a neo-realist explanatory account



Sources: Jones (2001: 911-914 – adapted; this study (Sections 6.3 to 6.6).

The task of abstraction has been pursued by applying the critical realist technique of retrodution, which reflects critical realism’s distinctive methodological position on the respective roles of theorising and generalisation:

‘Theory can grasp unique as well as repeated events, by demonstrating necessity in the world. Theory is no longer associated with generality in the sense of a repeated series of events but with determining

the nature of things or structures, discovering which characteristics are necessary consequences of their being those kinds of objects'. (Sayer 2000: 136)

The empirical study has refined a number of Penrosian concepts and has deployed them in a neo-realist account, combining narrative detail with retroductive analysis. The study has also provided support for the view that the Penrosian synthesis retains a considerable explanatory potential that can be extended to such unfamiliar territory as connected artisanal firms. This suggests that the modified Penrosian framework, combined with a neo-realist methodology, could contribute to a more coherent and insightful theorising of the growth process as it unfolds across complex temporalities and multiple levels of analysis.

CHAPTER 10 - IMPLICATIONS: CONNECTED FIRMS, NETWORKS AND GROWTH

It is part of the vanity of modern man that he can decide the character of his economic system. His area of decision is, in fact, exceedingly small.

J.K. Galbraith
The New Industrial State (1967: 397)

One of the most fateful errors of our age is the belief that 'the problem of production' has been solved.

Ernst Schumacher
Small is Beautiful: A Study of Economics as if People Mattered (1974: 10)

This chapter considers the practical implications of the research for three main audiences: owner-managers, policy-makers and members of the research community studying industrial dynamics and small firm performance. The ideas presented in each section draw on the findings of the empirical study, but is also informed by the modified Penrosian perspective that was developed from the literature review. For owner-managers, the key questions concern the extent and nature of their firms' connection with wider business networks. For policy-makers, attention is drawn to network governance and network dynamics issues, noting those areas where intervention appears most effective. Proposals for further research are directed towards the themes identified in the policy section. The concluding section reflects more widely on the implications of the thesis on our approach to connected firms and their role in production systems.

10.1 The implications for policy and practice

10.1.1 Penrose's forgotten chapters

In the penultimate chapter of *The Theory of the Growth of the Firm*, Penrose's attention focused on the small firm. The issue of growth in small firms also provided the rationale for the final chapter, which moves from a firm-level focus to address the issues of industrial concentration and large firm dominance. These two short chapters indicated that there was ample scope for further research, addressing the industrial policy implications of the Penrosian thesis. However, like so many other issues raised in the book, this was not pursued in Penrose's later work and the chapters themselves have been largely ignored (Section 4.3.9). Penrose's primary concern was theoretical; she wanted to ensure her 'general' theory of the growth of the firm could encompass the continued growth of small firms in an economy weighted in favour of 'big business'. However, her explanation was laced with normative issues regarding the contradictory nature of mid-century 'big business' competition, which was at once, 'the god and the devil' (Penrose 1959: 264). The following discussion revisits this debate from the perspective of today's connected small firms.

10.1.2 Connected firms and the interstices

Penrose (1959: 217-228) was concerned with what she termed the 'special position' of small firms in her theory of growth. Throughout the book, she had adopted the simplifying assumption that firms did not face externally-imposed constraints on productive opportunities. This, she acknowledged, did not reflect the conditions faced by small firms, given the

competitive power exerted by large firms. She acknowledged conventional explanations for the continued existence of small and growing firms, but argued that these failed to explain the continuing expansion in the numbers of large firms, which implied that some smaller firms were making this transition, despite the competitive disadvantage that they appeared to face. Penrose's provided an explanation that fitted artfully into her general theory; this sub-group of small firms were able to grow because they were filling the interstices 'left open' by the growth of larger firms (Penrose 1959: 229) (Section 4.3.9). Given Penrose's biographical link (Section 4.2) with Schumpeter, it is interesting to note similarities in his contention:

'It is true that the facts of industrial concentration do not quite live up to the ideas the public is being taught to entertain about it [...] In particular, large scale enterprise not only annihilates but also, to some extent, creates space for the small producing, and especially trading, firm.' (Schumpeter 1954: 140)

The dynamic concept of the interstices has been re-interpreted in this thesis, incorporating the 'blurred boundaries' of the connected firm. In the original argument, Penrose warned against the imposition of artificial barriers that blocked interstices to small and growing firms. In the modified Penrosian synthesis, the concepts of productive opportunity and interstices were re-deployed in order to address the interaction between connected firms and other actors (Section 5.5). The empirical study was concerned with a particular class of connected firm, and the following review of policy implications is focused accordingly (Section 1.2). However, the discussion covers several issues that appear to have a more general application for policy and practice in the New Competition (Best 1990, 2001).

10.1.3 Implications for various audiences

The chapter considers the implications of the research for the following audiences. First, it assesses the implications of ‘connection’ for owner-managers of small firms, with particular reference to those embodying artisanal knowledge practices. This is followed by a review of industry and small firms policies, reflecting on their impact on connected artisanal firms. The section on empirical research priorities is linked to questions arising from the preceding sections. The concluding section is more wide-ranging and speculative. Echoing some of the normative material at the margins of *The Theory of the Growth of the Firm*, it discusses the socio-political implications, including some questions related to sustainability and economic development, that have been raised during this study.

10.2 Practical implications for owner-managers

10.2.1 The fundamentals of connection

The small artisanal firms populating today’s supply chains face stark choices. The empirical study has analysed the growth of two small firms, indicating the different paths that each has taken over several decades. The firms have survived and remain strong, forward-looking businesses operating within dynamic business networks. It has suggested that firms can, and do, identify new productive opportunities and develop new capabilities (i.e. in broad terms, ‘learn’) from participation in a network. However, it also recognises that small firms can be damaged and destroyed as a result of interactions with larger organisations. In common with Penrose’s original research, the primary emphasis in this study has been on the growth

process. Consequently, the central narrative was based on two firms that had performed successfully in the study period (Penrose 1959: 7). The historical narratives provided an important counter-weight, indicating the extent of firm failure and exit in the formative industrial-artisanal configuration and under the subsequent, state-regulated configuration (Sections 8.5 and 8.6). Studies conducted by competition authorities have indicated that supplier firms may be harmed by inequitable network relationships, notably those formed with larger ‘customer’ firms (Competition Commission 2000, Dobson Consulting 1999). However, while acknowledging that some interactions have positive outcomes, they have provided little explanation of the mechanisms explaining these differential effects (Blundel and Hingley 2001). The empirical study has pointed to a more complex picture than that identified using the static research instruments (e.g. economic measures such as buyer power and industry concentration) commonly employed in competition policy research. There is a strong practical case for studying network processes (Kanter and Eccles 1992: 526-527). The following section is an initial attempt to propose practical implications for connected firms in a more dynamic, Penrosian interpretation.

10.2.2 Understanding network-level changes

Managers could benefit from a more focused and critical approach to their firm’s business network. This would include gaining a deeper understanding of the factors driving network-level changes over the long term. Mapping network sequences, as illustrated in the empirical study (see: Chapters 6 and 7), could help managers to obtain and share useful insights. For example, by recognising ‘blind’ links, firms can begin to pursue potential sources of knowledge (e.g. from indirect customers or suppliers). The potential benefits of enhanced

network-awareness were evident in the central narrative. Both Belton and Appleby's created network linkages in response to changes in the wider network, leading to new productive opportunities. The author has conducted some provisional research on the heuristic value of network mapping. Two groups of postgraduate management students attending full-time and executive MBA courses attended a lecture on business network research techniques. This was followed by a small group seminar activity involving the construction of network map sequences, based on the students' prior work experience. Participant observation and informal feedback from the students indicated that the activity was capable of generating new insights, despite the somewhat artificial setting in which it was undertaken. Further insights may be obtained by involving managers in the process of construction and retrodution of analytically structured narratives. For example, the retrodution conducted as part of the empirical study indicated how basic structures (Section 7.3) generated two distinct but inter-related streams of knowledge creation, which persisted in various guises over time. The production and consumption narratives traced the resulting configurations and their contingent historical effects. The predictive claims of this critical realist technique are necessarily limited (Section 6.6), reducing their obvious appeal to managerial audiences. However, an examination of causal powers can highlight particular 'contingent necessities' of knowledge creation in the present configuration, which change the zones of manoeuvre of these connected firms (Clark 2000: 292-313, Sayer 2000: 16). Table 10.1 summarises two examples, drawn from research conducted as part of the empirical study. This analysis may contribute to strategic awareness, on the part of connected firm managers, by anticipating subsequent phases in the extended process of knowledge creation. In short, the managerial recommendation would be to combine close scrutiny of the immediate network horizon with a more profound assessment the longer-term industry dynamics.

Table 10.1 Contingent necessities: network and firm-level effects

<i>Causal power</i>	<i>Necessary condition</i>	<i>Current configuration</i>	<i>Contingent necessity</i>
<p>The production narrative:</p> <p>Efforts to control (product and process) variability</p>	<p>Genetic modification technologies provide industrial producers with enhanced capacity to manipulate organoleptic qualities of cheese, imitating artisanal characteristics.</p>	<p>Artisanal knowledge and capabilities acts as an isolating mechanism for focal firms, facilitates collaborative activity (e.g. Belton and Dairy Crest – organic cheese supply).</p>	<p>Imitative behaviour by industrial producers increasing competitive pressure on artisanal firms, requiring new sources of difference, possibly through the creation of new downstream network ties.</p>
<p>The consumption narrative:</p> <p>Efforts to construct and exploit variety</p>	<p>Broadband internet and associated logistics technologies enable consumers to engage with much wider range of artisanal products for rapid home delivery.</p>	<p>Residual regional loyalties, logistical constraints and current market potential support a 'mixed economy' comprising specialist delicatessen, multiple retailer, specialist e-retail and farmers markets.</p>	<p>Expansion in specialist e-retail and/or multiple retail distribution of artisanal products; increasing demands on artisanal firms to supply products and identities amenable to the retail medium and probable increase in variety-seeking purchasing behaviour.</p>

10.2.3 Recognising the implications of connection

Firms are changed by the connections they make. Managers might not be in a position to anticipate these changes in detail, but they could make greater efforts to prepare their firms, and thus manage the change rather than react to its consequences. One possible approach could take the form of an audit; new and existing links would be reviewed in the light of the firm's current capabilities and its perceived strategic direction. While there are familiar dangers in over-stating their transparency and pliability (Kamoche 1996, Scarbrough 1998), there is also evidence that entrepreneurial networking can be path-creating (Butler and Hansen 1991, Johannisson 2000, Larson 1992, Larson and Starr 1993). For example, there may be situations where it is time to abandon old relationships, with the explicit aim of generating new knowledge and capabilities (i.e. in Penrosian terms, 'entrepreneurial services'). This is, of course, a process of conjecture. As illustrated in the case of Belton's

entry into organic cheese production, managers have to take calculated risks. In a Penrosian perspective, this rather banal point gains an extra twist. The capacity to take such actions is a product of managers' current perceptions of productive opportunity, yet once the actions are undertaken, these perceptions are also transformed. The managerial injunction, more easily stated than applied, is to see beyond the factors weighting the immediate decision. This is also the message of Itami and Roehl's (1987) strongly Penrosian concept of 'invisible assets' that accumulate both directly and as a by-product of operations. The authors stress the importance of addressing the dynamics of *future* resource combination and accumulation as well as current 'fit' between resources and strategy, even at the cost of short-term instability (Section 2.4.4).

10.2.4 The case for creative engagement

The previous paragraph appears to be an unqualified endorsement of connection as the basis for a virtuous spiral of growth. However, in the case of artisanal knowledge – arguably, for other categories of heterogeneous and tacit capability embedded at the level of the firm – there is a strong isolationist counter-argument. The central narrative showed how the artisanal knowledge practices of connected firms were eroded by powerful isomorphic pressures that transmitted an economising logic of rationalisation and standardisation through the business network. This finding could be used to support the argument that firms need to adopt a defensive strategy, avoiding all linkages into 'mainstream', large firm-dominated supply chains. However, there may be more constructive options for the connected firm. For example, Appleby's dramatic entry into a specialist wholesaler and retailer supply chain illustrated how an artisanal firm could protect its core knowledge, develop new capabilities

and obtain exposure to a further wave of productive opportunity. In the Belton case, the firm took time to recognise the threat to its artisanal knowledge, and the strategic isolating mechanism, or defensible position, that it supported. However, its managers demonstrated a capacity to adapt and anticipate, which restored its position. By contrast, other artisanal firms have avoided change and found themselves effectively ‘trapped’ in traditional but declining networks. Inertia might prove, therefore, to be an even greater threat to artisanal capabilities, and to the tacit knowledge upon which they draw. The advice for connected firms in this situation is a special case of two previous points. Managers should consider carefully the dynamics of their business network, and reflect on the implications of changing – or, indeed, retaining – the pattern of relationships that it contains. The strategic direction of artisanal firms is also subject to broader aesthetic and ethical issues, which fall beyond the scope of the present study (cf. Keane *et al.* 1996, Moeran 1997). However, the implication of the research is that valued artisanal knowledge may be better served through *active* engagement in novel network relationships, rather than an isolationist strategy that avoids change at any cost.

10.3 Industry and small firms policies

10.3.1 Connected firms and business networks

The most significant challenge for policy-makers is to ensure that interventions are both appropriate and effective. The diverse and fluid nature of business networks, which is apparent from the research literature, indicates that policy interventions are likely to be difficult, even where they are considered justified. In many situations, the scope for direct interventions may be extremely limited. Furthermore, the self-sustaining interactions

supporting healthy networks militate against heavy-handed policy initiatives (Blundel and Smith 2001: 55). Business networks are delicate organisational forms, which remain vulnerable to the precipitate actions of constituent firms or other parties, including government agencies. For example, as the historical narrative has highlighted, wartime regulation in England made a dramatic and lasting impact of on both industrial and artisanal cheese production systems (Section 7.7). In the following paragraphs, the emphasis is on policy interventions that might lend support to connected artisanal firms. However, some of the implications may be applicable to other categories of firm and network.

10.3.2 Addressing network governance

The central narrative provides some support for the ‘Aldrich-Birley’ thesis regarding the positive effects of networking on the performance of small firms (Aldrich and Zimmer 1986, Birley 1985). However, the decisive impact of government intervention during the Second World War, and the divergent paths taken by the two focal firms in the post-MMB era, both serve to underline Johannisson’s important caveat (2000: 380-381), regarding the mediating effect of organising contexts on firm-level outcomes. Concern for organising contexts serves to direct the attention of policy-makers towards network governance issues (Jones *et al.* 1997). Bianchi’s (2001) comparative study of two food Italian processing networks (i.e. mozzarella and tomatoes) illustrates how structural change in a network – in this instance a product of small firm decisions – can damage firm-level performance. Lack of differentiation (‘typicality’) in the tomato-processing sector was traced to a previous disengagement between the agricultural and manufacturing phases:

‘[I]f an industry intends to pursue this particular type of high road strategy [...] it has to retain control of all phases of the production chain, including the agricultural one. [...] spontaneous economic decisions made by small firms are not always conducive to such outcomes.’ (Bianchi 2001: 141)

Empirical studies in other sectors have highlighted the uncertain impact of changes in governance, notably sectoral deregulation, on network dynamics. For example liberalisation of the UK television broadcasting sector was instrumental, not only in creating new network actors (e.g. Channel 4, Sky, Hat Trick), but also in changing the expectations of broadcasters about the most appropriate way to organise their activities (Barnatt and Starkey 1994). Deregulation may trigger the creation of new entrepreneurial firms, but complementary infrastructures are required if the initial entrepreneurial surge is to stimulate new production capabilities (Best 2001: 229-230). Longer-term consequences of the new network governance arrangements remain contested. The debate is exemplified by the question of knowledge reproduction under different forms of network governance. Can liberalised sectors generate the quantity and quality of training previously provided by particular actors (e.g. the national broadcasting corporations)? Critics have argued that the new governance mechanisms can militate against these established practices:

‘It is precisely because the BBC and ITV diverge from the market form of governance that has made it possible for them to provide such training.’ (Abercrombie *et al.*, 1990:11)

In terms of the policy focus of this chapter (i.e. supporting connected artisanal firms), the main implication is that the scope of corporate governance, which became an important topic of debate in the late 20th and early 21st centuries, should be extended to address issues of network governance, including the impact of particular arrangements on connected firms.

10.3.3 Encouraging appropriate institutions

An issue closely related to that of network governance is the role of supportive institutional frameworks in the firm and network-level performance (Section 5.4.3). Policy intervention may take the form of targeted support for particular institutions. For example, recent crises in UK agriculture have had secondary effects in related institutions, such as a decline in applications for sector-specific education providers. Connected artisanal firms in the sector might benefit from funding directed at significant educational and promotional institutions (e.g. regional colleges of agriculture, Specialist Cheesemakers Association, British Cheese Awards, Food from Britain). Institutional innovations may emerge from within the business network. For example, in 1981 traditional buffalo milk mozzarella producers in the Mezzogiorno created a voluntary association ('Consortio Tutela Mozzarella di Bufala Campana'), in response to the threat of imitation and erosion of difference through adulteration with cow's milk (Bianchi 2001: 133-134). In 1993, the consortium secured a 'Denominazione di Origine Controllata' (DOC) for their products, which was subsequently extended under a similar European Union certification scheme. Larger firms obtained the greatest immediate benefits due to the stronger differentiating effect of the DOC in the national markets that they served. Smaller firms, supplying primarily local markets, were accordingly less enthusiastic and played a more minor role in the consortium. Over time, however, membership has proved a source of productive opportunity for the smaller producers, albeit one that trades artisanal for industrial capabilities:

'Once they have joined the consortium, [...] some of the smaller firms have started to consider the opportunities for further growth. In this sector the transition from artisan to industrial production for a national market can happen gradually through several small steps.' (Bianchi 2001: 135)

10.3.4 Working 'with the grain' of the network

The social capital associated with networks (i.e. their untraded interdependencies and institutional thickness) can be particularly elusive. For instance, researchers studying the fluid web of connection in England's 'Motor Sport Valley' have argued that networks of this kind are likely to require greater attention from policy makers, precisely because their intangibility renders them less amenable to conventional support measures (Pinch and Henry 1999: 826). The empirical study demonstrated that policy interventions have often led to decisive changes in network structure and performance, but have also been the source of unintended consequences for connected firms. This was illustrated in the recent spate of food safety legislation, which reinforced the potent and long-standing 'production' narrative of controlling variability, to the detriment of many artisanal producers. Firm-level effects have surfaced in conflicts related to raw milk cheese, notably the 'Lanark Blue' case (Section 7.8.2), and in isomorphic pressures experienced by artisanal firms with closer ties to the industrial production sector (Section 8.2). The general point is to guard against generic policy prescriptions. However, for interventions are to operate 'with the grain' of the network, they need to be based on sound research, which has identified the nature of the configuration. This should include its contextual characteristics, stretching beyond the major actors to consider the role of those that may appear peripheral (e.g. probing 'blind' links). It should also address network dynamics, arising between contemporary network actors and in extended cycles over time. Policy-oriented research based on aggregated data and cross-sectional methods is unlikely to grasp these complexities. It should be complemented by greater use of longitudinal and processual data (Section 6.3). The combination of analytically structured narrative and network mapping adopted for this study illustrates a novel approach to this task.

10.4 Future research priorities

10.4.1 Network governance and organising contexts

The empirical study was limited to one national and sectoral context, which was explored over an extended period and at several levels of analysis. However, both the business networks and business systems literatures have identified a lack of systematic theorising and empirical research that explores interactions between regional and sectoral factors and their influence on networking activity (Foss 1999c Oliver and Ebers 1998, Staber 2001a). Comparative studies of network governance and organising contexts could be developed to inform these issues. For example, it would be instructive to contrast artisanal cheese-making practices in England, the Netherlands, and the United States, each of which has long-established industrial production systems and a resurgent artisanal sub-sector. The aim of comparative studies in a critical realist perspective would be to analyse the differences in terms of necessary conditions, modifying the basic structures identified in the original research. A comparison between the configurations in each context could therefore probe observed differences (e.g. domestic cheese consumption patterns, industry structure and performance) to suggest the source of these effects. Comparative causal explanation of this kind could inform policy-making (e.g. acting as an *ex ante* guard against efforts to import ‘successful’ initiatives from one context to another), particularly in diverse administrative regions such as the European Union. It could also be used in the *ex post* explanation of differential network performance by applying ASN and mapping techniques to archival data.

10.4.2 Network process and firm level performance

The empirical study explored the process of inter-organisational networking, including the complex interaction between firms and other organisational actors (e.g. regulatory agencies), with a particular focus on the consequences for the smaller connected firm. There is still a great deal to learn about the impact of that business networks on firm-level performance. The guest editors of a recent *Strategic Management Journal* Special Issue highlighted this challenge, by distinguishing it from research that explained the origins of particular networks:

‘We felt that relative to research that attempted to explain the antecedents of network formation, there was relatively little research that systematically explored the performance consequences of the strategic networks in which firms are embedded. Though we have many answers to the question: ‘why do alliances and networks exist?’ we have fewer answers to the question: ‘Do alliances and networks really matter when it comes to firm performance?’ (Gulati *et al.* 2000a: 199)

A greater emphasis on outcomes is to be welcomed. However, the neo-realist analysis presented in this thesis cautions against attempts draw a sharp distinction between performance-related research and that addressing network antecedents. We already have some fairly reliable knowledge about networks and performance, primarily in terms of network structural effects. For example, a firm’s position in a network, more specifically its location over a ‘structural hole’, can be correlated with economic advantage (Burt 1992a, 1992b, 2001) (see: Section 4.2). Researchers have also argued that specified characteristics of a firm’s network ties (e.g. their strength or multiplexity), have ‘clear implications’ for strategic behaviour and performance (Gulati *et al.* 2000a: 208). However, there is a danger of over-simplification, whereby intervening factors are lost in the enthusiastic pursuit of

empirical regularities. The constraining and enabling role played by contextual factors is particularly important in comparative studies. For example, research on network processes and the performance of connected firms is of fundamental importance in developing countries, where local artisanal and industrial production systems are confronted by the demands of global buyers (Keane *et al.* 1996, Moeran 1997, Schmitz and Knorringa 1999). Historically-informed, process-oriented theoretical frameworks, methodologies and research methods, of the kind illustrated in this thesis, should be used to provide a depth of understanding that is necessarily lacking in conventional network analytical approaches. Researchers also need to address ‘dark side’ to relational resources, notably the tendency for close ties to lock firms into unproductive relationships, or to preclude alternative partnerships (Gulati *et al.* 2000b). Again, while there are some generic structural pathologies (e.g. the accumulation of dense webs of overlapping or ‘redundant’ ties, which has been associated with inertial effects on learning and adaptation), the explanation of particular configurations requires analysis of the context and its role in generating this network effect.

10.4.3 Connected firms in other contexts

As indicated in the previous sections (e.g. Bianchi’s (2001: 141) analysis of networks and firms in Italian food-processing industries (Section 10.3)), there is considerable scope for extending research on the connected firm to other contexts, through a combination of spatial and sector-specific studies. For example, the industrial-artisanal comparison, which framed the empirical study in this thesis, could have particular explanatory potential in development studies, by addressing the challenges faced by indigenous firms encountering global supply chains. Penrose (1965, 1980b) was among the earliest contributors to this field. In her

inaugural lecture at the School of Oriental and African Studies, she depicted a Western economist's misguided efforts to advise on local tax systems. Her comments, which anticipated a long-standing critique of the unreflective application of Western business models, indicated the need for thoroughly contextualised and reflective research practices:

'[A]s an economist, it was his business to know what sort of ugly facts would be likely to murder his beautiful theory'. (Penrose 1965, 1971: 324)

The lecture was also notable for bringing the term, 'The Third World' into the English language. Penrose's justification for this borrowing underlined the view that research needed to reflect the complex interrelationships that gave rise to unique organisational contexts:

'The clear political and sociological, as well as economic difference between the so-called developed countries (including Japan) and most of the rest of the world, vindicates, I think, my borrowing of an expressive and evocative phrase from another language – *le tiers monde* – 'the third world', which I chose deliberately, but not for precious effect'. (Penrose 1965, 1971: 321)

10.5 Connected firms and the problem of production

10.5.1 Capitalism, connection and democracy

The thesis has made use of the connected artisanal firm, both as an exemplar of the modified Penrosian approach and as a research subject in its own right. The research raises some broader political questions concerning 'the problem of production' (Schumacher 1974: 10) and the role of the small firm. The issues are unresolved, but are worthy of some speculative

comment in this policy-oriented chapter. In short, what is the role of the connected firm? In the Introduction, it was proposed that this type of small firm was growing in importance, challenging its marginalisation in the 20th century landscape of ‘big business’ competition (Galbraith 1967, Servan-Schrieber 1968). Schumpeter (1954) had also seen the decline of small firms as a corollary of advanced capitalism. However, like Penrose, he was less sanguine about this than were many of his contemporaries. The Schumpeterian analysis gave particular prominence to the wider institutional role of the small firm owner-manager:

‘The political structure of a nation is profoundly affected by the elimination of a host of small and medium-sized firms the owner-managers of which, together with their dependents, henchmen and connections, count quantitatively at the polls and have a hold on what we may term the foreman class that no management of a large unit can ever have; the very foundation of private property and free contracting wears away in a nation in which its most vital, most concrete, most meaningful types disappear from the moral horizon of the people’. (Schumpeter 1954: 140-141)

Penrose’s (1959) analysis was directed at a much narrower target, yet her late foray into industrial policy was prompted by a similar concern over the fate of smaller firms. While acknowledging the Galbraithian argument that ‘big’ business competition was likely to yield benefits for the economy and its consumers, she also highlighted the fundamental competition issues raised by the exercise of private monopoly power:

‘Great and widespread admiration, which is indeed justified, for the technological achievements of “big business” appears to be responsible for a distinct tendency in many quarters not only to play down the notion that restrictions on newcomers’ competition are deleterious to the economy, but even to insist that they are, within limits, desirable as a means of permitting the large firms to attain the kind of

market position necessary to induce them to engage in extensive and expensive research, larger-scale capital investment, and long-range planning programmes'. (Penrose 1959: 232)

While the case against monopolies was relatively straightforward, oligopolistic competition with entry barriers posed a more intractable dilemma (*ibid*: 234), explored in her earlier analysis of the small firms and the interstices (Section 4.3.9). Penrose chose not to discuss the 'essentially political' dimensions of this question, preferring instead to focus on the effect on output in the economy, which was 'perhaps more relevant for economic analysis' (*ibid*: 235). However, it is interesting to reflect on the normative issues that Penrose characterised as 'political', which echoed Schumpeter's libertarian agenda:

[T]he desirable nature of a vigorous and free society, the political significance of a concentrated structure of economic power, and the social significance of the absence of widespread economic opportunities for the "independent" man' (Penrose 1959: 234)

The apparent resurgence of connected firms and their class of 'independent', entrepreneurial owner-managers might suggest a degree of restoration in traditional capitalist institutions, values and associated sources of social capital. However, the nature of network governance remains the decisive factor (Section 10.3.2). Where 'dominated' networks prevail (e.g. traditional 'putting out' systems, some varieties of distributed manufacturing and sub-contracting), connection is unlikely to offer growth opportunities to small firms (Child and Faulkner 1998: 126). Indeed, it may be associated with exploitative and ultimately destructive relationships. However, this study has supported the view that business networks can, on occasion, defy conventional typologies. Research that probes the changing zones of manoeuvre of connected firms could offer an indicator of firm-level autonomy, while also

pointing to the contingencies giving rise to these changes. The politics of connection are likely to attract increasing attention as the issue of strategic choice is pursued across the blurred boundaries of the firm (Child 1972, 1997). These challenges are illustrated by recent contributions to the debate over sustainable development.

10.5.2 Sustainable development in the New Competition

In his concluding chapter, Best (2001) reviewed the environmental issues raised by economic growth in the New Competition. The chapter argued that production-oriented ‘capabilities and innovation’ framework could provide the basis for a much-needed economics of sustainable growth (*ibid*: 256). This challenges the sustainable development literature in the tradition of Schumacher’s (1974) treatise and questions whether it is always practical for firms to remain small in a given context (cf. Hawken 1993, Keane 1990, Moeran 1997). The New Competition framework envisaged small firms as part of a regional cluster, but in common with the modified Penrosian approach adopted in this thesis, it emphasised their connectedness; following Richardson (1972), networking was seen as enhancing the knowledge creation activities of firms (Best 2001: 67). Furthermore, the dynamics of connection suggested that many of the small, connected firms would be transformed by these interactions. While some would become larger independent entities, many would be absorbed by other network actors (i.e. they would follow the characteristic path of the biotechnology spin-off, leading to commercialisation within the boundaries of a larger firm). Best provided several examples of the ways in which research and development activity, allied with distributed production capabilities, delivered the attractive combination of environmentally-sustainable technologies (e.g. biodegradable polymers, nanotechnology and renewable

energy) and competitive advantage to the constituent firms. His core argument was compelling. Innovation and entrepreneurial activity across business networks held out the best prospect for more ‘sustainable’ forms of economic development in both the technology-leading and technology-following regions:

‘Because of technological and scientific advances the opportunities have never been greater for addressing the environmental challenge. Furthermore, technologies developed in the technology-leading regions become opportunities for establishing new growth dynamics in the low productivity regions as well. For example, advances in ‘micro-power’, clean energy technologies can foster enterprise development with an array of production applications in regions without existing centralised power systems’. (Best 2001: 256)

Such straightforward, design-led optimism is beguiling and inspirational. However, the argument needs to be qualified by an analysis of the political context in which production activities are organised. Governance issues, including control of the relevant intellectual property, will play a decisive role in the temporal and spatial distribution of any new growth dynamics. In short, we need to re-state the critique of much earlier, ‘trickle down’ theories of development. If technology-leading countries remain ‘better positioned’ to shape future technology trajectories (*ibid*: 255), how might we envisage a flow of advantage to the poorest regions? Best acknowledged that the production perspective was still at an early stage (*ibid*: 256). Analysis and policy prescriptions in this area could benefit from the incorporation of institutional and political dimensions, as outlined in the previous sections.

CHAPTER 11 - CONCLUSION

The basic propositions Edith Penrose put forward were provocative and path-breaking. However, few then ventured to go down the path she blazed. Time has passed, and over the last decade that path has become crowded with scholars of firm behaviour, some of whom have only the dimmest awareness that the ideas they are working with were first put forward by Penrose.

Richard E. Nelson

Endorsement for: *The Theory of the Growth of the Firm* – Third Edition (1995)

Strategy research still has a long way to go before it will catch up with Edith Penrose's four decades old insights. As Pitelis and Wahl (1998) argue, much the same may be said with respect to organisational economics.

Nicolai J. Foss

'Edith Penrose, Economics and Strategic Management' (1999a: 101)

This final chapter draws together the arguments presented in the thesis, reflects on the route taken and summarises its contribution to knowledge. It also notes some limitations and unresolved issues, which are linked to proposals for future research. The discussion addresses the three sets of research questions, theoretical, methodological and empirical. The modified Penrosian framework and the connected firm concept are located in relation to other recent developments, including the trend towards multi-level analysis and the application of co-evolutionary concepts in organisational and industrial dynamics research. The chapter closes with a reflection on Penrose's distinctive contribution to the enduring challenge of explaining the growth of the firm.

11.1 Reflecting on the arguments

11.1.1 The route taken: calibrate, modify and re-apply

The thesis has offered a detailed re-appraisal of the theoretical framework presented in Edith Penrose's (1959) *The Theory of the Growth of the Firm*. The initial task was one of calibration. Penrose's contribution was located in the literature, in relation to its precursors and some of the principal applications, elaborations and alternative approaches to theorising the growth of the firm. The task was complicated by the eclectic nature of Penrose's original work, and by the subsequent expansion of the many sub-fields whose gates she had opened. However, the 'single argument' identified the original Preface, proved to be a resilient and effective framing device, bringing some coherence to the calibration process (Penrose 1995a: xxii). The second task was to develop a modified Penrosian framework, capable of addressing methodological and empirical challenges raised in the literature review. This has been based on the 'Penrosian synthesis', a holistic interpretation of Penrose's 'single argument'. The modifications addressed a number of critiques of the original analysis and incorporated subsequent developments, notably the 'blurring' firm boundaries that is associated with network theory. The third task was executed in the empirical section of the thesis. This was designed to demonstrate a potential application of the modified framework, in the form of a detailed analysis of growth processes in connected artisanal firms. A more explicit methodology was developed, which involved a refinement of Penrose's original case-based approach to facilitate multi-level and co-evolutionary analysis. Contextual influences on the growth of the firm were included through a more nuanced interpretation of pre-existing structuring and greater differentiation in the treatment of temporality. These changes were

incorporated using a novel combination of analytically structured narrative and network mapping, providing a rich source of empirical data for practical purposes and a substantive basis for theoretical and methodological reflection.

11.1.2 Themes, contribution and unresolved issues

The thesis has ranged over many topics, but it is built around a few central and recurrent themes, which formed the basis for the detailed discussions in Chapters 9 and 10. This chapter gives a more concise overview of the contribution to knowledge, categorised under the headings of the original research questions (i.e. theoretical, methodological and empirical). It also notes some limitations in the study, which suggest a number of unresolved issues for future research.

11.2 The contribution to knowledge

11.2.1 Three levels: conceptual, methodological and empirical

Penrose's (1959) *The Theory of the Growth of the Firm* has been cited in innumerable articles published in the last two decades (Section 4.1). However, on the evidence of many citations, it remains poorly-understood by organisational scholars and is increasingly mis-represented and marginalised. Systematic analyses of its densely-woven arguments are fewer in number, and it has been left to a relatively small group, most of whom enjoyed a personal connection with the author, to make a case for the continuing importance of the work (Best and Garnsey 1999, Foss 1998, 1999a, Kor and Mahoney 2000, Loasby 1991, 1999a, Penrose and Pitelis

1999, Turvani 2001). One of the major limitations of the original book, which has persisted in the years since its publication, is the lack of empirical work grounded in this tradition. The Hercules case study (Penrose 1960), published separately from *The Theory of the Growth of the Firm*, provided a remarkably thin empirical base for such an elaborate theoretical construction (Section 5.2). Several economists have applied the receding managerial limit, or ‘Penrose effect’ empirically (e.g. Marris 1964, Shen 1970, Slater 1980b, Uzawa 1969). However, there have been few attempts to integrate the six components of the Penrosian synthesis. Four research studies have been discussed at various points during the thesis, each of which has made significant use of Penrose’s original framework: Best’s (1990, 2001) presentations of the New Competition thesis were introduced in Chapter 1; Kay’s (1997) study of corporate evolution was reviewed in Chapter 2; Garnsey’s (1998a) article on start-up ventures was discussed in Chapter 5. However, the thesis remains distinctive in its effort to combine a systematic theoretical re-appraisal and modification of Penrose’s (1959) argument, with a detailed application of the modified framework in an empirical study. The originality of the overall work lies in the balance between its conceptual, methodological and empirical elements. The contribution to each element is summarised in following sections.

11.2.2 Conceptual level: modifying the Penrosian framework

The literature review presented in Chapters 2 to 5 has indicated how Penrose’s contribution can be related to a distinctive genealogy of ideas, spanning the fields of economics, organisation and strategy. A detailed re-appraisal of the principal arguments of *The Theory of the Growth of the Firm*, was used to re-construct the six linked components of the Penrosian synthesis, reflecting the holistic nature of the book’s ‘single argument’. The broader

implication of the literature review was that disciplinary specialisation and partial attribution had diffused (and thus, 'defused') the explanatory potential of Penrose's argument. The subsequent modification and empirical re-application (Chapters 5 to 10) explored the case for invoking the Penrosian synthesis in contemporary research on firm and industry dynamics. Re-constructive projects of this kind lay themselves open to the accusation that organisational theorising and empirical inquiry is being unnecessarily constrained by its connection to earlier work:

'Conservatism once again stalks the land and the next generation of organization scholars are still looking for ways of revolutionizing the discipline and escaping the dead hand of aged scholars'.
(Burrell 1996: 3866)

There is a radical counter-argument for 'conservatism' of this kind. By acknowledging continuities in theory development, the research community guards against 'rediscovering America', an endemic tendency that is only possible once the original discoverer has been consigned to oblivion (Andreski 1971: 10). Furthermore, by engaging in a dialogue with earlier generations, individual researchers can develop greater critical awareness and a capacity to locate their own contribution to knowledge. Collectively, their informed reflexivity could challenge a much-remarked descent into the superficiality of managerialist 'fads' and 'fashions' (Clark 1999, Scarbrough and Swan 1999), and a nihilistic relativism that has infected countermodernist thought (Evans 1997: 249-253, Sayer 2000: 78-79). This debate was characterised in a previous chapter in terms of competing modes of knowledge production (Section 6.2.2). 'Mode 1' knowledge has been criticised on the grounds that it is, 'too slow, too inward-looking; it gives priority to pedigrees' (Huff 1999: 291). However, the unreflective pragmatism of 'Mode 2' knowledge has also proved to be problematic,

encouraging myopic studies, bounded by immediate task requirements. Penrose's final reflections exemplified the more 'conservative' stance. She took the opportunity afforded by the new Foreword to the Third Edition of *The Theory of the Growth of the Firm* to locate her work within the literature. Following a comment to the effect that there had, 'long been much discussion of the behaviour, growth, organizational structures and managerial problems of firms' (Penrose 1995a: ix), Penrose began to cite the works of celebrated precursors, including Alfred Marshall's [1920] (1986) *Principles of Economics*, Schumpeter's [1943] (1954) *Capitalism, Socialism and Democracy* and Coase's classic (1937) article, 'The Nature of the Firm'. She also commented on the fact that her book was published alongside a number of 'important works' containing similar ideas to hers, making particular reference to Alfred Chandler's (1962) *Strategy and Structure* and Robin Marris's (1964) *The Economic Theory of 'Managerial' Capitalism*. Her subsequent comments suggest that Chandler's historical study had the greater resonance:

'Chandler's book was finished before *The Theory of the Growth of the Firm* appeared, but the analytical structure within which its historical analysis was cast was remarkably congruent with my own work, using much the same concepts and very nearly the same terminology at many points'. (Penrose 1995a: ix)

Among the list of later studies in this tradition, she highlighted by George Richardson's (1972), 'relatively neglected by splendid pioneering article', *The Organisation of Industry*, noting that it was a work, 'which anticipated much that was to follow' (Penrose 1995a: ix) and Michael Best's (1990) *The New Competition*, both of which drew explicitly on Penrose's ideas (*ibid*: xiv-xv). The thesis has pursued these connections, taking up Penrose's implicit challenge to establish whether a blurring of firm boundaries by business networks merited a

new theory to explain the growth of the firm (Sections 1.2 and 5.1). Empirical application of the Penrosian framework in a modified form has demonstrated its continuing explanatory potential. It is, above all, the *integrated* nature of the Penrosian synthesis that lends it a lasting role in conceptual and empirical research. Penrose recognised Boulding's (1956) ontological distinction between social organisation and other forms. Concern with 'the image' led her to take managerial agency seriously, drawing on Barnard (1938) and the early behavioural theorists in order to incorporate the vital concepts of authoritative communication and productive opportunity. Her anticipation of systems theoretic approaches may have lacked a critical dimension, but her treatment of the firm as, in Kay's (1997: 282-283) terms, 'a non-decomposable system in which the whole is not the simple aggregation of its component parts', broke open the black box of neo-classical theory. However, despite this radical break with the past, much of contemporary industrial economics, strategic management and small firms research, has continued to operate with an impoverished concept of the firm:

'Break up these topics into separate issues and the interdependent nature of the firm's strategic agenda is lost. Focus instead on the firm and its constituent linkages, and the possibilities of coherent explanations are improved accordingly' (Kay 1997: 283)

The modified Penrosian framework focuses on linkages within and beyond the boundaries of the connected firm. It has the potential to mount a continuing challenge against false analogies, crude aggregations and arbitrary abstractions in these disciplines.

11.2.3 Methodological: applying the analytically structured narrative

The methodological questions were a logical extension of theoretical re-appraisal. The challenge was to develop a methodology that could address the empirical questions regarding the growth of connected artisanal firms. In addition, the re-appraisal continued in the sense that the original Hercules case study was a starting-point for the selection of suitable research techniques. The solution adopted was a novel combination of analytically structured narrative (ASN), complemented by network mapping sequences. The ASN responded to many of the perceived limitations of the narratives associated with case-based and research, including distortions arising from arbitrary periodisation, unitary narrative voice and inadequate attention to context. The construction of the narrative was informed by elements of the critical realist perspective, resulting in a multi-layered account that comprised three linked narratives (i.e. the central narrative account of the ‘two cheese-makers’ and the two historical accounts). The process of abstraction and analysis was conducted using the critical realist technique of retroduction. The narratives revealed many aspects of the growth process in connected artisanal firms. For example, the central narrative highlighted the episodic nature of ‘entrepreneurial’ networking in these firms, and demonstrated the explanatory potential of the Penrosian synthesis, including the interaction of particular components such as ‘resources-services’ and ‘productive opportunity’. The network mapping sequences facilitated a detailed examination of the network ties (or ‘connectivity’) of each firm. The constitutive effect of these connections was explored in the interval between the two main fieldwork visits. This revealed a number of new productive opportunities (e.g. Belton’s organic cheese initiative). By analysing the multiple voices of the ASN, the researcher was able to trace the ways in which knowledge and organisational practices were reproduced at the level of the firm. The

retroductive analysis provided a much more probing explanation of the growth processes identified in surface events, such as the formation or cessation of particular dyadic ties. The value of the retroduction lay in its capacity to isolate a set of explanatory mechanisms from a complex historically-informed account. While it does not resolve the ‘models’ versus ‘histories’ debate, the combination of ASN, network mapping and neo-realist interpretation allows the researcher to move with relative ease between the high road of abstract theory and the idiosyncratic byways of empirical detail (Sayer 2000: 23). In other words, ‘real world’ complexity is converted into a sound basis for theoretical abstraction, while retaining its essential dynamic and emergent characteristics. It seems like a very Penrosian way to examine the growth of the connected firm.

11.2.4 Empirical: exploring the growth of connected artisanal firms

The empirical section demonstrated that the modified Penrosian approach could be applied to unfamiliar and idiosyncratic subject-matter, far removed from the Penrosian heartland. The growth of long-established artisanal cheese-making firms in England provided a striking contrast to studies that have investigated diversification and vertical integration in multinational firms (Kay 1997), high technology clusters (Best 1990, 2001) and start-up ventures (Garnsey 1998a). Despite occasional assertions to the contrary (Section 3.3.2), it is clear that Penrose had intended her theory to incorporate the growth of small manufacturing firms (Section 10.1). However, her own modification to the basic theory – the notion that small firms grow by occupying the ‘interstices’ left behind by larger firms – did not appear to fit the empirical evidence on connected firms in the New Competition. By selecting this seemingly idiosyncratic category of firms, it has been possible to re-assess the explanatory

potential of the original arguments in a new empirical setting. The cheese-makers have also provided a test-bed for the new modifications, developed in Chapter 5, that respond to the blurred boundaries of the connected firm. The narratives have indicated how the connected firm's interactions with its wider context are mediated through a business network. The firms were able to influence the morphology of their focal firm networks by establishing new relationships (i.e. entrepreneurial networking), but these path-creating events were sporadic, the product of fluctuating 'zones of manoeuvre' (Clark 2000: 291-293). The firms were, in turn 'shaped' by these connections, which introduced new productive opportunities and provided a channel for the reproduction of knowledge and organisational practices. The analytically structured narrative indicated how these dynamic interactions operated at multiple levels of analysis, producing contingent and context-specific effects at the level of the firm. The complex interactive effects on the growth of firms were exemplified by the long-running 'confrontation' between radically different modes of knowledge-creation, as artisanal firms encountered the rationalising, industrial logic of the cheese factory, the wartime economy and the contemporary supply chain. Lastly, the empirical findings were used to identify a number of implications for policy and practice (Chapter 10). This demonstrated how a modified Penrosian framework could be used as the basis for policy-oriented empirical research. Its value derived from a capacity to move from a rich explanatory account, of the kind that is effectively 'written out' of most prevailing approaches to growth.

11.3 Limitations and areas for future research

11.3.1 Enduring challenges

The following sections identify some limitations in the conceptual and empirical work presented in the thesis. They also propose a number of areas for future research, with the intention of addressing these limitations and making further progress in relation to the theoretical and methodological aspects of the study. Other research proposals, which have a more direct bearing on policy and practice, are outlined in the previous chapter (Section 10.4).

11.3.2 Broadening the explanatory scope

Penrose was seeking to develop a ‘general’ theory of the growth of the firm. The original framework was designed to apply to all classes of industrial firm, including smaller firms, but excluded financial holding companies (Penrose 1959: 20). Furthermore, the theory was designed to inform both theory and practice:

‘What I have done is to attempt to build a consistent, self-contained theory of the growth of firms [...] which I hope provides a way of looking at the growth of firms that will be useful for both theoretical and “practical” purposes’. (Penrose 1959: 2).

This re-appraisal and re-application has been concerned with a sub-category of small firms, which were termed, connected firms (Sections 1.2 and 5.1). The arguments have been presented with reference to small artisanal firms variously engaged in activities that stretch beyond their administrative boundaries. It has also been concerned with both theoretical and

practical implications. However, the empirical study reported in Chapters 6 to 10 has focused attention on a sub-grouping of connected firms operating in a particular national and sectoral context. The empirical study has served to demonstrate something of the explanatory potential of the modified Penrosian framework. In this respect, it has served a similar purpose to the original case study of Hercules Powder Company (Penrose 1960). However, the empirical base could be readily extended, for the purposes of refining the modified Penrosian framework and its associated neo-realist methodology.

11.3.3 Comparing artisanal knowledge practices

There has been relatively little research into the nature or composition of firm-level artisanal knowledge. The analytical clarity and coherence of the concept may therefore be open to question. The empirical study has suggested that there is scope for developing a more nuanced conceptualisation of artisanal knowledge, reflecting the recent emphasis on knowledge as a dynamic and situated practice of ‘knowing’ (Section 9.3.3). Future empirical research in this area could probe the interface between traditional/artisanal and newer practices (e.g. Appleby’s combination of automated computer-controlled milking technology with artisanal production practices). Comparative studies, involving other sites of artisanal knowledge creation (e.g. cheese-makers in other countries; craft-based manufacturing in other sectoral clusters such as furniture or clothing) could also contribute to a better understanding of any systematic influences on growth processes.

11.3.4 Actor matching across network dyads

The central narrative and network maps adopted a focal firm perspective, which was triangulated using a variety of primary and secondary sources (Section 6.5). This provided a combination of actor-centred source material, informing the Penrosian concept of productive opportunity, while contextual material was derived primarily from the historical narratives, which operated at a higher level of analysis. The limitation this ‘superimposed’ approach is that it may under-represent the interactive processes associated with co-evolutionary theorising (Sections 5.5 and 9.4.3). There are considerable practical obstacles to tracing interactive effects empirically, most notably the problem of gaining access to network actors on both sides of a dyadic link. One solution involves a form of ‘snowball sampling’, in which the researcher engages one network actor to assist in obtaining access to their counterparts across the dyad, such as a buyer identifying a contact at a supplier firm (Blundel and Hingley 2001). This could prove to be an effective technique for data capture. However, the technique would need to be used sparingly, in order to retain analytical clarity and to avoid tautological argument.

11.3.5 Integrating ‘histories’ and ‘models’

The thesis began by retracing Penrose’s departure from neo-classical orthodoxy, and has asserted the importance of *appropriate* forms of analogising and abstraction when studying the growth of the firm (Sections 2.1, 3.1 and 4.4). It has also presented a critique of the countermodernist tendency to celebrate the idiosyncratic, to the exclusion of analytical clarity and a reliable accumulation of knowledge (Section 6.2, and 9.4). The empirical study and

subsequent analysis has been conducted in a neo-realist perspective, which has provided some grounds for optimism. However, there are considerable challenges in pursuing a ‘quasi-natural’ social science (McKelvey 1997). Lewin and Koza (2001) set an agenda for collaborative research approaches to co-evolutionary business dynamics that was designed to draw qualitative researchers and modellers from their respective ‘silos’:

‘In practice, this would imply that case researchers may wish to acquire the requisite modelling skills, or that modellers and qualitative researchers will form collaborations that will lead to new insights and new levels of understanding’. (Lewin and Koza 2001: vi)

The original Penrosian synthesis might seem to be a problematic partner in a collaboration of this kind, since its inherent subjectivism appears to deny the kind of aggregated data sets required for formal modelling. However, the empirical study has demonstrated that a Penrosian analytical framework can deliver an effective multi-level explanation of the growth of the connected firm. If researchers wish to take up the gauntlet laid down by Lewin and Koza (2001), the empirical challenge is to establish whether the primarily qualitative analysis technique of the ASN, in combination with a neo-realist retrodution, could provide the basis for a more formalised explanation of the growth process.

11.4 Closing thoughts

Much of this thesis has been concerned with the work of one person and, more specifically, with a rather small book written in the middle of the last century. The seemingly narrow focus of attention, and relatively long passage of time, have not proved to be an obstacle. Edith Penrose has been a most congenial and stimulating companion. I did not have the

opportunity to meet her in person, yet in conversations with former colleagues and acquaintances, her vibrant personality shines through. *The Theory of the Growth of the Firm* is undeniably a major work, spanning economics and organisation theory, while generating much of the raw material that fuelled the emerging fields of business and corporate strategy. Like all visionary work, it had its share of flaws, and we have seen how Penrose served as her own most acute critic in this regard. Yet, at a time when academic research is beset with such self-doubt, conformity and woolly-minded introspection, Penrose offers much-needed refreshment and inspiration. From the outset, rigorous argument is combined with intellectual breadth, clarity of expression and a generous measure of sheer bravado:

‘So far as I know, no economist has as yet attempted a general theory of the growth of firms. This seems to me so very strange that I am sure anyone attempting it should indeed watch his (or her) step, for naturally there is always a good reason for what economists do or do not do. Perhaps such a theory is impossible to construct, unnecessary, trivial, or outside the pale of economics proper. I do not know, but I offer this study in the hope that all four possibilities will be rejected’. (Penrose 1959: 1)

It is difficult to imagine a better way to end – or indeed, to begin.

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