The Evolution of a Creative Industry

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The Evolution of a Creative Industry

The industrial dynamics and spatial evolution of the global fashion design industry

De evolutie van een creatieve industrie

De industriële dynamiek en ruimtelijke evolutie van de wereldwijde modeontwerpsector

(met een samenvatting in het Nederlands)

Proefschrift

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Rik Wenting

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Promotor: Prof. dr. O.A. L. C. Atzema
Co-promotor: Dr. K. Frenken

Contents

Strong as is the desire for variety, it is weak compared with the desire for distinction: a feeling which if we consider its universality, and its constancy, that it affects all men at all times, that it comes with us from the cradle and never leaves us until we go to the grave, may be pronounced to be the most powerful of human passions.

Nassau Senior[1]

1 This quotation is preserved in Alfred Marshall's *Principles of Economics* (1890, p. 87).

Preface

I must call science a belief which I share.
Michael Polanyi, 1952, p. 219.

Four years of academia proved to be a surprisingly vibrant learning experience for me. Of course, the first few weeks taught me that all societal prejudices concerning academics were dead-on. However, when you finally come to grips with all the specialized topics, prodigious verbiage and jargon, and meet the persons behind the various academic titles you actually find yourself in the middle of a very common – and informal – social organisation. More importantly, one that is free of any persuasive incentive other then the passion for one's work, to accumulate and create knowledge. It has been a privilege to be able to work with some of the finest minds in the field and, I am proud to say, to befriend several of them.

Indeed, ivory solitude might be society's prejudice about any faculty member, social interaction is the beating heart of academia and its advancement. I believe that virtually any creative achievement springs from the same source: a symbiosis between individual creativity, knowledge accumulation and social exchange. Knowledge stored in a book helps retain it, but there it does not actually do anything. It is up to individuals and groups of individuals to build upon the legacy of the past. As such, the evolutionary principal of path dependence certainly applies to the continuous development of scientific disciplines. Each and every single paper, article, book chapter, conference presentation, and PhD dissertation starts with an introduction that embeds the study in prior research and points out knowledge gaps, continues with a presentation of the study's results that add to our understanding, and ends with final conclusions that point towards new research avenues. To paraphrase Isaac Newton: new horizons are found when one stands upon the shoulders of past giants. It is in exactly this way that each and every tangible product of scientific research contributes to the path dependent further development of scientific knowledge. Of course, with these words, I do not only legitimise the production process of science in general, but of my dissertation as well. A small piece of the puzzle it may be – especially considering the fact that no one knows the exact size of the puzzle to begin with – but a piece of the puzzle it is nonetheless.

My PhD study concerns the dynamics of creative industries. In the last decade, the so-called 'New Economy' – that part of the economy that thrives on knowledge, design, and innovation – is booming across major developed countries. More and more companies spend large shares of their revenues on research and development of new products and production processes. And with good reason: for many firms their sales rely heavily on products produced in the last five years. The standard Harvard business school example case on the company 3M reports that nearly 35 per cent of the company's total sales, or about 5.6 billion USD, came from products that had been introduced

during the prior four years (Schilling, 2008). Creativity and innovation create value, and increasingly so, in industries as diverse as automobiles, computer hardware, healthcare, consumer electronics, microwaves, fashion, multimedia, and communication technology. Also, the desires of the consumer seem more heterogeneous then ever. In short, for many companies and national policy makers the competence to remain competitive is increasingly dependent on the ability to innovate. As a PhD student, and an excited observer, I was given the chance to play my part in this tale.

The first question regularly asked to a PhD student on birthday parties and the like, is what the abbreviation PhD stands for. Of course, at first glance, 'doctor of philosophy' is an odd term for any non-philosophy scholar – for any economist or geographer, let alone a chemist or physicist. Then again, philosophy is referred to as the discipline that is the begetter of all other. My interest in philosophy bourgeoned during many long and interesting discussions with a five-odd fellow PhD students around an old wooden table in a smoky café in downtown Utrecht. At some point we met regularly and actually formed a 'reading group'. Our community of practice grew, and we attributed several names to it varying from The Circus to Young Schumpeterian Society – depending on our agreements with John Maynard or Joseph. It is thanks to discussions like these, during and after work hours, that I truly felt part of an institutionalised learning process that trains academic scholars to excel. I feel I have come a long way, these past four years.

It is with the important interactive aspect of research in mind, that I would like to thank several people that contributed to the fulfilment of my PhD research. First and foremost, I would like to thank my promoter Oedzge Atzema and co-promoter Koen Frenken, whom always provided a lenient but steady hand in guiding me through the rugged landscape of academia. On first glance, my two supervisors are quite different. Oedzge is one of the most entrepreneurial professors around, while Koen is an innovative theorist in fields as diverse as innovation studies, economics, and geography. They both, however, are generalists in nature and share a passion for overarching debates on the relations between developments in science, society, politics, and policy. Since I share many of these passions as well, many hours on and off work were spent discussing topics vaguely related to my thesis. I feel I have benefited from a duo-supervisorship by two experts in complementary fields, both in discipline and character. I could not have written this thesis without the constant support and frequent brainstorm sessions with Oedzge and Koen. On most occasions, our meetings lengthened way past the scheduled time. Naturally, such meetings ended with a beer afterwards. Oedzge will teach you that no matter your experience, you still have a lot to learn when it comes to negotiation and group dynamics. Indeed to see opportunities, to seize them, and to assertively establish deals between parties are important qualities that I hope to have mastered to a satisfactory degree through imitation. Koen taught me about the nature of a social organisation and that of academia in particular. One way to survive in such an environment is to recognize the value of plain-old intelligence, social networks, and maintaining a birds-eye-view on the literature's trends.

I would also like to thank my external supervisors, Ron Boschma (Utrecht University) and Michiel Scheffer (Noeton Consultancy and Saxion Professional University). Ron and Michiel helped in the set-up and outlay of the PhD project. Michiel provided helpful connections to the Dutch fashion field, and interesting discussions on the industry's development. Ron acted as a vital 'external reader' and critic of draft papers. More importantly, Ron has the ability to inspire and re-energise.

Ron wasn't the sole external critic of my work, of course. In fact my work benefited greatly from discussions and reviews within and outside the department. I would like to thank all my colleagues for helpfyul discussions and suggestions throughout my PhD project. In particular I would like to thank Erik, Frank van Oort, Sandra, Anne, Jarno, Roderik and Roald. Of all my colleagues, however, the most valuable (in on and off work hours) have been my roommates Frank Neffke, Jesse, and Mathijs. Thanks for a great time during my PhD studies. In retrospect, I am amazed that there always seemed to be plenty of time for discussion, a drink, and a laugh.

I would also like to thank many associates from the Dutch fashion design industry: Lucie Huiskens (Premsela/Kunstenaars&Co), Mariëtte Hoitink (HTNK), Monique Roso, Walter Manshanden (TNO), Victor Portes, and many others. I would also like to thank Sally Weller (Victoria University), Wendy Larner (University of Bristol) and Norma Rantisi (Concordia University) for their efforts to build up a community within the economic geography discipline that focuses especially on fashion industry research. Their special sessions at international conferences such as the AAG proved to be very helpful.

Several students and student-assistants were kind enough to help me with gathering survey data, and data input. In this respect I would like to thank Jarno, Suzanne, Sander, Cathelijne, Rosa, and the students of Human Geography and Planning at Utrecht University of the academic year 2005-2006.

I would like to thank my family and friends for their kind support throughout my studies. In this respect, I would like to thank my mom and dad in particular. Four years of PhD research can become a desolate place. Going out, doing sports with friends, or visiting relatives provide for the necessary haven to recharge.

Last but certainly not least, I would like to thank Ivonne for putting up with my flexible working hours, and weeks apart from each other when I went on another one of my trips, either for conference or course. Above all I would like to thank you, here, for your never-faltering support and belief in my abilities and judgement, especially when I felt uncertain, unable, or even unwilling to finish my PhD dissertation – and of those moments, I now dare to admit, there were more than a few. My love, you are the pillar of my accomplishments.

Rik Wenting
Utrecht, May 2008.

Chapter 1
Introduction

1.1 Why creative industries are fashionable and here to stay

Since Hirsch (1972) discussed the peculiarities of the market for cultural products, in particular the highly uncertain environment in which cultural goods are produced, an impressive number of studies on creative industries have appeared in economics and business strategy (DiMaggio, 1994; Pratt, 1997; Hirsch, 2000; Scott, 2000; Hall, 2000). The term "creative industries" refers to industries that supply goods that are commonly associated with cultural, aesthetic, or entertainment value, such as film, television, fashion, music, publishing, the performing arts, sports, and advertising (Scott, 2000; Caves, 2000)[1]. Many of its components, ranging from film and multimedia to interior design and architecture, have experienced disproportionally high growth rates since the mid-1990s (Florida, 2002a; Kloosterman, 2004). Creative industries have their origin in individual creativity, skill and talent and centre on the generation and exploitation of intellectual property and aesthetic originality (Howkins, 2001). The production process highlights small businesses, networks, risk-taking, and constant innovation in a way that set the creative industries at the core of a new kind of economy. Recent popularity of this 'creative economy' concept in policy circles signals a societal relevance of creative industry research.

However, despite the bourgeoning literature on creative industries (Scott, 2000), creative cities (Hall, 2000), and creative class (Florida, 2002a), we know little about the forces that propel the development of the market structure and spatial organisation of creative industries over time. Our understanding of creative industries is in need of a more dynamic and historic approach to its market and spatial structure. Recently, geographers like Pratt (1997), Scott (2000), Hall (2000), and Florida (2002a,b) have offered accounts of the uneven geographic distribution of creativity. In fact, few industries are more concentrated in space than creative industries (Schoales, 2006; Lazzeretti et al, 2008; Lorenzen and Frederiksen, 2007). Prime examples are fashion design in Paris, New York, London and Milan (Rantisi, 2004; Merlo and Polese, 2006), film production in Hollywood and Bollywood (Scott, 2004; Lorenzen and Taeube, 2007), and U.S. pop music recording studio's in New York, Los Angeles and Nashville (Scott, 1999). These studies on various creative 'hotspots'

1 In the economic geography literature the terms creative industries and cultural industries have been used interchangeably to categorize creative activities in cultural production (Scott, 2000). No consensus has been reached on the overlap in the terms' definitions. For example, Pratt (1997) speaks of 'creative' cultural industries to distinguish 'more creative' from 'less creative' cultural industries. In this dissertation we prefer the term creative industries over cultural industries. It stresses the aspect of continuous innovation in the production process, short product life cycles, and niche competition. These aspects, more than the production of culture per se, set creative industries apart from traditional manufacturing in the evolutionary economic framework that is applied throughout this dissertation.

signal a need for a dynamic and industry-wide approach to the development of a creative industry in space (Scott, 2006). Little is known however about the micro-foundations of industrial dynamics of entry, exit and growth that shapes the spatial structure of creative industries. Why, in short, do "certain places at certain times develop as foci of remarkable creativity in the form of exuberant entrepreneurship and innovation?" (Scott, 2006, p. 17).

The fashion design industry is an interesting case that represents several key elements of creative industries, in particular the cyclical (seasonal) processes of continuous innovation, the evasion of product standardization, and the importance of symbolic knowledge, individual skill and talent in the production process. The industry structure is characterised by a high number of firms and small firm sizes, and represents many creative industries in terms of industrial dynamics and extreme spatial concentration in four major fashion capitals that serve the global market: Paris, New York, London and Milan.

An evolutionary economic geography approach (Boschma and Frenken, 2003, 2006) to the evolution of the fashion design industry bridges two gaps in the literature. Evolutionary economic geography applies core concepts and methodologies from evolutionary economics in the context of economic geography. On the one hand, the application to creative industries is lacking in the evolutionary economic literature on industrial dynamics, and on the other hand, a systematic approach to the firm-level dynamics underlying the spatial evolution of creative industries is lacking in the economic geography literature. In addition, most, if not all cluster studies have a static nature, and do not address the origins and evolution of clustering. We offer theoretical concepts and novel empirical work that offer building blocks to further both creative industry research and evolutionary economic geography.

1.2 An evolutionary approach

1.2.1 Aim and research questions

We aim to understand the differential performance of fashion design firms and the spatial evolution of the industry from an evolutionary economic geography perspective. We obtain the following main research question:

Main research question: *What are the organizational and spatial factors that affect the performance of fashion design firms and the spatial evolution of the fashion design industry?*

We formulate the problem of industrial evolution by reference to a dynamic of cumulative causation whose logic is definable in terms of its won historical momentum, rather than in terms of a "primum mobile" or first cause (Scott, 2006, p. 18). It goes without saying that industrial dynamics have a specific geographic dimension. In fact, the spatial organisation of industries is among the core research questions in economic geography. We argue that an evolutionary perspective furthers the theoretical discussion on the geography of creative industries, and it offers a novel application of recent models of industry development (Klepper, 2002, 2007).

Up until recently, evolutionary economists have paid little attention to geography (Boschma and Lambooy, 1999). Scholars are now beginning to explore potential linkages between the fields of

evolutionary economics and economic geography (e.g. Antonelli, 2000; Breschi and Lissoni, 2001; Cooke, 2002; Boschma, 2004; Essletzbichler and Rigby, 2005; Iammarino and McCann, 2005). Having said that, it is fair to say there exist very few attempts that apply evolutionary thinking in a systematic way into the realm of economic geography (Boschma and Frenken, 2006). Indeed, the spatial evolution of industries is a promising field of application of evolutionary theory.[2]

1.2.2 Main concept: organisational routines

With an evolutionary economic approach, we build on the Schumpeterian conjecture that the primary determinants of industrial dynamics ought to be found in the underlying process of knowledge accumulation, on the one hand, and market competition among heterogeneous firms, on the other. The diffusion and accumulation of organisational knowledge is seen as a primary determinant of a firm's competitive prowess (Penrose, 1959; Nelson and Winter, 1982; Bottazzi et al., 2001; Klepper, 2002).

The concept of the 'organisational routine' is the central concept in evolutionary economic theory (Nelson and Winter, 1982). Routines are to firms what skills are to individuals, and have been metaphorically described as organisational 'memory' or 'DNA' (Nelson and Winter, 1982). Following Becker (2004), we define organisational routines as recurrent action patterns at the firm level, to the extent that they are communal and processual in nature. The evolutionary theory of the firm assumes economic action to be boundedly rational and routinised rather than driven by maximization calculus. The evolutionary theory posits that the behaviour of firms is heterogeneous, and organisational routines are responsible for the persistence of behaviour over time. Routines are resistant to change. Despite the fact that routines are the rules that guide organisational behaviour, knowledge of routines can be only partly codified and concerns a large degree of tacitness. Because of this, knowledge of an organisation's routines flows more freely within the organisation between employees that frequently interact in routinized practices, than between employees from two different organisations. In other words, routines do not only restrict organisational change, organisational borders bound their diffusion so that routines are firm specific.

In an evolutionary economic approach, the basic starting point is to understand firm behaviour as being guided by organisational routines, and market competition acts as a selection process of fitter routines. The key question in evolutionary economic geography then becomes through which mechanisms these routines diffuse among firms and cluster in space when a new industry emerges and grows (Boschma and Frenken, 2006). In the literature, three such mechanisms have drawn special attention.

The first mechanism is the replication of routines through spinoff formation. Recent studies have demonstrated that spinoff dynamics are one of the driving forces behind the growth of many industries, in which the spinoff process acts as a mechanism that transfers knowledge and routines from incumbents to new firms (Klepper and Simons, 2000a; Helfat and Lieberman, 2002). The spinoff model introduced by Steven Klepper (2002; 2007) posits that organisational routines are 'inherited' from parent firm to progeny firms started by former employees. Hence, by replicating

2 Boschma and Frenken (2003) have described how evolutionary economics may contribute to a new and more dynamic understanding of the location of an industry.

organisational routines from their parent organisation, spinoffs overcome their 'liability of newness' (Stinchcombe, 1965) commonly associated with *de novo* entrants.
The second mechanism of routine diffusion concerns the transfer of routines through inter-firm labour mobility (Nelson and Winter, 1982). We propose to extend Klepper's (2002) spinoff model to include labour mobility as a vehicle of organisational routines transfer. The movement of personnel across organisational boundaries entails the transfer of knowledge of organisational routines from one firm to the next (Nelson and Winter, 1982). The movement of key personnel to competitors entails a diffusion of organisational routines throughout the industry.

The third mechanism of routine replication is the formation of inter-firm cooperation networks. Whenever employees from different firms are cooperating closely in a joint project tacit as well as codified components of routines are exchanged simultaneously. The diffusion of routines between firms might be hampered by organisational boundaries and shielded by their ambiguity, yet close cooperation between firms forms conduits of trust through which participants learn of each other's routinized practices.

All three mechanisms have a spatial dimension. Organisational routines are partially embodied in individuals, and can diffuse spatially between firms through spinoff creation, labour mobility, and cooperation networks. The movement of individuals through space between firms is favoured by spatial proximity. As such, the three mechanisms of routine replication are localised in as much as spinoffs tend to locate near their parent firm (Klepper, 2002), and labour mobility and cooperation networks more often occur between co-located firms (Breschi and Lissoni, 2003).

We attempt to test the extent to which these three mechanisms can explain the performance of fashion design firms. We obtain the following research questions:

Research question 1: *What are the mechanisms through which organisational routines are replicated among fashion design firms?*

Research question 2: *Do replicated routines enhance the performance of fashion design firms?*

1.2.4 Evolutionary economic geography: Do agglomeration economies matter?

Besides routine replication dynamics, firm performance may be affected by agglomeration economies. This notion covers advantages that can be exploited by firms that are concentrated in a region. In economic geography, it is common to distinguish between urbanization and localization economies (Hoover, 1948). Urbanization economies are externalities available to local firms in cities, irrespective of the industry they belong to. Localization economies arise from a spatial clustering of economic activities in either the same sector or related industries. These place-specific factors can be thought of as the external, regional equivalent of classical economics' internal economies to scale. When accounting for agglomeration economies, geography itself plays a key role in explaining the spatial evolution of industries. We are particularly interested in localisation economies, or those economies that are industry-specific. In an evolutionary approach, agglomeration economies are seen as created by, and to the benefit of, firms. The entry of companies forms agglomeration economies over time. The selection of heterogeneous firm behaviour drives spatial concentration on the aggregate level. Also, firms may adapt their routines over time. Because of selection and mutation, the composition of organisational routines in an industrial cluster changes over time, and

with it the potential for localisation economies. Localisation economies, in the terms of localised knowledge spillovers, might be an alternative to spinoff creation, labour mobility, and cooperation networks, as a mechanism through which industry-specific routines spatially diffuse. In this way we can judge the relative importance of localisation economies. We obtain the following research question:

Research question 3: *Do localisation economies enhance performance of fashion design firms?*

1.2.5 The spatial evolution of a creative industry

Our final research question addresses the spatial evolution of the fashion design industry, rather than the performance of its firms. Earlier studies on spinoff dynamics (Klepper, 2002), labour mobility (Saxenian, 1994; Vinodrai, 2006), and the formation of inter-firm cooperation networks (Boschma and Ter Wal, 2007) have shown that these are predominantly, but not exclusively, localised phenomenon. Spinoffs tend to locate near their parent firms, and labour moves and cooperation ties tend to form between firms that are geographically proximate to each other. Hence, we argue that the replication of routines does not only affect the individual performance of fashion design firms. Because of their localised nature, spinoff creation, labour mobility, and network formation offer explanations for the spatial concentrating of the fashion design industry, alternative to agglomeration economies.

Besides agglomeration economies, the spatial evolution of a creative industry may be affected by urban amenities and social atmosphere specific to certain cities. Hall (2000) notes that creative activities concentrate in specific 'creative cities'. However, as Pratt (1997) and Hall (2000) emphasise, having creative industries is not the same thing as being creative or economically successful. Florida (2002a) posits that creative cities have specific characteristics that attract people in creative professions (i.e. the 'creative class'), which in turn influences firm location decisions to follow these scarce and valuable creative workers. Florida argues that creative cities attract creative workers based on the city's cultural amenities and tolerant social atmosphere. In our analyses we attempt to unravel the relative importance of these 'creative city' factors compared to agglomeration economies in determining the spatial concentration of the fashion design industry.

When considering the spatial structure of the fashion design industry, studies typically shift from the firm level of analysis to the regional level of analysis. Recent studies on the spatial organisation of creative industries highlight the importance of a place-specific cultural and institutional context that attracts and nurtures talent, and sustains complex social and informal interactions among creative agents that make a cluster of creative industry more than the sum of its parts (Scott, 2000; Florida, 2002a; Rantisi, 2004; Currid, 2007). In our evolutionary analyses we acknowledge these alternative explanations for the spatial formation of creative industries. In fact, several of our chapters address the question to what extent an evolutionary economic geography approach can complement these existing explanations for the spatial formation of an industry. By taking an evolutionary approach to the spatial formation of creative industries we do not aim to give a complete account of the complex processes that underlines the industry's spatial structure. Nor do we attempt to add to the industry's historiography. Rather we aim to uncover and appraise the micro-level evolutionary mechanisms of organisational routine replication that result, over time and in a path dependent fashion, in the spatial concentration of firms we see today.

Although we take an evolutionary rather than an institutional approach to economic geography (Boschma and Frenken, 2006), we know from historic accounts of fashion design that the industry experienced institutional resistance towards the emergence of a new market segment, ready-to-wear, in the 1960s to complement the haute couture fashion segment, which had been around since 1858 (De Marly, 1980). Evolutionary economists have also emphasized the co-evolution of individual agents, institutions that govern their boundaries of action, and industrial structure (Lam, 2000; Malerba, 2002). As an industry grows its actors and (regional) environment endogenously develop institutions that provide legitimation, standardisation of conduct, and govern specialised education and transaction arrangements. However, these industry-specific institutions may hamper the diversification of firms to new markets or industries. Grabher (1993) has termed this phenomenon regional 'institutional lock-in.' He shows that regional institutions that initially spurred the growth of Germany's Ruhr area steel industry through specialisation, turned out to foster inertia later on. In other words, the co-evolution between industry and institutions may generate conditions that are too specialised, and deter developments on different (technology) paths.

We intend to explain the spatial evolution of the fashion design industry by taking an evolutionary economic geography approach. We do so by taking into account four factors: (i) routine replication mechanisms, (ii) localisation economies, (iii) urban amenities, and (iv) the local institutional context. Our final research question follows:

Research question 4: *How can we explain the spatial evolution of the global fashion design industry?*

1.3 Research outline

In this section we briefly outline the topics of each Chapter. Table 1.1 indicates the main topics per Chapter. It shows that some pairs of Chapters overlap more than others, while all Chapters address the issue of routine inheritance.

In Chapter 2 we give an overview of the theoretical framework in which this study is embedded. We discuss the evolutionary economic geography approach to industrial dynamics, and its origins in research on the product life cycle, innovation dynamics, and the industry life cycle.

Table 1.1. Main topics per Chapter.

	Chapter 3	**Chapter 4**	**Chapter 5**	**Chapter 6**	**Chapter 7**
Unit of analysis	Firm	Firm	Firm	Firm	Firm
Spatial scale	Britain	World	World	Netherlands	World
Data	Longitudinal	Longitudinal	Longitudinal	Cross-sectional	Longitudinal
Spinoff creation	■	■	■	■	■
Labour mobility			■		
Cooperation networks				■	
Agglomeration economies	■	■	■	■	■
Urban amenities & tolerant atmosphere				■	
Regional institutions					■

Chapter 3 presents the benchmark case of the British automobile industry, for the period 1895-1968. By extending Klepper's (2007) spinoff model with agglomeration economies, we address the question whether routine replication through spinoff creation, or agglomeration economies explain the spatial evolution of the industry and its eventual concentration in the city of Coventry. As such, the Chapter functions as a point of reference for the subsequent chapters that address similar issues for the creative industry of fashion design.

In Chapter 4 we repeat the study of Chapter 3 for the case of the global fashion design industry in the period 1858-2005. We address the question whether spinoff dynamics or agglomeration economies are responsible for the spatial concentration of the global fashion design industry in four major cities: Paris, New York, London, and Milan. This study presents a first test of Klepper's spinoff model (2007) in explaining the spatial formation of a creative industry.

Chapter 5 extends Klepper's model to include labour mobility as a post-entry vehicle of routine replication. We test this extension for the global fashion design industry. We examine to what extent labour mobility affected firm performance.

In Chapter 6 we turn to a cross-sectional study of Dutch fashion designer entrepreneurs, using survey data. We address two questions. First, we examine the extent to which cooperation networks between designer-entrepreneurs are formed, at what spatial scale, and in what way cooperation networks affected firm performance. Second, we examine whether agglomeration externalities, or urban amenities and social tolerant atmosphere can explain the spatial structure of the fashion design industry.

In Chapter 7 we shift the unit of analysis from the firm to the region. We specifically analyse whether local density in industry-specific and industry-related activities determine regional entry rates. We also take into account regional institutions affecting entry. This Chapter provides the first organisational ecology study of a creative industry, and, more importantly, it offers insight in the way in which regional related activities and institutions determine the population of new market segments.

In Chapter 8, we answer our main research questions and present overall conclusions on the logic of industrial dynamics of the fashion design industry. We point out our contributions to the literature, and we identify remaining challenges for future research.

Chapter 2

Industrial dynamics and evolutionary economic geography

2.1 Introduction

Industrial dynamics can be defined as the development of industries, products, and technologies over time. The research discipline concerns itself with the analysis of entry, exit and growth of firms, and the relationship between these phenomena and technological development. The understanding of industrial dynamics represents a key theme in evolutionary economics (Nelson and Winter 1982; Dosi et al. 1988; Malerba 2002). The evolutionary approach in economics is inspired by the seminal book by Richard Nelson and Sidney Winter (1982) *An Evolutionary Theory of Economic Change*. Nelson and Winter refer to Joseph Schumpeter's work on competition, innovation and industrial organisation, who is considered as the founding father of evolutionary theorizing in economics, specifically related to questions concerning technological and economic change in industrial structure. Indeed, Schumpeter described the key notion of 'creative destruction' as a process of industrial mutation (1942, p. 83)[3] – and it is this starting point from which neo-Schumpeterian or evolutionary economists tend to view industrial dynamics (Dosi and Malerba, 2002). In this section we discuss the evolutionary literature on industrial dynamics, to the extent that it relates to our main research question.

In the evolutionary economic approach there are three processes driving economic change: (1) processes of variety creation in technologies, products, firms and organisations, (2) processes of replication, that generate inertia and continuity in the system, and (3) processes of selection, that reduce variety in the economic system (Nelson, 1995; Metcalfe, 1998). Central to evolutionary theorizing is the bounded rational behaviour of agents. Learning, strategy and capabilities of agents are constrained by their organisational routines, and the technology, knowledge base and institutional context in which firms act (Nelson and Winter, 1982). As a consequence, for evolutionary theory, aggregate phenomena at the industry level are not analysed in terms of market equilibria, but as properties that result from complex micro-interactions among firms (Dosi et al., 1995). A characteristic element of evolutionary studies is the emphasis on dynamic rather than static representations of industry organisation. Historical data and dynamic models are Schumpeter's (1987, p. 327) two 'indispensibles' in 'proper' sectoral studies. This has led scholars to compile and analyse long time series data on industrial dynamics as expressed in entry, growth, exit, innovation and labour mobility data, with which Schumpeter would agree: "it is extremely important to note that for fundamental problems of analysis, only long time series are of any use and that time series that start [ten years ago] are almost completely valueless." (Schumpeter, 1989, p. 327).

3 Schumpeter defined creative destruction as a process that "incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one." (1942, p. 83).

Industries provide a relevant unit of analysis due to their specificities. As summarized by Malerba (2002), empirical research has shown that industries are characterized by specific knowledge bases, technologies, production processes, complementarities, demand, by a population of heterogeneous firms, other organisations, and institutions. Such differences can be observed from cross-section analysis while comparing different industries (Malerba and Orsenigo 1996, 2002; Breschi, et al. 2000) and through time as a particular industry evolves (Gort and Klepper 1982; Audretsch 1987).

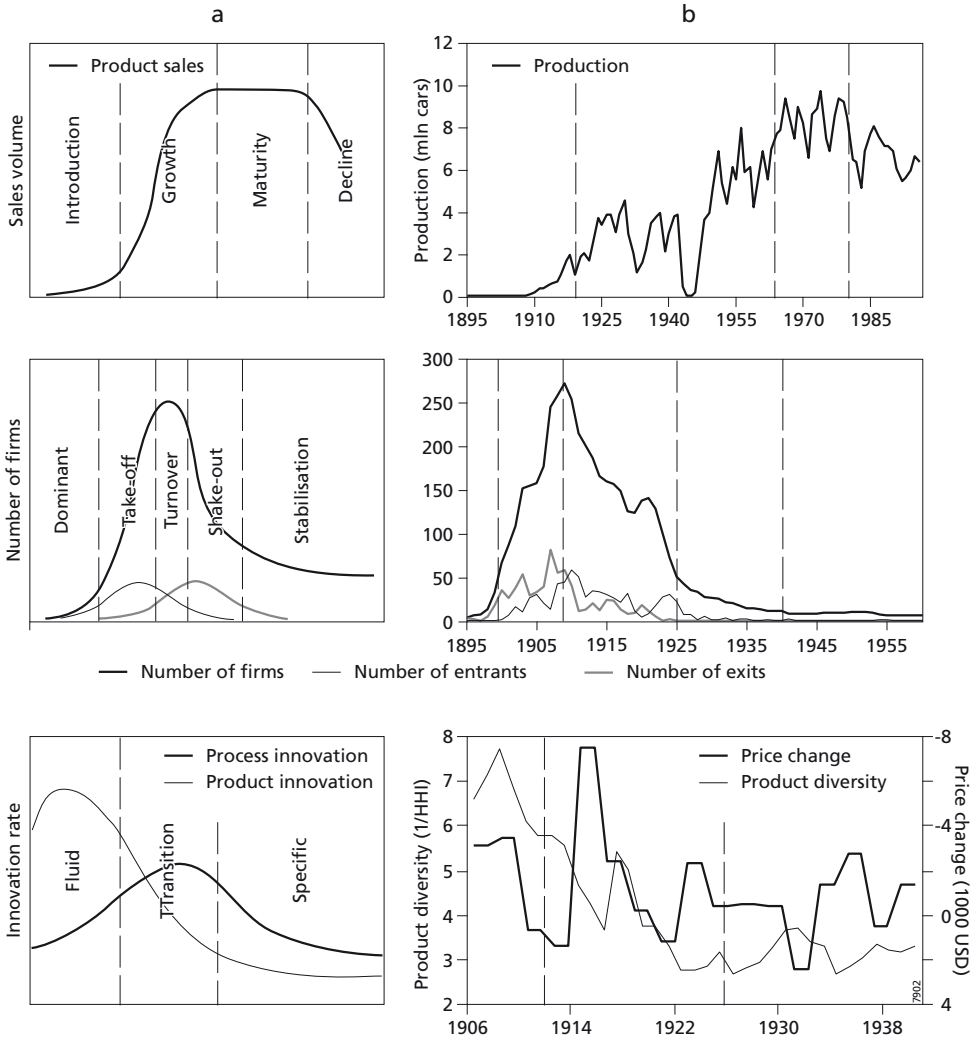

Figure 2.1. I. The product life cycle, II. the industry life cycle, and III. product and process innovation: (a) theory and (b) statistics of the US and UK car industries.
Source: Vernon (1966), Culshaw and Horrobin (1974), Gort and Klepper, (1982), Utterback (1994), Raff and Trajtenberg (1995), Geroski and Mazzucato (2001), Klepper (2002a).

Boschma and Lambooy (1999) and Boschma and Frenken (2003, 2006) call for an 'evolutionary turn' in the economic geography discipline, with a specific focus on the spatial dimension of industrial dynamics. Evolutionary economic geography translates the core concepts of variety, selection, and retention from evolutionary economics to a geographic context. Two major pillars are the acknowledgement of the path dependent spatial evolution of industries and the large influence of early, chance events on future spatial outcomes. Industrial dynamics takes up a central place in the field of evolutionary economic geography.

This chapter is set up as follows. In the first part, we discuss the literature on industry life cycles. In the second part, we assess the implications of an evolutionary approach to industrial dynamics for the field of economic geography. In particular we discuss the value of these models in explaining the spatial structure of industries over time, in contrast to more traditional models based on economies of agglomeration. In the fourth part, we assess remaining challenges from the literature, and discuss to what extent this dissertation addresses these issues.

2.2 Life cycle perspectives on industrial development

Evolutionary economics depicts industries as proceeding through distinct cycles over time as they age, akin to how organisms move from one life cycle phase to another (Bonner, 1993; Klepper, 1997). The industry life cycle describes the evolution of entry, exit and growth of firms over the course of the product life cycle. The product life cycle depicts the market development of a product or a group of product varieties in phases over time. In effect, the industry life cycle can be defined as a product life cycle that captures the way many industries evolve over time. In other words, the industry life cycle describes regular patterns in the development of market structure over the course of the product life cycle. The life cycle literature, in particular, is one that is rooted primarily in extensive empirical observation (e.g. Gort and Klepper, 1982; Acs and Audretsch, 1987; Klepper and Miller, 1995; Agarwal, 1998; Klepper, 2002; Boschma and Wenting, 2007).

The idea that a product goes through a life cycle after its first commercial introduction is quite common in the business and economics literature. The product life cycle is generally composed of four stages (Vernon, 1966): introduction, growth, maturity, and decline (see Figure 2.1.I.a). These categories are determined by the growth in product sales, which generally follows an 'S-shaped curve'.[4] For illustrative purposes, Figure 2.1.I.b shows the number of cars produced by domestic manufacturers in the Unites States over 1895 through 1996. The four different phases of the product life cycle are illustrated by the grey lines in the Figure's background.[5] The perception of an S-shaped product life path can be traced back to Kuznets (1929), and has early on been empirically tested

4 As such, the product life cycle is related to the S-shaped curve of innovation diffusion or adoption, which identifies four phases in the adoption of a new product innovation over time: 'innovators and early adopters', 'early majority', 'late majority', and 'laggers' (Rogers, 1983). The technological life cycle can be defined as the period from a major breakthrough, which opens up a new territory for exploitation to the next major technological barrier. It is characterized by a rapid increase in marginal R&D productivity, followed by a decline as technological possibilities are gradually exhausted.

5 Note that the specific boundaries of the four distinct phases remain ambiguous. Here, the figures in Figure 2.1 part (b) serve purely an illustrative purpose of the theoretical hypotheses in Figure 2.1 part (a).

by Burns (1934, pp. 171-173) who generalized that "an industry tends to grow at a declining rate, its rise being eventually followed by a decline."[6] For the United States, Burns (1934) found consistent 'trend cycles' in over a hundred product time series that record output, consumption, and turnover over the fifty years prior to 1929. An international comparison among 40 countries of 61 product life cycles was done by Wagenführ (1933), who found similar regularities in production figures: the introduction of a new product through technological innovation was followed by expansion, and this expansion in output is most rapid in its early years, up to a level where demand is saturated.[7]

Based on a study of 46 industries, Gort and Klepper (1982) examined the dynamics of entry, growth and exit and the role of innovation herein. The development of product output generally coincides with a regular trend in firm demography – the industry life cycle. Beginning with the first commercial introduction of the product, Gort and Klepper (1982) hypothesize five stages in the evolution of the market with respect to the number of active producers: (1) a dormant stage with low numbers of competitors enjoying high monopoly profits, (2) a 'take-off' stage with a increasing entry and low exit rate from the market, (3) a high turnover stage with many firms entering the market and leaving it, (4) a 'shake-out' stage with mass exit via mergers and bankruptcies, and finally (5) a stabilization stage during which a stable oligopoly emerges (see 2.1.II.a). Figure 2.1.II.b shows the benchmark case of US automobiles. Similar to the four stages in the product life cycle, these five stages represent a general pattern of the industry's development from its beginning up to, but not including, the period of eventual decline or contraction in absolute market size (Klepper, 1997).

The industry life cycle thesis is a powerful conceptual tool to think about the evolution of an industry. It has some shortcomings, however. First, not all technologies and industries display historical patterns that fit the life cycle thesis (Malerba et al., 2007). In some industries there it little reason to assume that scale economies or cumulative learning advantages would cause firms to grow large and prohibit new firms to enter the market. A second shortcoming of the product life cycle thesis is that it has no innate explanatory power. The life cycle thesis describes the development of products, technologies, and industries over time as they pass through empirically distinct phases. Some evolutionary theories have been developed later to explain the empirical findings of growth, shakeout and stabilization. It is to these that we turn in the following section.

2.3 Explanations for the industry life cycle

In this section we discuss the two main explanatory models of the industry life cycle. Both models concern the role of innovation in industry shake-outs.[8] The first is the dominant design theory which holds that technological developments initiate industry shake-outs. Here we present the

6 See Gold (1964) for some early critical comments on the empirical universality of the product life cycle.

7 It is in this respect that we view new fashion designs as (incremental) product innovations that set in motion short product life cycles every fashion season (Pesendorfer, 1995).

8 The relation between innovation patterns and entry opportunities opens up avenues of research that relates technological progress to industrial dynamics, other the models discussed here. For instance, the industry life cycle discourse benefits from insights in the workings of technological paradigms (Dosi, 1982) and technological regimes (Audretsch, 1991, Breschi, et al., 2000) where the specific pattern of innovative activities in an industry can be explained as the outcome of different technological learning processes.

notion of technological standardization into a dominant design, and discuss how the emergence of a dominant design from a set of contenders triggers a sudden decline in the number of manufacturers (Jovanovic and MacDonald, 1994a,b). The second theory presents an evolutionary approach in which changes in an alternative industrial demography are more incremental and part of a broader evolutionary process shaped by scale-appropriability and the diffusion of organisational routines (Klepper, 1996, 2002).

2.3.1 The emergence of a dominant design

Regularities in entry, growth and exit over time have been the subjects of longstanding theorizing and empirical investigation (e.g. Gibrat, 1931; Simon, 1955; Nelson and Winter, 1982; Gort and Klepper, 1982; Agarwal and Gort, 1996; Thurik and Audretsch, 1996; Dosi and Malerba, 2002). The product life cycle thesis is rooted in the notion of radical product innovation that gives rise to a new, undiscovered market around which a new industry in formed. Theoretical explanations for empirical regularities in firm demography have also been sought in the innovation literature. They include rates of product and process innovation over the product life cycle (Utterback and Abernathy, 1975), the emergence of a dominant design (Anderson and Tushman, 1990), the formation of technological paradigms (Dosi, 1982), and, to a lesser extent, disruptive innovation (Christensen and Bower, 1996) or discontinuous technological change (Lambe and Spekman, 1997). Of these, the latter three centre more around the evolution of technologies than industrial dynamics as such. Although their relation with the industry level is recognized (Nelson and Winter, 1982) they have given rise to their own respective fields of research in technological change.

The most influential explanation for the industry life cycle is the notion that its regularities are related to patterns in innovation rates (e.g. Phillips, 1971; Nelson and Winter, 1982; Jovanovic and MacDonald, 1994a,b; Thurik and Audretsch, 1996; Klepper, 1996). The regularities in innovation patterns involve both the rate and the type of innovation over the product life cycle, and were first described by Utterback and Abernathy (1975) using data from the US automobile industry and building upon the work from Mueller and Tilton (1969).[9] Utterback and Abernathy (1975) distinguish between product and process innovation. Product innovations are defined as (technological) improvements of the product itself, which lead to various product designs and broaden the scope the market. Process innovations are defined as innovations that enhance the efficiency and productivity of the manufacturing process of the new product, which lead to lower average costs, lower prices, and give rise to economies of scale. The idea is that in the introduction phase of the new product, its specific design and utility are still 'fluid' as consumer preferences are not fully known and technological uncertainty is still high. Over time the product design begins to standardize (Anderson and Tushman, 1990). As the demand for a product expands, a certain degree of standardization usually takes place[10]. In this second phase of 'transition', the rate of product innovation decreases in favor of process innovation. Utterback (1994, p. 96) states, "It is in this

9 Note that the universality of the development of innovation rates over the industry life cycle is contested, in particular for innovation in service industries (Barras, 1990).

10 Product standardization and increased process innovation over the product life cycle coincides with a shift in factor requirements (Vernon, 1966). Several geographers have translated the product life cycle model to the idea that industries emerge in urban 'core' areas, and move over their life cycle towards peripheral areas in search of cheap labour (Vernon, 1966; Norton, 1979; Rees, 1981; Markusen, 1985). It is in this context that outsourcing of many manufacturing jobs can be understood.

phase that product and process innovation start to become more tightly linked. Materials become more specialized; expensive specialized equipment is brought into the manufacturing plant; island of automation begin to appear; managerial controls are suddenly seen as important. The growing rigidity of these aspects of operations means that changes in the product can be accommodated only at increasingly greater cost." In essence, increasing product standardization shifts competitive pressure away from product standard battles to producing the dominant product design cheapest. As the underlying technology matures, process innovation rates declines and economies of scale come into play. Utterback (1994, p. 96) terms this third phase the 'specific' rather than 'mature' phase, because "the manufacturing of assembled products aims over time at producing a very specific product at a high level of efficiency." Figure 2.1.III.a illustrates the hypothesized rates of product and process innovation over the product life cycle by Utterback and Abernathy (1975), and, as an empirical illustration, Figure 2.1.III.b shows the illustrative statistics of the US car industries for 'product diversity' and 'change in price' as proxies for product and process innovation.[11]

Jovanovic and MacDonald (1994b) subsequently developed a model of industry evolution in which the non-monotonic rate of entry and exit over time is explained by innovation rates of competitive firms. The model attributes the dynamics of firm numbers to technological progress. Innovation opportunities are argued to fuel entry, while the relative failure to innovate causes firms to exit. Jovanovic and MacDonald's model contents that while output growth persists, the rate of growth falls below the growth rate of average firm size so that firms must exit and a 'shake-out' occurs. They conclude that the early adoptions of key inventions in the US tire industry in 1910-1920, i.e. the eventual dominant designs, by a few firms spurred their relative growth and initiated a shake out.

Unfortunately, the model falls short to explain the industry life cycle outside of the dominant design thesis. The model cannot explain industry dynamics in industries where dominant designs are less likely to emerge.[12] A second drawback of the model is that it is not a truly dynamic model, in the sense that it does not allow for continuous entry and exit. Rather the model distinguishes two periods (one before, and one after the dominant design emerges) with each an initial moment of entry, after which competition selects the winners from these sets (Jovanovic and MacDonald, 1994a).

2.3.2 Spinoff dynamics and routine inheritance

Klepper and Simons (2000a) show that Jovanovic and MacDonald's model, and the dominant design thesis in general, cannot provide a general framework since empirical evidence shows that

11 Note that the curve 'product diversity' in Figure 2.III.b represents the British automobile industry, as we weren't able to obtain the data for the US. Product diversity is shown as the inverse of the Herfindahl index (1/HHI) based on the dominance of types of car engines in all motorcar models produced in Britain between 1906 and 1940 (Culshaw and Horrobin, 1974). The 'price change' curve is measured in US dollars indexed for 1993. Raff and Trajtenberg (1995) show that price changes in US automobiles can to a large extent be attributed to process innovation.

12 In industries that do not standardize production, market structure commonly takes the form of monopolistic niche competition. In creative industries, such as fashion design, or luxury industries, such as jewellery and *haute cuisine*, products do not standardize. Firms that develop product innovations in these industries do not appropriate their benefits through the integration of manufacturing activities but by licensing new products to other manufacturers (Bonaccorsi and Giuri, 2000).

many industries that experience shakeouts happen to have no dominant design. In other words, the choice between process innovation and product innovation may not be exclusive. Klepper (1996) formulated a model in which industry evolution is not determined by any exogenous event, such as the emergence of a dominant design, but endogenously by the behaviour of firms. The model emphasizes differences in firm innovative capabilities, which are assumed to be randomly allocated, and the importance of firm size in appropriating the returns from innovation. In contrast to Jovanovic and MacDonald (1994b), the model does not *a priori* assume the emergence of a dominant design. In fact, within the boundaries of Klepper's model, no assumptions on technology life cycle are needed to explain the industry life cycle. He argues, whether through product or process innovation, firms grow and increase their market share *vis-à-vis* their competitors (Klepper, 1996). Product innovations enhance product diversity and are often designed to attract new buyers by expanding the scope of the market. Process innovation is principally designed to lower a firm's average cost of production. From the standpoint of entry, however, what is critical is not simply the reduction of the rate of technological advance but the co-occurring shift in its origin: the orientation shift from product to process innovation as the technology matures (Gort and Klepper, 1982). Intensified competition leads to decreasing profit margins over time (Klepper, 2002). As larger firms are better able to appropriate the returns to process R&D since their investments apply to a larger number of products, a large scale is required to remain technologically competitive. Eventually, as the product market declines, a new radical product innovation becomes necessary to provide new revenues for incumbent firms and a new lifecycle starts again.

A major drawback of the early model (Klepper, 1996) was its dependence on scale-appropriability to account for shake-outs, the typical industry life cycle phenomenon. In a further extension of the model, Klepper (2002) depicts the industry shake-out as a consequence of the replication of organisational knowledge through spinoff creation. Organisational routines are depicted as determinants of a firm's innovative capability, or its efficiency to do R&D. The model assumes that firms differ in their organisational capabilities from their birth, and successful routines can only diffuse through spinoff creation whereby routines of parent firms are replicated in the new spinoff company. This approach accounts for the evolutionary concept of firm heterogeneity in routines, and the rigid nature of organisational routines. The model incorporates two other elements that determine entry and survival. First, a firm's size is presented as a determinant of its amount of R&D expenditure. Thus, larger firms are considered to be more likely to innovate and 'stay ahead of the game', than smaller firms. In the model, however, size is a function of tenure and innovative capacity, as all profits made are allocated to firm growth. The second additional element in the model is time of entry. As firms improve their production process via process R&D, industry tenure is a powerful explanatory variable for the success of incumbents over new entrants. In sum, new entrants can only enter the market if their innovation capacity based on their pre-entry expertise compensates for their late entry and small size.[13]

Klepper's (2002) model of routine inheritance through spinoff generation offers a novel explanation for the industry life cycle. It assumes that barriers to entry are based on the average innovative capacity in the industry. Through the generation of more and more successful spinoffs, the demise of less successful incumbents, and the growth of incumbents, average innovative capacity in the

13 In a similar vein, Jovanovic and Lach (1989) propose that early entry favours higher revenues per unit of output, while late entry allows for imitation and learning from the experience of earlier entrants.

industry rises over time. The rise of the entry barrier restricts the number of possible new entrants. Eventually the rising average innovative capacity in the industry causes the exits of incumbents that fall short, initiating a 'shake-out' and forming an oligopolistic market structure.[14] The theory entails a number of predictions that have been confirmed in a series of studies (Klepper 2002, 2007; Cantner et al. 2006; Buenstorf and Klepper 2005). First, the theory predicts that the number of inexperienced entrants will decline versus the number of spinoff entrants over the development of the new industry. Furthermore, the model predicts that successful incumbents are more likely to generate spinoffs, as they inherit fitter routines vis-à-vis other spinoffs. The firms that survive the shake-out and claim oligopoly rents in the mature industry are likely to be the early entrants with appropriate pre-entry experience and the spinoffs of these firms that inherited their successful organisational routines. The evolutionary dynamic is path dependent as early entrants have a larger probability to survive as well as the firms originating from these firms.

The notion of organisational routines is central to evolutionary theorizing on firm behaviour, specifically to account for persistent heterogeneity in firm behaviour (Nelson and Winter, 1982). A routine has been defined as "*pattern of behavior that is followed repeatedly, but is subject to change when conditions change*" (Winter, 1964, p. 263), and later as "*repeated activity patterns, commonly involving interaction among several actors*" (Becker, 2004, p. 645). It is the collective nature of routines that renders routines an organisational rather than an individual attribute, while recurrent activity patterns of an individual would be more accurately described as habits. A firm's routines to a large extent determine its behaviour and its capabilities, and can be thought of metaphorically as organisational 'DNA' (Nelson and Winter, 1982) Such argumentation is in line with the idea that "routines contribute to the distinctive competences and capabilities", which "differentiate firms from each other and provide the basis of differential performance vis-à-vis competitors" (Teece et al. 1994, p. 15).

The inheritance of routines and capabilities from the parent firm to its spinoffs has emerged as a central theme in evolutionary studies of industry dynamics (Agarwal et al, 2004; Buenstorf, 2006). The spinoff process is regarded as a mechanism through which routines are diffused, albeit imperfectly, throughout the industry. The notion that entry opportunities are linked to the pre-entry background of entrepreneurs draws on the observation that most radically innovative products and technologies are not developed and commercialized by incumbents, but rather by new ventures (Schumpeter 1934; Henderson and Clark 1990; Burton et al., 2002). In this respect, acquiring pre-entry experience is a way by which entrepreneurs can overcome their 'liability of newness' (Stinchcombe 1965). The idea that the pre-entry learning experiences of entrepreneurs determine their firm's innovative capacity, entry opportunity and firm performance (Klepper and Simons, 2000a) is supported in work by Burton et al. (2002), Agarwal et al. (2004), Koster (2006), and Dahl and Reichstein (2007).

14 This argument runs parallel to a predicted inflation of sunk costs, which arises when firms compete to establish brands, create new distribution channels, invest in process innovation or attempt to buy up scarce resources (Geroski, 2001). Such expenditures stimulate market growth, raise fixed costs and so limit the number of firms able to survive in the market.

2.4 The economic geography of the industry life cycle

The abovementioned theories in industrial dynamics provide a way to understand the spatial evolution of industries as an evolutionary process. Using data on the entry and exit of firms, the additional information on the location of firms provides one with an evolving spatial distribution of firms. One can then ask the question to what extent an increase in spatial concentration results from differential spinoff rates (assuming that spinoffs locate in the same region as their parent firm) as well as to what extent spatial concentration affects the survival rates of new firms through agglomeration effects. These two questions are addressed separately in two path dependence models by Arthur (1994) and jointly in the industry lifecycle model of Klepper (2002b, 2007) as applied to the spatial concentration of the U.S. automobile industry in Detroit.

2.4.1 The spatial dimension of spinoff dynamics

In the spinoff model by Arthur (1994) the number of spinoffs a region generates is dependent on the number of incumbents it hosts. The more firms are active in the region, the more spinoffs they generate, which in turn increases the future probability spinoffs are generated in this region vis-à-vis other regions. As the occurrence of each new spinoff in a region changes the probability a new spinoff occurs in a region, the process is path dependent. Arthur's model allows for early chance events (i.e. the location of a few more firms in a particular region) to be magnified eventually leading to the industry's concentration in one or only a few regions.

Arthur's model, however, does not allow for heterogeneity of firms. All firms survive and all are equal in their capability to generate a spinoff. Within Klepper's (2002) model of industry evolution, the spatial formation of an industry is dependent on the geography of heterogeneous organisational routines. As a result, firms are heterogeneous, not only in their ability to survive, but also in their ability to generate spinoffs. The model assumes that unsuccessful firms generate fewer, and less successful spinoffs than more successful incumbents. As such, not only the quantity, but also the qualities of the number of incumbents that reside in the region determine the region's chances of becoming a prominent cluster. Klepper (2007, p. 2) states that:

"At any given moment the number and quality of a region's entrants into a new industry depends on its stock of firms in related industries and the quality of its incumbents in the new industry. These two factors – the stock of incumbents and firms in related industries shape the location and regional performance of entrants into the new industry and thus how the geographic structure of the new industry evolves."

As in Arthur's model, Klepper's model also allows for the early, chance location of only a few entrants in one region to set in motion a cascade of spinoffs leading to industry concentration. However, regions in which entry starts later may still develop a cluster provided that its entrants have fitter organisational routines. In Klepper's (2002) study of the spatial concentration of the US automobile industry in Detroit, it becomes clear that Detroit was not the favoured location from the industry's start. In fact, the region's first entrants appeared well after the radical innovation that gave birth to the new industry. The fact that early Detroit entrants (e.g. Ford, Olds Works) where very successful, and locally sprouted several spinoff firms, which generated spinoffs themselves, etcetera, set in motion the process by which successful organisational routines in automobile manufacturing where locally diffused in the Detroit region. The local replication of routines through

spinoff generation contributed to the geography of organisational knowledge that underlines the geography of the industry. Similar findings have been documented in studies on the German and British automobile industries (Cantner et al. 2006; Boschma and Wenting, 2007), and the US tire industry (Buenstorf and Klepper 2005).

A vital component of the spinoff model is the assumption that spinoffs locate close to their mother companies. Several studies have shown that spinoffs tend to locate near their parents, (e.g. Klepper, 2002; Egeln et al., 2004; Buenstorf and Klepper, 2005; Cantner et al, 2006). Buenstorf and Klepper (2005) note that the specific circumstances surrounding the spinoff event determine its spatial location. Social networks of aspiring entrepreneurs with co-workers, customers, and suppliers are spatially localised and can tie new venture developments to the parent region (Sorenson, 2003). The relation with the parent may also endure after the spinoff event, which would be a further incentive for the spinoff to locate near the parent firm.

2.4.2 Agglomeration economies over the industry life cycle

The economic geography literature traditionally explains the spatial structure of an industry by place-specific factors and agglomeration economies. This latter notion covers advantages that can be exploited by firms that are concentrated in a region. In economic geography, it is common to distinguish between localization and urbanization economies (Hoover, 1948). Urbanization economies are externalities available to local firms irrespective of the industry they belong to. They comprise the benefits firms appropriate by locating in large, diverse urban areas (Jacobs, 1969). Such local advantages entail better infrastructure and a larger diversity in local industries and related technologies.[15] In contrast, localization economies arise from a spatial clustering of economic activities in either the same sector or related industries. Localisation economies generally fall into three categories (Marshall, 1890). First, the local supply of a specialised labour pool. The geographic concentration of economic activity generally coincides with the local availability of skilled workers.[16] Second, the critical mass of firms caused by spatial clustering enables the set-up of specialized suppliers and customers in the region. Third, clusters provide better environments for knowledge spillovers through face to face contact between employees in social networks and by employees moving between firms (Breschi and Lissoni 2001; Balconi et al., 2004). In contrast to spinoff dynamics, when accounting for agglomeration economies, geography itself plays a key role in explaining the spatial evolution of industries.

Myrdal (1957) was one of the first to take a dynamic view on agglomeration economies, or what he called a process of cumulative causation. That is, the more firms locate in a region, the more diversified the local labour market becomes, the more suppliers can specialise, the higher local demand, the better the infrastructure, the more attractive the region becomes for newcomers, leading to more local firms, *et cetera*. Thus, the higher the number of local firms, the stronger the impact of agglomeration economies becomes. In a similar vein, Arthur (1994) has simulated agglomeration economies using a population of firms that enter the economy sequentially. He assumed that firms have different locational preferences equally distributed across regions. In the

15 Urban density also entails agglomeration diseconomies, related to congestion effects and high land rents.

16 Of course, sharing a labour pool with competitors also entails diseconomies in the sense of higher wages and an increased risk of labour poaching. Thus, under these conditions, industries cluster when human capital is scarce to the extend that it offsets these disadvantages.

absence of agglomeration economies, sequential firm entry would simply lead to a equal distribution of firms across regions. However, if agglomeration economies are present, and one region has attracted slightly more entrants than other regions, a critical threshold is passed and all new firms will opt for this one region as to profit from the higher agglomeration economies. Once again, path dependence is involved: chance events (i.e. the stochastic sequence of new entrants with locational preferences early on), combined with increasing returns (i.e. the more entrants locate in a region, the stronger the impact of agglomeration economies) lead to spatial lock-in. As a consequence, agglomeration economies can cause an industry to concentrate in one region.

Co-location of firm may not only induce agglomeration economies, but may also increase competition for clients and employees. Porter (1990) argues that increasing spatial concentration of an industry induces firms to be innovative in order to survive. In other words, co-location of competitors implies strong local rivalry, which fosters the pursuit and rapid adoption of innovation. Stronger local competition, however, may also force firms to exit the market (Klepper, 2002). This is especially true during the later stages of the product lifecycle of an industry, when cost competition becomes fiercer, resulting in a shakeout process. This shakeout process may disproportionately affect regions that host less successful firms, resulting in a change of the spatial distribution of the industry.[17] What is more, knowledge spillovers within clusters may also involve sensitive information and useful knowledge for close competitors while such involuntary spillovers are less likely to occur over larger distance. In Klepper's (2002) study it was found that a dummy variable coding for Detroit firms had no significant effect on their survival chances once pre-entry experience and other variables were controlled for. In one model, the dummy even exerted a negative effect on firm survival, suggesting that the competition effect was larger than the localisation economies effect. Competition effects are also central to geographical applications of in organisational ecology literature where local number of firms is found to have a negative effect on entry (Hannan et al. 1995; Bigelow et al. 1997; Van Wissen, 2004).

2.5 Criticism and extensions of the life cycle model

The industry life cycle thesis has opened up new areas of research in industrial dynamics. The industry life cycle concept offers researchers in industry dynamics a new framework that is based on extensive empirical investigation and arguments rooted in innovation and evolutionary theory. In the context of economic geography, however, the industrial lifecycle theory has several shortcomings.

2.5.1 Shortcomings of the industry life cycle model

Modeling the spatial structure of an industry through the spinoff mechanism leaves little scope for place-specific effects. In Klepper's industry lifecycle model routine replication through spinoff

17 Recent literature aims to establish a geographic account of the industry life cycle thesis by introducing the notion of 'cluster life cycle' (Press, 2006; Maskell and Malmberg 2007; Menzel and Fornahl, 2007). It argues that clusters go through a life cycle of their own as industries grow, mature and decline. Note that the industry life cycle thesis posits spatial concentration of industries as a by-product of market concentration following a shake-out in the number of firms. As such, the thesis does not take into account geographic notions such as agglomeration economies or localised knowledge spillovers (Breschi and Lissoni, 2001).

dynamics determines the formation of the market and geographic structure of the industry. The eventual spatial structure of an industry, i.e. which regions turn out to be winners and obtain new clusters, is solely based on the early chance events of successful incumbents locally generating successful spinoffs, who generate spinoffs themselves, and set in motion a cumulative causation mechanism. The role of geography in explaining the spatial structure of industries is reduced to the location of diversifying firms from related industries that enter the industry with pre-entry experience.

In his study of the US automobile industry and its spatial concentration in Detroit, Klepper (2002) shows that even though Detroit firms seem to enjoy benefits over firms located elsewhere, this effect disappears when controlling for firm capabilities inherited from parent firms. Klepper concludes that even though the industry clustered in and around Detroit, the industry might have been clustered in any another region. Early chance events, specifically the entry by successful entrants and a rapid spinoff generation initiated a localized replication of organisational capabilities that led to the region's eventual dominance over its competitors. In their study of the US tire industry and its concentration in Akron, Ohio, Buenstorf and Klepper (2005, p. 33, 25) observe that "a closer look at the evidence suggests that the geography of the industry may have been shaped primarily by the origin of firm capabilities rather than agglomeration economies. … We suspect there were no such advantages." Hence, the model predicts that the spatial structure of an industry is shaped by the geography of organisational routines, rather than by the geography of economic activity.

A challenge for scholars of economic geography is to reconcile these findings with the notion of agglomeration economies. One of the main arguments against Klepper's model that proponents of agglomeration economies thesis may hold rests in his measure of 'regional specific effects' by including a region dummy for Detroit firms. Aside from the fact that the measure is determined *ex post* and is time invariant whereas agglomeration effects are assumed to be dependent on the concentration of firms, a dummy does not indicate the exact nature of such economies or diseconomies. More advanced measures such as the changing number of competitors and suppliers in a region, the size of the local labour pool, and the presence of related activities may be important explanatory factors left out of the model. Such an extension of the model would incorporate geography more thoroughly in the evolutionary approach to industry life cycles.[18]

A second challenge for scholars of evolutionary economic geography rests in developing a more dynamic theory of agglomeration externalities in explaining the industry life cycle and its spatial implications, without reference to routine inheritance *per se*. To what extent can the spatial formation of an industry over its life cycle be explained by evolving agglomeration economies? In a first attempt, Neffke et al. (2008) show that urbanization and localization economies exhibit diverse effects as an industry progresses from phase to phase over its life cycle. Specifically, they find that firms in young or pre-shake-out industries benefit from urbanization economies, i.e. a regionally diverse sector and technology base, while firms in mature or post-shake-out industries benefit from localization economies, i.e. proximity to sector-specific factors such as labour and suppliers. Agglomeration economies, then, change over time, not only based on a rich-get-richer argument, but in their nature as well. Regional diversity nurtures the development of emerging industries,

18 Chapter 3 further develops this argument empirically in a study of the British automobile industry in which various forms of agglomeration economies are taken into account.

while regional specialization stimulates the growth of mature sectors. Analyzing agglomeration economies from an evolutionary perspective based on the industry life cycle thesis becomes a powerful new understanding of regional disparages in growth and sectoral composition.

A third shortcoming of the industry lifecycle concerns its inability to account for the location of new industries. Indeed, the origin of new clusters and industries remains largely obscure, in the sense that it is difficult to determine *ex ante* where future clusters will take root (Maskell and Malmberg 2007). Boschma and Frenken (2006) agree with the industry lifecycle model that the clustering process is path dependent and unpredictable, yet emphasize the potential asymmetries across regions in initial conditions. Put differently, an analysis is required to determine which territories are likely candidates and which territories can be excluded from the start. This provides an answer to what degree the windows of locational opportunity are open when a new industry emerges (Storper and Walker, 1989). In the industry lifecyle model, the only factor opening locational windows is the presence of firms in related industries that potentially diversify in the new industry. However, other factors are important as well. Apart from traditional determinants such as factor cost and transportation cost (Krugman 1991), the institutional context and its responsiveness to change such that the development of the new industry is supported, also plays a key role (Storper and Walker 1989; Boschma and Lambooy 1999; Murmann, 2002). Chesbrough (1999) shows for the hard drive industry how differences in institutional environments affected the technological and industrial dynamics.[19] Murmann (2004) contends that the development of knowledge, like any other form of material production, occurs in a specialized institutional environment. This implies that we cannot see organisational routines as separate from the institutional environment in which they were formed. The industry life cycle thesis deals with the co-evolution of industry and technology, but does not address the co-evolution of industry, technology, and institutions.

Fourthly, the industry life cycle model based on routine inheritance does not allow for the possibility that the creative ability of exceptional entrepreneurs can surpass regional factor shortcomings. The spinoff model predicts that entrants with experience in related industries outperform others, and pass on their successful routines locally through spinoff creation. As such the emergence of new industries from related industries is part of a path-dependent process of reproduction of the spatial structure of organisational knowledge. However, as Storper and Walker (1989) propose, industries may create space, rather than the other way around. An early chance event of a successful yet inexperienced entrant might set in motion a mechanism of increasing returns, through the spinoff mechanism and co-evolution of regional institutions, and lead to the development of a geography of organisational knowledge that differs from that of prior, related industries.

Fifthly, the industry lifecycle does not allow for radical innovation in process innovations during the lifecycle. Such innovations can fundamentally affect the competitive positions of firms. For example, the emergence of competitive Japanese car manufacturers using radically different production technology, and their competitive impact on Western producers, cannot be explained by the industry cycle. It would require an extension of the industry lifecycle from a national to a global context and the possibility of national systems of innovation to successfully enter foreign markets by radical process innovation.

19 In Chapter 7, we address the effect of institutions in the case of the global fashion design industry, albeit in a stylized manner.

Finally, the industry lifecycle model is essentially a model of horizontal competition industries and does not account for changes in the vertical organisation of the industry over time (Klepper 1997; Bonaccorsi and Giuri 2000). As the spatial distribution of industries is fundamentally affected by the global fragmentation of supply chains, a comprehensive industry lifecycle model in the context of economic geography requires a supplementary theory of vertical organisation.

2.5.2 Extensions of the industry life cycle model

The industry lifecycle model is essentially a model of manufacturing industries. In such industries, process innovation, entry barriers and scale economies in R&D are known to be important. Following the logic of the industry lifecycle, shakeouts should occur as average efficiency increase with size and pre-entry experience. Indeed, shakeouts are common (Gort and Klepper, 1982; Klepper, 1997, 2002). However, exceptions exist. Bonaccorsi and Giuri (2000, p. 848) mention three types of industries where shake-outs generally do not occur:

1. Industries in which there is a separation between firms that design and manufacture products and specialist firms that develop process technologies and sell them on a competitive basis (e.g., modern chemistry plants).
2. Industries in which firms that develop product innovations do not appropriate their benefits through the integration of manufacturing activities but license new products to other manufacturers (e.g., many creative industries notably design).
3. Industries in which the final demand is highly heterogeneous and fragmented, so that there is no emergence of leaders covering all segments and no shakeout of small competitors (many specialized high-tech products) (Windrum and Birchenhall, 1998).

A future challenge for research is to examine to what extent the industry life cycle logic, in modified form, can explain the industrial dynamics in these types of industries. Though the empirical phenomenon of a shakeout may not exist in such industries, the industry life cycle logic of spatial concentration through spinoffs may still apply in so far (i) entry occurs through spinoffs, (ii) spinoffs locate in the parents' region, and (iii) they inherit (part of) the parent organisational routines.[20]

The industry life cycle model aptly describes the evolution of many industries (Gort and Klepper, 1982). Knowledge transfer between parent and progeny firms has been found in several industries, such as automobiles (Klepper, 2002; Boschma and Wenting, 2007), tires (Klepper and Simons, 2000a; Buenstorf and Klepper, 2005), lasers (Klepper and Sleeper, 2000; Buenstorf, 2005), accounting (Wezel et al., 2006), the wireless telecommunications industry (Dahl et al. 2003), law firms (Phillips, 2002), the US beer brewing industry (Horvath et al., 2001), and television receivers (Klepper and Simons, 2000b). Note that most of these studies have focussed on manufacturing industries, and none on creative industries. The absence of creative industries in the industrial dynamics literature so far may be due to data-limitations, or to the model's focus on technological innovation, rather than symbolic knowledge creation. We argue that creative industries are of particular interest to test the spinoff mechanism and the usefulness of the routine concept. The notion of routinized organisational behaviour seems to be inconsistent with the preoccupation of creative industries with creativity in rapidly changing markets and short product life cycles. Indeed, routinisation and creativity have been characterized as an organisational duality (Ohly et al., 2006). Understanding

20 In Chapter 4, we examine the applicability of the industry lifecycle to one specific case of the global fashion design industry (an example of type 2 in the classification by Bonaccorsi and Giuri, 2000).

the relationship between routinized and creative practices is of particular importance to firms that rely on the creative and proactive behaviour of their employees (Ohly et al., 2006). We argue that this is especially the case for creative industries, and address these issues in our analysis of the fashion design industry.

Fashion design is quite different from traditional manufacturing, such as automobile production. The production process is not scale-intensive, which limits economies of scale. Also, the production process does not experience product standardisation over time, which allows for cyclical niche creation. These aspects render barriers to entry based on firm size and product scope ineffective. As such, the industrial demography of creative industries does not depict a typical 'shake-out' in the number of producers over time (Klepper and Simons, 2000a; Bonaccorsi and Giuri, 2000). Because of low barriers to entry, new firms are able to challenge incumbents and profitably enter the industry throughout its history. In many creative industries, size *per se* is not a driving objective, allowing for spinoffs that might not take away from their parents.[21] Many cultural products are part of luxury brands and their economic value depends on their aesthetic content. Most products are imperfectly substitutable, and, consequently, competition tends to be monopolistic. Such market conditions are common for creative industries such as music, fashion, theater, video-games, and media, but are quite rare in manufacturing industries, such as automobiles, tires, computers, and steel. These conditions might make the industry life cycle thesis less applicable to the context of creative activities in general, and the fashion design industry in particular.

A second extension of the industry life cycle model would be to drop the assumption that organizational routines remain unchanged during the life course of the firm. The industry life cycle is based on the assumption that organisational routines cannot be altered after a firm has entered the industry. In this manner, the fate of firms can be attributed largely to the pre-entry experience of its founder (Klepper, 2002). Further increases in performance are solely related to scale allowing firms to better appropriate the returns of their R&D investments (Klepper 1996, 2002). This assumption underlines the rigid nature of routines and their tendency to resist change (Nelson and Winter, 1982). However, the evolutionary theory of the firm does allow for, and even accredits great importance to, firm learning. This is understood as the adaptation of routines to changing circumstances, or as Nelson and Winter (1982) state: "*routines change when conditions change.*" Although flexibility in organisational routines and capabilities is limited and changes are bound to be path-dependent and incremental (Pentland and Feldman, 2005), an evolutionary approach to industry evolution should account for innovation and learning. In particular, as new routines are typically introduced by labour mobility, and labour mobility is higher within clusters than across clusters, the ability to adapt routines may well be higher in spatial concentrations.[22] Another channel

21 In a variant of the spinoff model, Klepper and Sleeper (2005) propose a Hotelling-like model to allow spinoffs to enter product niches. The equilibrium outcome for such a model entails firms locating at points equally apart on a space of product variants. Spinoff entry occurs as a consequence of investments in R&D which are assumed to generate knowledge about variants of the firm's product. Klepper and Sleeper (2005) show that spinoffs are more likely than an incumbent to pursue these new ventures at the extremes of its market area. Hence, the model contends that entry occurs when new market niches are discovered, and spinoffs are better able than other entrants to spot new ventures.

22 Chapter 5 develops this line of argumentation further in a study on labour mobility and firm survival in the global fashion design industry.

of routine replication can be through inter-firm networks through joint production.[23] Through close cooperation and the exchange of personnel firms are better able to learn from each other than through observation and imitation alone. The exchange of knowledge and practice between firms opens up additional resources for innovation, and presents an opportunity to realign existing organisational routines to a changing environment.

In the following chapters we address these challenges, and extend the life cycle thesis to the realm of economic geography and creative industries.

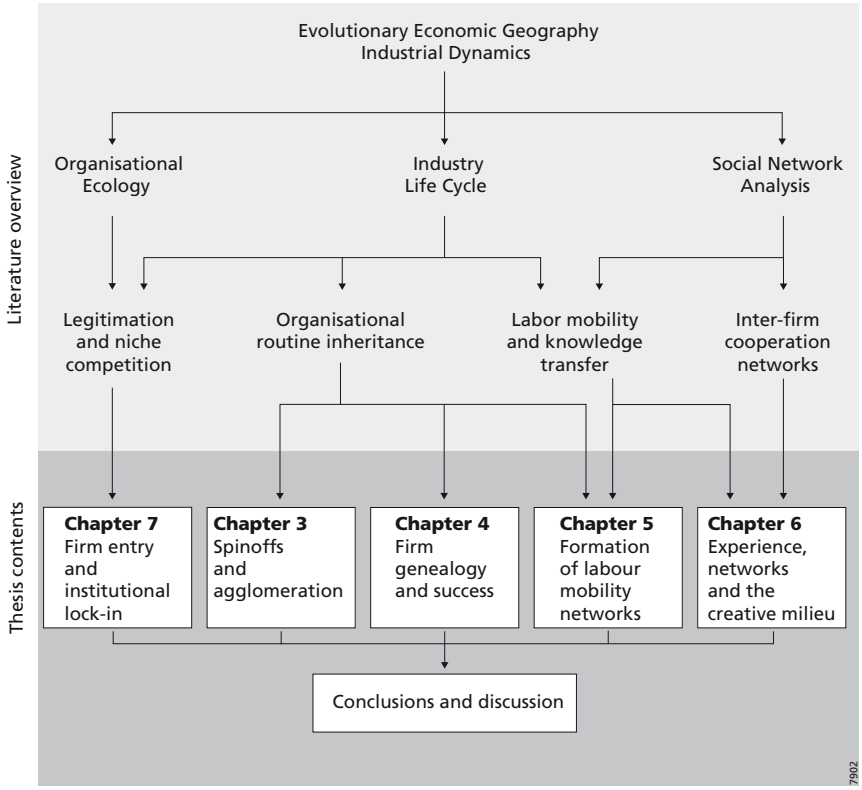

Figure 2.2. Diagram of chapters: research fields, core explanatory variables, and sections

23 Chapter 6 develops the role of networks in the context of the Dutch fashion design industry.

Chapter 3

The spatial evolution of the British automobile industry. Does location matter?

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3.1 Introduction

Till recently, evolutionary economists have paid little or no attention to geographical issues (Boschma and Lambooy, 1999). Scholars are however now beginning to explore potential linkages between the fields of evolutionary economics and economic geography (see e.g. Antonelli, 2000; Breschi and Lissoni, 2001; Cooke, 2002; Boschma, 2004; Werker and Athreye, 2004; Essletzbichler and Rigby, 2005; Iammarino, 2005; Iammarino and McCann, 2005; Wezel, 2005). Having said that, it is fair to say there exist very few attempts to date that apply evolutionary thinking in a systematic way into the realm of economic geography (Boschma and Frenken, 2006).

A promising field of application is the spatial evolution of industries. Boschma and Frenken (2003) have described how evolutionary economics may contribute to a new and more dynamic understanding of the location of an industry. In Evolutionary Economic Geography, the basic starting point is to understand firm behaviour in space as being guided by routines. The key question then becomes through which mechanisms these routines diffuse and cluster spatially when a new industry emerges and grows. In the literature, two such mechanisms have drawn special attention, namely, spinoff dynamics and agglomeration economies. Recent studies have demonstrated that spinoff dynamics are one of the driving forces behind the growth of many industries, in which the spinoff process acts as a mechanism that transfers knowledge and routines from incumbents to new firms (see e.g. Helfat and Lieberman, 2002). Others have perceived agglomeration economies as a key vehicle for knowledge creation and diffusion in a region. There is increasing evidence that knowledge spillovers are often geographically bounded (Feldman, 1999), and this is regarded as a main reason why many industries cluster in space (Boschma and Lambooy, 1999).

In other words, spinoff dynamics and agglomeration economies provide alternative explanations for the spatial formation of an industry. Our objective is to apply this evolutionary framework to a long-term study of the British automobile industry. Inspired by a study of the US automobile sector by Klepper (2002), we estimate the importance of spinoff dynamics and agglomeration economies for the emerging spatial pattern of automobiles in Great Britain since the late nineteenth century. Our study is based on our own data collection of all entries, exits, mergers and acquisitions in this sector during the period 1895-1968. It concerns data on all entrants concerning their location, age and techno-economic background of the entrepreneur. We apply a hazard model to determine

which factors explain the spatial formation of the British automobile industry. In doing so, we assess the extent to which location, among other factors, has had an impact on the survival rate of entrants during the twentieth century.

The paper is structured as follows. In the next section, we briefly outline the two types of explanation for the spatial evolution of a new industry, and establish how these different mechanisms may play different but complementary roles during the lifecycle of a new industry. In Section 3, we explain which data sources have been used to describe the spatial formation of the automobile sector in Great Britain during the period 1895-1968, and present some descriptive results. In Section 4, we note the estimation techniques employed, then present the empirical findings. Finally, some conclusions are drawn.

3.2 Spatial formation of industries from an evolutionary perspective

Although the notion of routines is not unambiguous (Hodgson, 2003; Becker, 2004), we take a quite traditional view on routines, emphasizing two processes that make fitter routines become more dominant in an industry (Boschma and Frenken, 2003). The first concerns selection of heterogeneous firms due to market competition and institutions, resulting in asymmetrical profits. As a consequence, firms with fitter routines will expand, at the expense of firms with a lower fitness (Nelson and Winter, 1982). The second process concerns the emergence and diffusion of new and fitter routines, due to processes of innovation and imitation. In this latter respect, the spinoff process is regarded as an important mechanism that promotes the diffusion of fitter routines in an industry. Both processes will result in differential growth rates of firms with different routines in an evolving industry.

But how about geography? We have little understanding of how new routines emerge and diffuse spatially when a new sector develops and grows. What role might geographical proximity play, and how may spatial factors affect their location? Evolutionary economists like Arthur (1994) and Klepper (2002) have provided an explanation for the spatial evolution of new industries over time. They refer to two mechanisms through which inter-organisational learning (i.e. the diffusion of 'fitter' routines from one firm to the other) may take place. The first is spinoff dynamics, in which the transfer of knowledge occurs between a parent firm and its spinoffs. The other is agglomeration economies, in which knowledge spills over from one firm to the other in a restricted spatial area. Below, we briefly discuss both mechanisms. We build on their ideas to construct a theoretical and analytical framework that provides a basis for our long-term study on the spatial formation of the British automobile industry.

3.2.1 Spatial emergence of sectors through spinoffs

Arthur (1994) has developed a model that describes the spatial formation of a new industry in terms of spinoff dynamics. By spinoffs we mean new firms founded by former employees of incumbent firms in the same industry. There is increasing evidence that spinoffs played a crucial role in the growth and spatial concentration of industries like the ICT sector in Silicon Valley (Saxenian 1994), the U.S. automobile industry in Detroit (Klepper 2002), and wireless telecommunications around Aalborg (Dahl et al. 2003), among others (Koster, 2006).

In Arthur's spinoff model, existing firms give birth to new firms that generate new firms themselves, *et cetera*. The probability of a spinoff in a region is equal to its share in the total number of incumbent firms. This model assumes that spinoffs locate in the same region as the parent company, and that spinoffs do not move to other regions. By randomly drawing at each time t one firm that produces a spinoff, an evolving spatial distribution of firms in an industry is simulated. This process is also known as a Polya process, which produces a stable spatial distribution in the long run. The long-run stability can be understood from the fact that the more firms that are already present in the industry, the less impact each new spinoff will have on the spatial distribution. This spinoff model describes a path-dependent process in which small events (i.e. the stochastic sequence of spinoffs early on), magnified by positive feedbacks (i.e the more spinoffs in a region, the higher the probability of more spinoffs) determine the spatial pattern of the industry. The resulting spatial distribution will be highly skewed when some regions, by pure chance, will generate a relatively high number of spinoffs early on, and, subsequently, also produce more spinoffs thereafter.

A drawback of Arthur's model is that the firm itself remains a black box. Routines do not play a role, firms are considered homogenous agents, and the model does not account for the performance of firms. The dynamics of the new sector are purely described in terms of entry, not in terms of competition and exits. All firms are considered equal: they do not grow, decline, exit or migrate. Consequently, Arthur neglects key evolutionary principles that are put at the centre in recent literature on spinoffs (Agarwal et al., 2004). This body of literature views the spinoff process as a mechanism through which tacit knowledge is transferred, and which affects positively the performance of spinoffs. In doing so, it acknowledges that firms develop routines or competences that are firm-specific, and which can determine which types of firms will generate more and more successful spinoffs.

Klepper (2002) proposed a spinoff model within an evolutionary framework that accounts for these shortcomings in Arthur's model. In Klepper's industry model, more successful firms will grow, due to increasing returns in R&D, while less performing firms will exit, due to market competition. The basic principle in his model is that spinoffs inherit the routines of parents firms. In contrast to Arthur's spinoff model, the spinoff process is regarded as a mechanism in which routines and competences are transferred or diffused from parent firms to their offspring (Shane, 2000). Klepper claims that entrepreneurs with a techno-economic background in the same or related industries will perform better than start-ups that lack that kind of experience. In addition, Klepper claims that success breeds success: he expects the survival probability of spinoff firms to correlate positively with the survival probability of parent firms. Successful firms (with 'fitter' routines) will generate more and more successful spinoffs because they have a superior learning environment.

Although the spinoff models of Arthur and Klepper cover different evolutionary principles, both models assume that the spinoff process is basically a local phenomenon, meaning that spinoffs are expected to locate near parents. As Klepper has interpreted the spinoff process as a localised mechanism of knowledge transfer, it is assumed that knowledge spillovers between firms are geographically bounded. In other words, spinoff dynamics in themselves may be a sufficient explanation for the spatial concentration of an industry. However, there are other mechanisms, such as agglomeration economies, that might stimulate inter-firm learning, and which may induce inter-firm learning to be confined to a geographical area (Boschma and Weterings, 2005). We turn to this topic now.

3.2.2 Spatial emergence of sectors through agglomeration

Besides spinoff dynamics, the spatial evolution of an industry may be affected by agglomeration economies. This notion covers advantages that can be exploited by firms that are concentrated in a region. In economic geography, it is common to distinguish between urbanization and localization economies (Hoover, 1948). Urbanization economies are externalities available to local firms irrespective of the industry they belong to. Localization economies arise from a spatial clustering of economic activities in either the same sector or related industries. When accounting for agglomeration economies, geography itself plays a key role in explaining the spatial evolution of industries.

Myrdal (1957) was one of the first to take a dynamic view on agglomeration economies, or what he called a process of cumulative causation. That is, the more firms locate in a region, the more diversified the local labour market becomes, the more suppliers can specialise, the higher local demand, the better the infrastructure, the more attractive the region becomes for newcomers, leading to more local firms, *et cetera*. Thus, the higher the number of local firms, the stronger the impact of agglomeration economies becomes. In a similar vein, Arthur (1994) has simulated agglomeration economies using a population of firms that enter the economy sequentially. Once a region has attracted slightly more entrants than other regions, a critical threshold is passed, and suddenly all new firms will opt for this one region as to profit from the higher agglomeration economies. Once again, path dependence is involved, because chance events (i.e. the stochastic sequence of new entrants with locational preferences early on), combined by increasing returns (i.e. the more entrants locate in a region, the stronger the impact of agglomeration economies) lead to spatial lock-in. As a consequence, agglomeration economies can cause an industry to concentrate in one region.

Notice that, once again, routines do not play an explicit role in Arthur's agglomeration model. As explained earlier, a true evolutionary approach to the spatial evolution of an industry should focus on the spatial distribution of routines in a sector, and its evolution over time. An evolutionary approach based on agglomeration economics should therefore focus explicit attention on how agglomeration economies may enhance the emergence and diffusion of routines and competences as an industry grows. Evolutionary approaches on agglomeration economies therefore concentrate on the role of knowledge spillovers, and how these diffuse routines and competences from one firm to the other in a restricted area.

A large body of literature has demonstrated that knowledge spillovers are indeed often geographically bounded (that is, they do not travel over large distances), exerting a positive effect on knowledge output of local agents in terms of patents or innovations (Feldman, 1999). This may be simply due to co-location, which offers opportunities to learn from other local agents (Malmberg and Maskell, 2002). Social networks may also be involved, because they provide effective settings through which knowledge circulates and interactive learning between members of the network takes place (Breschi and Lissoni, 2001). Because social networks are often localized in a geographical sense, knowledge spillovers turn out to be localized geographically as well. As a result, knowledge will accumulate and become increasingly available in a region through co-location and local networks as an industry grows. Both mechanisms ensure that local firms sharing values and similar competences have a better learning ability than actors outside the region (Boschma, 2004; Weterings, 2005).

Co-location of competitors may not only induce knowledge spillovers, it also puts additional pressure on local agents to perform. Porter (1990) argues that increasing spatial concentration of an industry induces firms to be innovative in order to survive. In other words, co-location of competitors implies strong local rivalry, which fosters the pursuit and rapid adoption of innovation. Stronger local competition may also force firms (with less efficient routines) to exit the market (Klepper, 2002). This is especially true during the later stages of the product lifecycle of an industry, when cost competition becomes fiercer, resulting in a shakeout process (Klepper, 1997). This shakeout process may disproportionately affect regions that host less successful firms, resulting in a change of the spatial distribution of the industry.

3.2.3 A dynamic, evolutionary perspective

Spinoff dynamics and agglomeration economies provide different evolutionary explanations for the spatial pattern of an industry. However, there is reason to expect that both the spinoff mechanism and agglomeration economies play a role simultaneously. A high rate of spinoff activity increases the number of local firms, strengthening agglomeration forces, which, in turn, not only enhance spinoff creation, but also increase the survival rate of spinoffs. Since spinoff dynamics and agglomeration economies provide different explanations for the same phenomenon of the emerging spatial pattern of a new industry, the challenge for empirical research is to disentangle and isolate both mechanisms as to assess their importance.

When taking an industry's lifecycle perspective, we expect that spinoff dynamics and (different types of) agglomeration economies are key mechanisms in different phases of development of a new industry. It is plausible to expect that the spinoff mechanism will be less dominant in the very early stages of the lifecycle of an industry, because there are simply few firms with a great deal of experience in this new field of activity. The same is true for localization economies that are expected to become important only in later phases. This is because developing a new industry requires new types of knowledge, skills, inputs and institutions which existing organisations and institutions cannot provide, since these are orientated towards old technologies and routines (Boschma and Lambooy, 1999). Firms typically have a low level of vertical disintegration at the start of a new industry (Klepper, 1997), and thus profit little from specialized suppliers. Moreover, firms initially benefit little from thick labour markets as they need to train personnel in-house to acquire the new routines specific to the new industry. Only once concentration becomes denser, and local demand for input increases and becomes more standardized, firms will outsource activities to newly founded local suppliers, and local labour markets become more specialized.

Since the spinoff mechanism and localization economies are unlikely to provide an explanation for the spatial pattern of the new industry during its initial stage of development, other mechanisms are expected to play a role. Urbanization economies may be relevant, because large urban areas can offer new entrants opportunities to acquire generic (not specific!) resources like employees, capital and other inputs (Hoover and Vernon, 1962). It is also plausible to expect that agglomeration economies based on the regional concentration of *related* industries will matter more at this stage. Some regions may be more favourable from the very start, because they are well-endowed with related activities, offering a stock of potential entrepreneurs and skilled labour that can be readily exploited by entrants in a new industry (Buenstorf and Klepper, 2005). In other words, a new industry may have a higher probability to develop in regions where related activities are abundant. For instance, it

is commonly known that the new television industry emerged out of radio producers, while the new automobile industry drew heavily on pre-existing sectors like coach and cycle making.

Similarly, experienced entrants (instead of spinoffs) may influence the spatial pattern of a new industry at its initial stage of development. We expect that new, successful firms are mainly founded by people who worked previously in related industries, because these experienced entrepreneurs can build on relevant knowledge and skills. And insofar as experienced entrants in the new industry locate their new venture in the same region, the pre-existing spatial pattern is reproduced. However, entrants with prior experience in the same industry (i.e. spinoffs) are expected to perform better than experienced entrants from related industries, because the pre-entry working experience of spinoffs is even more closely related (Klepper, 2002). As a result, the logic of spatial location through experienced entrepreneurship may be taken over by spinoff dynamics as the industry grows.

Finally, we expect that local rivalry will have no impact on the spatial pattern of a new industry during its initial stage of development. Since there are ample opportunities to enter the market (entry barriers are low), local competition will still be rather weak. Over time, local market competition will become stronger, eventually resulting in a shakeout process. It is still uncertain what effect this will have. On the one hand, one expects a positive Porter-effect, because more local rivalry urges firms to innovate and upgrade their routines (while benefiting from local knowledge spillovers). On the other hand, one expects a negative effect when local competition becomes more intense, forcing firms to exit.

In sum, we expect that urbanization economies, agglomeration economies based on related industries, and experienced entrepreneurship affect the emerging spatial pattern of a new industry during its initial stage of development. Instead, localization economies and spinoff dynamics are expected to be more important in later stages of the industry lifecycle. Competition is also expected to be significant only in later stages, but its precise impact is theoretically ambiguous. We test for these expectations hereafter.

3.3 Evolution of the British automobile industry 1895-1968

Conducting a spatial analysis of the British automobile industry for the period 1895-1968 requires a good deal of data collection. Below, we discuss which sources provided the necessary data. Then, we briefly describe the evolution of the market structure and the emerging spatial pattern of the British automobile industry during this period.

3.3.1 Data sources

We have collected data on the years of production, the location and pre-entry techno-economic background of the entrepreneur of every car manufacturer from 1895 to 1968. As a starting point, we made use of '*The Complete Catalogue of British Cars, 1895-1974*' by Culshaw and Horrobin (1974), who

compiled a list of every British automobile manufacturer[24] from the start of the industry in 1895 till 1974. This list includes information about the 461 makes made by manufacturers who have put one or more models into series production. Furthermore, we made use of '*The Complete Encyclopedia of Motorcars 1885-1968*' (Georgano, 1968), because it offers great detail on years of production, firm location and the background of the founders. '*The World Guide to Automobile Manufacturers*' (Baldwin et al, 1987) has been consulted to obtain information primarily on the founder's background[25]. Information on acquisitions was taken from Culshaw and Horrobin (1974, p. 493), Georgano (1968) and Church (1995, p. 80-83)[26]. Data on firm market shares has been obtained from Saul (1962) for the automobile industry until 1914, and from Church (1995) and Wood (1988) for the period thereafter. Population and employment data by region by sector covering the whole period have been obtained from Lee (1979).

3.3.2 Evolution of market structure and spatial pattern in the British automobile industry

Figure 3.1 displays the evolution of the number of automobile firms, entrants and exits in Great Britain for the period 1895-1968. It turns out that the British density-pattern falls somewhere between the French and German one. The industry started relatively late, the number of new entrants peaked in 1913, and the number of firms remained very high until after the early 1920s (Hannan et al., 1995). By and large, three periods can be distinguished.

At the first stage of development of the sector, covering the period of about 1895-1921, the density rate goes up very steeply, with the exception of two major interruptions. Most rapid growth occurred in the late nineteenth and the first years of the twentieth century. For instance, the number of firms rose from 21 firms in 1898 to 99 in 1903. The 'slump' of around 1907 can be explained by the liquidity crisis in Britain at that time (Church, 1979). However, a recovery soon set in (Michie, 1981; Lewchuck, 1985), due to, among other reasons, a stabilization in car design which reduced the risk for investors (Nicholson, 1983; Harrison, 1981). The density rate remained high in the period 1910-1922, with the exception of the First World War, when the density declined more than 25 per cent. After the war, in 1919, soaring car prices stimulated the adaptation of pre-war firms and led to the entry of many new producers (Maxcy, 1958), of which a large number failed to survive the subsequent competition (Church, 1995).

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24 The term 'automobile manufacturer' has been defined as a producer being principally devoted to four-wheeled petrol-engined passenger cars. As a result, we have deliberately excluded producers of racing cars, commercial vehicles, one-off specials, kit cars, three-wheelers, steam cars and electric cars, as well as those makes which cannot reasonably be termed production models (i.e. prototypes).

25 Other sources that were consulted were: 'A-Z of Cars of the 1920's' (Baldwin, 1994), 'The World's Automobiles 1880-1958' (Doyle, 1959), 'The Motor Industry in Britain' (Saul, 1962), 'Britain's Motor Industry' (Georgano et al., 1995), The British Motor Industry, 1945-94: A Case Study in Industrial Decline (Whisler, 1999),'The Complete Catalogue of British Cars' (Culshaw and Horrobin, 1974), The Motor Makers: The Turbulent History of Britain's Car Industry (Adeney, 1989), King (1989) and Richardson (1977).

26 Listed entrants by Culshaw and Horrobin (1974) but controversial to the stated definition of automobile manufacturer were excluded from the analysis. For example, when the Complete Encyclopedia by Georgano (1968) expresses strong and reasonable doubt on an entrant's qualification as an automobile manufacturer, it outrules the list of Culshaw and Horrobin, and the entrant is not included in our analysis. Overall, the adjustments made to the list of automobile manufacturers compiled by Culshaw and Horrobin were few in numbers, but necessary for a clear analysis of the British automobile sector for the period 1895 to 1968.

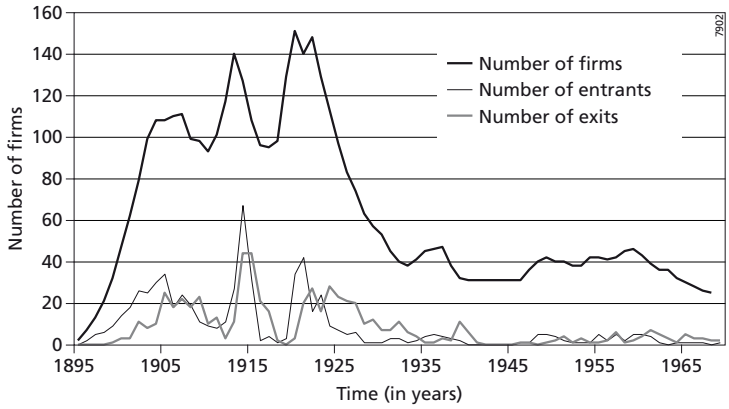

Figure 3.1. The number of automobile manufacturers, entrants and exits in Great Britain, 1895-1968.

After 1922, the industry was hit by a shakeout process, as reflected by a sharp decline in the number of firms, which lasted until the mid-1930s: the number of automobile manufacturers in Britain plummeted from 147 to 40 during the period 1922-1932. During this period, the industrial structure changed from one of strong competition consisting of a large number of small firms with high mortality rates, to one dominated by three British companies Morris, Austin and Singer (Thoms and Donnelly, 1985). By the end of the 1920s, these three giants accounted for 75 per cent of car production. Austin and Singer were early entrants in Coventry, while William Morris, being one of the '1913 entry-boom' entrants, located his firm about hundred kilometers from Coventry in Cowley, Oxfordshire (Georgano, 1968). A decade later, however, the market was controlled by the 'Big Six', that is, Morris, Austin, Ford, Vauxhall, Rootes and Standard. During the shakeout, the British motor industry made enormous gains in production output. By the late 1930s, Britain was second only to the United States in terms of production and export (Church, 1995).

During the period 1933-1968, the number of car manufacturers in Great Britain more or less stabilized. It remained exceptionally high though, compared with countries like France, Germany and the US (Hannan et al., 1995; Klepper, 2002). This outcome can be attributed to the high number of surviving small producers of high-priced, high-quality cars, filling market niches. Nevertheless, the market structure was one characterised by a few leading companies, as in the US, where the automobile industry evolved into an oligopoly dominated by Ford, General Motors and Chrysler.

Just as Detroit and Paris emerged as the main centres of, respectively, the American and French automobile industry, Coventry became Britain's motor city. From the outset, the British motor industry differed from its continental contemporaries in that it sprang, to a notable extent, from the bicycle industry (Wood, 1988). This is confirmed by our data: 89 per cent of the entrants that located in the Coventry-Birmingham area[27] in the period 1895-1900 had prior experience in related

27 When we say the Coventry-Birmingham area, we mean the area that is within a distance of 50 kilometres from the city of Coventry. We choose the distance of 50 kilometres, because we felt that the 100 miles distance used by Klepper when defining the Detroit area would be just too large in the British context. Making use of such a definition, we could also avoid working with a predefined administrative region.

industries like bicycle making. The bicycle trade had arrived in Coventry in 1868, and after the bicycle-boom of 1893-1897, the city became the centre of the British bicycle industry.

In contrast to Detroit, the number of Coventry-Birmingham area firms was already high from the beginning of the industry[28]. During almost the whole period, 25-40 per cent of all British car manufacturers were located in the Coventry-Birmingham area. In terms of production, this share was much higher. During periods of decline, firms outside the Coventry-Birmingham area were hit disproportionately. For example, from 1914 to 1918, the number of automobile manufacturers in Britain declined from 126 to 96, while the share of the Coventry-Birmingham area rose from about 25 per cent to 32 per cent. The most visible manifestation of Coventry's involvement in the First World War was a marked acceleration of building activity as existing factories were extended and new ones built to accommodate the growth of military production (Thoms and Donnelly, 1985).

The share of the Coventry-Birmingham area rose during the shakeout period, from 25 per cent in 1922 to 35 per cent in 1932. This share was by no means comparable to the dominance of the Detroit-area in the American automobile industry (Klepper, 2002b). By 1939, Coventry's two largest automobile manufacturers, Rootes and Standard, each accounted for 9 to 10 per cent of total output, compared with over 26 per cent for Morris, the market leader at that time (Thoms and Donnelly, 1985). During this shakeout period, several companies in the Birmingham-Coventry area became specialist manufacturers, each accounting for a relatively small share in total industry output (Thoms and Donnelly, 1985). The market share of Coventry firms in Great Britain remained, however, well above 50 percent up through 1968 (Church, 1995).

3.4 The spatial formation of the British automobile industry: spinoff dynamics and/or agglomeration economies?

As demonstrated above, the British automobile industry, like its US counterpart, concentrated in a particular region. It is yet unclear to what extent this has been determined by a spinoff process (as was the case in the US, according to Klepper), and to what extent agglomeration economies have been involved (which was not the case in the US, according to Klepper). Klepper's study assessed the effect of agglomeration economies with the assistance of a dummy for being located in the Detroit area. Since the dummy showed no positive effect on the survival of firms, he concluded that agglomeration economies played no role. Instead, in our study, we account for different types of agglomeration economies, like agglomeration economies based on related industries. Below, we first introduce the variables used in our estimation model. Then, we present the empirical findings of the Cox regressions.

3.4.1 Variables

There are several variables in Klepper's model that are expected to determine the performance of firms as well as to affect the spatial pattern of the automobile sector. Below, we take a more detailed look at the following factors and explain how these have been measured: the location of firms, their

28 In the first six years of the industry, there were 69 entrants in the US, but not one locating in Detroit. After 1900, the number of firms in the Detroit area rose, reaching a peak of 41 in 1913. The percentage of automobile firms in the Detroit area rose to 15% by 1905 to 24% by 1916, and to over 50% by 1935 (Klepper, 2002a).

time of entry, and the pre-entry techno-economic background of the entrepreneur. Before doing so, we first explain what is the dependent variable in our model.

Age

The dependent variable is the age of the firm, as a proxy for their performance. We would have preferred other performance indicators, but it comes as no surprise that these are not available over such a long period. Since we have data on the entry and exit years of each automobile firm in the period 1895-1968, we can determine their age by counting the number of years between their first and last year of commercial production. As explained in Section 4.2, we will make use of hazard rates, because of entrants that still exist after 1968.

If a foreign company, such as Ford in 1911, established a branch plant in Great Britain, it was treated as a new entrant. In the case of acquisition by another car manufacturer, the purchased firm exits the industry and the acquiring firm continues. If a foreign company entered Britain by acquiring an incumbent firm, such as General Motors' acquisition of Vauxhall in1928, this is treated as an exit of the purchased firm, and an entry of the purchasing firm. Firms that were reorganized or acquired by non-automobile firms were treated as continuing producers. Approximately 5 per cent of the firms exited through the acquisition by another automobile company, or through a merger. This number is comparable to that of the American automobile sector (Klepper, 2002).

Location

In Section 2, we explained how (different types of) agglomeration economies can affect the spatial evolution of a newly emerging industry. Our data set provides information on the location of each entrant during the period 1895-1968. Consequently, we can be more precise in determining the effect of location than Klepper's US study, which only made use of a dummy variable (being located in Detroit area or not). As explained below, we will also account for the impact of different types of agglomeration economies.

Based on a regional classification scheme developed by Lee (1979), each entrant has been assigned to one of 51 regions in Great Britain. In case firms had moved from one location to another, we assigned the firm to the location where it had produced cars for most of its time. This correction has been conducted for more than twenty firms. As explained in Section 2, we assess the impact of agglomeration economies in three different ways. First of all, we measure the effect of urbanization economies using the number of people living in each region. This latter indicator allows us to test whether the size of a regional economy (e.g. local demand and local suppliers) at the time of entry affects the performance of the entrant. Secondly, we measure the effect of agglomeration economies based on related industries using the number of people employed in each region in a broad range of related industries (i.e. vehicle production, including car making, coach making, cycle making, etc., see footnote 5). Accordingly, we test whether automobile firms located in regions that are well endowed with knowledge and skills related to the automobile industry at their time of entry perform better. Thirdly, we assess the effect of local rivalry, measured as the number of automobile firms in the region at the time a new start-up enters the sector. As explained before, different interpretations are feasible here. On the one hand, we anticipate that a high number of automobile firms in the immediate surroundings of a new entrant may be beneficial, because it induces firms to innovate and upgrade their routines. On the other hand, it may mean more intense competition, increasing the hazard of a new entrant. Fourthly, we did not include the effect of (regional)

institutions in our model, because we found no evidence in the extensive literature on the history of the British automobile industry that institutions had played a major role in the spatial emergence of the industry.

Time of entry
According to Klepper (2002), earlier entrants will have higher survival rates. In Klepper's basic model, earlier entrants face a higher price-cost margin than later entrants. As a result, in the early stages of the industry's lifecycle, firms make higher profits, they can allocate more resources to R&D, and, therefore, they grow more. Consequently, earlier entrants will have a lower hazard rate at every age. Following Klepper (2002), all automobile manufacturers have been grouped into three entry cohorts of comparable size, in order to test the importance of time of entry. Cohort 1 refers to the 1895-1906 entrants consisting of 211 firms, 226 entrants in the period 1907-1919 were assigned to cohort 2, and cohort 3 included 191 firms that entered the market in the period 1920-1968.

Pre-entry techno-economic background of entrepreneur
In order to assess the impact of spinoff dynamics, we account for the pre-entry experience of entrants acquired in parent organisations. Following Klepper, we expect that survival rates will differ across firms, depending on the pre-entry background of the entrepreneur. As set out in Section 2, spinoffs are considered to be the most experienced firms in automobiles, followed by experienced firms, while inexperienced firms are expected to have the lowest survival rates, as compared to the two other firm types. Klepper (2002) made a distinction between four types of firms, based on their entrepreneurial background. The spinoff type of entrant is a new firm founded by former employees of incumbent automobile firms. The second type concerns pre-existing firms diversifying from closely related industries. The third type refers to new firms founded by employees of pre-existing firms in closely related industries. Finally, Klepper defined a residual group of inexperienced entrants.

Following more or less the categories defined by Klepper, we distinguished between three types of entrants, according to the pre-entry experience of the entrepreneur: (1) a firm was classified as a spinoff, if the founder had previous experience in the automobile industry, either as founder or as employee of another motor company; (2) a firm was classified into the category of experienced firms when at least one of their founders had prior experience in a closely related industry (such as coach making and cycle making)[29] or a semi-related industry (mechanical engineering)[30]; (3) firms

29 Using the list of occupations in the British population census of 1911, experience in related industries to automobile manufacturing in Great Britain was identified as experience in commercial production of coaches, bicycles, automobiles services, motor car components (motor car body makers, etc.), and the following other professions: motor car attendant, motor garage-proprietors and -workers, motor car driver & motor cab driver, and motor, van etc. drivers.

30 Using the list of occupations in the British population census of 1911, experience in semi-related industries to automobile manufacturing in Great Britain was identified as mechanical engineering, meaning experience in the following professions: boilermaker, others in engineering & machine making, others in textile machinery fittings, metal machinist, erector, fitter & turner-labourer, erector, fitter & turner, ironfounder, millwright, pattern maker, others in construction of vehicles, machinists & machine workers, merchant service, seaman-engineering department, and agricultural machine-proprietors & attendants.

that were not classified as spinoffs or experienced firms were assigned to the residual category of inexperienced firms.

In the case of foreign entrants, the entrepreneurial background has been designated to the experience of its original founder. For example, the Ford company was classified as a spinoff because Henry Ford used to work for Cadillac. The General Motors's Vauxhall plant was defined as an experienced firm, because General Motors had been founded by a former bicycle manufacturer (Klepper, 2002). In the case of a firm having a British and a foreign founder, this was treated as a new entrant and, as with all entries concerning multiple founders, the founder with the most related experience to the automobile industry was viewed as the founder determining the entrepreneurial background of the firm. In case of multiple parent-firms, the last parent is considered the mother company from which the spinoff sprang (and from which it is assumed to inherit its routines).

Figure 3.2 displays the entrants in the British automobile industry by their pre-entry entrepreneurial background and time of entry. The largest category by far is experienced firms, followed by spinoffs and inexperienced firms. Unfortunately, we could not determine the pre-entry entrepreneurial background of 248 entries during the period 1895-1968 (accounting for 39 per cent of the total number of entrants), because our data sources failed to deliver any information on this issue. For that reason, this last group of entrants has been excluded from most of the analyses below. We have further analyzed the group of entrants with unknown backgrounds, and we have made a comparison between this group and the group of firms with a known background. We found that firms assigned to the group with unknown background had a shorter life span. This is understandable because for firms that have existed only a few years, little or no information will be available.

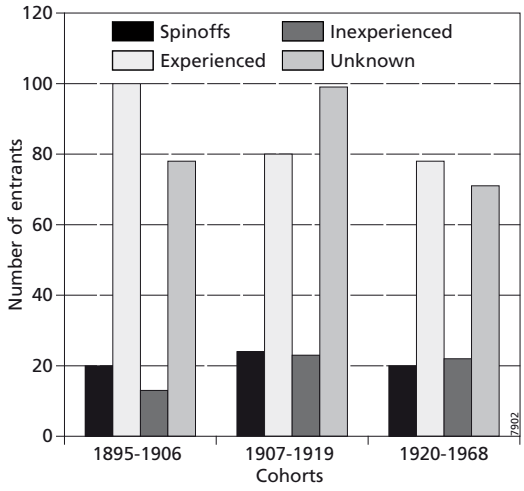

Figure 3.2. Entrants by background and time of entry (divided among three cohorts).

We observed a total number of 64 spinoffs, which is about 17 per cent of all British entrants with a known background. In the US, a total of 145 spinoffs (20% of the total) were counted during the

whole period (Klepper, 2002). As in the US, quite a significant number of spinoffs were generated by a few parent organisations in Great Britain. The two firms that produced most spinoffs were Daimler (10 spinoffs, of which 6 were direct[31]) and Wolseley (6 spinoffs, 4 direct), both of them located in the Coventry-Birmingham area. Arrol-Johnston in Glasgow generated 4 spinoffs, and nine other companies (of which four are located in the Coventry-Birmingham area) 2 spinoffs each.

As noticed above, we expect that survival rates will differ across automobile firms with different pre-entry backgrounds: the more experienced the entrant is, the higher its survival rate at every age. Figure 3.3 presents survival curves indicating the percentage of firms surviving to each age for each of the three types of entrants. The vertical axis shows this percentage plotted on a logarithmic scale. Figure 3.3 demonstrates that spinoffs and experienced firms show indeed, as expected, a higher survival rate than inexperienced firms at every age.

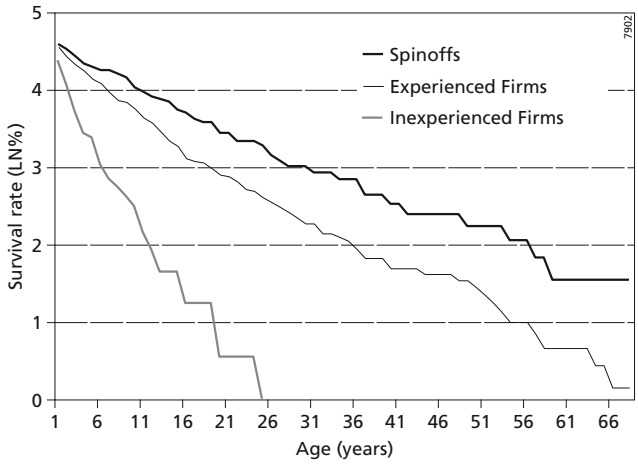

Figure 3.3. Survival curves by pre-entry entrepreneurial background.

As stated in Section 2, the survival rates of spinoffs at every age may also be affected by the performance of their parents: spinoffs from more successful parents are expected to show a higher performance rate. The data confirm that more successful parents generate more successful spinoffs than less successful parents: the Pearson correlation between the age of a parent firm and its spinoff(s) is positive (0.359) and significant at the 0.01 level.

Following Klepper, we expect there will be a disproportionately high number of spinoffs in the Coventry-Birmingham area. The data show that 19 spinoffs out of a total of 64 (thus 29 per cent) were located in the Coventry-Birmingham area, as compared to its share of 22 per cent in the total number of entrants. As expected, 17 of these 19 spinoffs originated from Coventry-Birmingham area parents, while Coventry-Birmingham area parents generated another 7 spinoffs outside this area. In addition, an independent samples t-test demonstrated that spinoffs located in the Coventry-Birmingham area showed a significantly higher average age (at the 0.10 level) than spinoffs located elsewhere. Finally, we discerned no significant difference in performance of inexperienced firms that

31 We counted 6 direct spinoffs of Daimler, and 4 spinoffs of these Daimler spinoffs.

were located in the Coventry-Birmingham area versus those that were located elsewhere. A similar result was found in the Detroit area in the US (Klepper, 2002). According to Klepper, this outcome (among others) suggested that agglomeration economies did not matter. Seemingly, no knowledge had spilled over from the most successful firms in the Detroit area to local inexperienced firms.

3.4.2 Cox regressions

We make use of a hazard model to determine which factors can explain the spatial evolution of the British automobile industry. More in particular, we estimate Cox regressions to assess the effects of location (agglomeration economies), time of entry, and spinoff dynamics (the pre-entry techno-economic background of firms) on the survival rates of automobile firms.

As explained before, the dependent variable in our model is the age of each firm, as a proxy for their performance. We could determine the years of entry and exit of almost every automobile firm that existed in Great Britain in the period 1895-1968. However, 25 car manufacturers in our database still existed in the year 1968. In such circumstances, it is common to run Cox regressions (Audretsch and Mahmood, 1994). A Cox regression makes use of the contribution of censored cases. In our model, the firms that exited the industry after 1968 have been considered censored exits.

The Cox proportional hazard regression model is widely used in duration analyses, in part because it requires fewer assumptions than some other survival models (Lee, 1992). In our case, the use of a time-dependent Cox regression model is not necessary, since we assume that observations are independent, and the hazard ratio should be constant across time. In that case, we guarantee that the proportional hazard assumption[32] is not violated. Cox regressions make use of the hazard function to estimate the relative risk of failure. The hazard function, $h(t)$, is a rate. A high hazard function indicates a high rate of mortality. The model is used to determine the influence of predictor variables (covariates) on a dependent variable (e.g. survival), which is simply expressed in terms of the hazard function.

$$h(t) = [h_0(t)]e^{(BX)}$$

Here X is a covariate, B is a regression coefficient, e is the base of the natural logarithm, and $h_0(t)$ is the baseline hazard function when X is set to 0 (the expected risk without the variable). As with multiple linear regression, the model for Cox regression can be expanded to include more than one covariate:

$$h(t) = [h_0(t)]e^{(B_1X_1 + B_2X_2 + \ldots + B_nX_n)}$$

where $X_1 \ldots X_n$ are the covariates. For multiple level variables, $Exp(B)$ estimates the percentage change in risk with each unit change in the covariate.

32 In the Cox proportional hazard model it is assumed that the proportionality of hazards from one case to another should not vary over time. The latter assumption is known as the proportional hazards assumption (Klein and Moeschberg, 1997).

Table 3.1. Estimation results of the Cox regressions (standard errors in parentheses)

	Model 1	Model 2	Model 3	Model 4	Model 5
RREIN	**-0.202****	**-0.266****	**-0.241****	**-0.215****	**-0.346***
	(0.069)	(0.073)	(0.075)	(0.076)	(0.139)
RPOPU	0.041	0.048	0.061	0.052	0.166
	(0.053)	(0.053)	(0.053)	(0.053)	(0.094)
RCOMP	0.025**	0.030**	0.029**	0.028**	0.026
	(0.007)	(0.008)	(0.008)	(0.008)	(0.016)
ENTR1		**-0.370****	**-0.313***	**-0.292***	
		(0.143)	(0.144)	(0.145)	
ENTR2		-0.193	-0.158	-0.148	
		(0.149)	(0.148)	(0.149)	
EXPEF			**-0.853****	**-0.864****	**-0.978****
			(0.154)	(0.154)	(0.310)
SPINOF			-1.293**	-0.300	-0.607
			(0.197)	(0.483)	(1.023)
YRPAR				**-0.356***	-0.280
				(0.165)	(0.344)
Chi-square	**13.121****	**20.191****	**72.390****	**75.390****	**24.442****
-2 Log Likelihood	3626.713	3606.509	3565.284	3560.668	1027.602
	N=380	N=380	N=380	N=380	N=133

** significant at the 0.01 level
* significant at the 0.05 level

3.4.3 Estimation results

We have estimated five regression models via maximum likelihood, adding more factors in each new model. The estimates of the models are presented in Table 3.1.

In model 1, we test whether location has had any effect on the hazard rates of the automobile firms. As a proxy for agglomeration economies based on related industries, we constructed a variable RREIN that measures on a logarithmic scale for each entrant the number of people employed in related industries (see footnote 5) in its home region at the year the firm entered the automobile sector. As explained before, this variable is used as a proxy for local knowledge spillovers and a local supply of relevant labour skills (Buenstorf and Klepper, 2005). As a proxy for urbanization economies, we have constructed the log-variable RPOPU, which measures on a logarithmic scale for each entrant the population in its home region at the year it enters the sector. With respect to local competition, the variable RCOMP measures for each entrant the number of automobile firms in its region at its year of entry.

As shown in Table 3.1, RCOMP has a positive and significant effect on the hazard rate. This implies that the more automobile firms there are in the region of the entrant at its year of entry, the more local competition, the lower its survival rate. As expected, the relation between regional employment in related industries (RREIN) and the hazard rate is negative and significant: agglomeration economies based on related industries indeed matter. In other words, automobile firms located in regions that are well endowed with knowledge and skills related to the emerging automobile industry at their year of entry perform better. By contrast, urbanization economies are

not important: the variable RPOPU has no significant relationship to the hazard rate of automobile firms, and its coefficient has even an unexpected (i.e. positive) sign. When we take a more detailed look at the data, we observe that densely populated areas with no concentration in related industries (such as the London region) generated a lot of entrants, but housed very few successful firms in the end. Overall, our data confirmed that the location of firms matters: firms located in regions with many related activities, rather than densely populated regions per se, show higher survival rates, but they tend to suffer from many automobile firms in their immediate surroundings.

The second model assesses the impact of time of entry on the performance of automobile firms in Great Britain. As explained in section 3.4.1, we made two 1-0 dummy variables, one for cohort 1 (ENTR1), and one for cohort 2 (ENTR2), with cohort 3 as the omitted reference group. As model 2 shows, the coefficient estimates of the dummy variable for cohort 1 is negative and significant: early entrants show indeed a lower hazard rate, as expected. However, this is not the case for firms of cohort 2. This outcome is in line with the US experience (Klepper, 2002) and the German experience (Cantner et al. 2004). The effects of the different types of agglomeration economies remain the same as in model 1.

In model 3, we added control variables measuring the pre-entry background of entrants. In other words, we tested whether the pre-entry background of the entrepreneurs affected the survival rate of the automobile firms. We defined two 1-0 dummies that equal to 1 for spinoffs (SPINOFF) and experienced firms (EXPFIRM). Section 3.4.1 provides details on the definitions of both variables. As expected, the dummies of spinoffs and experienced firms have a very strong, negative and significant impact on the hazard rate of automobile firms. In addition, the relative effect of spinoffs is higher than the one of experienced firms, implying an even higher survival rate for spinoffs than experienced firms. This is in accordance with the evolutionary argument that firms inherit routines from their parents: the more closely these routines are related to automobiles, the better the new entrants will perform. The impacts of time of entry and firm location remained the same in model 3, as compared to model 2.

As stated in section 2, Klepper (2002) claims that better-performing parent firms offer excellent learning environments, and, as a consequence, will generate more successful spinoffs. Therefore, it is important to control for the performance of parent firms. In model 4, we have added the log-variable YRS.PAR.PROD FOUNDER measuring the number of years the parent firm produced cars[33]. As expected, the coefficient is negative and significant: better performing parent firms indeed generate better performing spinoffs. This outcome suggests that successful routines are transferred from parents to spinoffs. What is also interesting is that the added control for parent performance cancels the significant effect of the variable SPINOFF on firm survival. This implies that prior experience in the automobile industry is of no importance *per se*. What is important though is that the entrepreneur has had prior experience in a successful parent automobile firm. This result is comparable to what Klepper (2002) found in his study of the US automobile sector. The effects of the other variables remained largely unchanged. Overall, we can conclude that it was the location

33 This indicator of the performance of parent firms is the only available one over such a long period. One of the problems with this indicator is that it should have measured (but does not measure) the performance of the parent only for the period when the founder of the spinoff was still working for the parent (or at least till the time of entry of the spinoff).

of firms (regions with high levels of employment in closely related industries), their time of entry (meaning early entrants), and the pre-entry background of firms (as embodied in spinoffs and experienced firms) that determined the hazard rate of British automobile firms during the period 1895-1968.

In section 3.2.3, we stated that agglomeration economies based on related industries, experienced entrepreneurship and urbanization economies are more likely to affect the emerging spatial pattern of a new industry during its initial stage of development. Instead, localization economies, local competition and spinoff dynamics are expected to be more important in later stages of the industry's lifecycle. In order to test for these expectations, we have set up a new model, which includes only entrants belonging to cohort 1, that is, automobile firms that entered the market during the period 1895-1906. Firms that survived after 1906 have been treated as right censored cases. Excluding the time of entry variables, we have run the same hazard model as model 4. Model 5 presents the results.

The results confirm most of our expectations. As compared to model 4, agglomeration economies based on related industries and experienced entrepreneurship have now an even stronger negative effect on the hazard rate during the first phase of development, as the higher coefficients of RREIN and EXPFIRM in model 5 indicate. Thus, prior experience in related industries matters even more at this stage, which is embodied in both the background of the entrants (pre-entry experience in related industries) and their location (regional concentration of related industries). This is in line with the evolutionary argument: new firms will perform better when they inherit relevant routines from parent organisations and learn from local sources of knowledge and skills in related activities. It is interesting to observe that the spinoff variables SPINOFF and YRS.PAR.PROD FOUNDER are no longer significant in model 5. As expected, spinoff dynamics only becomes important during later stages of development.

Moreover, the variable RCOMP is no longer significant in model 5. This outcome is as expected. It suggests that, in contrast to later phases, local competition has no impact on the hazard rate during the first phase of a sector, because (local) competition is still weak. If we accept that this latter variable also covers the effect of localization economies, we can conclude it has no impact. This is in line with what we expected because it can be excluded at the early stages of an industry's life cycle that a region has passed a threshold (in terms of a minimum number of automobile firms) that brings into existence localization economies. However, we observed earlier that localization economies do not have a positive effect either on the survival rates of automobile firms at later stages of the industry's lifecycle. On the contrary, a high number of automobile firms in a region was accompanied by high hazard rates, suggesting that the negative effect of local rivalry on survival rates is much stronger. Finally, we expected urbanization economies to affect the hazard rates of firms at the very start of a sector. Model 5, however, shows that the variable RPOPU remained insignificant.

3.5 Conclusions

Two evolutionary explanations have been used to analyze the evolution and resulting spatial concentration of the British automobile sector during the period 1895-1968. Our analysis

has demonstrated that agglomeration economies and spinoff dynamics played an important complementary role in the spatial formation of the British automobile industry.

First of all, we were able to show that the spatial distribution of related industries has had a significant and negative impact on the hazard rate of firms. This mattered even more during the first phase of development: some British regions were more favourable from the very start, because they were well endowed with closely related activities (e.g. bicycle and coach making), offering a local supply of potential entrepreneurs, knowledge externalities and skilled labour that could be readily exploited by entrants in the new industry. In particular, the pre-existence of a concentration of bicycle making in Coventry seems to have laid the foundations of a automobile industry in this region. In addition, a high number of automobile firms in a region did not have a positive but a negative effect on the survival rates of new entrants, especially in the later stages of the industry's life cycle. In other words, location influenced the spatial formation of the British automobile industry to a considerable degree.

Spinoff dynamics played an important additional role. The pre-entry techno-economic background of the entrant appeared to be essential for firm survival. Whether or not the entrant possessed relevant experience to automobile manufacturing proved to be a determining factor for its performance, even more so in the initial phase of development of automobiles. Experienced entrants and spinoffs witnessed higher survival rates, as compared to inexperienced firms. What is more, prior experience in a successful parent automobile firm had a positive impact on the performance of spinoffs, indicating an evolutionary process of inheritance of successful routines between firms. However, there is a strong need for further research to examine how this transfer process between generations of firms actually operates. In addition, early entrants, as opposed to later entrants, demonstrated higher survival rates. A few exceptionally successful early entrants in the Coventry-Birmingham area generated a disproportionate amount of local spinoffs, which, in turn, created spinoffs themselves. Coventry spinoffs also performed better than spinoffs located elsewhere. In other words, the high number of (early) spinoffs in the Coventry-Birmingham area and their exceptional success contributed to the concentration of the industry in this region. However, as stated before, this was not the sole reason: both spinoff dynamics and agglomeration economies affected the spatial formation of the British automobile industry in the period 1895-1968.

This paper is part of an exciting new research field that brings together insights from evolutionary economics and economic geography to analyze the spatial evolution of new industries (Boschma and Frenken, 2003). There exist very few studies to date that test empirically its models in a systematic way. This paper has made an attempt to contribute to this task. Among other things, it has demonstrated that agglomeration economies may be decisive in explaining the emerging spatial pattern of a new industry. In doing so, it has provided evidence that geography should be taken seriously in applied evolutionary thinking. It is up to future research to see whether the same results apply to other industries as well.

Chapter 4

Spinoff dynamics and the spatial formation of the fashion design industry, 1858-2005

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4.1 Introduction

In recent years various fields of the social sciences have contributed to our understanding of the market and geographical structure of creative industries. Creative industries have been hailed as a major part of the 'New Economy' (e.g. Scott, 2000; Florida, 2002a). Many of its components, ranging from film and multimedia to interior design and architecture, have experienced disproportionally high growth rates since the mid-'90s (Florida, 2002a; Kloosterman, 2004). The performance of individual firms has been found to be tied to their host regions as 'creative fields' (Scott 1996, 2006).[34] Indeed, it seems that creative cities such as Paris, London, New York and Los Angeles owe a considerable part of their prowess to an interplay of a varied cultural setting and Marshallian externalities of specialisation (e.g. Florida, 2002a; Rantisi, 2004; Scott, 2006; Vinodrai, 2006; Merlo and Polese, 2007). A common theme in explaining the continuing success of such hubs of cultural production is the path dependent nature of their development (Rantisi, 2004). In this paper we supplement the economic geography literature on creative industries with a theory of industrial evolution based on spinoff dynamics (Klepper, 2002; Boschma and Wenting, 2007), and present our results concerning the formation of the fashion design industry over the period 1858-2005.

In evolutionary studies of industrial dynamics the variance in the performance of firms is explained by heterogeneity in routines (Nelson and Winter, 1982; Hodgson and Knudsen 2004). Routines can be understood as organisational skills, which cannot be reduced to the sum of individual skills. Organisational routines, as for individual skills, consist for a large part of experience knowledge (learning-by-doing) and tacit knowledge. Both aspects of routines render them difficult to imitate by other firms (Teece et al., 1997). Still, routine replication takes place between firms through various mechanisms. One mechanism of routine replication is the creation of a firm by an employee (Klepper, 2002; Buenstorf, 2006). Such spinoff firms are expected to transfer the routines, and the

34 Scott introduced the concept of 'creative fields', which he defines as: "… the locationally-differentiated web of production activities and associated social relationships that shapes patterns of entrepreneurship and innovation in the new economy. … [T]he creative field functions as a site of (a) entrepreneurial behavior and new firm formation, (b) technical and organizational change, and (c) the symbolic elaboration and re-elaboration of cultural products." (Scott, 2006, p. 1).

knowledge embedded in them, from the parent firm to the newly created company. Even if such a transfer is imperfect, a spinoff firm has the advantage over a startup firm in that it already has acquired experience in how to run a company in a particular industry (Klepper, 2001). Empirically, one can construct the genealogy structure between firms from parent-spinoff relationships and start to analyze to what extent the success ('fitness') of parent firm and spinoff is correlated. It has become clear that spinoffs indeed outperform other startups, and furthermore that spinoffs from successful parent firms outperform spinoffs from less successful firms (Klepper 2002; Dahl et al., 2003; Agarwal et al., 2004; Dahl and Reichstein, 2007; Cantner et al., 2006; Boschma and Wenting, 2007). This evidence strongly suggests that organisational routines are indeed being replicated by spinoffs albeit imperfectly. Put differently, entrants suffer from a "liability of newness" (Stinchcombe, 1965), which they can overcome by acquiring pre-entry experiences.

We supplement the genealogical concept of routine inheritance with the concept of imitation, which can be defined as routine replication between firms without genealogical linkage. In particular, following the theory of local knowledge spillovers (Breschi and Lissoni, 2001), one expects designers located in clusters to learn more by imitation than isolated designers. Such knowledge spillovers also provide a candidate explanation for the extreme spatial concentration of the world's fashion industry in only a few "fashion capitals", notably Paris, Milan, London and New York.

Routine transfer between parent and progeny firms has been found in various industries, such as accounting (Wezel et al., 2006), law firms (Phillips, 2002), automobiles (Klepper, 2002; Boschma and Wenting, 2007), tires (Klepper and Simons, 2000a) and television receivers (Klepper and Simons, 2000b). Note that most of these studies have focussed on manufacturing industries, and none on creative industries. We argue that creative industries are of particular interest to test the spinoff mechanism and the usefulness of the routine concept. Testing an industrial evolution theory based on the diffusion of routinised practices through spinoffs might be especially interesting for a creative industry. The notion of routinised organisational behaviour seems to be inconsistent with the preoccupation of creative industries with creativity in rapidly changing markets and short product life cycles. Indeed, routinisation and creativity have been characterized as an organisational duality (Ohly et al., 2006). Understanding the relationship between routinised and creative practices is of particular importance to firms that rely on the creative and proactive behaviour of their employees (Ohly et al., 2006). We argue that this is especially the case for creative industries, and address these issues in our analysis of the fashion design industry.

Our analysis is based on a unique dataset of the fashion design industry covering the complete history of the industry starting in 1858 with the establishment of the first haute couture company in Paris. In total, we collected 565 biographies of the world's top fashion designers who are active in either haute couture or ready-to-wear. For each couture house we collected data on location, the year of entry, the year of exit, and the labour market career of the entrepreneur (i.e. the head designer of the firm). These data allows us to reconstruct the complete genealogy of the top fashion design industry. Different from previous studies, we can trace the routine replication process back to all previous employers of the entrepreneur, which allows us to analyse whether the amount, variety and geographical origin of labour market experience affect the performance of firms.

Fashion design, like many other cultural products, relies upon its aesthetic component to confer value (Granham, 1987). The aesthetic component reflects the designer's ability to understand and

incorporate symbolic knowledge from its environment into a commercial product. We argue that a variety of pre-entry experiences is beneficial to the creative potential of a designer, as (s)he inherits routinized practice from the parent firm. Second, we will test whether the success of parent firms is reflected in the success of their spinoffs. This would be a clear indication of 'inheritance'. Indeed, to what extent can a fashion designer firm's success be explained by its pre-entry experiences, and, specifically, the variety and quality of its parentage?

The remainder of this paper is structured as follows. We start in section 2 with a concise history of the fashion design industry by focussing on the life courses of the most influential designers and the emergence of "fashion capitals". We develop a theoretical framework in section 3. Data and methodology are presented in section 4 and the results are presented in section 5. We end with conclusions and discussion.

4.2 A concise history of the world's fashion design industry

The fashion design industry started with the formation of the first *couture* house in 1858 by Charles Frederick Worth in Paris (De Marly, 1980). The distinctive feature of *haute couture* or the high fashion design industry was to incorporate artistic creativity and technical excellence into the clothing design process. It created its own market by designing clothing for the royalty, the rich and famous, starting with Worth's dresses for empress Eugenie in 1860. Worth was also the first to sign his work and the word *couturier* was invented as a new profession. Yet, Worth's most important contribution to the start of a new industry, was his redefinition of the nature of the relationship between designers and consumer. Before him, even the most talented dressmakers were regarded as servants in the circles that determined social prestige. They were placed much lower on the social ladder than architects or painters. Worth was able to get his clients to come to his house, rather than the other way around, just as a patron might visit an artist's studio. Under his leadership, haute couture became a luxury business. The early couture industry functioned as an interface between the silk and brocade manufacturers of Lyons and the world of the aristocracy and the Court, but also a vehicle for publicity, which favoured both the client and the couturier.

Worth only faced serious competition from 1871 onwards when Jacques Doucet set up a salon in Paris. For a long time Doucet's name was the only one equalled with Worth (Chapon, 1996). Later, competition would quickly increase with many new designers entering the industry. Charles Frederick Worth himself trained two of these young designers, notably the revolutionary designer Paul Poiret. He started his career as a fashion designer in 1898 at Cheruit and quickly moved in 1899 to London to work for the houses of Rouff and Redfern. In 1900, Doucet employed his design talents, and from 1901 to 1904 he worked for Worth. After having gained experience at these different companies, Poiret started his own firm in Paris. In the subsequent years, Poiret trained many fashion designers himself who would come to dominate the next generation of fashion designers. The most famous of his spinoffs was Piguet who started his company in 1933 in Paris. Piguet's employed Christian Dior who started his own firm in Paris in 1947 (De Rethy and Perreau, 2002). Dior in turn trained other famous designers who later started their own company, including Yves Saint Laurent, Pierre Cardin and Marc Bohan. Thus, a few successful early entrants generated many other successful couture houses in Paris, who generated many spinoffs themselves, etcetera. Furthermore, most of the couture houses active today can trace their decent back to only

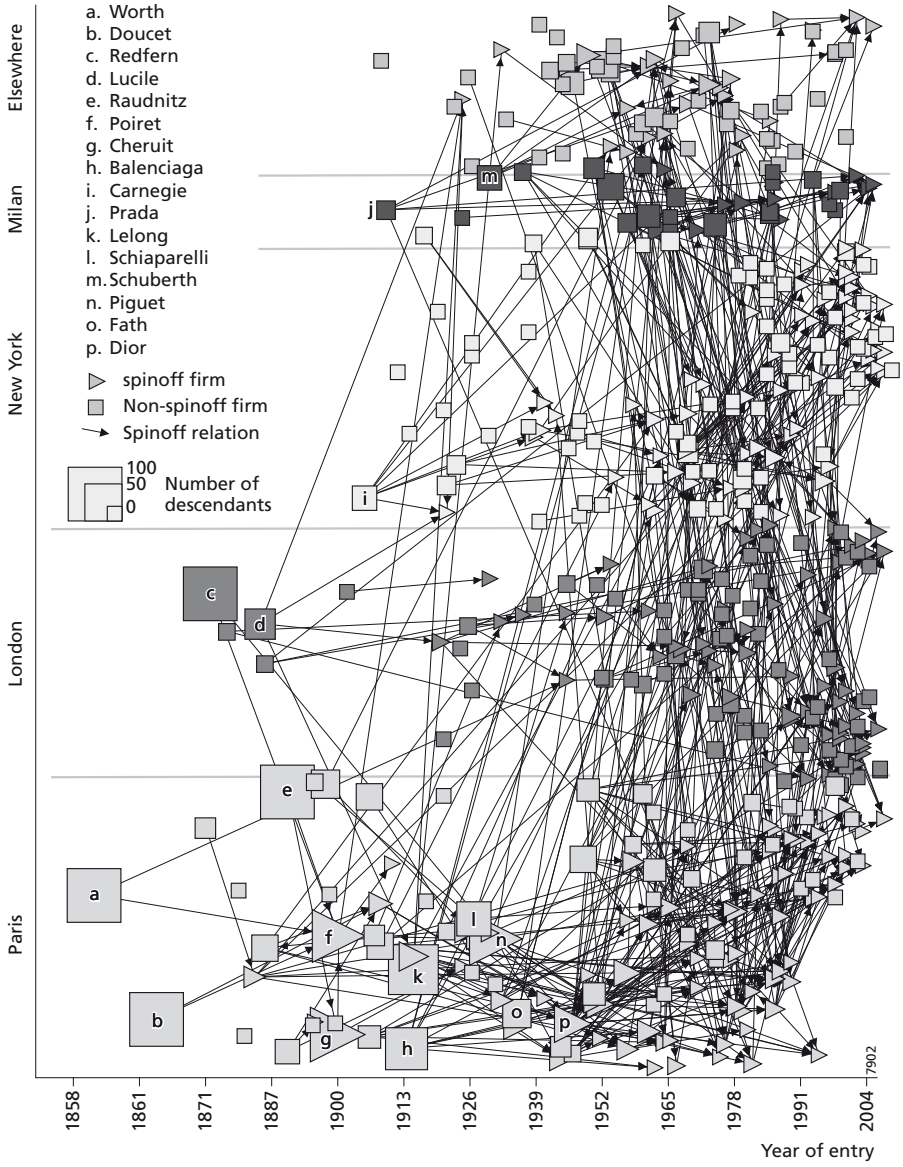

Figure 4.1. The genealogy of the fashion design industry, 1858-2005.

a handful of early entrants in 19th century Paris. Figure 4.1 shows the genealogical data for each of the four dominant clusters being Paris, London, New York and Milan. Here, we can observe the historical patterns of the industry´s geography. Paris dominated the early development of the industry with London following at a distance. In the postwar period, however, Paris experiences a serious crisis while new clusters emerge in New York and Milan. In the final period, the growth takes place primarily outside of the four clusters reflecting the continuing spatial de-concentration of the industry.

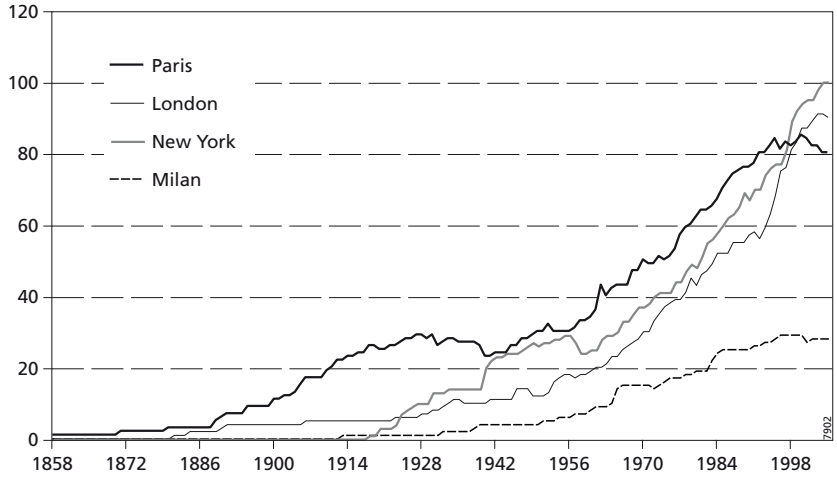

Figure 4.2. Number of fashion houses by location, 1858-2005.

Due to the success of Worth and Poiret and their pupils, Paris became the dominant centre in the world of haute couture. Designers from all over the world went to the French capital to learn the business. Instead of returning home, the vast majority of them remained in Paris. Before the Second World War, the majority of the world's fashion designers were located here. Those located outside of Paris were mostly located in London. The extreme spatial concentration in Paris was further institutionalised by the establishment of the Syndicate Chamber of Parisian Couture. This association, founded in 1911, regulated the profession of the haute couturiers (Waddell, 2004). It provided arrangements for intellectual property and high standards in the schooling of seamstresses and designers. Around the same time, two successful designers started a business in different part of the world. Carnegie set up her boutique in New York in 1909 and Prada started branching out to fashion in Milan in 1913. These events initially did not pose any threat to Parisian dominance, yet would plant the seed of two new clusters emerging decades later. Similar to the successful Parisian designers, Carnegie and Prada trained many designers who would start they own firms at a later stage within the same cluster. For example, Banton (in 1924) and McCardell (in 1940) are spinoffs of Carnegie (with a total of seven spinoffs), while Audibet (in 1984) and Alaia (in 1980) worked for Prada (with a total of five spinoffs) before starting their own company. In the post-war period, serial entrepreneur Arnoldo Girombelli was especially noteworthy in fuelling the growth of the Milanese fashion cluster. He founded several Italian ready-to-wear companies: Genny in 1961 and Byblos in 1973, which would come to generate 18 spinoffs themselves. In New York, Donna Karan (start in 1984) was herself a former employee of the New York based fashion houses of Anne Klein and Dell'Ollio, and has generated eight spinoffs. Six of these located in New York.

The share of Paris-based firms started to fall rapidly from around 70 percent up until 1923, to 36 percent in 1941. Currently less than 25 percent of the famous fashion houses in the world are located in Paris. At the same time, London, New York and Milan increased their share of designers with New York currently outnumbering Paris. The marked shift in spatial concentration of the industry is closely related to the success of *prêt-à-porter* or ready-to wear in the 1950s and 1960s as a new market segment (Waddell, 2004). Ready-to-wear is a simplified form of high fashion and demands

less artistic skill from the designer. Initially French haute couturiers were not allowed to practice ready-to-wear according to the guidelines of the Syndicate Chamber of Parisian Couture. As a consequence French couturiers entered the ready-to-wear market much later than designers outside Paris. And, with prêt-à-porter serving a rapidly increasing consumer group outside France, the fashion clusters in London, New York and Milan could grow much faster than the cluster in Paris leading to a spatial de-concentration of the industry (see Figure 4.2).

Currently, the fashion design industry has grown into a global, multi-billion dollar industry. Design being a luxury good and with gross world income rising, demand for fashion is still rapidly expanding. As a consequence, a number of new clusters have developed recently, most notably Tokyo. Other fast-growing clusters include Los Angeles, Mumbai, Shanghai, Rio de Janeiro, and many more. Still, in size and prominence they form no match for fashion's Big Four.

4.3 A genealogical framework of industrial dynamics

The history of the fashion design industry illustrates that successful young designers generally accumulate experience through job mobility before starting their own brand. The example of Poiret – one of the most successful designers in history – who worked for Cheruit, Rouff & Redfern, Doucet, and Worth before staring his own firm, serves as just one out of many examples. The importance of gaining experience as assistant of an established fashion designer reflects that creativity is not purely a personal threat, but can be transmitted if two people work closely together. Creativity is based on one's stock of tacit, symbolic knowledge (Banks et al., 2000; Weller, 2007) and tacit knowledge is best transmitted within the boundaries of a firm between employees (Nelson and Winter, 1982), or in our case, between the designer-entrepreneur and his or her assistant-designer(s).

The importance of pre-entry experiences for success in fashion design begs to question why successful incumbents are motivated to train their future competitors. Few designers remain at one fashion house for more than a couple of years, taking with them valuable knowledge of the design process to rival incumbents or their own new firm. Yet, designers cannot do without assistants to cope with strong competition and rapidly changing fashion concepts. To cope with this pressure to innovate, designers themselves deem the exchange of ideas with peers as important (Crewe and Beaverstock, 1998; Scott, 2000). Since ideas can be best exchanged through day-to-day contact within the firm, successful firms hire young designers to have new ideas flowing in the company.[35] Often, these ideas build on the assistant's experience of working for previous employees. Indeed, it appears that designers do not only use the knowledge they gained at previous employers in their own entrepreneurial venture, but also put their prior experiences to good use while working as an employee for other houses.[36] This implies that experienced designers make more attractive employees for incumbent firms than designers who are just starting their career.

35 Successful American designer Donna Karan, herself a former employee of Anne Klein, stated that she hires young talent, because "these great young designers continually recharge and inspire me." (Sischy, 2004)

36 An example is the work of designer Alber Elbaz at Lanvin. His previous employer, Geoffrey Beene, taught him the essential elements of drape and fit. And while working at Lanvin since 2001, he follows Beenes lessons of making clothes womanly, user-friendly, and working with the body (Watson, 2004).

In short, the evolutionary argument in the spinoff literature holds that entrants, suffering from a liability of newness (Stinchcombe, 1965), can overcome this by acquiring pre-entry experience. Thus, we expect that firm survival is affected by the amount and type of experience the entrepreneur built up in the past. Note that in the case of fashion design, where most companies are small and rely on a single brand, the survival of a firm is a good indicator of its success.

Following Klepper (2002), we distinguish between two types of pre-entry experience. First, the entrepreneur can gain pre-entry experience in a company within the same industry. These entrants are called spinoffs. Second, the entrepreneur can gain experience in a company active in a different but related industry. We have defined fashion manufacturing, textile manufacturing and fashion or textile trade (including retail) as related sectors to fashion design. Entrepreneurs who previously worked in these sectors are called experienced entrepreneurs. Both spinoffs and experienced entrepreneurs are *de alio* entrants in that they descend from another company. By contrast, companies set up by entrepreneurs without any experience (graduates or former employees in unrelated industries) are *de novo* entrants. We call this third category holding no pre-entry experience startups. Following the evolutionary theory of routine replication, two hypotheses state (Klepper 2002; Klepper and Sleeper 2005):

Hypothesis 1: Spinoff firms outperform inexperienced entrants.

Hypothesis 2: Experienced entrants outperform inexperienced entrants.

We approximate the *amount* of pre-entry experience of spin-offs by the number of previous employments held by the entrepreneur in the same industry. Following the genealogical terminology, the higher the number of parents of the spin-off, the greater his or her pre-entry experience. For example, in Figure 4.3 firm A had only one parent while firm B has three parents. We expect the success of spinoffs to be related to the number of parents. This type of reasoning seems plausible for the fashion design industry where success is determined by remaining creatively relevant. Creativity is in turn dependent on recombinant potential of previous experiences (Weitzman, 1998). Another beneficial effect of having multiple parents is the accumulation of reputation effects stemming from affiliation with different incumbent firms (Phillips, 2002). From this, the following hypothesis follows:

Hypothesis 3: The more parents a spinoff firm has, the higher its performance.

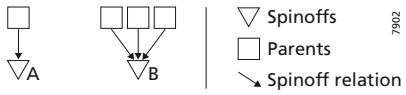

Figure 4.3. Spinoff relations.

The number of parents is a proxy for the amount of pre-entry experience and captures recombinant possibilities between the pieces of knowledge acquired from different parents. Having more parents generally increases the recombinant possibilities. Recombinant potential might not be enough, however, to understand the difference in performance of spinoffs. Since routines are the object of selection in evolutionary studies, fitter routines might prove to be essential in a spinoff's portfolio.

In other words, if routines are indeed transmitted from parent to spinoffs, the performance of the parent influences the performance of the spinoff (Burton et al., 2002; Klepper, 2002). Indeed, affiliation with a single major fashion-giant might be more beneficial then with numerous other incumbent firms. We approximate the *quality* of pre-entry experience of spin-offs by counting the number of years a parent firm has produced at the time of spinoff. Thus, the spinoffs from more successful firms (in terms of survival) are distinguished from those from less successful firms. The following hypothesis follows:

Hypothesis 4: The higher the performance of a parent firm, the higher the performance of its spinoff firms.

A second mechanism through which experience knowledge as embodied in routines is transmitted among firms is imitation (Nelson and Winter, 1982; Boschma and Frenken, 2006). Transmission through imitation, however, is expected to be much less effective as a transmission mechanism, because tacit knowledge is lost without direct interaction between designers. Yet, there is ample evidence that imitation takes place, especially through social networks that are geographically localised (Uzzi, 1996; Stuart and Sorenson, 2003; Sorenson, 2003). Imitation in this context is closely related to the concept of local knowledge spillovers, which is a form of localisation economies. Co-located firms are expected to learn from each other and to profit from knowledge spillovers stemming from being located in a dense cluster of similar firms (Porter, 2000).

Hypothesis 5: The higher the local density of fashion designer firms, the higher a firm's performance.

Imitation effects, however, have a disadvantage of contributing to regional homogeneity (Grabher, 1993; Boschma, 2005). If many firms imitate within a cluster, variety will decrease and recombinant opportunities diminish. Migration counteracts the tendency towards homogeneity as migrant entrepreneurs bring knowledge created in a different environment. Thus, through migration, a firm can profit from knowledge acquired by imitation by applying and recombining this knowledge in a new environment. The following hypothesis follows:

Hypothesis 6: Firms founded by migrant entrepreneurs outperform other entrants.

4.4 Data and methodology

4.4.1 Data

We collected a unique dataset comprising firm-level data on year of entry and exit, the career path of the entrepreneur, the most prominent employees, location, migration, as well as information on mergers and acquisition. The data we collected are a compilation of various sources, notably the Thames & Hudson Dictionary of Fashion and Fashion Designers by O'Hara Callan (1998) and Watson's (2004) 20th Century Fashion: 100 Years of Style by Decade and Designer. This was supplemented by consulting more detailed biographies of specific designers (e.g. De Marly, 1980; De Rethy and Perreau, 2002; Sischy, 2004). The data were updated to the year 2005 using Internet sources, of which 'www.designerhistory.com' by Bawa (2007) is the most notable. Our data

encompasses information on 565 of the world's top designers[37] in the haute couture and ready-to-wear industry, from the start of the industry in 1858 through 2005. The information on each designer is biographical and hence offers complete information of designer's career moves and training, their entry and exit years in the industry, their locational behaviour and their most important design products. During the period 1858-2005 a total of 510 designers started their own firm. This means that 55 designers in our dataset have been active as employees only (up until 2005) and are left out of the analysis. Among them is Frenchman Gerard Pipart, who, although having had a successful career spanning the period 1949-1999 compromised of successful organisations such as Balmain, Patou and Ricci, never started his own firm (Martin, 1997; Bawa, 2007).

Although the dataset is detailed, it cannot be considered complete. In fact, the 565 designers on whom we have collected data represent a mere fraction of the total number of fashion designers throughout the industry's history. Our data does, however, represent all designers of considerable note to be placed in the Thames & Hudson Dictionary and fashion encyclopaedias. As such, our data is biased towards the industry's 'elite' firms and designers. Our data concern the two highest, most exclusive market segments of fashion design: haute couture and ready-to-wear. We have not included fashion houses that solely produce for the mass market, or fashion firms whose main activity consists of retail trade and distribution, rather than creative design. Since our theoretical framework predicts that spinoffs outperform other entrants, we might expect a disproportional high number of spinoffs compared to inexperienced entrants in our dataset. Based on qualitative accounts on the industry's history (e.g. De Marly, 1980), our data on firm locations seems to reflect historical density patterns with a lesser bias – in particular the concentration in Paris, and later London, New York, and Milan. The data also includes designers who were active in other cities, such as Los Angeles, Tokyo, Hamburg, Barcelona, Rome, and Copenhagen, which are known to host a local fashion design community (Waddell, 2004; Watson, 2004; Merlo and Polese, 2006). In sum, although our dataset offers a unique opportunity to quantitatively analyse the industrial dynamics underlying the fashion design industry's spatial formation from its onset in 1858 through 2005, it also suffers from a bias to the more successful firms and designers. Any generalisation of our analysis of this dataset is limited by its bias, and should reflect the assumption that similar learning mechanisms of spinoffs inheriting organisational capabilities from parent firms occur throughout the industry's layers. Nonetheless, our results are best understood in the context of haute couture and ready-to-wear constituting fashion's top market segments.

Figure 4.4 shows the number of entries and exits each year as well as the total number of top fashion design firms in the world. Here it is clear that the industry continues to grow in terms of the number of firms. While in most manufacturing industries, the number of firms first rises and than falls during an industry 'shakeout' (Klepper and Simons, 1997), this pattern is absent in the top fashion design industry. While in most manufacturing industries entry rates decline towards

37 Here, our definition of top fashion designers includes both head- and assistant-designers, as well as founder-designers of houses mentioned in the Designers by O'Hara Callan dictionary, or Watson's historical record of most prominent fashion designers. We also include creative directors in charge of the overall design of fashion items. We aim to capture all individuals that are responsible for the creative development in the top of each house's organisational hierarchy. Commonly, founder-designers are the creative head of their organisations, up until one of their assistants replaces them. Designers that start their own firm generally only end their connection to their fashion house (designers is commonly name their ventures after themselves) at retirement.

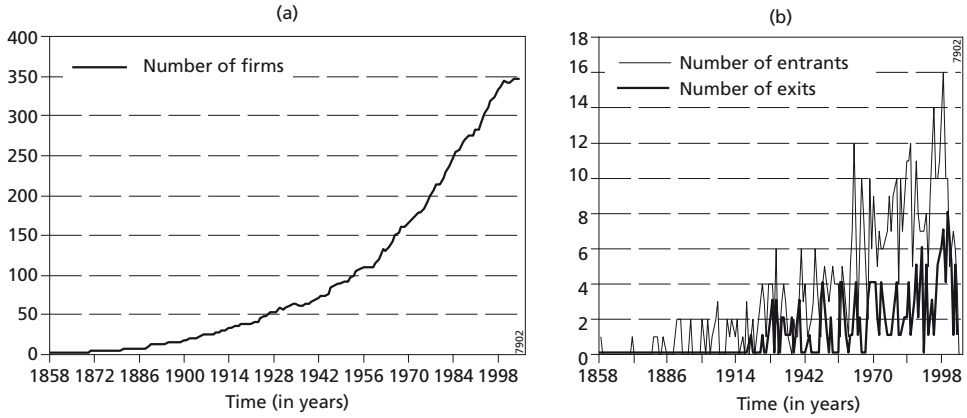

Figure 4.4. Number of top-fashion houses, 1858-2005. (a) Total number of firms, and (b) number of entrants and exits.

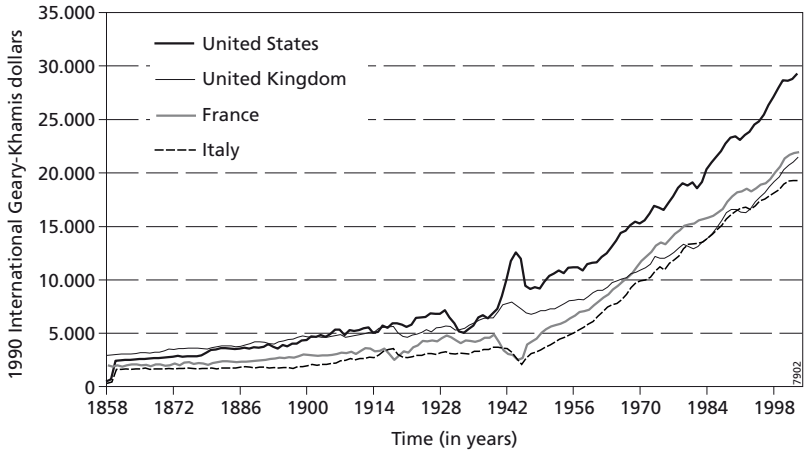

Figure 4.5. GDP per capita, 1858-2005 (United States, United Kingdom, France, and Italy).

zero during and after a shake-out, entry rates remain high throughout the fashion design industry's history. This is understandable because in creative activities such as design scale economies in production are much less important compared to manufacturing. Indeed, fashion designers are more concerned with remaining creatively relevant and maintaining an image of exclusivity than maximizing production to obtain low marginal costs (Banks et al., 2000). Considering the luxury aspect of couture, one could expect that, as wealth increases, more and more niche-spaces open up. These are as likely to be filled up by new entrants as incumbents. This assertion is supported by the correlation between the number of fashion houses and GDP per Capita (Figure 4.5).

4.4.2 Methodology

Using duration analysis (Cox proportional hazard regression), we analyse to what extent family genealogy affected firm survival in the fashion design industry as a whole. We estimate hazards

for fashion design firms to exit the market at time t dependent on *n* covariates $x_1, \ldots, x_n$. The Cox proportional hazard function can be formulated as follows:

(1) $\lambda(t|x) = \lambda_o(t) \exp\{\beta x\}$

Where $\lambda(t|x)$ is the hazard at time t dependent on covariates $x = (x_1, \ldots, x_n)$, $\beta = (\beta_1, \ldots, \beta_n)$ is the vector of regression coefficients for x, and λ_o denotes the baseline hazard function.

As we will be estimating the hazard to exit we counted the years between a firm's entry and exit to the fashion market as its spell duration. The 340 firms that are still present in 2005 were treated as right-censored cases. Approximately 5 percent of the total number of cases has become the victim of acquisition or merger. We treat mergers and acquisitions such that the dominant firm survives and the acquired firm is considered to exit the industry at the time of acquisition.[38] For example, Maison Worth, which was acquired by the rival house of Paquin, exited the industry in 1953. Paquin-Worth was short-lived, however, as the new formation closed its doors in 1956. A more recent example is Alexander McQueen, who sold a controlling interest in his own label to Gucci in 1997. Some fashion houses were acquired by firms that had not been active in the fashion design industry prior to the moment of acquisition. Each acquisition by a firm that was not active in the industry before, was not treated as an exit as long as production did not cease. For example, the German hair-care and cosmetics giant Wella AG bought the house of Marcel Rochas in 1987, which was not treated as an exit for Rochas.

The first group of independent variables concern the entrepreneurial background as earlier defined. We use a dummy for spinoff firms (SPINOFF) and a dummy for experienced firms (EXPERIENCED). Sometimes a firm had multiple founders. If their backgrounds differed, 'spinoff' overrules 'experienced', and 'experienced' overrules 'inexperienced'.

Table 4.1 shows the number of firms by entrepreneurial background and entry cohort (each cohort represents approximately one-third of the population). In total we counted 212 spinoffs (41.6 percent), 219 experienced entrepreneurs (42.9 percent), and 79 inexperienced entrepreneurs (15.5 percent). This shows that most entrants in the industry have entered with pre-entry experience, further supporting the relevance of our theoretical framework. Over time, the share of spinoffs increases, which is to be expected since the number of spinoffs is closely related to the total number of incumbents in the industry. Interestingly, the relative number of inexperienced entrants also increases over time while in other industries this number generally decreases (Klepper, 2002; Agarwal et al. 2004). This would indicate that the barriers to entry without experience have decreased. Possibly, this reflects the rise of fashion academies that generate many of the inexperienced entrants.

38 In case of a merger, we traced the more dominant partner by qualitative reports on performance of the fashion houses in the years prior to the merger (e.g. De Marly, 1980). We denote the better performing partner as the acquiring party. This definition of acquisitions and mergers in the application of survival analysis to industry evolution is similar to earlier studies by Klepper (2002) and Boschma and Wenting (2007).

Table 4.1. The number of firms by cohort and entrepreneurial background

	Total (1858-2005)		Cohort 1 (1858-1961)	
Background	**No.**	**%**	**No.**	**%**
Spinoff	212	41.57	54	33.54
Experienced	219	42.94	89	55.28
Inexperienced	79	15.49	18	11.18
Total	510	100.00	161	100.00

	Cohort 2 (1962-1983)		Cohort 3 (1984-2005)	
Background	**No.**	**%**	**No.**	**%**
Spinoff	68	41.72	90	48.39
Experienced	73	44.79	57	30.65
Inexperienced	22	13.50	39	20.97
Total	163	100.00	186	100.00

The spinoff variable is further differentiated by the variables counting the number of parents (NO. PAR. FOUNDER) and the variable counting the maximum number of years a parent has produced at the time the employee leaves to start his own firm (YRS.PAR.PROD FOUNDER). The former is used as a proxy for the variety of organisational practices accumulated, while the latter proxies the success of the parent company. These variables can be derived directly from the biographical information that makes up the genealogy of the industry. In the few cases where multiple founders had spinoff backgrounds we compiled their pre-entry experiences. One example of combined backgrounds is the firm Tuleh, formed in New York in 1997 by Josh Patner and Bryan Bradley. Patner had previously designed for Donna Karan, while Bradley had been working for Calvin Klein and Anne Klein.Thus, in the case of Tuleh, NO.PAR. FOUNDER equals 3 and YRS.PAR.PROD FOUNDER equals 29. Since one can assume diminishing returns to scale in learning, we transform NO.PAR. FOUNDER and YRS.PAR.PROD FOUNDER on a natural logarithmic scale.

The group of geographical variables consists of whether the entrepreneur has ever worked outside of the city in which (s)he started the firm (MIGRATION), the number of fashion designer firms in the firm's location at time of entry (LOC.ECONOMIES), and whether the firm is located in one of the four dominant fashion clusters throughout history (PARIS, LONDON, NEW YORK, MILAN). A few firms have relocated their firm from their start-up location or have opened new branches in other locations. In these cases we note the city in which it has produced the longest period of time as its prime location. From Figure 4.1, it is clear that there have been many designers that moved between the dominant clusters as reflected by spinoff relationships that cross the geographical boundaries. In total, one out of four designers has international experience, further underlining the global character of the industry.

Finally, we include three control variables for macro-economic circumstances at the time of entry: gross domestic product per capita (GDP.CAPITA)[39], the First World War (WWAR1), and the Second World War (WWAR2). As noted earlier, GDP per capita might indicate market demand

39 We log-transformed (LN) this variable to obtain a less skewed distribution.

Table 4.2. Descriptive statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
EXPERIENCED	510	0.00	1.00	0.43	
SPINOFF	510	0.00	1.00	0.42	
NO.PARENTS (LN)	510	0.00	2.40	0.43	0.56
YRS.PAR.PROD (LN)	510	0.00	4.71	1.32	1.65
MIGRANT	510	0.00	1.00	0.18	
GDP.CAPITA (LN)	510	7.55	10.28	9.26	0.67
WWAR1	510	0.00	1.00	0.01	
WWAR2	510	0.00	1.00	0.04	
PARIS	510	0.00	1.00	0.27	
LONDON	510	0.00	1.00	0.24	
NEW YORK	510	0.00	1.00	0.28	
MILAN	510	0.00	1.00	0.07	
LOC.ECONOMIES (LN)	510	0.00	4.60	3.30	1.10

for luxury products such as high fashion. The two World Wars have most likely disrupted the European market, specifically during the Nazi occupation of Paris (Merlo and Polese, 2006). Table 4.2 shows descriptive statistics for each of the independent variables used in the Cox regression analysis.

4.5 Results

We tested different hazard models using Cox regression with an increasing number of variables, shown in Table 4.3. We start with Model 1 where we include entrepreneurial background only. Following hypothesis 1 and hypothesis 2, spinoff firms and experienced firms indeed have lower hazard than the omitted category of inexperienced startups. Both coefficients are negative and significant. Thus, we accept hypothesis 1 and 2. Note that none of our control variables is significant. This implies that the growth in wealth in the last decades and the considerable disruption by World Wars had no significant impact on firm survival.

Model 2 replaces the spinoff variable with the number of parents of a spinoff (NO.PAR. FOUNDER), which we log-transformed to obtain less skewed distributions, and to reflect diminishing returns to learning.[40] By measuring the number of parent firms, we not only take into account whether an entrepreneur has previous experience in working for another fashion designer,

40 Note that in Model 2 we exclude the SPINOFF variable and include NO.PAR. FOUNDER, because one is logically related to the other: all non-spinoff cases are coded as 0 in both variables. This is reflected in the high and significant correlation between the two variables at 0.907 (see Appendix 4.A). To test whether having only one parent might be sufficient to reap the beneficial 'spinoff effect' on survival, we estimated a model including a dummy variable for having one parent firm, and a variable that counted the number of parents of spinoffs with two or more parents. The results show that having one parent is sufficient to yield a higher survival rate compared to non-spinoff entrants. However, the coefficient of the number of parents variable remained significant and negative, indicating that spinoffs with a multitude of parents outperformed spinoffs with fewer parents – similar to the results shown in Model 2.

Table 4.3. Cox regression results (standard errors in parentheses; dependent variable: hazard to exit the market.).

	Model 1	**Model 2**	**Model 3**	**Model 4**
EXPERIENCED	**-1.384*** **	**-1.079*** **	**-1.230*** **	**-1.203*** **
	(0.221)	(0.221)	(0.215)	(0.222)
SPINOFF	**-1.261*** **			
	(0.227)			
NO.PARENTS (LN)		**-0.959*** **	0.248	0.436
		(0.244)	(0.412)	(0.432)
YRS.PAR.PROD (LN)			**-0.440*** **	**-0.439*** **
			(0.133)	(0.136)
MIGRATION				-0.439
				(0.320)
PARIS				-0.334
				(0.396)
LONDON				-0.224
				(0.331)
NEW YORK				0.126
				(0.334)
MILAN				-0.674
				(0.446)
LOC.ECONOMIES (LN)				0.058
				(0.159)
GDP.CAPITA (LN)	0.051	0.073	0.129	-0.055
	(0.139)	(0.140)	(0.140)	(0.236)
WWAR1	0.490	0.394	0.534	0.457
	(0.430)	(0.431)	(0.432)	(0.436)
WWAR2	-0.066	-0.062	-0.009	-0.233
	(0.309)	(0.308)	(0.310)	(0.326)
Number of cases (N)	510	510	510	510
Chi-square	**34.694*** **	**23.567*** **	**34.503*** **	**50.621*** **
-2 Log likelihood	1684.697	1695.824	1684.888	1677.692

*** significant at the 0.01 level
** significant at the 0.05 level
* significant at the 0.10 level

but also the *amount* of such experiences (s)he accumulated during his/her career. Indeed, the coefficient of number of parents is significant and negative, although the explanatory power has not risen compared to model 1. We can conclude that the number of parents increases a spinoff's success, thus accepting hypothesis 3. It seems that the variety in inherited routines significantly boosts firm survival in the fashion design industry. Our results confirm the idea that the recombination of design traditions is beneficial in creative industries.

In model 3 we test hypothesis 4, regarding the effects of quality of parentage on firm survival.[41] The coefficient for YRS.PAR.PROD FOUNDER is negative and significant, indicating that spinoffs with successful parents outperform spinoffs with less successful parents. Better performing parents seem to generate better performing spinoffs. This result suggests that organisational knowledge is transferred from parents to their spinoffs, albeit imperfectly. We accept hypothesis 4. Note that in Model 3 we show the results of a test that incorporates both quantity (NO.PAR. FOUNDER) and quality (YRS.PAR.PROD FOUNDER) of parentage. The now insignificant coefficient of (NO. PAR. FOUNDER) indicates that the quality effect overrules the quantity effect. In other words, having multiple parents might contribute to survival, but it is more important to have at least one successful parent from whom the aspiring entrepreneur learns fitter routines. The fact that YRS. PAR.PROD FOUNDER and NO.PAR. FOUNDER are highly correlated, however, weakens our interpretation of Model 3 due to multicollinearity[42]. Still, on conceptual grounds it is important to control for the number of parents when incorporating parental success, as they may be causally related. Indeed, having multiple parents is commonly the outcome of a designer's successful career path leading up the hierarchical ladder of fashion houses.

In model 4 we test our hypotheses 5 and 6. We included those independent variables that were related to locational effects on firm survival in Model 4. To test hypothesis 5 we included a variable approximating localisation economies that measures the number of fashion designer firms in the region at time of entry (LOC.ECONOMIES). The major fashion capitals may house agglomeration economies that propel industry concentration. Indeed, urbanisation and localisation economies might form a powerful explanatory mechanism for industry concentration, aside from spinoff dynamics. Because we included a proxy variable for localisation economies[43], the dummy variables PARIS, LONDON, NEW YORK and MILAN are more likely to capture urbanisation economies specific to these four fashion capitals. Table 4.3 shows that the inclusion of city dummies does not yield any significant result at the 0.10 level. The coefficient of LOC.ECONOMIES is also insignificant. We find no indication of localised knowledge spillovers, since the survival rate of firms within dense and urban clusters is not significantly different from any other firm. Hypothesis 5 has to be rejected on the basis of our evidence.[44]

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41 Note that we log-transformed (LN) the variable YRS.PAR.PROD FOUNDER to obtain less skewed distributions, and to reflect diminishing returns to learning.

42 Since the two variables are significantly and highly correlated (0.938), we tested for multicollinearity. F-tests on the inclusion of both variables show that the multicollinearity problem is not serious. Moreover, the sign, significance, and standard errors of the estimates are stable in 20 re-estimations of the model for smaller random samples. To test the model's robustness, we estimated a model which excludes the variable NO.PAR. FOUNDER from Model 3, and thus tests the effect of YRS.PAR.PROD FOUNDER without controlling for number of parent firms. The resulting coefficient of YRS.PAR.PROD FOUNDER is negative and significant, similar to the result shown in table 4.3.

43 Note that we log-transformed (LN) the variable to obtain a less skewed distribution, and to reflect diminishing returns to local knowledge spillovers.

44 Note that, interestingly, Parisian firms on average performed worse than the firms in other clusters. This might be interpreted as the effect of local competition in the highly dense Parisian cluster and the prolonged crisis they experience after the ready-to-wear segment had emerged.

The large negative coefficient for migrant fashion designers (MIGRANT), suggests that migrant fashion designers have indeed a lower hazard rate. However, the effect is not significant at p = 0.17, and we do not accept hypothesis 6. When we do not include variables related to entrepreneurial background, we find that the coefficient becomes significant and negative. This result suggests that taking experience gained in one geographical cluster to a new geographical cluster might be a successful strategy, but this effect is no longer significant when controlling for the quality of parentage (i.e. YRS.PAR.PROD FOUNDER).

Our analysis of firm survival indicates that pre-entry experiences determine the success of entrepreneurial endeavours in fashion design. Both the quantity and quality of parentage influenced the success of spinoffs. Our analysis showed no evidence for success derived from locating within one of the four fashion clusters. To the extent that the spinoff process is localised, i.e. spinoffs locate near their parents, the inheritance of fitter routines from parent to progeny firms might fuel the clustering of the industry in a handful of cities. The agglomeration of multiple incumbents, makes clusters the ideal spot for inexperienced designers to find a job and learn from the establishment. Indeed, clusters of cultural activities thrive on the influx of talent drawn to the place's creative atmosphere and job opportunities (Scott, 2006). The intense competition within clusters might cause higher failure rates (Porter, 2000), but also ensures a more intense selection of fitter routines that can be transferred to aspirant entrepreneurs.

Table 4.4. Percentage of spinoff firms locating in the same cluster as the parent firm, in the three other major fashion cities, or elsewhere

		Spinoff locates in:				
		Paris	**London**	**New York**	**Milan**	**Elsewhere**
Parent location:	Paris	70%	12%	8%	3%	7%
	London	10%	73%	8%	2%	6%
	New York	2%	4%	87%	4%	4%
	Milan	12%	14%	12%	53%	9%
	Elsewhere	32%	21%	6%	12%	29%

For spinoff dynamics to drive spatial concentration, spinoffs need to locate near their parent firms. Our data on the fashion design industry suggests that this is indeed the case. Table 4.4 shows that most spinoffs located in their parent's location. 70 per cent of the total number of spinoffs created by Parisian fashion houses also located in the French capital. The large majority of spinoffs created by parent firms in London (73 per cent) and New York (87 per cent) also choose to remain in their parent's city. Compared to these figures, Milanese parents saw a relatively large share (47 per cent) of their spinoffs locate in a different location, most often one of the other three fashion capitals. Spinoffs spawned by parent firms that were located outside of the four major fashion cities, tended to locate in Paris or London. Our results indicate that spinoffs remain in or are drawn to clusters, but doing so does not necessarily improve their performance. Spinoffs are more likely to remain in clusters due to specific reasons surrounding their founding, rather than to agglomeration economies. Because of its local nature, the spinoff mechanism not only governs firm success, but also structures the spatial evolution the industry around specific centers of creativity. Early chance

events, specifically the entry by successful entrants and a rapid spinoff generation initiated a localized replication of organisational capabilities that led to the dominance of four fashion capitals over their competitors. The inheritance effect remains significant after controlling for localisation economies and urban factors specific to the four major fashion cities: Paris, London, New York and Milan.[45] The insignificance of the coefficients of the place-specific variables in Model 4 suggests that agglomeration economies played a minor role, if any, in driving the spatial formation of the fashion design industry. Hence, the spinoff model (Klepper, 2002, 2007) predicts that the spatial structure of an industry is shaped by the geography of organisational capabilities and their replication, rather than by the geography of economic activity.

4.7 Conclusions and discussion

In sum, we found that during the evolution of the fashion design industry, spinoffs performed better than other start-ups. Because they tended to locate close to their parents, spinoff dynamics contributed to the geographic clustering of the industry in only a handful of cities worldwide. We did not find evidence for local knowledge spillovers, but we found that fashion designers who have worked in different cities outperform immobile fashion designers. The latter result suggests that local knowledge spillovers matter if this knowledge is applied in a new geographical context. Indeed, the local 'creative milieu' might be attractive for entrepreneurs, but our findings suggest that their success depends heavily on their hands-on pre-entry experiences in the field. We argue that the importance of descent further underlines the self-reinforcing growth of major cultural hubs. Paris may have become fashion's capital early on with the location of successful early entrants, but the city has remained an international hub over the subsequent century because of a disproportional amount of successful spinoffs that copied their parent's success. Furthermore, even though the emergence of other fashion city's such as New York, London and Milan can be attributed to the rise of ready-to-wear in the 1950s, their growth was sustained by similar local spinoff dynamics that had benefited Parisian haute couture decades earlier.

Our results confirm earlier studies in manufacturing industries where it was consistently found that spinoffs outperform startups (Klepper 2002; Dahl et al., 2003; Agarwal et al., 2004; Dahl and Reichstein, 2007; Cantner et al., 2006; Boschma and Wenting, 2007). The lack of evidence for local knowledge spillovers is also in line with an earlier finding on automobile firms in the Detroit cluster and tire firms in the Akron cluster using a similar methodology (Klepper 2002, 2007; Buenstorf and Klepper, 2005). In fact, in a study of the US tire industry and its spatial concentration in Akron, Ohio, Buenstorf and Klepper (2005, p. 33) observe that "a closer look at the evidence suggests that the geography of the industry may have been shaped primarily by the origin of firm capabilities rather than agglomeration economies." It implies that the popularity of the local knowledge spillover concept may be undeserved. Often, the spatial concentration of an industry is attributed to the benefits of clustering. However, our study suggests that the high degree of clustering is better understood as the outcome of a spinoff dynamic that has been fuelled by relatively few successful

45 Because of the inclusion of LOC.ECONOMIES (LN) in Model 4, which captures effects related to industry clustering at time of entry, the location dummies PARIS, LONDON, NEW YORK, and MILAN are better able to capture effects related to their status as large and diverse metropolitan areas providing urbanisation economies to entrants in the industry.

entrepreneurs, while the specific location of these clusters can oftentimes be explained by local demand for luxury goods. The local replication of routines through spinoff generation contributed to the geography of organisational knowledge that underlines the spatial formation of the industry.

Our study presents a first test of Klepper's spinoff model (1996, 2002) in explaining the spatial formation of a cultural industry. The fashion design industry is quite different from traditional manufacturing industries. The production process is not scale-intensive and products renew each six months. These aspects render barriers to entry lower compared to mature manufacturing industries. As such, the industrial demography does not depict a typical 'shake-out' in the number of producers over time (Klepper and Simons, 2000; Bonaccorsi and Giuri, 2000).[46] Because of lower barriers to entry, new firms were able to challenge incumbents and profitably enter the industry throughout its history. Despite the differences between manufacturing and cultural industries, we have shown that the same mechanism of spinoff dynamics drives their spatial evolution. Pre-entry experiences of entrepreneurs played a vital role in the survival of these new fashion houses. In particular, we have shown that spinoffs outperform other entrants, and that spinoffs inherit part of their parent's organisational fitness. Thus, the evolutionary theory of routine inheritance is not specific to manufacturing industries only, but applies to fashion design as an example of cultural industries as well. This means that the concept of organisational routines (Nelson and Winter, 1982), as a unique bundle of skills and knowledge at the level of a firm, and which can be inherited partially by spinoffs, has proven to be a very powerful concept.

Why do "certain places at certain times develop as foci of remarkable creativity in the form of exuberant entrepreneurship and innovation" (Scott, 2006, p. 17)? Because spinoffs tended to locate near their parents, we argue that the spatial concentration of the fashion design industry was driven by the local replication of fitter organisational routines through spinoff creation. Another explanation for the clustering of creativity and economic growth has been put forward by Florida (2002a,b). In short, Florida's argument holds that diverse urban climates attract talented individuals[47] to a handful of cities. These cities, then, become magnets for human capital-intense production activities. Although we did not address the issue of local diversity, we show that fashion's clusters of creativity (i.e. Paris, London, Milan, and New York) may have "lower barriers to entry for human capital" (Florida, 2002b, p. 743) – and indeed, these locations experience more entry than any other location – but they do not enhance the performance of fashion design firms. Rather, we find that entrepreneurs function as vehicles of routine replication between parent firm and spinoff company.

Although our analysis covers the industry's entire history, we were only able to obtain biographical data on 565 designers mentioned in fashion dictionaries and encyclopaedias. These career histories are biased towards the top-segment of the world's fashion designers. Our results are thus best understood in the context of fashion's top market segments of haute couture and ready-to-wear.

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46 Moreover, fashion design, like many other cultural industries, is an industry in which firms that develop product innovations do not appropriate their benefits through the integration of manufacturing activities but by licensing new products to other manufacturers (Bonaccorsi and Giuri, 2000).

47 Florida (2002b) defines talent as individuals with high levels of human capital, measured empirically by education level (Bachelor degree or higher).

The evolutionary model of spinoff dynamics offers a new explanation for the spatial concentration of industries. We interpret our findings on the importance of pre-entry experiences for entrepreneurial endeavours as inheritance of organisational capabilities from parent firms to progeny. An alternative interpretation of this result might be that more successful firms attracted better designers, and better designers were more likely to start their own firms and survive. In other words, successful firms might act as magnets for creative and entrepreneurial talent. This implies that there may not necessarily be an inheritance process of organisational capabilities, and labour market dynamics are the main driver of firm performance and spatial clustering, to the extent that labour mobility is localised (Saxenian, 1994; Power and Lundmark, 2004; Vinodrai, 2006). An important element in this line of reasoning is that labour is heterogeneous and endowed with innate features of entrepreneurial capability and creative prowess. The performance of firms might simply act as an attraction mechanism for the most talented individuals. In the evolutionary view, however, the firm cannot be reduced to an environment in which talent has free reign. As soon as an individual is employed, he or she becomes part of the organisational and social structure of the firm (Nelson and Winter, 1982). Because of this, individuals learn (part of) the organisation's routines that constitute its competitive advantage. Klepper's spinoff model, then, posits that it is the accumulation of pre-entry experiences of the entrepreneur that determines firm performance. Nonetheless, the model does not take into account the possibility that successful firms may act as magnets for talent, which would make their personnel, prior to their learning experience at the firm, more likely to become successful spinoffs. Likely, both mechanisms of talent attraction and routine inheritance are at work in a complementary fashion. The interplay between labour market dynamics and spinoff generation is indeed an exciting new research avenue.

Our framework is a general one and can be applied to any industry and at any spatial level of aggregation. As long as the complete biographies of entrepreneurs' labour market careers are available, genealogical information can be exploited in an explicit evolutionary research design. Future extensions of such an approach can go in many directions. For example, the concept of pre-entry experience can be broadened to include family experience and education. And, the effect of knowledge spillovers can be extended as to take into account the variety of routines present in a city. These are just two examples of where a genealogical approach may lead us in the study of industry dynamics and economic geography.

Chapter 5

'Always change a winning team': Labour mobility and firm survival in the fashion design industry, 1926-2005

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5.1 Introduction

In this paper we analyse interfirm labour mobility within an evolutionary framework of industry development. Evolutionary economics contents that firm behaviour is heterogeneous and bounded rational (Nelson and Winter, 1982). In particular, it posits organisational behaviour as the outcome of organisational routines, which bestow a rigidity on the firm's possible (re)actions and development path (Becker, 2004). Organisational routines are unique to the firm and are difficult to replicate for competitors, because of their tacit and collective nature. However, routines are at least partially known to employees within the firm, and the movement of key individuals is likely to encompass a transfer of knowledge of organisational routines (Nelson and Winter, 1982).

Klepper (2002, 2007) proposed a model of industry evolution in which organisational routines of incumbent firms are 'inherited' by their spinoffs. The model predicts that spinoff entrepreneurs outperform their competitors because they profit from their pre-entry experience. This hypothesis has been confirmed in a series of studies (Helfat and Lieberman, 2002; Klepper, 2002; Agarwal et al., 2004; Cantner et al. 2006; Dahl and Reichstein, 2006; Boschma and Wenting, 2007; Wenting, 2008). Studies highlighting the superior performance of spinoff firms neglect, however, that organisational routines can also be inherited post-entry through labour mobility. Our central argument holds that even though the entrepreneur sets the organisational 'blueprint' according to his or her pre-entry experiences, subsequent hiring and firing of key personnel[48] influences the development of organisational routines. The experiences of personnel with competitors' routines are a source of comparison and learning for their new employer, which might aid its survival. As such, labour mobility can be thought of as a form of post-entry learning, which complements the pre-entry experiences of the entrepreneur. Eventually, however, new employees become socialised in the firm and conform to their role in existing routines (Nelson and Winter, 1982). Thus, on the one hand, new talent *confronts* existing practice with its experiences at successful competitors, while on the other hand, it *conforms* to the existing organisational routines.

We test two main hypotheses. The first holds that experiences of new workers at previous employers enable them to improve their new employer's routines and, hence, its performance. The second hypothesis argues that over time new workers become socialised within the organisation and have

48 See footnote 38 in Chapter 4 for our definition of 'key personnel' in the fashion design industry.

become a source of replication rather than innovation for existing organisational routines. Hence, as soon as new workers turn into veterans and become part of the organisational establishment their human capital may still contribute to firm performance, but they cease to be challengers to routinised practices. Rather, veterans function as a filter of new practices brought in by newly hired talent.

We test our hypotheses for the global fashion design industry. The movement of skilled individuals between fashion houses is key to understanding changes in organisational practice. The way a couture house is set up, its departments, its personnel and its day-to-day activities are based on the Parisian model set by Charles Worth, the world's first couturier in 1858 (Waddell, 2004). It dictates that the head-designer or couturier is the figure head for the house. His or her name is vital to the house's image and success, as has been the case from Charles Worth in the 1860s to Christian Lacroix today. "The designer couturier sets the mood of the house, designs the collections, oversees the toils, the fittings, chooses the models, arranges the shows, talks to the press, negotiates with backers and takes full responsibility for the house, its reputation and its success." (Waddell, 2004, p.3). We argue that the ability of designers to excel is primarily dependent on their learning experiences at successful incumbents. At incumbent fashion houses designers come to grips with the 'tools of the trade.' Each fashion house has its own traditions in style and organisational routines, which it passes on to each of its designers, albeit imperfectly. By moving from one fashion house to the other, designers function as agents of innovation by transferring knowledge of organisational routines. Using data on biographies of 565 top fashion designers, we analyse how firm performance is affected by the movement of personnel between fashion houses, in the period 1926-2005.

The paper is organised as follows. The role of labour mobility in the fashion design industry is discussed in section 2. A theoretical discussion on organisational routines, inter-firm labour mobility, and firm performance is provided in section 3. Section 4 introduces the data and provides descriptive statistics. In section 5 we discuss the methodology we used to analyse the data and test our hypotheses concerning labour mobility, diffusion of routines, and firm survival. Section 6 shows the results from the regression analysis to test our hypotheses. In the final section we draw some conclusions, and discuss implications for the literature.

5.2 Labour mobility in the fashion design industry

The creativity of personnel is the main asset of firms operating in the fashion design industry. The head designer or couturier is the figurehead for the house, and is usually the founder himself (Waddell, 2004). His or her name is vital to the house's creative image and commercial success. This fact cannot be overemphasized (De Marly, 1980). The designer's reputation, label, and social ties with peers and media, form the most important components for a fashion house's competitive power. The couturier needs to incorporate knowledge of fabric, shape and colour with a feel for consumer tastes. Furthermore, he or she must be able to appease journalists and critics alike, and maintain a high reputation among its couture peers. Thus, fashion houses are set up around a single individual – the founder or eventual successors. Most couturiers have assistant designers but their name is rarely known until they, in turn, set up their own firm.

Knowledge transfer in fashion design commonly takes the form of a mentor-student relationship, in which the assistant-designer learns techniques from the head designer. Although a few designers remain at a singe fashion house throughout their career, most designers are quite mobile. The career history of designer Angelo Tarlazzi is a good example (O'Hara Callan, 1998). At the age of nineteen, the Italian born designer created his first fashion collection for the Roman couture-house Carosa in the mid 1960s. After a three-year stay in Paris, as a designer at Jean Patou and afterwards as an assistant to Michel Goma, he worked in New York, Rome, and Milan. In Italy, he contributed to up-and-coming ready-to-wear fashion establishments such as Laura Biagiotti and Basile. In 1972, Tarlazzi returned to Paris to become the artistic director for Jean Patou, and in 1977 starts his own firm. Tarlazzi's career path is one that is typical for many top-fashion designers.

The dynamics of labour mobility in the fashion design industry depict a continuous flow of assistant designers between firms. In many cases, assistant designers are hired to replace someone who just left. Head designers are often recruited from existing personnel who are familiar with the organisational practices, design and style traditions, and the clientele of the firm. Yet, in some circumstances, firms prefer to hire a new head designer from outside, in particular, when the house is changing direction in terms of its fashion style.

Labour mobility facilitates the creation and diffusion of knowledge and routinized practices through the industry, from one firm to the next. Successful American designer Donna Karan, herself a former employee of Anne Klein, captures the sentiment by stating that she hires young talent, because "these great young designers continually recharge and inspire me." (Sischy, 2004, p. 21; Bawa, 2006). Indeed, every designer is hired both to continue a tradition set out by the house's founder, and to provide a new and vibrant style to ensure the house's designs remains fashionable. This is well illustrated by Karl Lagerfeld who was given the creative direction of Chanel in 1983, at a time when the house had been largely forgotten and remembered only for its perfumes. He brought new life back into Chanel's shops.[49] Lagerfeld previously worked at the Italian ready-to-wear house of Fendi. Under Lagerfeld's guidance, the couture house of Chanel now successfully produces ready-to-wear fashion. The survival of a fashion house is ensured by a continuous influx of new ideas that are to be reconciled with the styles that people have come to expect based on the house's tradition.

Few designers, however, remain at one fashion house for more than a couple of years, taking with them valuable knowledge of the design process to rival incumbents or their own new firm. Yet, designers cannot do without assistants to cope with strong competition and rapidly changing fashion concepts. To cope with this pressure to innovate, designers themselves deem the exchange of ideas with peers as important (Scott, 2000). Since ideas can be best exchanged through day-to-day contact within the firm, successful firms hire young designers to have new ideas flowing in the company. Often, these ideas build on the assistant's experience of working for previous employees. Indeed, it appears that designers did not only use the knowledge they gained at previous employers in their own entrepreneurial venture, but also put their prior experiences to good use while working as an employee for other houses. An example is the work of designer Alber Elbaz at Lanvin. His previous employer, Geoffrey Beene, taught him the essential elements of drape and fit. And while

49 In terms of design at the house of Chanel, Lagerfeld's 'shock treatment' consisted of raising the hemline about 12 inches, and using denim and leather fabrics. He has not, however, changed what is basically the Chanel suit.

working at Lanvin since 2001, he follows Beenes lessons of making clothes womanly, user-friendly, and working with the body (Watson, 2004). Clearly, experienced designers make more attractive employees for incumbent firms than designers who are just starting their career, and prestigious fashion houses are better learning environments for aspiring designers.

To further illustrate the process of labour mobility between fashion design houses, we take a closer look at the career paths of three Parisian fashion designers: Balmain, De Givenchy and Lagerfeld. After a considerable career in various fashion houses, each designer started their own firm, and their houses started to experience labour mobility themselves. Balmain, De Givenchy and Lagerfeld build a career as assistant- and head-designer at major incumbents such as Piguet, Molyneux, Patou, Schiaparelli, Fendi and Chanel, and subsequently start their own firms. Shortly after starting up these new entrants hire talented young designers from their previous employers – Balmain hires Cavanagh from Molyneux, De Givenchy hires Venet from Schiaparelli, and Lagerfeld hires Leger from Fendi. With regular intervals, the successful houses become the scene of hiring and firing of new designers, usually from a favoured set of peer organisations. One could say that the necessary influx of new personnel reflects a 'war for talent' that has lasted throughout the industry's history.[50] We posit that these labour dynamics can be thought of as conduits of knowledge exchange between firms that sharpens their organisational routines. As such, from the circulation of talented individuals emerges an evolving inter-firm network (Almeida and Kogut, 1999).

5.3 Organisational routines, labour mobility and firm performance

At the heart of the seminal work by Nelson and Winter on "An Evolutionary Theory of Economic Change" (1982), lies the proposition that "the behavior of firms can be explained by the routines that they employ." (1982, p. 128). Routines function as the organisation's memory, organisations 'memorize by doing'. Nelson and Winter (1982, p. 14, 15) defined routines as: "regular and predictable behaviour patterns of firms".[51] They refer to the notion of 'scripts' introduced by Schank and Abelson (1977), when proposing routines as a form of organisational memory.[52] The evolutionary argument is that routines restrict the behaviour of firms. With each firm having a unique set of routines and with routines being durable, markets operate as selection environments on the variety of routines carried by firms. Firms operating according to profitable routines will prosper, while firms operating with

50 Chambers et al. (1998) argue that since the late 1990s talent shortages plague various industries, from services to manufacturing. We argue that in creative industries, and in fashion design in particular, the ability to attract and retain talent has always been at the heart of a firm's competitive advantage.

51 The definition of organisational routines, however, remains rather ambiguous (Cohen et al., 1996). Routines also entail a more cognitive dimension, referring to recurrent interaction according to a common heuristic or set of rules. In a review of the recent literature on organisational routines Becker (2005, p. 256) posits that "in recognizing the fundamental importance of recurrence for routines, it is proposed to use the term 'recurrent action pattern' (Cohen et al., 1996, p. 695) for 'routines' on the level of 'the actual', and the term 'rule' for the level of the 'empirical'."

52 In a similar vein, Nooteboom (2001) refers to the notion of scripts in his discussion of organisational behaviour and organisational learning. He formalizes scripts as a sequence of action 'nodes', and each of these nodes entails a script of its own. Nooteboom (2001) contends that organisations learn by adjusting nodes, and, when failing to solve the problem, move up to increasingly complex super-scripts.

loss-making routines will incur losses. Metaphorically, one can think of organisational routines as the 'DNA' of organisations (Nelson and Winter, 1982).

The 'stickiness' and intangible nature of a routine resides in its tacit knowledge components. Nelson and Winter refer to Polanyi's (1967) distinction between tacit and codified knowledge. Routines are rarely captured in formalized, codified knowledge. Note that in this respect our understanding of codified knowledge is similar to Penrose's "objective" or transmissible knowledge (1959, p. 76) in that it captures all knowledge that can be formalized in text and can be easily understood by individuals that are for all other practical purposes unrelated to each other. However, similar to individual skills, the only manner in which the complex process of routines can be stored is through day-to-day practice. The understanding of organisational routines resides in the tacit knowledge and skill of the organisational routine's members. As opposed to codified knowledge, tacit knowledge is of an intangible nature and can only be transferred from one individual to the other through long hours of practice, and intensive interaction. Thus, in as much as the boundaries of the organisation facilitate the transfer of routines between employees within the same firm, they limit the transfer of organisational routines between firms.

There is a strong parallel between organisational routines and individual skills. In fact, in more ways than one, "routines are the skills of an organization." (Nelson and Winter, 1982, p. 124). First, because individuals exercise skills in their roles as organisation members, the characteristics of organisational capabilities are directly affected by the characteristics of individual skilled behaviour. Second, an individual skill offers a powerful metaphor for understanding an organisational routine. Organisational behaviour seems to be subject to magnified versions of problems that afflict individual skilled behaviour. Through routine operation the organisation 'remembers by doing', comparable to how individual skills are maintained through exercise. Skills, however, become rusty over time when not exercised. It is hard for an organisation to hold in memory a coordinated response to conditions that arise only now-and-then (Nelson and Winter, 1982).

Since the behaviour of organisations is bounded by routines, so is their ability to learn or adapt routines. To adapt to change, especially in long-run conditions, organisational structures and routinized procedures evolve which not only permit the making of change decisions on all administrative levels, but also ensure a high degree of consistency (Penrose, 1959, p. 17). Whenever routines do change, this change is bound to be path dependent and incremental to minimize mutation costs. In other words, although routines are a source of stability and persistence, they are "subject to change if conditions change" (Winter, 1964, p. 263). Although this aspect of routines was acknowledged early on, variation has only recently re-emerged to accompany inertia as a core aspect of routines (Becker, 2004; Feldman and Pentland, 2003). Costello (2000, p. 14) writes that "the variation and openness of routines are often missed", and it is in this respect that we propose labour mobility as a form through which routines diffuse and incorporate new elements of organisational practice.

Organisational routines function as a coordination mechanism that assimilates new members of the organisation. New members need to conform to the existing routines of the organisation, since unroutinized practice is costly and mutation of routines is discouraged. In fact, organisations that do not change their routine often tend to survive (Nelson and Winter, 1982; Carroll and Hannan, 2000). Routines control and coordinate new members to conform their actions and skills to

organisational requirements. Routines are also described as a formal and informal, even symbolic, 'truce' between different viewpoints within the organisation (Nelson and Winter, 1982, p. 110). As such, a routine represents a comprehensive truce in intra-organisational conflict.

Because of the extensive training required to incorporate each individual in the organisational routine, individuals possess knowledge of the routine (Nelson and Winter, 1982). This is especially true for those individuals in key roles of production and coordination. Indeed, what is required for the organisation to continue in routine operation is simply that all members continue to 'know their jobs' as those jobs are defined by the routine. This means that they retain in their repertoires of (parts of) routines actually invoked in the given state of routine operation of the organisation. As individuals move from one firm to the next, their role in the new organisational routine may require the learning of new skills (Nelson and Winter, 1982), but most definitely involves becoming familiar with new routines, which are added to the repertoire of experiences that compromises the individual's career path.

Besides acquiring a competitor's routines, another possible reason for firms to hire new personnel is to acquire human capital that will contribute to a firm's profitability and survival chances (Lado and Wilson, 1994; Hatch and Dyer, 2004). As human capital is an individual trait associated with individual skill, the human capital of a firm can be defined as the sum of the human capital held by its employees. With personnel entering and leaving the firm, the stock of human capital changes accordingly.

The main contribution of Nelson and Winter (1982) in this context has been to characterise firms – apart from being repositories of individuals' skills – by the routines that coordinate the application of skills in productive processes. Importantly, routines are organisational traits that are passed on from veteran employees to newcomers. However, new employees do not necessarily *conform* perfectly to existing routines, but may also *confront* current wisdom with new ideas based on knowledge of their past employer's routines. In this view, new employees can be a source of routine adjustment and improvement of the organisation's viability.

In the framework of organisational routines, routines can be transplanted between two incumbent firms through labour mobility or between an incumbent firm and a newly created firm by one of its former employees, i.e. a spinoff company (Klepper, 2002; Buenstorf, 2006). The difference between the two mechanisms of routine transplantation holds that an employee moving between two firms is faced with existing routines in place – and veteran employees preserving them – while a spinoff entrepreneur is free to implement the organisational routines (s)he prefers. The formation of a spinoff company can be considered as a special instance of routine transplantation through labour mobility (Frenken and Boschma, 2007).

5.4 Hypotheses

The set-up of a spinoff firm offers a unique opportunity to incorporate past experiences in a new organisational 'blueprint'.[53] After this event, it is likely that the firm's organisational routines have an innate response to reject mutation. This results in a rather rigid structure that remains largely unchanged over the subsequent years, or even over the firm's lifetime (Klepper, 2002). As spinoff companies inherit organisational routines specific to the market from their parent firms, and other entrants do not, spinoffs have been found to outperform other entrants. The importance of pre-entry experience of entrepreneurs in the survival of their firms has been found for several industries, including law firms (Phillips, 2002), tires (Klepper and Simons, 2000a; Buenstorf and Klepper, 2005), lasers (Klepper and Sleeper, 2000; Buenstorf, 2007), automobiles (Klepper, 2002; Cantner et al. 2006; Boschma and Wenting, 2007), television receivers (Klepper and Simons, 2000b), accounting (Wezel et al., 2006), and the wireless telecommunications industry (Dahl et al., 2003). We obtain the following hypothesis:

Hypothesis 1: Spinoff entrants outperform inexperienced entrants.

In a similar vein, spinoffs from firms in related industries and firms diversifying from related industries are also expected to outperform entrants with no background in the same or related industries (Klepper, 2002; Boschma and Wenting 2007). In running the new business, these firms benefit from relevant pre-experience as spinoff companies do. Following Klepper (2002), we call these firms experienced entrants. We obtain the following hypothesis:

Hypothesis 2: Experienced entrants outperform inexperienced entrants.

Since routines are the object of market selection in evolutionary studies, fitter routines might prove to be essential in a spinoffs' portfolio. In other words, if routines are indeed transmitted from parent firm to spinoffs, the performance of the parent influences the performance of the spinoff (Burton et al., 2002; Klepper, 2002). Indeed, a previous affiliation with a single successful fashion-giant might be more beneficial then with numerous other incumbent firms (Wenting, 2008). We approximate the quality of pre-entry experience of spin-offs by counting the number of years a parent firm has produced at the time of spinoff. Thus, the spinoffs from more successful firms (in terms of survival) are distinguished from those from less successful firms. We obtain the following hypothesis:

Hypothesis 3: The higher the performance of a parent firm, the higher the performance of its spinoff firms.

Where previous studies limited their analysis to the differential performance of firms with and without pre-entry experience, we extend the logic of routine inheritance to post-entry labour mobility on firm performance. When hiring new employees, an incumbent firm already has a blueprint in place – they already possess extensive organisational routines of their own – and new employees are pressed to conform to the existing norm by veteran employees. As such, the influx

53 An important difference between background of the entrepreneur and employees is that the effect of the background of the entrepreneur on firm performance is expected to last throughout the firm's lifetime, while the effect of the background of employees is expected to be confined to a short time after their hiring.

of new talent is, on the one hand, a moment at which the firm faces the need for incorporation of individuals in the organisational structure of the organisation to prolong and preserve its existing routines – a moment of conformation. On the other hand, the hiring of new talent entails a clash of rival norms and provides the creative spark to change existing practices – a moment of confrontation. The former is more in line with routines laid out by the founder as blueprints for organisational action in years to come (Klepper, 2002), while the latter is more in tune with the notions of organisational change and the flexibility of routines to adjust to environmental conditions (Pentland and Feldman, 2003; Becker, 2004).

We argue that the mobility of skilled workers between firms constitutes conduits of knowledge transfer that opens up temporary windows of opportunity for firms to learn and realign their existing routines to the competitive environment. As such, we can distinguish between the pre-entry experience of the founder at the time of entry and the post-entry adjustments of organisational routines through the transplantation of routines inherited by new employees from competitors. One thus expects that the ability of an organisation to adjust its routines increases with the influx of new personnel. We obtain the following hypothesis:

Hypothesis 4: The more employees a firm has hired from competitors in recent times, the better it performs.

Just as spinoffs from successful parents are expected to be successful themselves (hypothesis 3), we expect new employees coming from successful firms to contribute more to a firm's performance than new employees coming from less successful firms. Employees from more successful firms will have more authority and confidence to question existing routines by pointing out its imperfections and by proposing alternatives from previous experiences. Newcomers with little prior experience with alternative organisational routines at successful companies, will be less inclined to question the routines of its new employer. More importantly, however, new employees that previously worked at successful companies are expected to bring in knowledge of these 'successful' routines. Hence, hiring personnel from the 'right' firm becomes important. We obtain the following hypothesis:

Hypothesis 5a: The better performing are the previous employers of new employees, the more these new employees contribute to firm performance.

Before, we distinguished between new employees and veteran employees as the latter preserve the organisational routines by training and socialising the new employees as to conform to the organisational routines built up in the past. Over time, as training and socialisation processes are completed, new employees become veteran employees and switch their attitude from confrontation to conformation. However, because of conformity to the routine, the wealth of previous experiences with alternative routines from the individual will no longer be invoked. The newly hired employees challenge existing routines and provide the opportunity for adjustment, while veteran employees preserve organisational routines by training and socialising the newcomers. We thus argue that veterans preserve organisational practice and act as the organisational memory for new employees to build upon.

Hypothesis 5b: As soon as new employees become veteran employees, they do no longer contribute to firm performance.

In sum, we consider new personnel as a source of new routines inherited from their earlier parents. Labour mobility between firms forms conduits of knowledge exchange that affect firm performance. Hiring new employees enables a firm to adjust its routines by making use of their past experiences with routines of other firms. Yet, this window of opportunity closes once the newcomers are fully socialised by the veteran employees in the firm.

Having discussed the effect of newcomers and veterans, the remaining question concerns the effect of personnel leaving the firm. Within our evolutionary framework the movement of personnel to competitors has three consequences for firm survival. First, the loss of capable hands entails the loss of human resources available to the firm (Penrose, 1959). In our definition, this simply means that the stock of knowledge – as the sum of individual skills – decreases with the amount of human capital possessed by personnel leaving the firm. Second, the loss of personnel weakens the organisational routine. Even when the departure is known well in advance, it would entail search costs and investment in training and acclimatizing the new arrival to the role (s)he is to exercise (Nelson and Winter, 1982). Third, since employees are considered as carriers of routines between firms, the loss of personnel decreases the competitiveness of a firm as their routines become less unique. Such argumentation is in line with the central idea that "routines contribute to the distinctive competences and capabilities", which "differentiate firms from each other and provide the basis of differential performance vis-à-vis competitors" (Teece et al. 1994, p. 15).

Hypothesis 6: The more employees a firm has seen leaving to competitors, the worse it performs.

Finally note that our perspective on labour mobility is motivated by the concept of organisational routines as introduced by Nelson and Winter (1982). An alternative view is to consider labour mobility flows as creating social networks (Almeida and Kogut, 1999; Breschi and Lissoni, 2006; Uzzi and Spiro, 2006; Fleming and Frenken, 2007). The hiring and firing of employees create ties between firms in so far as employees remain in contact with former colleagues at prior employers. Thus, informal social networks between firms are established as employees move from one firm to the other. Firms can benefit both from knowledge 'sent' by their previous employees who left for other firms, and from knowledge 'received' by the current employees who came from other firms. We acknowledge that such networks may be important channels for learning among otherwise competing firms. Yet, such channels are not expected to be sufficiently rich to transfer organisational routines due to their highly tacit nature. Rather the exchange will generally be limited to information and knowledge components of a lesser tacit nature. What is more, the effects of social networks are expected to be ambiguous: networks create access to information and knowledge residing in other firms, but also provide channels through which sensitive information and valuable knowledge can leak to competing firms. Especially in creative industries with poor intellectual property rights and short lifecycles, the detrimental effects of networks should not be underestimated. We therefore assume that the effects of informal social networks between firms are negligible in their effect on firm performance.

5.5 Data

We collected a unique dataset comprising biographical information on 565 of the world's top designers in fashion design, from the start of the industry in 1858 through 2005. The data are a compilation of various sources, most prominent being the "Thames & Hudson Dictionary of Fashion and Fashion Designers" by Callan O'Hara (1998), "The St. James Fashion Encyclopedia" (Martin, 1997), and Watson's (2004) "20th Century Fashion: 100 Years of Style by Decade and Designer". These data were supplemented by consulting more detailed biographies of specific designers (e.g. De Marly, 1980; De Rethy and Perreau, 2002; Sischy, 2004). The data were updated to the year 2005 using Internet sources, of which "www.designerhistory.com" by Bawa (2007) is the most notable.

We know the complete career path of each designer: the year a designer started and ended a career in fashion design, prior experience in other industries if any, the sequence of design firms where the designer was employed, and the year each employment started and ended. In total we counted 963 labour moves from one firm to the other. Even though some designers remain at the same company for a long time, most move rather quickly between jobs. In fact, the average tenure of designers in the fashion design industry is 3.4 years. Likewise, not all designers worked for multiple employers, yet the 247 that did, have an average of 3.9 career moves.

Following Klepper (2002), we categorized firms by pre-entry experience of their founders in three groups: spinoffs, experienced entrants, and inexperienced entrants. Spinoff firms are started by an entrepreneur who previously worked for other fashion houses. An experienced entrant is started by an entrepreneur with previous work experience in related sectors, which we define as either fashion accessories, or apparel and textile manufacturing and trade (including retail and wholesale). Sometimes a firm had multiple founders. If their backgrounds differed, 'spinoff' overrules 'experienced', and 'experienced' overrules 'inexperienced'. Experienced entrants can be *de novo* firms started by experienced entrepreneurs in related sectors, or incumbent firms in a related sector that diversify to fashion design. In total, we counted 510 firms as active in the top-segments of haute couture and ready-to-wear fashion design, during the period 1858-2005: 212 spinoffs, 219 experienced firms, and 79 inexperienced firms.

For all firms, we know the year of entry and exit, the career path of the entrepreneur, location, market segment (i.e. haute couture or ready-to-wear), and information on mergers and acquisitions. We defined a firm's time of entry and exit as, respectively, the year a firm starts and ceases to produce under its own name, in either the haute couture of ready-to-wear market segments[54]. Thus, a firm exits the market when it goes bankrupt or stops producing fashion apparel, but remains active in perfumes and other luxury articles. We also consider a merger with or acquisition by a competitor as an exit event. Approximately 5 percent of the total number of cases has become the victim of acquisition or merger. In such cases the acquiring firm 'survives', and the acquired firm exits the market. In case of a merger, we traced the more dominant partner by qualitative reports on performance of the fashion houses in the years prior to the merger (e.g. De Marly, 1980). We denote the better performing partner as the acquiring party. This definition of acquisitions and mergers

54 This definition of time of entry and exit is in line with previous work on firm survival and industrial evolution (Klepper, 2002; Cantner et al., 2006; Boschma and Wenting, 2007).

in the application of survival analysis to industry evolution is similar to earlier studies by Klepper (2002) and Boschma and Wenting (2007). Some fashion houses were acquired by firms that had not been active in the fashion design industry prior to the moment of acquisition. Each acquisition by a firm that was not active in the industry before, was not treated as an exit as long as production did not cease. For example, the German hair-care and cosmetics giant Wella AG bought the house of Marcel Rochas in 1987, which was not treated as an exit for Rochas.

Although the dataset is detailed, it cannot be considered complete. In fact, the 565 designers on whom we have collected data represent a mere fraction of the total number of fashion designers throughout the industry's history. Our data does, however, represent all designers of considerable note to be placed in the Thames & Hudson Dictionary and fashion encyclopaedias. As such, our data is biased towards the industry's 'elite' firms and designers. Our data concern the two highest, most exclusive market segments of fashion design: haute couture and ready-to-wear. We have not included fashion houses that solely produce for the mass market, or fashion firms whose main activity consists of retail trade and distribution, rather than creative design.

Thus, our dataset offers a unique opportunity to analyse the industrial dynamics of the fashion design industry, yet it also suffers from a bias to the more successful firms and designers. Any generalisation of our analysis of this dataset is limited by its bias, and should reflect the assumption that similar learning mechanisms of spinoffs inheriting organisational capabilities from parent firms occur throughout the industry's layers. Nonetheless, our results are best understood in the context of haute couture and ready-to-wear constituting fashion's top market segments.

Figure 5.1 shows the number of the total number of top fashion design firms in the world by location in the period 1926-2005 (our research period) for each five-year period. Here it is clear that the industry continues to grow in terms of the number of firms. While in most manufacturing industries, the number of firms first rises and then falls during an industry 'shake-out' (Klepper, 1997), this pattern is absent in the top fashion design industry. Industry shake-outs, however, arise only after product standardisation or the emergence of a dominant design, which would give rise to internal scale economies and industry consolidation (Malerba and Orsinego, 1996). One could imagine that the idea of product standardisation would be the anathema of haute couture. Furthermore, in creative activities such as fashion design scale economies in production are of lesser importance than in manufacturing. Indeed, fashion designers are more concerned with remaining creatively relevant and maintaining an image of exclusivity than maximizing production to obtain low marginal costs (Banks et al., 2000; Caves, 2000). Considering the luxury aspect of couture, one could expect that, as wealth increases, more and more niches open up. Incumbents would suffer from an inability to radically change their designs, lest they risk loosing their trusted clientele. Thus, new niches are as likely to be filled up by incumbents and new entrants.[55] Even though the industry population rises over time, entry and exit rates remain high throughout the period. The large amount of turnover in fashion firms is evident from the minor fluctuations in the average age of fashion houses over the period 1926 through 2005. To be precise, the average age of firms increases only marginally in the period, from 19 years in 1926 to 27 years in 2005.

55 Indeed, we found a positive (over .95) and significant correlation (at the 0.05 level) between the number of fashion houses and GDP per capita for the United States, England and France using the GGDC database (www.ggdc.net).

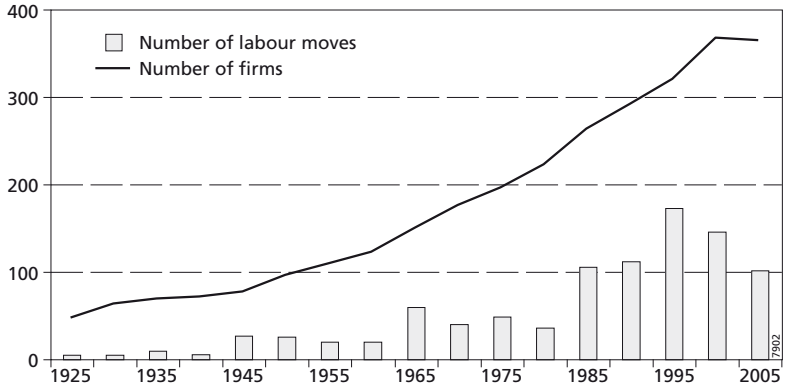

Figure 5.1. Number of firms and labour moves over the period 1926-2005.

Figure 5.2 shows the concentrated spatial structure of the top-segment of the industry: most fashion designers are located in only a handful of cities, namely Paris, New York, London, and Milan. In fact, these four cities account for 85.9 per cent of all firms in our database. Runners-up include Los Angeles, Rome, Tokyo and Antwerp. In case a firm has migrated or set up different branches over the course of its lifetime, we counted the number of years it produced in each location and set the firm's location to the site where it produced the longest.[56] Figure 5.1 also shows the dominance of Parisian haute couture in the early 20th century. Since 1858 through 1930, Paris was synonymous to high fashion throughout the Western world (De Marly, 1980). In the subsequent decades, however, three new cities emerged as hotbeds for new designers that supplied a new and rising market that demanded a simplified form of haute couture and wanted to break with century old traditions. The new market segment of *prêt-à-porter* or ready-to-wear took hold in the hearts of a new generation of designers and clientele, mostly in London, New York and Milan. Paris was still largely clinging to its rich history in haute couture, and until the 1960s the Syndicate Chamber of Parisian Haute Couture forbade its members to branch out towards 'lesser forms of fashion' (De Marly, 1980). Entrepreneurs in the 'new' fashion cities of New York, London and Milan largely emerged from a locally well-established fashion retail and wholesale industry (Rantisi, 2004; Merlo and Polese, 2006).

Figure 5.2 also shows the number of labour moves of the most prominent designers between fashion firms by location. For illustrative purposes we only show the main fashion capitals Paris, London, New York, and Milan. Interestingly, most labour moves are directed towards or emerging from Parisian firms, even though from the 1980s onwards New York and London rival Paris in sheer number of firms. It seems that throughout the industry's history, Paris has remained the most important international 'hub' in the career paths of the world's most prominent designers. Note the relative small number of firms in Milan, compared to the other three clusters. Milan faced severe competition from Rome and Florence before its ascendance in the 1970s with the advent of the ready-to-wear market (Merlo and Polese, 2006). Considering the Milan cluster's smaller size,

56 For example, we locate the house Balenciaga in Paris. The Spanish designer Cristobal Balenciaga set up his own house Elsa in 1922 in Barcelona, moved to Madrid in 1932, and moved again in 1937 to Paris, establishing Maison Balenciaga (Martin, 1997).

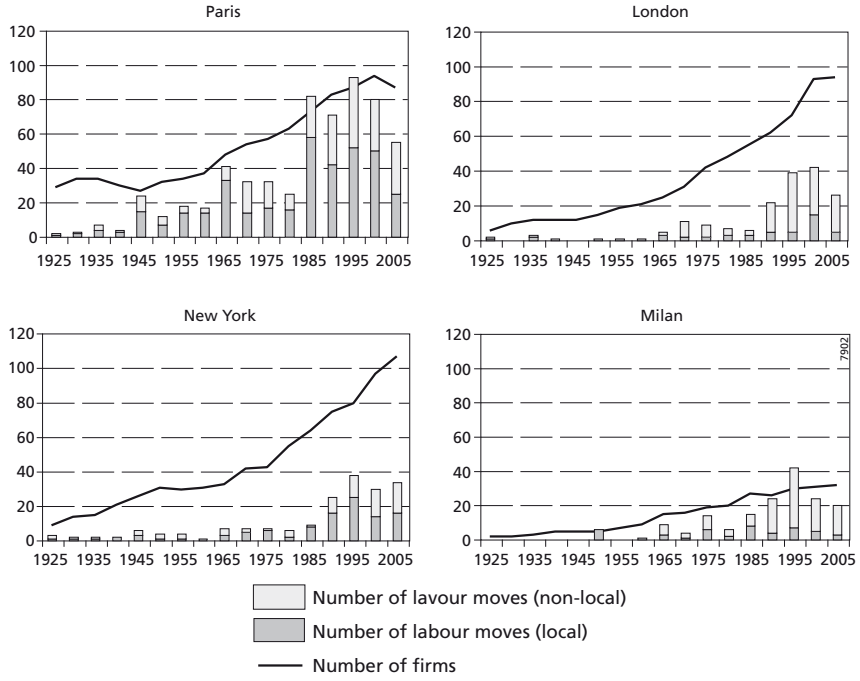

Figure 5.2. Number of firms and labour moves over the period 1926-2005, in Paris, New York, London, and Milan.

Milanese fashion houses account for a relatively large share of the fashion design industry's labour mobility.

Not all fashion design houses are equally prevalent in the labour moves of the most prominent designers. Indeed, 33.5 per cent of all fashion houses are mentioned as neither an origin nor destination of a labour move. Ranking fashion houses by number of labour moves, the first 20 per cent of fashion houses capture 76.5 per cent of all labour moves. This result is in line with Pareto's law of the vital few. In fact, the top-five firms, Dior, De Givenchy, Balmain, Chloe, and Chanel, account for 13 per cent of all recorded labour moves in the industry. Even though the development of the industry is characterised by a large and growing number of firms, labour mobility flows revolve around a few organisations. The fact that some are relatively new organisations reflects the turbulent market structure of the industry. Most of these new organisations, however, are spinoffs of the old elite. For example, Lucien Lelong and Robert Piguet started successful Parisian fashion houses in 1918 and 1933 respectively, and trained several talented young designers who started their own firms. Among them were Pierre Balmain and Christian Dior. The houses of Dior (1947) and Balmain (1945) came to dominate the 1950s, and spawned several spinoffs that came to dominate the next generation of fashion houses, such as Yves Saint Laurent (1961) and Karl Lagerfeld (1984). In addition, successful fashion houses frequently exchange designers, sometimes on a part-time basis.[57]

57 For example, in the 1980s Karl Lagerfeld is in charge of fashion design at the Parisian houses of Chanel and Chloe, and at the Italian house of Fendi.

Table 5.1. The geography of labour moves (in percentage of total number of moves)

		To a firm in:				
		Paris	**London**	**New York**	**Milan**	**Elsewhere**
From a firm in:	Paris	74.4	8.8	5.9	4.7	6.3
	London	32.4	43.5	4.6	8.3	11.1
	New York	8.7	2.9	76.8	6.5	5.1
	Milan	22.9	9.5	7.6	37.1	22.9
	Elsewhere	35.0	14.0	6.0	18.0	27.0

As we have seen, labour mobility in the fashion design industry is concentrated in space. At first glance, the number of labour moves seems to depend on the number of firms in the location – with Paris and Milan as exceptionally vibrant international hubs. Aside from giving the total number of labour moves per city, Figure 5.2 also provides information on the localisation of labour mobility flows between fashion houses. Following Saxenian (1994) we expect a healthy cluster is home to a specialised labour pool that facilitates local labour (and implicitly, knowledge) circulation between firms. The localisation of labour mobility could provide for the localisation of innovation and the clustering of firms. Figure 5.2 shows that labour mobility in fashion design is especially localised in Paris and New York. In fact, respectively 74.4 and 76.8 per cent of all labour moves in these cities are between local firms. As such, labour mobility in Paris and New York is highly localised, compared to Milan (37.1 per cent) and London (43.5 per cent) (see Table 5.1). Worldwide, most labour moves are between local firms: on average, 61.4 per cent of all labour moves occur between firms in the same location. This signals the importance of spatial distance in career path development. However, Figure 5.2 also shows the internationalisation of the industry in the last decades, as in particular Paris seems to have obtained a more balanced account of both local and non-local (mostly international) labour flows.

Although most labour moves are between two incumbent firms, 30.3 per cent are between incumbents and their spinoff firms. These links represent the formation of a new firm by entrepreneurial past-employees of incumbents. Spinoffs tend to locate near their parent. In fact, 71.6 per cent locate in the same city as their parent firms. As such, spinoff generation is more localized than labour mobility (61.4 per cent). In other words, the mobility of designers as vehicles of knowledge exchange *between* locations is dominated by labour mobility rather than spinoff creation. In line with Klepper's (2002) spinoff model of industry evolution, spinoffs – by replicating part of their parent's routines – seem to be responsible for the high degree of spatial clustering of the industry. To the extent that the mobility of talented individuals between incumbents contributes to the diffusion of organisational practice, labour mobility seems to play a powerful complementary role to these clustering dynamics – particularly so in Paris and New York.

We used the software program NetDraw[58] to draw a graph of the labour flows between fashion houses. Figure 5.3 shows the labour mobility network of all firms in the period 1956-1965, by degree

58 NetDraw is part of the Ucinet 6 software package (Borgatti et al., 2002)

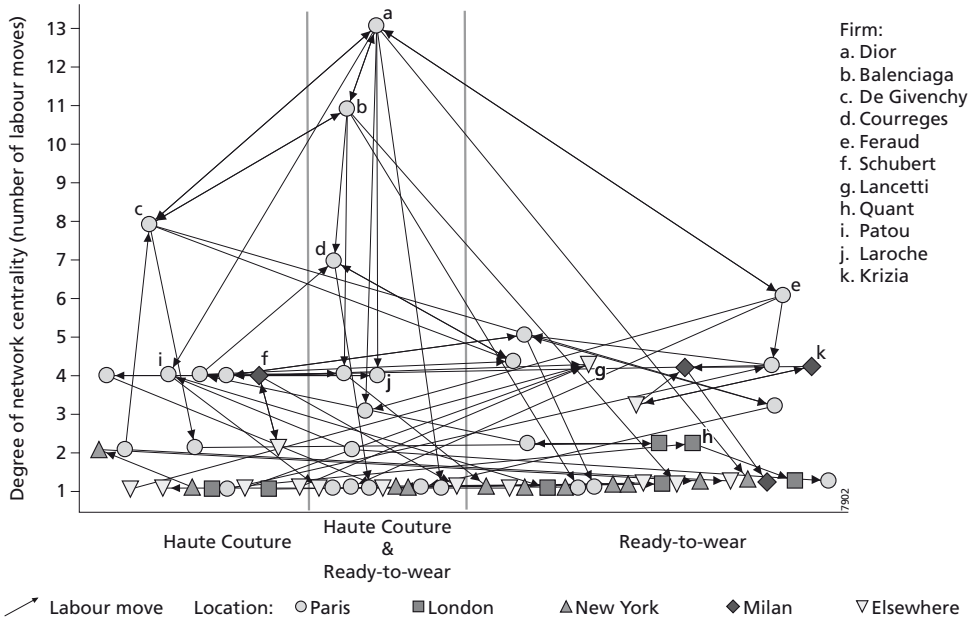

Figure 5.3. Labour mobility network of all firms in the period 1956-1965.

centrality (i.e. number of ingoing and outgoing labour moves), segment, and location. It depicts the 80 labour moves from and to all 65 firms with a degree of one or higher. Note that we excluded 94 firms with a degree of zero. First, the Figure shows the dominance of Parisian firms in the labour mobility network of the fashion design industry, both in centrality rankings and in number of firms, most notable in haute couture. Parisian firms Dior, Balenciaga, De Givenchy, Courreges, and Feraud form the most important hubs in the career paths of prominent designers. They form the pinnacle of the fashion hierarchy that emerges from designer's career paths. In addition, these hubs are frequently linked to each other as well, through the exchange of personnel. In Figure 5.3, we can see that in the 1960s Italian designers Lancetti and Schubert are up-and-coming in the labour mobility network, and promising British designer Mary Quant bursts upon the fashion stage of ready-to-wear.

Thirty years later, shows a somewhat different picture. Figure 5.4 depicts the labour mobility network of all firms in the period 1986-1995. It depicts the 285 labour moves from and to all 122 firms with a degree of one or higher, with 222 firms being excluded because they have a degree of zero. We can see that the hierarchical structure of the labour mobility remains the same, but instead of a continued Parisian dominance, we can see a sizable pyramid of labour flows among New York ready-to-wear designers. Designers such as Calvin Klein, Donna Karan, and Anne Klein form the pinnacle of an American hierarchical pyramid of labour mobility that clusters in New York, and serves mainly a ready-to-wear market. In the 1990s, the Parisian prominence in haute couture remains as strong as ever, however, with Chanel, Lagerfeld, Dior and De Givenchy. Figure 5.4 also shows the branching out of several Parisian couturiers to ready-to-wear. In the 1990s Italian fashion houses such as Prada, Armani and Byblos have obtained central positions in the intertwining career paths of famous designers. In fact, the Milanese design houses seem to fulfill a 'bridge' function

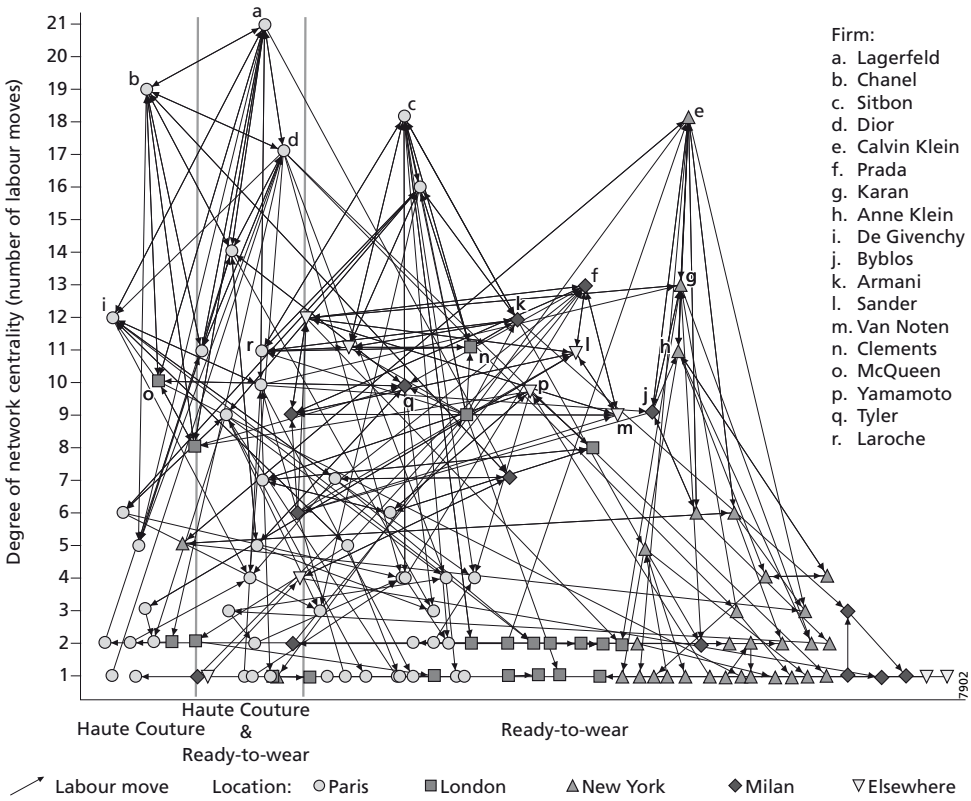

Figure 5.4. Labour mobility network of all firms in the period 1986-1995.

between American and French houses in terms of international labour flows. The same can be said for Londoners such as the houses of McQueen and Clements. Since the 1990s, 'second-tier' fashion cities seek the spotlight with a new generation of designers, notably Antwerp (e.g. Dries van Noten), Tokyo (e.g. Kansai Yamamoto), and Hamburg (e.g. Jil Sander).

The evolution of the labour mobility network shows both stability and turbulence. The emergence, rise, and fall of design houses are the dynamic micro-undercurrents of a stable hierarchical network pattern, one that is characterised by the dominance of a few fashion houses in a handful of locations. The fashion design industry, like many other luxury product markets, is characterized by monopolistic competition and the creation of various market niches. However, the strategic implication of our findings is that firms must attend not only to their positioning in product markets, but also to their positioning in factor markets, particularly the market for design talent.

5.6 Methodology

5.6.1 Dependent variable

Probability to exit
To test our hypotheses concerning the effects of labour mobility on the survival of fashion design firms we estimate a logistic regression model. In logistic regression the dependent variable is dichotomous. We estimate the effect of the probability that a firm exits the industry in time t+1 ($EXIT_{t+1}$) based on its characteristics at time t. The logistic regression model generates the coefficients of a formula to predict a logit transformation of the probability of $EXIT_{t+1}$, and is specified as follows:

$$logit\ (EXIT_{t+1}) = \beta_0 + \beta_1 X_1 + \ldots + \beta_n X_n$$

where logit ($EXIT_{t+1}$) is the probability that the exit event occurs, $X_1 \ldots X_n$ is a set of explanatory variables, β_0 is a constant, and $\beta_1 \ldots \beta_n$ is a set of coefficients estimated through maximum likelihood. Descriptive statistics are given in Table 5.2.

We have compiled data on each variable for each year of a firm's lifecourse, from its entry to its exit date. Our central argument holds that a firm's routines are initially the outcome of entrepreneurial background, but are transformed over time as the firm hires and fires personnel who contribute to organisational learning. Thus, we estimate survival chances based on firm specific variables that change as the firm experiences inter-firm labour mobility. To account for both pre-entry background of the entrepreneur, which is a constant over the firm's life course, and post-entry learning through labour mobility, which is a variable over the firm's life course, we estimate survival chances in period t+1 based on conditions in time window t.

To do this, we distinguished between 16 time periods of five years each from 1926 through 2005. Each firm exists at least for one time window of five years, starting in the period it entered the industry. As soon as the firm survives to the next period, it generates another observation for our analysis. This procedure yielded 2,775 observations for 502 firms, or an average of 5.5 observations per firm.[59] Whenever a firm exited the market in the following period, the observation's dependent variable $EXIT_{t+1}$ is attributed a value of 1, and whenever a firm survived up unto period t+1, the observation is attributed a value of 0. In total, we counted 159 observations of firm exits. The logit regression estimates the probability of exit, and hence a negative coefficient indicates that an explanatory variable is beneficial to firm survival. Regrettably, since we have no data on survival of firms after 2005, we cannot use the observations in the final period (2001-2005), which excludes 343 observations from the analysis.

Previous studies of routine inheritance have used survival analysis, such as Cox or semi-parametric Gompertz hazard models, to capture the effect of entrepreneurial background on firm performance (e.g. Klepper, 2002; Phillips, 2002; Boschma and Wenting, 2007). However, when analysing the effects of labour mobility over time, survival analysis becomes less appropriate. The construction of our methodology, based on simple logit estimation, allows us to analyse the effect of changing

59 This figure reflects the average age of a firm in the period 1926-2005 at 28 years.

values in independent variables on short-run survival. An important assumption is that short-run future survival is determined by short-run past behaviour; for a firm, the probability to survive in the next five years depends on past actions of the last five years.[60] This relatively short time window can be supported by the general observation that value of new knowledge in fashion design becomes quickly obsolete due to short product life cycles and the temporary status of a design being 'fashionable'. In an industry where dominant designs are avoided by definition, firm survival depends on the ability to incorporate new fashions and styles to accommodate volatile demand.[61]

5.6.2 Independent variables

Entrepreneurial background
To test hypotheses 1 and 2 concerning the superior performance of spinoff firms and experienced firms, we create dummy variables by entrepreneurial background distinguishing between spinoff firms (SPINOFF), experienced firms (EXPFIRM), and inexperienced firms. To test hypothesis 3, which states that spinoffs from better perform parents outperform other spinoffs, we include a variable that counts the number of years past employers of founder(s) have produced (YRS.PAR. PROD FOUNDER). To reflect diminishing returns to learning, we log-transformed the variable.[62] Table 5.2 shows descriptive statistics of the variables used in the regression analysis.

Talent gain and loss
To test hypothesis 4, which states that firms having hired more employees in recent times outperform other firms, we counted the number of new employees hired in the time window t-1 and t (TALENT GAIN). To test hypothesis 6, which states that firms having lost more employees in recent times to competitors perform worse than other firms, we include a variable which counts the number of employees lost to competitors in the five year time window (TALENT LOSS). To reflect diminishing returns to learning, we log-transformed the variables. Note that in Table 5.2 the mean and maximum of talent gain and talent loss are comparable. This reflects the fact that turnover in key personnel is an important dynamic in the top-fashion design industry.

Confrontation and conformation
Hypothesis 5a states that new employees with past experience working at successful competitors, increase the probability of a firm to survive, while hypothesis 5b states that as soon as these new employees become veteran employees, their experience at successful competitors no longer contributes to firm survival. We measure the success of past employers of employees similar to the quality of heritage of spinoff founders (YRS.PAR.PROD FOUNDER), i.e. by counting for all employees the number of years that their past employers produced. We then distinguished between newly hired employees (YRS.PAR.PROD NEWCOMERS), i.e. hired in the current time window

60 The choice for five years as observation periods is arbitrary, and we have looked at ten-year periods as well. This yielded 1,243 observations, and regressions showed results similar to those for five-year periods.

61 The dependence of short-run future survival on short-run past actions is illustrated by the demise of some of the fashion industry's most renowned houses such as Worth (1953) and Doucet (1929). The dawn of ready-to-wear in the 1950s spelled the doom of many haute couture firms, specifically those that resisted change of traditional values and practices. Chanel is one of the few that survived, and much of this accomplishment can be attributed to one of their newest designers, Karl Lagerfeld, who rejuvenated the company in the 1980s (Waddell, 2004).

62 Before log-transformation all values are increased by one, as to allow log transformation of zero values.

Table 5.2. Descriptive statistics of independent variables used in the regression analyses.

	N	Minimum	Maximum	Mean	Std. Deviation
SPINOFF	2432	0.00	1.00	0.40	
EXPFIRM	2432	0.00	1.00	0.51	
YRSPARPROD FOUNDER	2432	0.00	4.41	1.18	1.51
TALENT GAIN	2432	0.00	2.71	0.16	0.39
TALENT LOSS	2432	0.00	2.40	0.15	0.39
YRSPARPROD NEWCOMERS	2432	0.00	4.21	0.45	1.04
YRSPARPROD VETERANS	2432	0.00	6.67	0.26	0.97
SIZE	2432	0.00	1.79	0.14	0.33
HUMAN CAPITAL	2432	0.00	5.59	0.45	1.10
PARIS	2432	0.00	1.00	0.30	
LONDON	2432	0.00	1.00	0.20	
MILAN	2432	0.00	1.00	0.08	
NEW YORK	2432	0.00	1.00	0.25	
WWAR	2432	0.00	1.00	0.03	
LOC.ECONOMIES	2432	0.69	4.57	3.46	1.06

t-1 and t, from those hired in previous time periods (YRS.PAR.PROD VETERANS). Whenever a designer moves from one firm to the next in time t, his career history is counted within the YRS. PAR.PROD NEWCOMERS variable of the destination firm. Then, if the designer remains at this firm in time t+1, this same career history is counted in the variable YRS.PAR.PROD VETERANS in time t+1, and is excluded from YRS.PAR.PROD NEWCOMERS. Whenever a designer enters and leaves the firm in the same five-year period, his or her experience is counted in YRS.PAR. PROD NEWCOMERS, and not in YRS.PAR.PROD VETERANS. Similar to YRS.PAR.PROD FOUNDER, we log-transformed the variables.

5.6.3 Control variables

Human capital
The amount of knowledge possessed by a firm's personnel automatically increases with experience (Penrose, 1959). Individuals learn and accumulate experiences as they move along their career path. As such, human capital can be proxied by the number of years a person is active in the industry. The human capital of a firm is then computed as the sum of the human capital of its employees (HUMAN CAPITAL). We log-transformed the variable to reflect diminishing returns to learning.

Firm size
Generally, larger firms outperform smaller firms due to economies of scale. We include the variable SIZE that counts the number of top-designers working at a fashion house. We log-transformed the variable, to reflect diminishing returns to scale. In addition, since we include variables that may well be dependent on firm size, such as HUMAN CAPITAL, or TALENT GAIN and TALENT LOSS, the inclusion of SIZE in our model controls for size-related effects and thus allows for a straightforward interpretation of the other explanatory variables. The mean of 0.14 reflects that most fashion houses in our dataset have only one head-designer in each time period. During the

firm's first time periods this is likely to be the founder of the firm. We can also see in Table 5.2 that the largest size of a fashion house in our database is one house employing six top-designers.

Local density
Firm performance can be affected by agglomeration economies.[63] Firms belonging to the same industry often cluster in a few regions. For the fashion design industry, cluster effects may be confined to the four major fashion capitals. As such, we included four dummy variables PARIS, LONDON, MILAN, and NEW YORK to capture the effect of locating in these cities, and the rest of the world constitutes the omitted reference category. The clustering effect may be confined to localisation economies that induce firms to co-locate, notably the Marshallian 'labour market pooling' argument: it makes sense for firms to locate where vacancies can be filled by experienced, specialized workers.[64] Localised knowledge spillovers through (in)formal contacts in the industry constitute another possible explanation for clustering, and might increase firm performance. To proxy localised knowledge spillovers we count the number of firms active in fashion design at the municipality level (LOC.ECONOMIES). Our database includes 28 locations.

World wars
From the literature on the history of the fashion design industry we know that the two world wars, especially the occupation of Paris, severely disrupted the European haute couture industry (De Marly, 1980). We include a dummy variable WWAR for every time interval that falls in the period 1914-1918 or 1939-1945.

5.7 Results

To test our hypotheses we estimate a series of logit regression models. Each model takes more variables into account, and tests for a new hypothesis while controlling for the effect of a previous finding. Table 5.A (see appendix A) shows the correlation matrix of the independent variables. Some variables are highly correlated. Possible multicollinearity issues are dealt with below.

Table 5.3 shows the results of our logistic regression analyses. We estimate four models, whereby each model builds upon the previous one by adding new variables to the equation. We consistently include all control variables which proxy the effect of firm size, growth, human capital, location, and competition on a firm's probability to survive the next five-year period.

In Model 1 we test hypothesis 1 and 2 on pre-entry background. We include the variables SPINOFF and EXPFIRM. The results show that entrepreneurial background has a positive effect on firm survival: for each 5-year period in our sample, spinoffs and experienced firms outperformed

63 See Chapter 3 for a more thorough discussion of agglomeration economies.

64 Alfred Marshall (1890) makes this point by stating that: "Employers are apt to resort to any place where they are likely to find a good choice of workers with the special skill which they require; while men seeking employment naturally go to places where there are many employers who need such skill as theirs and where therefore it is likely to find a good market." (Marshall, 1890, Book IV Chapter X).

Table 5.3. Estimates of the logistic regressions (dependent variable: $EXIT_t$; standard errors in parentheses).

Variable name	Model 1	Model 2	Model 3	Model 4
SPINOFF	**-0.905****	0.323		
	(0.266)	(0.556)		
EXPFIRM	**-0.935****	**-0.928****	**-1.018****	**-0.985****
	(0.244)	(0.244)	(0.229)	(0.228)
YRS.PAR.PROD FOUNDER		**-0.437****	**-0.331****	**-0.312****
		(0.18)	(0.086)	(0.086)
TALENT GAIN			**-0.701****	
			(0.316)	
TALENT LOSS			**0.921****	**0.730****
			(0.273)	(0.268)
YRS.PAR.PROD NEWCOMERS				**-0.290***
				(0.131)
YRS.PAR.PROD VETERANS				0.094
				(0.097)
SIZE	-0.693	-0.641	-0.360	-0.346
	(0.355)	(0.356)	(0.362)	(0.361)
HUMAN CAPITAL	0.077	0.107	0.002	-0.010
	(0.09)	(0.091)	(0.099)	(0.099)
PARIS	0.344	0.255	0.272	0.188
	(0.471)	(0.471)	(0.468)	(0.36)
LONDON	-0.134	-0.168	-0.132	-0.164
	(0.456)	(0.456)	(0.458)	(0.397)
MILAN	-0.463	-0.567	-0.566	-0.428
	(0.493)	(0.495)	(0.494)	(0.453)
NEW YORK	0.223	0.187	0.232	0.089
	(0.463)	(0.463)	(0.465)	(0.397)
WWAR	0.228	0.215	0.202	0.226
	(0.456)	(0.458)	(0.459)	(0.446)
LOC.ECONOMIES	-0.051	-0.038	-0.061	-0.010
	(0.159)	(0.16)	(0.16)	(0.146)
Constant	**-1.751****	**-1.760****	**-1.761****	**-1.838****
	(0.386)	(0.387)	(0.377)	(0.39)
N	2432	2432	2432	2432
-2 loglikelihood	1149.585	1144.096	1144.096	1136.011
Chi-square	**25.152****	**30.640****	**40.994****	**38.725****

** Significant at the 0.01 level; * Significant at the 0.05 level.

inexperienced entrants. Following our theoretical framework, these results reflect the effect of routine inheritance between parent firm and spinoff firms, be it a parent from the fashion design industry or from related industries. Put differently, pre-entry experience contributes to firm survival, so we accept hypotheses 1 and 2.

Concerning the control variables, we see some interesting results. Model 1 shows that SIZE has an insignificant effect on firm survival. It seems that in the fashion design industry, small firms are as likely to succeed as larger firms. Interestingly, HUMAN.CAPITAL has the expected negative sign, but is insignificant. This suggests that the level of experience, measured as the number of career years per employee, has no significant effect firm survival. This may reflect that creative ideas (i.e. symbolic knowledge) quickly become obsolete in fashion design.

The location dummies for PARIS, LONDON, MILAN, and NEW YORK are insignificant. This finding indicates that these fashion capitals do not offer a necessarily positive or negative environment for firm performance. We find that LOC.ECONOMIES has a negative but insignificant coefficient, implying that firms do not enjoy localisation economies. The absence of location effects suggests that local spinoff creation fuelled the clustering of the fashion design industry over time. It is the geography of organisational knowledge and its diffusion through spinoff creation that drive spatial concentration.[65]

The coefficient for WWAR is positive, as expected, but insignificant. Hence, although some specific cases may indicate otherwise, the first and second world wars did not influence the performance of fashion designer firms.

In Model 2 we test hypothesis 3, regarding the effects of quality of parentage on firm survival. The coefficient for YRS.PAR.PROD FOUNDER is negative and significant, indicating that spinoffs with successful parents outperform spinoffs with less successful parents. Better performing parents seem to generate better performing spinoffs. This result suggests that organisational knowledge is transferred from parents to their spinoffs, albeit imperfectly. We accept hypothesis 3. Note that the variable SPINOFF has become insignificant with the inclusion of YRS.PAR.PROD FOUNDER. It seems the variable YRS.PAR.PROD FOUNDER better captures the effect of pre-entry experience of spinoffs. The sign and significance of the other variables remains similar to Model 1.

The bivariate correlation between the variables SPINOFF and YRS.PAR.PROD FOUNDER is significant and high at 0.960. This is likely due to the fact that the variables are causally related: SPINOFF measures whether or not a founder worked in the fashion design industry prior to entry, and YRS.PAR.PROD FOUNDER measures the quality of parentage of each spinoff entrepreneur in number of years its parent firm produced. As such, non-spinoff entrants are coded as 0 in both variables. Although a high correlation between independent variables suggests that multicollinearity may be serious, taking only correlation coefficients into account is insufficient to conclude as much. To estimate the seriousness of the multicollinearity problem we performed three tests (Maddala, 1992, p. 280). First, we observed the t-ratios for the estimated coefficients of SPINOFF and YRS. PAR.PROD FOUNDER. Since the t-ratios are significant, multicollinearity might not be serious. Second, we tested the stability of the estimated coefficients when some observations are deleted. We estimated the model on 20 random samples of approximately 80 per cent of our 2,432 cases. The sign of coefficients remained similar to our previous estimations, and standard errors did not fluctuate to a considerable degree. Third, we examined the predictions of the model. The predications of the model improved with the inclusion of both variables, compared to the predictions based on a subset of explanatory variables. Indeed, overall, even though there exists a high correlation between

65 This finding is in line with the findings in Chapter 4.

SPINOFF and YRS.PAR.PROD FOUNDER we conclude that multicollinearity is not a serious problem.

Model 3 adds the variables TALENT GAIN and TALENT LOSS to Model 2, to test hypotheses 4 and 6. We dropped the variable SPINOFF, as it became insignificant in the previous model.[66] We find that TALENT GAIN has a negative effect on the probability to exit yet, with a p-value of 0.107, is insignificant. We do not accept hypothesis 4. The significant and positive sign of the coefficient for TALENT LOSS indicates that the loss of top-designers to competitors increases the probability to exit the market in the following period. As such we accept hypothesis 6. We interpret this result such that the loss of talent entails a loss of competitive power, as (knowledge of) a firm's routine is transmitted to its competitors. Since we control for size, these effects of TALENT GAIN and TALENT LOSS are less related to scale, but rather reflect the circulation of routines between firms through labour mobility. Table 5.3 shows that the coefficients for size, location, human capital, and competition in Model 3 are similar to those found in Model 2.

In Model 4 we extend Klepper's (2002) reasoning on the background of the founder to the background of personnel. We expect personnel from better performing firms, i.e. those who transfer fitter routines, to add to the firm's existing routine in a more profound and beneficial way (hypothesis 5a). Furthermore, to reflect the socialisation of newcomers over time and their conformation to existing practice, we expect the contribution of newcomers to be restricted to their first period at the firm. In other words, as soon as newcomers become veteran employees, they act as instuments of preservation rather than innovation, irrespective of differences in their past experiences (hypothesis 5b). To test these hypotheses, we add two new variables to the equation in Model 4: YRS.PAR.PROD NEWCOMERS and YRS.PAR.PROD VETERANS. The coefficient of YRS.PAR.PROD NEWCOMERS is negative and significant, implying that firms that hire workers from successful competitors are more likely to survive the following period. As such, this result indicates that routines are transmitted as designers move from one firm to the next. By hiring designers that work at firms that have proven to be survivors, firms are able to decrease their probability to exit in the following period. In contrast, the coefficient of YRS.PAR.PROD VETERANS is insignificant. This result suggests that while new workers might bring in new knowledge of organisational practice, their knowledge becomes insignificant for firm performance. It appears that that the influx of workers as agents of routine diffusion strengthens the firm's resilience to exit, but our results also indicate that this effect is only temporary. We accept hypotheses 5a and 5b.

Note that we dropped the variable TALENT GAIN in Model 4 because of a serious mulicollinearity problem. The bivariate correlation between the variables TALENT GAIN and YRS.PAR.PROD NEWCOMERS is significant and high at 0.925. This is likely due to the fact that the variables are intrinsically related: TALENT GAIN measures the number of new personnel hired, and YRS.PAR.PROD NEWCOMERS measures the quality of career paths of new personnel in the number of years their previous employers produced. We performed three tests for mulicollinearity, similar to the tests done on SPINOFF and YRS.PAR.PROD FOUNDER. In contrast to results on these latter two variables, the tests indicated that TALENT GAIN and YRS.PAR.PROD

66 We have run Model 3 and 4 with the inclusion of the SPINOFF variable as well, and results did not alter, nor did the model fit improve considerably.

NEWCOMERS are not only significantly correlated, but also pose a multicollinearity problem.[67] As such, we are unable to include both variables in one model.

Our findings on labour mobility complement the result found for entrepreneurial background. Indeed, the coefficients of YRS.PAR.PROD FOUNDER and EXPFIRM remain negative and significant. Although entrepreneurial background is vital for firm survival, and better parents create better spinoffs, it seems that this line of reasoning can be extended to labour mobility as well. Put differently, lack of pre-entry background of entrepreneurs might be supplemented by post-entry learning from competitors through the mobility of talented individuals who serve as agents of innovation. Within a similar evolutionary framework on firm survival, post-entry labour mobility complements the explanatory power of pre-entry experiences of the entrepreneur.

Our results indicate that to optimize survival chances, fashion designer firms need to invest in talent recruitment in each and every period. The insignificant effect of veteran employees on firm performance (either in firm size, human capital, or past experience at competitors) is interesting, but should not be interpreted as redundancy. Although we find that the expertise of veteran employees does not directly contribute to firm survival, we argue that veteran employees play an important role in retaining rather than diffusing routines. As such, they act as the organisation's memory (Neslon and Winter, 1982) for new workers to build upon. Veteran employees retain traditions that ensure an enduring relationship with the established clientele, while also providing the necessary embedding for ideas of new talent.

To test the robustness of our results, we run the regression analyses for ten-year periods, instead of five-year periods. In this case we counted 1,243 observations for the 502 firms. The results, i.e. sign and significance of variables' coefficients, are the same as presented in Table 5.3. The only difference is found in the control variables, where SIZE remains significant and negative in Model 3 and 4, and NEWYORK and LONDON have significant negative coefficients in all four models. These results are unique to the regression based on data in time windows of ten-year periods rather than five-year periods. The correlations between variables remains the same as well. These results strengthen the model's outcomes.

5.8 Conclusion

This paper posits, in an addition to Klepper's (2002) model of industry evolution, that the mobility of labour creates conduits of routine replication between firms. In particular, we argue that key workers build up experiences with varying organisational routines as they move from one firm to the next. As such, new employees are not only a source of internal replication of organisational routines, but also of their external diffusion. The pre-entry experiences of the founder may have laid down the organisational blueprint, but it is the post-entry influx of labour that enables the firm to dynamically adapt its routines to those of its competitors.

67 As can be seen in Table 5.3, both variables have significant coefficients, yet when both are included in a model, the coefficients become insignificant (i.e. their standard errors become very large). One of our tests for mulicollinearity showed that the standard errors of the estimates varied widely over 20 random samples of approximately 80 per cent of our cases.

Are the firms that are able to attract new talent the ones that are able to keep their competitive edge and survive? Fashion houses are constantly looking for new designers to invigorate their creativity and realign their organisation with cultural and societal demand. New labour also functions as a way to pass on and preserve traditional design skills. Note that the former is more related to strengthening the firm's appeal to new clients, while the latter is more related to sustaining the existing clientele. Fashion houses that fail to do so, were forced to exit the market. Our findings do indeed show that new talent significantly increases a firm's survival.

Our second main hypothesis argues that over time new workers become socialised within the organisation and have become a source of replication rather than innovation for existing organisational routines. Hence, as soon as new workers become part of the 'old garde' they may contribute to firm performance in terms of brainpower in terms of human capital, but they cease to be challengers to existing practices. Rather, over time new workers become veterans that function as a filter to new practices brought in by newly hired workers. We found evidence for this in the fashion design industry. Through labour mobility, organisational routines develop through a process of routine confrontation and conformation as firms position themselves within the labour mobility landscape. We argue that each resulting routine is a synthesis, or new 'truce' (Nelson and Winter, 1982), amongst new co-workers. The dissipation of the value of new talent over time through organisational socialisation further contributes to the continuous need for new talent in fashion houses.

Both the five-year and ten-year period regression models suggest that the value of past experiences of workers dissipates over time. However, because this effect is found in both models, we cannot conclude on the exact number of years that it takes for employee experience to become obsolete. The length of this process may itself be a determinant of firm-specific routines, as it ties in with the firm's meta-routine or dynamic capability (Teece et a., 1997) to incorporate new routines in the existing structure. The change of routines provides a new and exciting research avenue in organisational routine research. Our results contribute to this literature with an extension of the routine replication model through spinoff creation (Klepper, 2002) to post-entry labour mobility.

We did not find significant effects of location on firm performance after controlling for entrepreneurial background and labour mobility. Firms located in one of the major fashion capitals performed as well as firms located elsewhere. We specifically controlled for localisation economies that can be attributed to close proximity to other fashion designers. However, designers in clusters perform as well as firms located elsewhere. It might be that clusters entail both positive as well as negative externalities that on average even out.

Interestingly, although Paris has lost its dominance in terms of number of firms, it remains the world's number one in terms of non-local spinoffs and labour moves. It seems that Paris is more likely than New York, London, or Milan to be selected as the place to set-up a spinoff company from incumbents located elsewhere. Second, Parisian firms are more likely to hire (and fire) employees from other fashion designers around the world, compared to their counterparts in the other three fashion capitals. At some point during their careers, most of the world's top-designers have worked for Parisian firms. These conditions translate into a star-like pattern of labour mobility with Paris as the world's primary hub.

Chapter 6

Urban amenities or agglomeration economies? Locational behaviour and entrepreneurial success of Dutch fashion designers

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6.1 Introduction

The spatial clustering of industries is among the core research questions of economic geographers. For long, explanations of clusters have been based on the concept of agglomeration economies. It has become commonplace to assume that three 'Marshallian' economies – specialised suppliers, specialised labour and knowledge spillovers – drive spatial clustering of industries (Marshall, 1890; Glaeser et al., 1992). Creative industries tend to cluster in dense urban areas where they play an important role in urban economic development (Scott, 1996, 2000; Hall, 2000). Following the traditional reasoning, Scott (2000, 2006) attributed the exceptional clustering of creative industries to the disproportionate advantages that creative firms experience from co-location, transforming the cluster in a 'creative field'. The received view on clusters has been challenged by Florida (2002a) who argued that spatial clustering – at least as far as workers in creative industries are considered – is primarily the result of amenities that attract creative workers to live in certain cities rather than others. Examples of urban amenities in such a broad sense are a tolerant social atmosphere, ethnic diversity and cultural activities.[68] In a similar vein, Gottlieb (1995) found that urban amenities with respect to the residential location of employees influenced the location decision of firms. The presence of creative people would, in turn, attract business to these cities interested in access to talent and ideas leading creative industries to cluster in certain cities.

The two explanations of spatial clustering of creative industries are very different, but not mutually exclusive. It may well be the case that agglomeration economies and urban amenities both act as drivers of clustering of creative industries. In this paper, we explore to what extent the locational behaviour and economic success of fashion design entrepreneurs can be explained by a local 'people's climate' based on urban amenities, or a local 'business climate' based on agglomeration economies. This case is a prime example of a creative industry with a strong degree of clustering with over one in four designers living in Amsterdam. We proceed as follows. In the following section we give a brief overview of the literature on the clustering of creative industries. Section 3 describes our data collection and descriptive statistics. In section 4 we present the results on the motives underlying

68 Note that our definition of urban amenities encompasses many aspects that go beyond the physiological environment of the city. It also encompasses the social and cultural atmosphere of a place.

location choices. We analyse the determinants of entrepreneurial success in section 5. Finally, we draw some conclusions, derive policy implications, and discuss issues for further research.

6.2 A Complementary Dichotomy: Agglomeration Economies vs. Urban Amenities

Economic geographers traditionally explain the spatial clustering of industries by three different forms of positive agglomeration economies (for a review, see Gordon and McCann 2000). First, the availability of a pool of specialised labour benefits firms in clusters as it lowers the search costs and improves the match between labour supply and labour demand. Second, the local provision of inputs by specialised suppliers benefits firms in clusters reducing transportation and transaction costs as well as lowering costs of inputs. Third, local knowledge spillovers between firms yields advantages for firms in clusters as efficiency is increased through mutual learning without financial compensations.

The first two forms of agglomeration economies reflect the benefits from increased division-of-labour among workers and among suppliers. As such, it is reminiscent of Adam Smith's theory of economic growth in which growth promotes efficiency through increased opportunities for division-of-labour. In both cases, the cluster provides a local market, which is large enough to render such specialised skills and specialised supply profitable.

The third form of agglomeration economies of knowledge spillovers is different, and less undisputed, in that it refers to a pure externality. For long, economists have treated such spillovers as unbounded by space until Jaffe et al. (1993) showed that spillovers between inventors (as proxied by patent citations) occur much more often within regions than across regions. More recently, Breschi and Lissoni (2003) confirmed this finding and also showed that the local nature of knowledge spillovers is caused by dense local social networks between inventors, which function as channels for informal knowledge exchange. Once controlling for the social distance between two inventors[69], spatial proximity is no longer correlated with knowledge spillovers. This suggests that simple co-location in a cluster is not sufficient for knowledge spillovers to occur; rather, social networks are necessary to exchange knowledge and not all firms are equally well connected, both within a cluster and over larger distance (Bathelt et al. 2003; Bathelt 2005; Giuliani 2007).[70] Yet, because the density of social networks is higher within clusters than between clusters, co-location is expected to be, on average, advantageous for firm performance (Sorenson 2003).[71]

The concept of agglomeration economies has been developed traditionally with reference to manufacturing industries. However, the forces operating in manufacturing may apply to creative industries as well, where we define creative industries as all industries active in the fabrication of

69 Social distance is defined as the geodesic distance (shortest path) in the social network, where a social tie between two inventors is defined as previously having co-authored a patent.

70 See also Guiliani (2007), Boschma and Ter Wal (2007) and Morrison (2007) using survey data rather than patent citations.

71 Apart from knowledge spillovers, it has also been found that the socio-professional network of the entrepreneur is often critical to the formation and early growth of new entrants (Hite and Hesterley, 2001).

cultural products characterised by symbolic value.[72] Instead of using the concept of agglomeration economies, Scott introduced the concept of 'creative fields', which he defines as:

> "… the locationally-differentiated web of production activities and associated social relationships that shapes patterns of entrepreneurship and innovation in the new economy. … [T]he creative field functions as a site of (a) entrepreneurial behavior and new firm formation, (b) technical and organizational change, and (c) the symbolic elaboration and re-elaboration of cultural products." (Scott, 2006, p. 1).

Even though Scott (2002, 2006) acknowledges that creative fields might encompass different spatial scales, he puts a special emphasis on the regional and urban level. He regards clusters in creative industries as places that are endowed with rich infrastructures of specialised production chains and skilled workers. Note that the importance of local availability of specialised suppliers and skilled workers refer to the first two forms of Marshallian economies. Scott also speaks of creative fields as 'places of trust'. Trust in a creative field is important to facilitate interaction and knowledge exchange, referring to the third form of agglomeration economies. Interaction, collaboration and networking is especially crucial in creative industries, where a tension exists between their atomistic and hyper-competitive market structure (Banks et al., 2000) and their need for symbolic knowledge exchange (Asheim and Gertler, 2005; Vinodrai, 2006; Asheim et al., 2007). Local communities of creative individuals provide the basis for knowledge exchange in social networks on a *quid pro quo* basis (Scott, 2000; Banks et al., 2000) similar to the role of social networks in knowledge spillovers between inventors (Breschi and Lissoni, 2003).

A specific kind of knowledge spillover is the knowledge – or capabilities put more generally – that is transferred between parent company and spin-off. Several studies have shown that the performance of parent firms and spin-off firms is highly correlated suggesting that entrepreneurs benefit from the experience from previous employment (Klepper, 2002; Klepper and Sleeper, 2005; Boschma and Wenting, 2007; Dahl and Reichstein, 2007). A similar finding has been reported by Wenting (2008) in a recent study of the global high fashion design industry.

Since most spin-off locate close to the parent firm, this type of knowledge spillover tends to be geographically localised. The emergence and success of a cluster can thus be related to the genealogy of firm formation with a few founding fathers creating many successful offspring. This means that the performance of cluster firms compared to firms located outside clusters has to be analysed while controlling for differences in pre-entry experience (Klepper 2007). In general, one expected those firms located in clusters to have gained more experience from previous employment than firms located elsewhere.

Creative industries are generally even more clustered than manufacturing industries, specifically in urban areas (Scott 1996, 2000). Given the short product lifecycle of symbolic goods – which in

72 Definitions of creative and cultural industries tend to overlap to varying degrees in the literature, and some authors oppose their interchange-ability. Note that our definition of creative industries is similar to that of Scott's (2000). The term "creative industries" refers to industries that supply goods that are commonly associated with cultural, aesthetic, or entertainment value, such as film, television, fashion, music, publishing, the performing arts, sports, and advertising (Scott, 2000; Caves, 2000).

fashion design is only six months – there is a rapid turnover of ideas with the value of ideas decaying rapidly in time and space. This implies that most spillovers are expected to occur within the local creative field. By contrast, manufacturing knowledge is of a more accumulative nature and more often codified in patents, standards, handbooks and machinery. This means that such knowledge remains relevant over a longer period of time and can be transmitted over long distance at lower costs. Both aspects render global spillovers to be more common in manufacturing industries in comparison to creative industries, and provides an explanation for agglomeration forces to be less strong for manufacturing compared to creative industries. A second important difference between manufacturing and creative industries holds that the share of transportation costs in total costs is much lower in creative industries than in manufacturing industries. This is especially true for cultural products such as fashion designs, music and film, which can be transported at relatively low costs over long distances. This means that for creative firms geographical proximity to clients and suppliers is expected to be relatively less important than geographical proximity to peers.

The competitive advantage of clusters is then sustained by a dynamic of intensifying agglomeration economies (Scott, 2006). Such a mechanism of positive feedback was introduced by Arthur (1994) as a chance process in which small differences in the spatial distribution of economic activity might have drastic and lasting consequences – in effect locking it into an 'oligopoly' of a few large creative cities.

The Marshallian view on agglomeration economies and clustering has recently been challenged by Florida's (2002a) work on the creative class. Starting from the concept of class rather than industry, Florida provided a new understanding of spatial clustering in creative industries. According to his 'creative capital theory' the existence of an attractive people climate is much more the key to success than an attractive business climate (Florida, 2005). Florida argued that members of the creative class, most of whom working in creative industries, have distinct locational preferences that are driven by personal motives rather than business motives. They locate in cities with certain amenities that fit with their values, aesthetics, lifestyles and consumption patterns. Florida states that "… tolerance is the key factor in enabling places to mobilize and attract technology and talent." (Florida, 2005, p. 6) Cities "… that are open to immigrants, artists, gays and racial integration … gain an economic advantage in both harnessing the creative capabilities of a broader range of their own people and in capturing a disproportionate share of the flow [of creative class members] …" (Florida, 2005, p. 7). According to Florida it is the quality of places that attract creative people and because of their presence it attracts high tech industries and creative industries. The concentration of a diversity of talented people powers the economic growth of creative cities. The central idea is that "… tolerance and low entry barriers to human capital helps to attract talent and that talent is in turn associated with high technology industry and regional growth." (Florida, 2005, p. 139).

Such a line of reasoning should also hold for entrepreneurs in creative industries, such as fashion design. Note that Florida (2002a, 2005) does not clarify through which exact mechanisms the local presence of a creative class generates regional economic growth. In Florida (2002a) it is argued that some cities are home to a larger absolute share of the creative class, and hence these cities experience higher growth rates compared to other locations. Later Florida and Stolarick (2006) argue that the clustering of creative people might stimulate regional growth through local knowledge spillovers occurring in (in)formal networks relation among creative individuals. The latter is a typical externalities argument related to local density, and is more in line with Scott's creative field thesis (2006), and Breschi and Lissoni (2003) work on co-inventors.[73]

Florida's explanation of spatial clustering in creative industries is, however, fundamentally different from explanations based on agglomeration economies, because he reasons from personal motives of members of the creative class rather than from the business motives of entrepreneurs.[74] Following this reasoning, workers first decide where to live according to their preferences regarding residential amenities (Storper and Manville, 2006). Firms then follow these decisions in their quest for qualified workers. However, the cause-effect relationships are generally expected to run both ways and statistically it is hard to distinguish between people following firms and firms following people (Van Oort et al. 2003). Yet, in fashion design most entrepreneurs are self-employed or employ only one or two assistants. This means that the location decision from a worker's perspective and from a firm's perspective coincide, which makes it possible to analyse the relative importance of personal versus business motives in location decisions.

6.3 Methodology

6.3.1 Research design

The main question to be answered is whether agglomeration economies or urban amenities trigger fashion designers to cluster in space. Put differently, we ask the question whether business motives, especially related to agglomeration economies, drive the location decision of designers or whether personal motives, specifically concerning urban amenities, drive the location decision of designers. As explained, with the large majority of designers being self-employed or leading small firms, one can analyse the business and personal motives simultaneously as the employer and entrepreneur coincide. We did so by sending out a questionnaire to all known independent fashion designers in The Netherlands.

In addition to comparing business and personal motives, we also estimate a statistical model that explains entrepreneurial success by the personal income of fashion designers. In this way, we can

73 Based on patent data, Bettencourt et al. (2006) attempt to distinguish between amenities and spillovers as explanation for the clustering of inventors in cities. They found that inventors are equally productive in larger cities and in smaller cities. Hence they conclude that amenities attract inventors to larger cities.

74 One could still argue that Florida's explanation is based on economies, though, namely economies arising in the consumption sphere instead of the production sphere. By spatially concentrating in certain cities, members of the creative class create the required local demand for a variety of symbolic goods including arts, cinema, bar, restaurants, architecture, and the like.

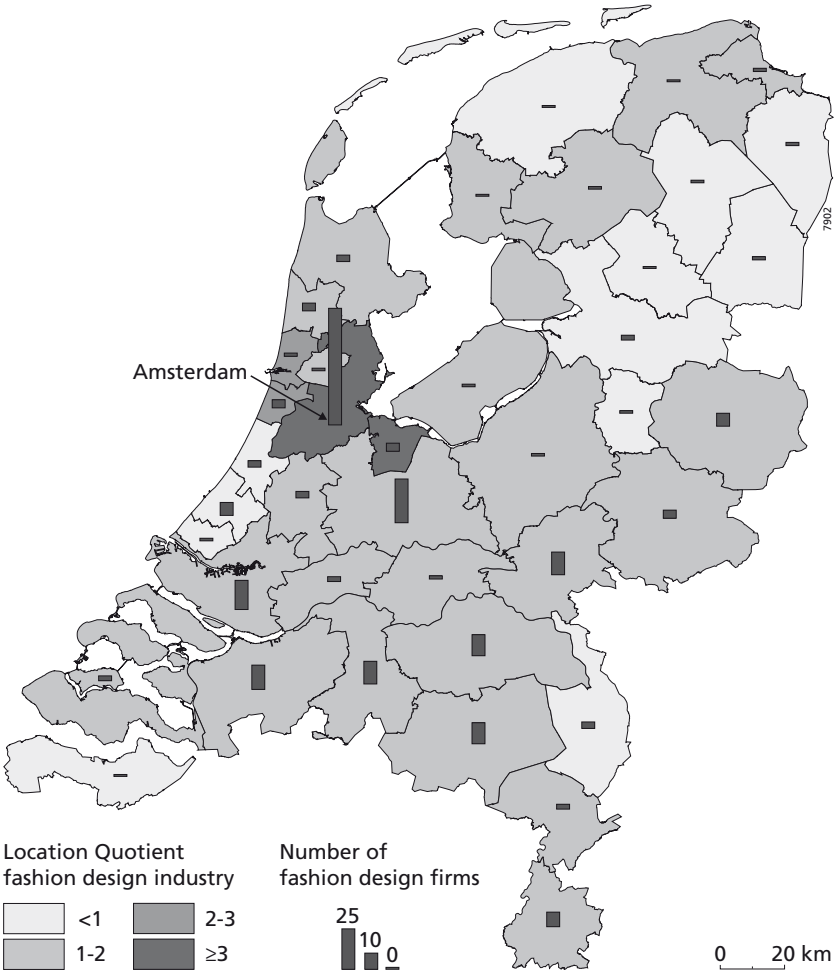


Figure 6.1. The spatial distribution of fashion designers in The Netherlands (N=275).

assess whether designers in clusters benefit from co-location. Importantly, in this exercise we control for a host of other variables affecting success. Notably, we take into account the size of the socio-professional network of an entrepreneur as a proxy for knowledge spillovers. This allows us to distinguish between benefits arising from co-location and benefits stemming from social networks.

6.3.2 Data collection

We have collected data by a telephonic survey of all 1496 firms classified as fashion designers in The Netherlands as registered at the Chambers of Commerce. A total of 511 firms appeared to be (still) active in fashion design. Others were active in a wide variety of fields, from graphic design to interior design or teaching. Out of the 511 designers contacted, 275 questionnaires were completed,

resulting in a response rate of 54 per cent. The responses are representative for the entire population concerning the variables location and in terms of firm size in number of employees.[75]

6.3.3 Main variables

Similar to earlier results on the creative class (Florida 2002a; Boschma and Fritsch 2007), most fashion design entrepreneurs are located in cities. Here, location refers to the business location of designers. Note, however, that almost all designers live in the same labour market area ($NUTS_3$ region) as they work. Defining cities as municipalities with over 50,000 inhabitants, over 60 percent of all fashion designers is located in cities while only 49 percent of the Dutch population does so. This preference for city-life is most apparent for Greater-Amsterdam, where 26 percent of all fashion designers locate against less than 8 percent of all Dutch inhabitants. This renders the location quotient of Amsterdam (i.e. the regional share of fashion designers divided by the regional share of total population) larger than 3. Figure 6.1 shows the absolute numbers and location quotients for all 40 labour market areas ($NUTS_3$ regions) in The Netherlands. The location pattern of the fashion design industry is in line with the general geographical pattern of the creative industries in The Netherlands, which tend to concentrate in the Amsterdam region (Kloosterman, 2004; Van Aalst et al., 2006).

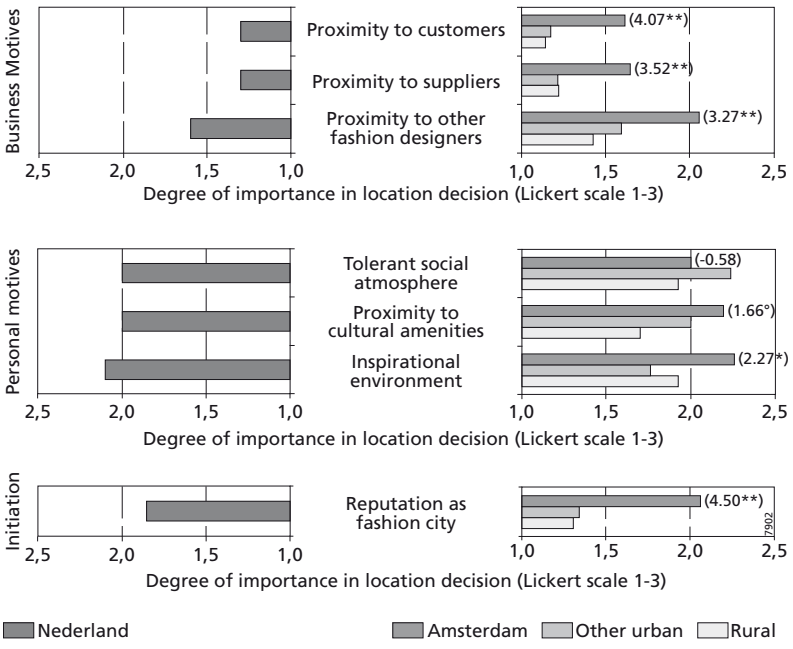
Most fashion design entrepreneurs are women, accounting for 80 percent of all fashion designers. The lion's share (87 per cent) of all firms in the Dutch fashion design industry are self-employed. The remaining designers generally have one or two employees, while only one percent exceeds ten employees. Interestingly, most fashion designers (55 per cent) earn a low income from their fashion design activities, where low income is defined as less than 20,000 euro a year[76]. Only 21 per cent earn a high income over 40,000 euro a year, which leaves 24 percent with an income between 20,000 and 40,000 euro. These figures suggest that the group of designers is very heterogeneous, since many are struggling to stay in business and only a few are prospering.

6.4 Locational preferences

To analyse the relative importance of business and personal motives in designers' location decision, we ask them about seven potential factors. Respondents have been asked to grade the extent to which each factor was of no importance (grade 1), some importance (grade 2), or much importance (grade 3) for their location decision. The first three questions concern the importance of the proximity to suppliers, customers and fellow designers. A high score on these motives indicates the operation of agglomeration economies. The last three questions concern personal motives related to the location of residence and reflect the urban amenities present in the place of choice. We finally asked whether the location decision was driven by reputation of the location. Such locational behaviour can be thought of as imitative rather than autonomous. Reputation relates to both business and personal factors, since the reputation of location may refer to the 'place-to-be' to set up your business or the 'place-to-be' to live comfortably.

75 For more details, see Wenting et al. (2006).

76 The category 20,000 to 40,000 euro income per annum captures the income levels around the modal gross income per capita in the Netherlands.



** Significant at the 0.01 level (2-tailed)
* Significant at the 0.05 level (2-tailed)
° Significant at the 0.10 level (2-tailed)

Figure 6.2. Business and personal motives for entrepreneurs in fashion design on various spatial levels (outcome of independent samples t-tests for equality of means in parentheses; N=163).

Figure 6.2 shows the average of these values for all respondents in The Netherlands on the left side of the graph, and broken down at different spatial scales on the right side of the graph. Note that we only asked designers who had moved to a new location when setting up their business amounting to 163 respondents. To see whether creative entrepreneurs tend to settle in cluster, urban or rural locations, we differentiated the results for Amsterdam, other cities with more than 50,000 inhabitants and the rest of the country.

The results in left side graphs in Figure 6.2 show that personal motives tend to be more important than business motives in the location decision of fashion designers. The average scores for personal motives are all higher than the scores for the business motives. This suggests that location decisions of fashion designers are indeed predominantly, though by no means exclusively, driven by amenities of the residential environment.

Figure 6.2 also shows that those who value certain location factors as more important tend to have chosen more often to locate in the Amsterdam cluster. Indeed, with the exception of tolerant social atmosphere, t-tests show that all location factors are significantly better met in Amsterdam than elsewhere in the country. Since many fashion designers are located in Amsterdam, this shows that location motives and location decisions are indeed consistent: Dutch fashion designers acted according to their locational preference. Concerning Amsterdam, Florida's creative city thesis

Table 6.1. Definition of the variables used in the logistic regression analyses

Variable	Description
HIGH.INCOME	Income of more than 20,000 euro per year from fashion design activity
AMSTERDAM	Located in the Amsterdam labour market region (NUTS3 level)
COLLABORATION*	Number of collaborations with fellow fashion designers
COLL.PRODUCTION	Finds collaboration in production important
COLL.MARKETING	Finds collaboration in marketing important
COLL.INFORMATION	Finds collaboration in information and knowledge sharing important
SPINOFF	Has been employed by an fashion design firm prior to start-up
SERIAL	Has previously started a firm in the fashion design industry
YEARS.ENT**	Number of years experience as an entrepreneur
ACADEMY	Bachelor's degree or higher in fashion design
FULLTIME	Working more than 32 hours a weeks on fashion design activity
PRICE.MID	Is active in the middle and middle-to-high price segments
PRICE.HIGH	Is active in the high and *haute couture* price segments

* We log transformed this variable to reflect the marginal decrease in the utility of each additional collaboration link. The exact variable definition becomes COLLABORATION = log(x+1), where x stands for the number of collaborations as indicated in the questionnaire.

** We log transformed the number of years an entrepreneur has been active as an independent fashion designer to reflect the marginal decrease in the utility of each additional year in business. The exact variable definition becomes YEARS.ENT = log(y+1), where y stands for the number of years an entrepreneur has been active as an independent fashion designer as indicated in the questionnaire.

receives support predominantly because of attractiveness of cultural and atmospherical amenities to creative entrepreneurs.

Even though we concluded from the results shown in left side graphs in Figure 6.2 that Marshallian agglomeration economies (i.e. business motives) are valued considerably lower in designers' location decisions than 'creative city' economies (i.e. personal motives), the right side graphs in Figure 6.2 show that the situation is more complex. Indeed, Marshallian economies might not be valued highly, but they are important for startups in Amsterdam and less relevant for designers located elsewhere. To the extent that agglomeration economies are at play, this result implies that Amsterdam is the only Dutch cluster of fashion design that has attained the critical mass necessary to generate Marshallian economies for entrepreneurs.

Amsterdam also scores significantly higher on reputation. This indicates that the Amsterdam cluster profits from a self-reinforcement mechanism: its reputation as a fashion city attracts fashion designers whose presence adds again to its reputation, et cetera.[77] The importance of reputation as a location factor for those who choose to live in the cluster supports Scott's (2006) argument for creative fields enjoy self-sustaining agglomeration economies.

77 Such mechanisms are known as information cascades (Bikhchandani et al., 1992).

6.5 Entrepreneurial success

Our results so far were based on the subjective perception and appreciation of these various locational factors. The question remains whether, indeed, fashion designers benefit from agglomeration economies, whether they are aware or not. If agglomeration economies would operate in the Dutch fashion design industry, designers in the Amsterdam cluster would outperform designers outside the cluster.

6.5.1 Dependent variable

Income

To analyse the agglomeration economies hypothesis, we are in need of an unambiguous performance indicator. In creative industries, however, traditional proxies for success based on size or growth do not apply, as most designers do not aim at growth. Profit, however, is also problematic as a performance indicator, because profit figures are extremely volatile and – as we discovered – often unknown to the designer. We therefore opted for a less ambiguous indicator: whether a designer earns more than 20,000 euro per year from his or her fashion design activities, defined as a dummy variable, named HIGH.INCOME.[78] This indicator yields two groups of almost equal size with 55 percent earning less than 20,000 euro per year and 45 percent earning more than 20,000 per year. This dummy variable proxies the extent to which fashion entrepreneurs are able to solely rely on their design activities to make a living, or in other words, and corresponds with Florida's (2005) view that the quality of economic growth is reflected in the wages and income that people make.

6.5.2 Independent variables

Agglomeration economies

To test whether agglomeration economies exist in the Amsterdam cluster, we introduce a dummy variable AMSTERDAM for those working in the labour market region of Greater-Amsterdam (NUTS3 level). In this way, we can assess whether co-location in the Amsterdam cluster contributes to entrepreneurial success as proxied by the personal income of the head designer.

However, the cluster benefits have to be assessed while including alternative determinants possibly affecting the success of fashion designers (cf. Boschma and Weterings, 2005). From our theoretical discussion, two alternative explanations for the superior performance of firms in clusters were proposed: networking and pre-entry experience.

Networking

The questionnaire asked designers about the number of collaborations with other fashion designers during the last year. Two out of every five fashion designers collaborates with other fashion designers. The number of collaborations varies between 0 and 50. This number is captured by the variable COLLABORATION. The questionnaire also asked to those designers who had collaborated, what type of collaboration was considered important for them (with the possibility to mark more than one answer): collaboration in the production of designs (COLL.PRODUCTION), collaboration

78 Note that we define success purely in income per year, and not on the basis of artistic 'genius', despite the fact that some fashion designers consider their work as artistic activity rather than as a commercial activity. However, one can assume that personal income and artistic success also correlate, albeit less strong than commercial success and personal income.

in marketing of designs (COLL.MARKETING), or collaboration by information and knowledge exchange in general (COLL.INFORMATION). We use both the number of collaborations and the type of collaboration considered as most important as explanatory variables for success. In this way, we can test the importance of networks as a source of competitiveness as well as the type that is most conducive for this success.

Pre-entry experience

Another important determinant of success is the experience of an entrepreneur. Aforementioned research in industrial dynamics has shown that spin-off outperform startups reflecting the experience inherited from the parent firm (Klepper 2002; Dahl and Reichstein, 2007). Experience is also gained by setting up several firms and by managing your own firm for a prolonged period of time. We thus include three variable to capture experience: a spinoff dummy (SPINOFF), a serial entrepreneur dummy (SERIAL), and the number of years a person has been an entrepreneur independently from the type of industry (YEARS.ENT).

Apart from the determinants of success related to co-location in the cluster, networking and pre-entry-experience, a number of controls need to be taken into account that are expected to affect fashion designer incomes.

Human capital

Human capital of the entrepreneur is also expected to be an important determinant of personal incomes as it holds for virtually all professions. In the Dutch fashion design industry, three quarters graduated from a fashion design academy, which is part of the Dutch higher education system.

Table 6.1. Definition of the variables used in the logistic regression analyses

Variable	Description
HIGH.INCOME	Income of more than 20,000 euro per year from fashion design activity
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COLL.PRODUCTION	Finds collaboration in production important
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COLL.INFORMATION	Finds collaboration in information and knowledge sharing important
SPINOFF	Has been employed by an fashion design firm prior to start-up
SERIAL	Has previously started a firm in the fashion design industry
YEARS.ENT**	Number of years experience as an entrepreneur
ACADEMY	Bachelor's degree or higher in fashion design
FULLTIME	Working more than 32 hours a weeks on fashion design activity
PRICE.MID	Is active in the middle and middle-to-high price segments
PRICE.HIGH	Is active in the high and *haute couture* price segments

* We log transformed this variable to reflect the marginal decrease in the utility of each additional collaboration link. The exact variable definition becomes COLLABORATION = log(x+1), where x stands for the number of collaborations as indicated in the questionnaire.

** We log transformed the number of years an entrepreneur has been active as an independent fashion designer to reflect the marginal decrease in the utility of each additional year in business. The exact variable definition becomes YEARS.ENT = log(y+1), where y stands for the number of years an entrepreneur has been active as an independent fashion designer as indicated in the questionnaire.

Table 6.2. Descriptive statistics of the variables used in the logistic regression analyses

	Variable	N	Minimum	Maximum	Mean	Std. Deviation
1.	AMSTERDAM	275	0.00	1.00	0.26	
2.	COLLABORATION	273	0.00	1.70	0.17	0.30
3.	COLL.PRODUCTION	271	0.00	1.00	0.30	
4.	COLL.MARKETING	271	0.00	1.00	0.07	
5.	COLL.INFORMATION	271	0.00	1.00	0.20	
6.	SPINOFF	275	0.00	1.00	0.43	
7.	SERIAL	275	0.00	1.00	0.11	
8.	YEARS.ENT	274	0.00	1.72	0.91	0.41
9.	ACADEMY	214	0.00	1.00	0.75	
10.	FULLTIME	275	0.00	1.00	0.81	
11.	PRICE.HIGH	268	0.00	1.00	0.32	
12.	PRICE.MID	268	0.00	1.00	0.59	

A dummy variable (ACADEMY) captures all designers with a higher education background in fashion design.

Fulltime

One important and obvious control is how many hours a week a designer devotes to fashion design. From the questionnaire we know whether the designers works part-time or full-time, where full-time is defined as working more than 32 hours a week on fashion design activities. This is captured by a dummy variable FULLTIME. The vast majority (81.1 per cent) of our respondents are classified as full-timers.

Table 6.3. Correlation matrix of the variables used in the logistic regression analyses

		1.	2.	3.	4.	5.	6.
1.	AMSTERDAM	1.000**					
2.	COLLABORATION	0.145*	1.000**				
3.	COLL.PRODUCTION	0.099	0.543**	1.000**			
4.	COLL.MARKETING	0.072	0.239**	0.144*	1.000**		
5.	COLL.INFORMATION	-0.042	0.507**	0.285**	0.221**	1.000**	
6.	SPINOFF	0.156**	0.177**	0.147*	-0.006	0.097	1.000**
7.	SERIAL	0.007	-0.306	-0.051	-0.005	-0.061	-0.026
8.	YEARS.ENT	0.097	-0.096	-0.049	-0.031	-0.128*	0.166**
9.	ACADEMY	0.098	0.049	0.094	-0.113	0.028	-0.071
10.	FULLTIME	0.073	0.028	-0.071	0.060	0.013	0.050
11.	PRICE.HIGH	-0.020	-0.070	-0.066	0.013	-0.064	0.007
12.	PRICE.MID	0.016	0.003	0.063	-0.001	0.083	0.032

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Market segment
Fashion design is a peculiar market in that it ranges from the design of simple T-shirts to works of art in *haute couture*. Although the price for a cloth item goes up with the symbolic value added, so does its exclusivity. Fashion designers active in the volatile and competitive market of high fashion have a lower average income, compared to those active in more commercially viable parts of the (mass)market. Fashion designers that work freelance for large, mass-producing clothing companies earn more steady and higher average incomes than designers who design very unique pieces of clothing for small, shifting market niches. The latter group considers themselves often as artists more than business people and accept lower income for more artistic freedom (Wenting et al., 2006). We therefore introduce two dummies for middle fashion segment (PRICE.MID) and high fashion segment (PRICE.HIGH), both of which are expected to contribute negatively to income compared to the omitted variable (PRICE.LOW).

Table 6.1 and 6.2 summarise all variables used in the various regression analyses. Using a binominal logistic regression, we assess which determinants have a significant effect on the personal income of Dutch fashion designers as a proxy for entrepreneurial success.

6.5.3 Results

The correlation matrix between independent variables is given in Table 6.3. The correlation between the variables is low, except for COLLABORATION and three variables denoting the type of collaboration. This is to be expected because we only asked entrepreneurs with a positive number of collaboration which type of collaboration they thought to be important. Because the number and the type of collaborations are intrinsically related, and strongly correlated, we decided not to include them in the same regression models below.

Regarding the correlation between other variables, a number of interesting patterns can be discerned. The experience variables SPINOFF and YEARS.ENT are significantly and positively

7.	8.	9.	10.	11.	12.
1.000**					
-0.017	1.000**				
0.136*	0.067	1.000**			
0.120*	0.024	0.049	1.000**		
0.048	0.009	-0.010	-0.023	1.000**	
-0.047	0.005	0.034	-0.007	-0.831**	1.000**

correlated. This implies that spinoff firms are able to survive for longer periods of time, compared to other entrants in line with aforementioned research by Wenting (2008) on the global high fashion design industry. Furthermore, a positive and significant correlation between SPINOFF and COLLABORATION shows that spinoffs tend to collaborate more with fellow fashion designers, compared to other entrants. This may reflect that spinoffs continue to profit from networks of the parent firm, as was found by other studies as well (Sorenson, 2003; Klepper and Sleeper, 2005).[79] A positive and significant correlation between AMSTERDAM and COLLABORATION shows that fashion designers in Amsterdam are more inclined to collaborate. This correlation is in line with previous studies on (social) networking in clusters (Sorenson, 2003; Dahl and Pederson, 2005), including studies on networking in design industries (Florida and Stolarick, 2005; Vinodrai, 2006). Finally, the correlation between AMSTERDAM and SPINOFF shows that Amsterdam designers are more likely to be spinoff entrants compared to designers located elsewhere. These results are in line with research on clusters as seedbeds of spinoffs (Klepper, 2002; Boschma and Wenting, 2007).

Table 6.4 shows the results of the multivariate regression analyses. Model 1 presents the regression coefficients of the agglomeration economies variable AMSTERDAM and our control variables. Here, we test for the advantage of co-location of fashion designers in the Amsterdam cluster. The effect is positive and significant reflecting the higher incomes of Amsterdam-based designers compared to designers located elsewhere. Model 1 also shows the coefficients for the control variables ACADEMY, FULLTIME, PRICE.HIGH, and PRICE.MID. The control variables for higher education and full-time employment have positive coefficients, as expected, but are insignificant. Furthermore, designers active in higher price "artist" segments earn significantly less income than their colleagues active in lower-priced "commercial" segments. The effects of our control variables on income in all subsequent regression models are similar to the results of Model 1.

In the two subsequent models we test whether socio-professional collaboration with peers affects income. In Model 2 we add the number of collaborations and in Model 3 the types of collaboration that collaborating designers find important. The number of collaborations contributed positively and significantly to income, while collaboration in production is the only type of collaboration that contributed to income. Networking – and the alleged knowledge spillovers resulting from it – indeed contributes to entrepreneurial success. The latter result on the type of collaboration reflects that not all types of collaboration are important for success; only when working together on the production of design benefits designers. We understand this result as stemming from the highly tacit nature of knowledge spillovers in creative industries, which means that most knowledge is transferred when two designers truly work together in the design process.

Importantly, including the networking variables in our model renders the AMSTERDAM dummy variable insignificant. Thus, agglomeration economies are not contributing to entrepreneurial success. This result shows that spatial clustering per se is not beneficial; rather, cluster-based designers are more attractive as collaboration partners – both for peers inside *and* outside the cluster – than designers located elsewhere. Indeed, 44 percent of the networking designers outside

79 Spinoffs might simply be more attractive collaboration partners for other designers because they outperform other entrants – implying an endogenous relationship between success and collaboration, which is a common problem in social network studies.

Table 6.4. Estimates of the binominal logistic regression models (dependent variable: average or higher income; standard errors in parentheses).

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
AMSTERDAM	**0.793***	0.693	0.708	0.512	0.540
	(0.353)	(0.365)	(0.371)	(0.395)	(0.400)
COLLABORATION		**1.711****		**1.620****	
		(0.568)		(0.611)	
COLL.PRODUCTION			**1.126****		**1.139****
			(0.363)		(0.389)
COLL.MARKETING			-0.136		-0.001
			(0.625)		(0.677)
COLL.INFORMATION			-0.085		-0.102
			(0.407)		(0.431)
SPINOFF				**0.735***	**0.719***
				(0.359)	(0.364)
SERIAL				0.246	0.173
				(0.544)	(0.552)
YEARS.ENT				**1.727****	**1.747****
				(0.463)	(0.468)
ACADEMY	0.460	0.425	0.286	0.331	0.213
	(0.350)	(0.358)	(0.367)	(0.387)	(0.395)
FULLTIME	0.603	0.583	0.769	0.428	0.611
	(0.370)	(0.381)	(0.392)	(0.407)	(0.417)
PRICE.HIGH	**-1.967****	**-2.027****	**-2.280****	**-1.948****	**-2.097***
	(0.709)	(0.710)	(0.821)	(0.746)	(0.848)
PRICE.MID	**-1.707***	**-1.781****	**-2.097***	**-1.709***	**-1.946***
	(0.688)	(0.688)	(0.803)	(0.720)	(0.826)
Constant	0.505	0.345	0.563	-1.486	-1.405
	(0.740)	(0.748)	(0.864)	(0.902)	(1.021)
-2 Log Likelihood	259.997	249.356	245.226	229.744	226.119
Chi-square	**19.996****	**29.070****	**31.980****	**47.462****	**49.859****
R Square (Nagelkerke)	0.125	0.179	0.197	0.281	0.295
Overall Percentage correct predicted	61.1	66.3	68.2	66.2	70.5
N (included in analysis)	203	202	201	201	200

** Significant at the 0.01 level.
* Significant at the 0.05 level.

of Amsterdam who did not collaborate locally, indicated to collaborate primarily with designers in Amsterdam, while Amsterdam hosts only 26 percent of all designers. This implies that the cluster functions not so much as a local network, but rather as a national 'hub' of network interaction. Such an interpretation is further supported by the positive and significant correlation between the variables AMSTERDAM and COLLABORATION.

In Model 4 and Model 5 we include the experience variables. As expected, spinoffs and the number of years of entrepreneurial experience are both significant determinants of success. Serial entrepreneurship in fashion design, however, does not affect success. Again, the AMSTERDAM

dummy is insignificant and its coefficient gets closer to zero compared to Model 3 and Model 4, which further supports our conclusion that agglomeration economies per se are absent. This reflects the positive correlation between the Amsterdam variable and the experience variables. Knowledge spillovers are not of a pervasive nature, but are specific to the firm and its network. We conclude that networking and experience are crucial determinants of entrepreneurial success.

6.6 Discussion

Theories in creative industries can be divided in the traditional agglomeration economies theory (Scott, 2000) and the creative-class theory based on urban amenities (Florida, 2002a). Statistical research so far, however, has found it difficult to distinguish between the two on the basis on employment and amenities data alone. Using a questionnaire among Dutch fashion designers instead, we find that the locational behaviour of fashion designers is better explained by urban amities than by agglomeration economies. The agglomeration economies thesis was further analysed using data on the personal income of fashion designers as a proxy for entrepreneurial success. Our study showed that Amsterdam-based designers indeed have a higher income, but that their success cannot be attributed to agglomeration economies stemming from co-location. Rather, network ties with fellow designers and experience gained in the past explain entrepreneurial success. Yet, these success factors are more commonly associated with Amsterdam-based designers than with designers located elsewhere.[80] Co-location affects entrepreneurial success indirectly by facilitating learning through increased opportunities to gain valuable experience and socio-professional networking.

Our study has three important implications: methodological, theoretical and policy-related. Methodologically, our study points to the value of questionnaires in studying locational behaviour in general and members of the creative class in particular. To delineate the creative class in a precise manner, or a specific profession like fashion designers within the creative class, questionnaires have the important advantage of direct validation by asking people about the exact activities. What is more, one can directly pose questions regarding location decisions and the underlying motives, rather than to derive them indirectly from aggregate data from statistical offices.

Theoretically, our results suggest that Florida's theory on location decisions of the creative class is indeed an important supplement to theories in economic geography and urban studies. Since most fashion design firms consists solely of the entrepreneur, personal valuations regarding (urban) amenities are an important part of location decisions. We also question the notion of agglomeration economies as pure co-location advantages. Rather, our result shows that cluster-based entrepreneurs obtain higher network connectivity – both with peers within and outside the cluster – than designers located elsewhere. The cluster functions not so much as a local network, but rather as a national 'hub' of network interaction. We understand this result as stemming from the highly tacit nature of knowledge spillovers in creative industries, which means that most knowledge is transferred when two designers truly work together in the design process. The further development of cluster theories could benefit from integrating theories of social networks and the social network analysis tools that

80 This result is in line with the study by Marlet and Van Woerkens (2004) on the effect of the creative class on urban economic growth. They found that there exists a significant positive relationship between the presence of creative industries and urban economic growth, but this relationship disappears once Amsterdam is removed from the data.

have been developed within this field (Wasserman and Faust, 1994; Uzzi 1997; Giuliani 2007). A particular feature of such networks, which has remained underexplored, is the role of strong overlap between business and personal networks specific to creative industries as supporting trust among entrepreneurs (Scott, 2006; Vinodrai, 2006).[81]

Our findings for the locational behaviour and success of entrepreneurs in creative industries also deserve policy attention. In addition to Florida's thesis, we find that socio-professional networks within a creative industry affect the relationship between the concentration of creative people and regional growth. Our analysis shows that without experience and (social) networks in the sector, it can be very difficult to obtain a sufficient income. Low income is expected to discourage potentially talented designers. This is why the shown importance of residential amenities should not be taken to mean that local governments should concentrate primarily on the built environment as the main parameter nor on subsidies for cultural activities (cf. Martinez 2007). Urban amenities may attract young creative entrepreneurs but they do not impact their success. Rather, most of them do not succeed to earn an income required to live comfortably in large cities – and most likely will give up soon after. Rather, students can be advised to learn from established designers first, before venturing out on their own. Second, entrepreneurs are advised to share risks and knowledge by networking. Such socio-professional networks are often derived from previous employment as well (Sorenson, 2003). Both critical success factors point to the importance of incumbent firms in clusters as seedbeds for talent and hubs for networking.

Although our analysis is based on a snapshot of an otherwise evolving cluster, our result can – albeit on a more speculative note – support a dynamic interpretation. Our results suggest that, at least in rather small countries like The Netherlands with a domestic market of only 16 million inhabitants, creative industries most likely self-organise into a single dominant cluster. The importance of gaining experience and building networks attracts young designers to Amsterdam as the dominant cluster. In spite of ambitions of other Dutch cities such as Arnhem and Utrecht with fashion academies and cultural amenities, it is unlikely that a cluster once established, will loose its dominance. The attractiveness of the Amsterdam cluster is precisely the opportunities to collaborate – with peers within and outside the cluster – as well as the amenities that are – at least partly – created by the cluster itself. The density of fashion designers and incubator firms in the Amsterdam cluster attracts new entrants, who, after locating in the cluster, will make the cluster even more attractive for future entrepreneurs. Our conclusion is in line with Scott (2006) who argues that such a reinforcing mechanism of growth is a central element of creative fields. Due to the self-sustaining nature of the attractiveness of Amsterdam as the Dutch fashion capital, it will be difficult for other Dutch cities to equal her success in the near future. The city of Amsterdam now faces the challenge to compete with the established centres of fashion design across the globe.

81 In our study, we also found that in the Dutch fashion design industry a third of all business networks overlapped with friendship networks.

Chapter 7

Firm entry and institutional lock-in: An organisational ecology analysis of the global fashion design industry

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7.1 Introduction

Few industries are more concentrated than the global fashion industry. Most of the successful fashion designers are located in a handful of cities: Paris, New York, London and Milan. Before the Second World War, Paris was the single centre in global fashion design. It was only after 1945 that Paris lost its dominance with London, Milan and New York emerging as new centres of fashion creativity.

Some have related the rather sudden shift from a mono-centred to a poly-centred geography of fashion design to the emergence of ready-to-wear (*prêt-à-porter*) fashion (Waddell, 2004). Parisian designers dominated *haute couture* but were initially reluctant to embrace the ready-to-wear segment, which became the largest segment during the post-war period. Most Parisian designers considered ready-to-wear too commercial and a threat to the high standards of haute couture. For a while, French haute couturiers were not even allowed to practice ready-to-wear according to the guidelines of the Syndicate Chamber of Parisian Couture.

We propose to explain the geography and evolution of the ready-to-wear fashion design industry by looking at the yearly entry rates following an organisational ecology approach. The main contribution is that we provide the first organisational ecology study on a 'creative industry' (Scott, 2000) whereas previous contributions focused on manufacturing and service sectors (Hannan and Carroll, 1992; Hannan et al., 1995; Bigelow et al., 1997; Carroll and Hannan, 2000). In the first part of the paper, we ask the question to what extent the insights from organisational ecology obtained so far are transferable to creative industries. In particular, we question the universality of the results of Hannan et al. (1995) and Bigelow et al. (1997) who found for the automobile industry that legitimation effects (or 'knowledge spillovers') were global and competition was local. In the fashion industry, we expect the opposite to be true due to the rapid turnover of fashion ideas on the one hand and the global demand for fashion apparel on the other hand.

In the second part of the paper, we focus on the decline of Paris with the advent of ready-to-wear. In particular, we discuss the specific role played by the Syndicate Chamber of Parisian Couture that blocked entry in the new ready-to-wear segment. We understand this historical context as a case of 'institutional lock-in', which prevented a new, related industry to emerge from an existing industry as vested interested were threatened (Grabher, 1993; Maskell and Malmberg, 2007). To assess this

claim empirically, we analyse the effect of the presence of haute couture designers on ready-to-wear foundings in the various cities using an extended organisational ecology framework.

We proceed as follows. We first explain in section 2 the core model of organisational ecology and how it can be applied at different geographical scales simultaneously to assess the level at which legitimation and competition processes take place. We then discuss our data collection process in section 3 and present the results of our analysis in section 4. The specific history of the Parisian cluster, and the role of the Syndicate Chamber of Parisian Couture herein, is discussed and analysed in section 5. We end with a conclusion in section 6.

7.2 Organisational ecology

The main goal of organisational ecology studies is to understand the dynamics of populations of organisations (Hannan and Freeman, 1977, 1989; Hannan and Carroll, 1992). The ecology analogy refers to the concept of markets as niches that, once established, are filled by organisations until the carrying capacity of the niche is reached. When the niche is discovered, the birth rate is positively dependent on density as each existing entity will bring forth new entities. The number of offspring eventually exceeds the number of parent organisations. The analogy in organisational foundings holds that the positive density effect reflects legitimation. Legitimation is rather loosely defined as constitutive or "social taken-for-grantedness" (Hannan et al. 1995, p. 510) and includes all positive feedback processes that encourage entrepreneurs to start new business.

Probably the most important source of positive feedback in entry results from the information generated by the current stock of organisations and diffusing to potential entrepreneurs inducing them to start the same type of business (Hannan et al. 1995, p. 512). In this context, organisational ecologists speak of cognitive legitimacy (Aldrich and Fiol 1994; Suchman 1995; Barron, 2001) as distinct from moral legitimacy. As argued by Barron (2001, pp. 545-546), the main source of positive feedback of existing firms to potential entrepreneurs is expected to be of a cognitive nature, as entrepreneurial decision relies primarily on a subjective estimation of costs, benefits and risks. This form of cognitive feedback can be thought of as a form of knowledge spillover, the term we will use in the remainder of the study.

After the emergence and filling of the industry niche, the ecological argument holds that eventually, with the niche becoming saturated, density becomes detrimental for birth due to competition for resources. Specifically, the population level will stabilize at a level depending on the carrying capacity of the niche, or may even decline as average firm size tends to increase over time (Klepper 1997). Accordingly, and following the notation of Bigelow et al. (1997), the core model of organisational ecology can be written as:

$$\lambda(t) = \exp(\beta_0 + \beta_1 N_t + \beta_2 N_t^2) \qquad (1)$$

Where $\lambda(t)$ stands for the yearly organisational founding rate and N_t for the density of the population (i.e., the number of organisations) at time t. The hypotheses hold that $\beta_1 > 0$ and $\beta_2 < 0$. The model is often extended with dummies referring to particular historical periods that affect

the founding rates, for example, periods of war or periods that are characterised by a particular dominant technology (Bigelow et al. 1997).

An interesting conceptual extension to the model, which we use in our analysis of urban clusters in the global fashion design industry, was proposed by Hannan et al. (1995) who introduced different geographical levels of analysis and then analysed at which levels knowledge spillovers and competition take place.[82] Hannan et al. (1995) analysed national founding rates of automobile manufacturers in five European countries and found that competition took place at national level, while knowledge spillovers were global. Similarly, looking at founding rates of automobile manufacturers in different U.S. regions, Bigelow et al. (1997) found that competition was regional, while knowledge spillovers occurred across U.S. regions.[83]

We will make use of the multi-level approach introduced by Hannan and colleagues when analysing the founding rates of fashion houses at the urban level and the global level. However, we question the universality of the results of Hannan et al. (1995) and Bigelow et al. (1997) as we expect knowledge spillovers to be local and competition between fashion designers to be global. The reason for the reverse hypothesis lies in the specificity of fashion design. Given the short product lifecycle (usually six months) there is a rapid turnover of ideas with the values of ideas decaying rapidly in time. And, ideas typically spread through people moving between companies or setting up their own spinoff companies, and these movements are predominantly local (Wenting, 2008). As a consequence, knowledge spillovers will occur primarily within design clusters rather than between them. The characteristics of fashion design are fundamentally different from manufacturing where knowledge is more accumulative and more codified in patents, standards, handbooks and machinery. This means that knowledge remains relevant over a longer period and can be circulated at lower costs. Both aspects of manufacturing knowledge render global spillovers to be more pervasive. Concerning the competition effect in organisational ecology, we also expect fashion industry to be different from manufacturing as fashion designers compete globally for clients. Fashion being a luxury good and insensitive for transportation costs, the locus of consumption is not tied to the origin of production. By contrast, at least historically, manufacturing goods compete in regional markets because the transportation costs account for a large share of total costs.[84]

So, we get:

$$\lambda_i(t) = \exp(\beta_0 + \beta_1 n_t + \beta_2 N_t^2) \qquad (2)$$

For each city *i* and *n* stands for urban density. Again, the hypotheses hold that $\beta_1 > 0$ and $\beta_2 < 0$.

82 The use of nested scales need not only refer to geographical scales, but could also refer to product classifications, or any other type of hierarchical classification.

83 For a more general discussion on how industrial dynamics and economic geography can be combined, see Van Wissen (2004), Boschma and Frenken (2006) and Frenken and Boschma (2007). Geroski (2001) provides an overview of the industrial dynamics and organisational ecology literatures.

84 For services, competition is expected to be even more local.

7.3 Data and methodology

To test our hypotheses we collected a unique dataset on entries in the global fashion industry. The data we collected stem from various sources, most importantly, the *Thames & Hudson Dictionary of Fashion and Fashion Designers* by O'Hara Callan (1998) and the *20th Century Fashion: 100 Years of Style by Decade and Designer* by Watson (2004). The data were updated till the year 2005 using Internet sources, of which designerhistory.com is the most notable. Our data encompasses information on 565 of the world's top designers in the haute couture and ready-to-wear industry, from the start of the industry in 1858 through 2005.

From the total of 565 designers mentioned in our sources, 510 designers started their own firm. This means that 55 designers have been active as free-lancers or employees, and are left out of the analysis. The majority of designer firms were active in the ready-to-wear market. We counted 147 entrants in haute couture and 406 entrants in the ready-to-wear industry reflecting the larger size of the ready-to-wear market compared to the elitist haute couture market. The 43 cases that produced haute couture and ready-to-wear fashion are included in both populations.

Figure 7.1 shows the total number of entries and exits in the ready-to-wear segment each year, as well as the industry's world population. Here it is clear that the industry has witnessed sustained growth throughout the whole period.[85] Figure 7.2 shows the same data for each of the four dominant clusters being Paris, London, New York and Milan. Figure 7.3 and 7.4 show the same two figures for the haute couture population. The Figures show that Paris dominates the haute couture industry from its onset in 1858 up until today. Yet, Paris started relatively late in the ready-to-wear segment and did not achieve dominance over New York or London in this segment. At present, New York and London even outnumber Paris in terms of the number of ready-to-wear fashion houses.

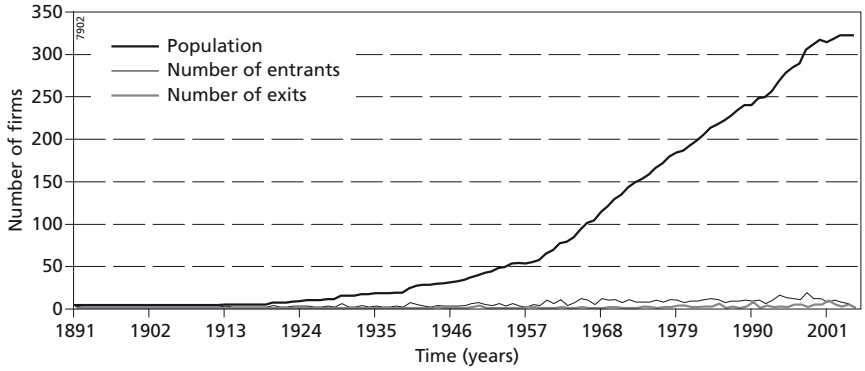

Figure 7.1. Ready-to-wear population, 1891-2005.

85 While in most manufacturing industries, the number of firms first rises and then falls during an industry 'shakeout' (Hannan et al. 1995; Klepper and Simons, 1997), this pattern is absent in the top of fashion design. This is likely a consequence of the sustainability of small market niches, and the relative ease of their creation. In fashion design, scale economies in production are of less importance compared to manufacturing activities. Indeed, fashion designers are more concerned with remaining creatively relevant and maintaining an image of exclusivity (Banks, 2000).

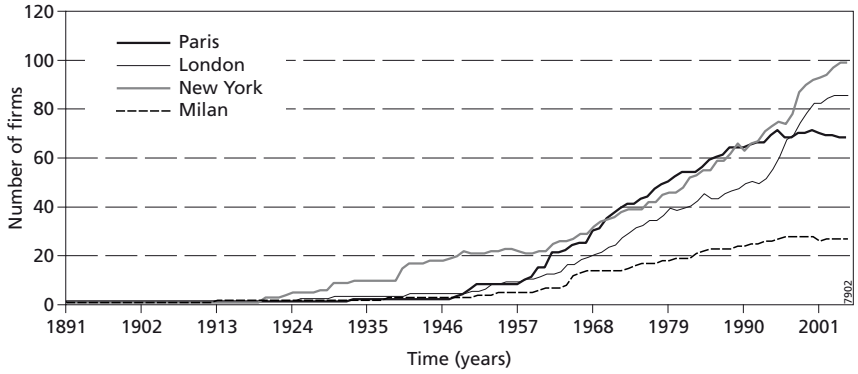

Figure 7.2. Ready-to-wear population by city, 1891-2005.

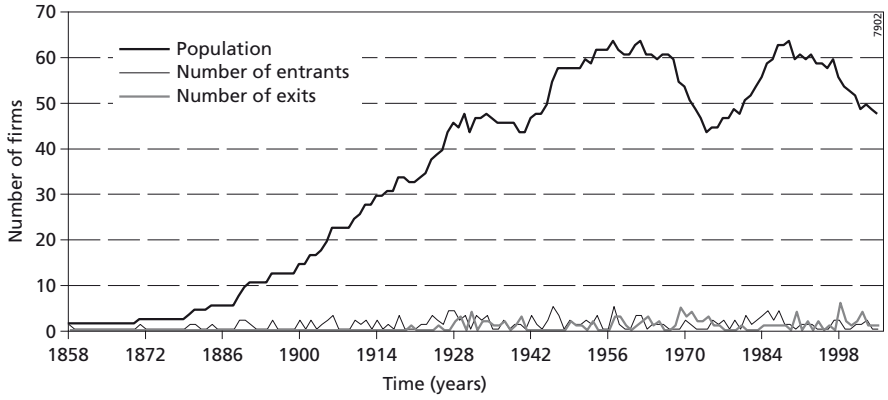

Figure 7.3. Haute couture population, 1858-2005.

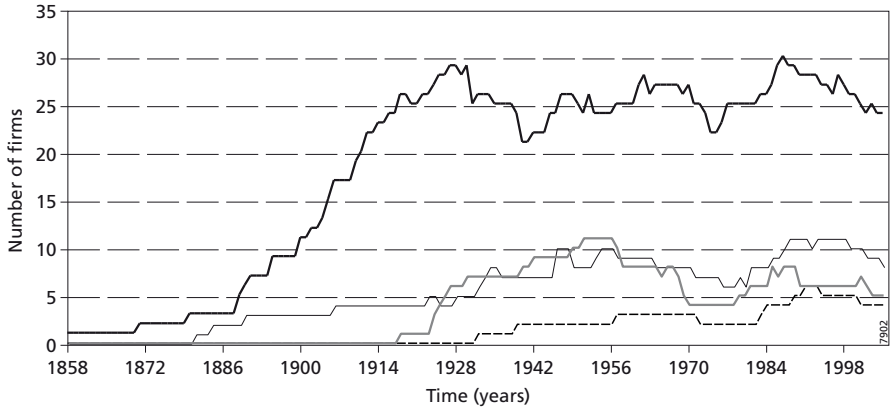

Figure 7.4. Haute couture population by city, 1858-2005.

In order to test the two hypotheses (spillovers are local and competition is global), we include in the analysis density dependence of all types at all levels. So, we let founding depend on local density and local density squared and on global density and global density squared. Following Hannan et al. (1995) and Bigelow et al. (1997) we define global density as the density of fashion houses outside the city in question (also referred to as total remaining density).

We limit the analysis to ready-to-wear foundings as a distinct segment in the global fashion industry. Restricting the analysis to the ready-to-wear segment allows us to analyse the effect of the presence of haute couture on the formation of the new ready-to-wear cluster in the second part of the paper. The ready-to-wear segment started in 1891 while the data ends in 2005. Analysing the four largest clusters (Paris, London, New York and Milan) and pooling the observations, we have a total of 460 yearly founding rates. As controls, we use dummies for the two world wars (1914-1918 and 1939-1945) where we distinguish between the U.S (*WW_US*) and Europe (*WW_EUROPE*). The two world wars have most likely disrupted the European market (Merlo and Polese, 2006).

Our dependent variable counts the number of yearly foundings and should therefore be dealt with as 'count data'. Probably the most common regression model applied in this respect is the Poisson regression model, which is estimated by means of maximum likelihood estimation techniques. However, due to overdispersion we resort to estimating negative binomial regression models instead, which add a parameter α to the model capturing unobserved heterogeneity and thus correcting for overdispersion in the data.

Apart from the problem of overdispersion, our dataset also suffers from an excessive amount of zeros relative to the amount of actual observed interregional collaborations. Although the negative binomial regression model already improves upon the under-prediction of zeros, Vuong tests[86] indicate that we should use a zero-inflated variant of the negative binomial regression model. The zero-inflated negative binomial model considers the existence of two (latent) groups within the population: a group having strictly zero counts and a group having a non-zero probability of counts different than zero. Correspondingly, its estimation process consists of two parts. The first part contains a logit regression of the predictor variables on the probability that there is no founding at all. The second part contains a negative binomial regression on the probability of each count for the group that has a non-zero probability of count different than zero. Since we are interested in the founding rates and only use the zero inflated model to correct for the excessive number of zero counts, we only report the negative binomial part of our analyses.[87]

7.4 Results

In Table 7.1 we describe the variables used in the regression analyses. Descriptive statistics and bivariate correlations are depicted in Table 7.2 and 7.3. Table 7.4 shows the results of our analysis.

86 The Vuong test compares the zero-inflated model with an ordinary Poisson regression model. A significant z-test indicates that the zero-inflated model better fits the data than a regular negative binomial regression model.

87 The signs of coefficients for the zero inflated part are consistent with the results for the negative binomial part, and are available on request.

Table 7.1. Variables used in the regression analysis.

Variable	Description
ENTRY	Yearly founding rate in ready-to-wear in a city at time t
n	Number of firms active in ready-to-wear in a city at time t-1
n2	Number of firms active in ready-to-wear in a city at time t-1 (squared)
m	Number of firms active in haute couture in a city at time t-1
N	Number of firms active in ready-to-wear in other cities at t-1
N2	Number of firms active in ready-to-wear in other cities at t-1 (squared)
PARIS	Dummy variable for a city is Paris
WWAR_US	Dummy variable for a city is in the United States and time t falls in the First or Second World War period
WWAR_EUROPE	Dummy variable for a city is Europe and time t falls in the First or Second World War period

Table 7.2. Descriptive statistics of the variables used in the regression analysis.

Variable	No. Obs.	Mean	Std. Dev.	Minimum	Maximum
ENTRY	460	0.77	1.29	0	9
n	460	17.89	23.68	0	98
n2	460	879.49	1736.83	0	9604
m	460	9.12	9.01	0	30
N	460	67.01	81.40	0	293
N2	460	11101.43	18639.47	0	85849
PARIS	460	0.25	0.43	0	1
WWAR_US	460	0.03	0.16	0	1
WWAR_EUROPE	460	0.10	0.31	0	1

Model 1 reports on the results including local spillovers and local competition only. Both estimates are significant and of the expected sign with density having a positive effect on foundings and density squared a negative effect on foundings. Yet, when we introduce global spillovers and global competition in Model 2, we observe that local competition is no longer significant while global competition is significant. This result supports our main hypothesis that the geographical structure of the fashion industry is such that designers learn locally while they compete globally. Local spillovers promote further entry within each cluster, while global competition ultimately limits the growth of the industry as a whole.

The finding is important because it shows the specificity of the fashion design industry and its fundamental difference with the automobile industry, for which the opposite results were found (Hannan et al., 1995; Bigelow et al. 1997). The results also suggest that local spillovers are important and cause, at least partially, the high degree of clustering of the industry in just four 'global cities', and the persistence of this clustering over time.

Table 7.3. Correlation matrix of the independent variables used in the regression analysis.

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. n	1.000*							
2. n2	0.945*	1.000*						
3. m	0.270*	0.224*	1.000*					
4. N	0.846*	0.733*	0.168*	1.000*				
5. N2	0.767*	0.702*	0.110*	0.958*	1.000*			
6. PARIS	-0.068	-0.072	-0.080	-0.124	-0.097	1.000*		
7. WWAR_US	-0.212*	-0.167*	-0.021	-0.238*	-0.200*	0.480*	1.000*	
8. WWAR_EUROPE	0.053	0.065	0.885*	-0.015	-0.032	-0.095	0.000	1.000*

* Significant at the 0.05 level.

Table 7.4. Estimates of the zero-inflated binomial regression analyses

Dependent variable: ENTRY			
		Model 1	**Model 2**
n		**0.042***	**0.040***
	stand.error	(0.011)	(0.013)
	p-value	0.000	0.003
n2		**-3.0E-4***	-2.0E-4
	stand.error	(1.0E-4)	(1.0E-4)
	p-value	0.018	0.164
N			0.005
	stand.error		(0.006)
	p-value		0.390
N2			**-3.0E-5***
	stand.error		(2.0E-5)
	p-value		0.096
WW_US		2.465	2.932
	stand.error	(2.344)	(2.328)
	p-value	0.293	0.208
WW_EUROPE		-1.349	-1.642
	stand.error	(2.260)	(2.289)
	p-value	0.551	0.473
Constant		**-0.745***	**-0.788***
	stand.error	(0.222)	(0.286)
	p-value	0.001	0.006
Log likelihood		-418.206	-405.516
LR Chi square		45.91	61.65
Number of observations		460	460
Number of non-zero observations		175	175

* P-values below the 0.10 level.

7.5 Institutional lock-in?

Few industries have seen such a stable geography as fashion design with the main clusters of today being the same as a century ago. Yet, one marked shift has taken place with Paris losing its dominance after the 1920s. The share of Paris-based firms started to fall rapidly from around 70 percent up until 1923, to 36 percent in 1941. Currently less than 25 percent of the top fashion houses in the world are located in Paris. At the same time, London, New York and Milan increased their share of designers with both New York and London currently outnumbering Paris.

Some have attributed the marked shift in spatial concentration of the industry to the rapid growth of the ready-to-wear market in the 1950s and 1960s as a new segment next to haute couture (Waddell, 2004). The term ready-to-wear describes a method of buying clothes whereby the customer no longer has to have clothes made to measure. As such, ready-to-wear is a simplified form of high fashion and demands less artistic skill from the designer. Yet, it also involves complicated sizing problems and manufacture in large quantities as well as professional marketing as in the clothing industry more generally. However, within the clothing industry the term ready-to-wear has come to mean the more exclusive designer end of the mass market.

Initially, Parisian haute couturiers were not allowed to practice ready-to-wear according to the guidelines of the Syndicate Chamber of Parisian Couture (Waddell, 2004). This association, founded in 1911, regulated the profession of the French haute couturiers. As a consequence French couturiers entered the ready-to-wear market much later than designers outside Paris. It took until 1973 for a separate entity to be established in Paris setting guidelines for ready-to-wear, while similar institutions were setup much earlier in London (in 1947), Milan (in 1958) and New York (in 1962).

The attempts by the Syndicate can be understood as a case of institutional lock-in (Grabher, 1993; Hassink, 2005), where firms with vested interest in a particular line of business try to raise entry barriers for a new line of business as to protect the meaning and exclusivity of (Parisian) fashion. The notion of lock-in refers to processes of co-evolution of industry and regional institutions which, although supportive of the development of a specific industry, eventually may lead to the region's decline along with the industry as it progresses along its life cycle. In haute couture, Paris was 'the place to be' for over a century. However, that long-standing couture tradition caused regional institutions, embodied to a large extent in the Syndicate Chamber, to become rigid and unable to cope with change. Put differently, Parisian 'institutional thickness' (Amin and Thrift, 1994), contributed to its dominance in haute couture, but also led to its inability to translate that same mastery into the new era of ready-to-wear.

The strategy of the Syndicate was, however, just one manifestation of a more general resistance within Paris against 'commercialisation' and 'popularisation' of fashion design (De Marly, 1980). Parisian designers traditionally designed for the rich-and-famous elite and continued to do so after the emergence of ready-to-wear. The whole concept of haute couture is that fashion is, and should be, artistic, exclusive and tailor-made. By contrast, London, Milan and New York saw a democratization of design consumption with youngsters expressing themselves in ready-to-wear fashion and entrepreneurs quickly reacting to this growing demand for fashion (Waddell, 2004).

One can expect the emergence and growth of the ready-to-wear segment in each cluster to be dependent on the presence of haute couture designers. Generally, the development of new industries profits from the presence of related industries (Klepper, 2002; Boschma and Wenting, 2007). The argument holds that knowledge and practices can be easily transplanted from the related industry to the emerging industry within the same cluster.[88] In an organisational ecology framework, the effect of haute couture designers on the development of ready-to-wear segment can be introduced by extending the model with the density of haute couture designers. The effect of haute couture density on foundings in the ready-to-wear segment is expected to be positive. Each haute couture designer could decide to change its business and to switch to the more profitable line of business in the ready-to-wear segment. Indeed, quite a number of designers decided to do so: 29 percent of all entrants in haute couture branched out into the new market. A second mechanism through which a population of related industry might contribute to entry in the new segment is through local spinoff generation (Klepper, 2002). In our case, 97 out of 406 ready-to-wear entrepreneurs (24 percent) had previous work experience in the haute couture industry. To test whether local haute couture density fuelled entry in the new segment, we extend the specification in Eq. (2), and get:

$$\lambda_i(t) = \exp(\beta_0 + \beta_1 n_i + \beta_2 N_t^2 + \beta_3 m_i) \qquad (3)$$

Where m_{it} stands for the yearly density in haute couture in city *i*. The hypotheses hold that $\beta_1 > 0$, $\beta_2 < 0$, and $\beta_3 > 0$.

The model specification in Eq. 3, however, neglects institutional differences between the fashion clusters. Following our previous discussion on the history of the Parisian cluster, the more powerful and conservative Syndicate in Paris may have been better able to block entries than its counterparts in competing clusters, implying that entry rates in Paris are structurally lower than elsewhere. To address the specificity of the Parisian context, we introduce a dummy variable for entry rates in Paris. The hypothesis holds that its sign is negative reflecting the 'institutional lock-in' within the Parisian fashion community.

In Table 7.5 we test the extended organisational ecology model in Model 3.[89] Surprisingly, the density of haute couture designers did not fuel the cluster of ready-to-wear with new entrants as the coefficient is insignificant. The absence of any positive effect of haute couture designers on foundings in ready-to-wear may, however, may be caused by the specific Parisian context, where the presence of haute couture designers possibly had a negative effect on the formation of the ready-to-wear cluster due to its unionised structure.

Model 4 replicates Model 3 but extends the PARIS dummy. The results indicate two important phenomena. First, Paris indeed shows a structurally lower founding rate compared to the other three clusters suggesting a specific local (institutional) context which was less conducive for ready-to-

88 Examples include the emergence of the automobile industry out of the bicycles and engine industries (Wood, 1988; Klepper, 2002; Boschma and Wenting, 2007), the emergence of the tire industry from the rubber industry (Klepper 2007), the emergence of the television industry from the radio industry (Klepper 2007), and the emergence of the film industry out of theatres (Mezias and Kuperman, 2001).

89 We do not include the square of haute couture density, because the two separate market segments do not compete for the same clientele.

Table 7.5. Estimates of the zero-inflated binomial regression analyses

Dependent variable: ENTRY			
		Model 3	**Model 4**
n		**0.043***	**0.031***
	stand. error	(0.014)	(0.015)
	p-value	0.002	0.046
n2		-2.0E-4	-1.0E-4
	stand. error	(1.0E-4)	(1.0E-4)
	p-value	0.127	0.454
N		0.003	0.007
	stand. error	(0.006)	(0.006)
	p-value	0.557	0.275
N2		-3.0E-5	**-4.0E-5***
	stand. error	(2.0E-5)	(2.0E-5)
	p-value	0.150	0.055
m		-0.005	**0.063***
	stand. error	(0.007)	(0.030)
	p-value	0.536	0.036
PARIS			**-1.359***
	stand. error		(0.579)
	p-value		0.019
WW_US		2.916	2.577
	stand. error	(2.469)	(2.244)
	p-value	0.238	0.251
WW_EUROPE		-1.709	-1.476
	stand. error	(2.442)	(2.214)
	p-value	0.484	0.505
Constant		**-0.694***	**-1.008***
	stand. error	(0.303)	(0.359)
	p-value	0.022	0.005
Log likelihood		-405.223	-401.232
LR Chi square		61.82	66.04
Number of observations		460	460
Number of non-zero observations		175	175

* P-values below the 0.10 level.

wear entrepreneurs to start a business. Second, our previous hypothesis that haute couture density facilitated the formation of the ready-to-wear clusters is now supported with the coefficient being positive and significant. It is only after controlling for the local specificity of the Paris cluster that the expected positive effect of haute couture density can be observed.

One could also expect that haute couturiers in Paris were less likely to diversify to the ready-to-wear market than haute couturiers located elsewhere. By adding an interaction term *m**PARIS to Model 4, we tested whether the effect of Parisian haute couture on entry rates in ready-to-wear was significantly lower than elsewhere. The result, however, was an insignificant coefficient. An F-test on the residuals of the two regression models also showed that including the interaction term *m**PARIS did not significantly improve the model fit. Thus, the Parisian institutions did not

specifically affect the diversifiers, but rendered the entry of any kind of designer firm (i.e. startup, spinoff and diversifier) less likely to occur in Paris compared to the other cities.

7.6 Concluding remarks

Having provided the first organisational ecology study on a 'creative industry', we showed that the geography and industrial evolution of the fashion design industry is rather different from the manufacturing logic underlying the automobile industry analyzed previously. Given the rapid turnover of ideas, knowledge spillovers occur primarily locally, promoting further entry within the cluster. At the same time, clients for luxury fashion can be found globally, which means that firms compete both with firms in their own cluster and elsewhere. By contrast, knowledge in manufacturing industries is more accumulative and codified allowing for global circulation, while manufacturing goods compete in regional markets because transportation costs are relatively high.

Our results thus provide an explanation for the extreme and persistent geographic clustering in creative industries like fashion design. Similar creative industries like film production (Hollywood, Bollywood) and publishing (New York, London) may well exhibit the same patterns as found in this study.

Apart from profiting of an existing density of ready-to-wear designers, the growth of ready-to-wear clusters was also facilitated by the presence of haute couture designers. Being a related industry, it provided a pool of possible entrants, thus giving rise to a process of related diversification (Klepper, 2002; Boschma and Wenting, 2007). However, though Paris had the largest concentration of haute couture designers, it did not succeed to dominate the new ready-to-wear segment, as it showed structurally lower entry rates than competing clusters. We attribute this failure to a form of 'institutional lock-in' where vested interested of Parisian haute couture frustrated the development of ready-to-wear.

Our inclusion of related industry and the local institutional context in the density dependence model is in line with the recent discussion in organisational ecology research calling for more theoretical development and alternatives to pure ecological models (Barron, 2001; Geroski, 2001). Organisational ecology is currently developing from a purist ecological perspective to a broader evolutionary perspective notably with the addition of technological and market dynamics to population dynamics. Our study showed how such studies can be further enriched with the incorporation of spatial scales and their institutional specificities.

The case of fashion design, though to be generalized for other industries, also illustrates some general concerns that can be relevant in local policy-making. The prospects for developing local clusters are most favourable when the new cluster can draw on resources (mainly entrepreneurs with relevant knowledge) that are present in existing, but related, activities (Frenken et al. 2007). Yet, the concentration of such resources can also hamper new lines of development if seen as a threat by the incumbents. It is the role of policymakers to stay out of networks of vested interests and to promote new combinations among competencies, among people, and among ideas.

Chapter 8

Conclusions and discussion

8.1 Answers to the research questions

In the first Chapter of this dissertation, we started by formulating the aim of this research project: to understand the industrial dynamics and spatial formation of the fashion design industry from an evolutionary economic perspective. We obtained the following main research question:

Main research question: *What are the organizational and spatial factors that affect the performance of fashion design firms and the spatial evolution of the fashion design industry?*

The main concept in evolutionary economics to explain heterogeneous behaviour of firms is organisational routines. Routines are a sequence of actions that are repeated frequently as a collective process specific to the organisation. They constitute the organisation's capabilities and bound its decision-making process to resist radical change. Organisational routines are a necessary component of retention in the evolutionary theory of the firm. Organisations with fitter routines outperform their competitors. Competition acts as a selection mechanism that favours organisations with superior organisational routines over others. Organisational routines function as an organisation's memory and have been metaphorically referred to as 'organisational DNA' (Nelson and Winter, 1982). Although organisational routines commonly entail a set of rules, they take the shape of repeated actions and are formed by the coordinated skills of individual agents. We know from the literature that routines can be diffused throughout the industry. In fact, processes of inter-firm routine replication are posited as main explanatory mechanisms for organisational learning, firm success, and – on the aggregate – the spatial evolution of the industry.

To answer our main research question we posited several separate research questions, in line with the evolutionary economic framework. The first concerns mechanisms of diffusion of routines among fashion design firms:

Research question 1: *What are the mechanisms through which organisational routines are replicated among fashion design firms?*

We discussed three mechanisms through which fitter routines can be transmitted between firms: (i) spinoff creation, (ii) labour mobility, and (iii) inter-firm cooperation networks. The first mechanism of routine replication is through spinoff creation. Klepper's (2002) spinoff model of industry evolution posits that spinoff entrepreneurs inherit (part of) their parent firm's organisational routines. As such, spinoff companies are expected to outperform other entrants based on their superior routines. The mechanism of routine replication through spinoff creation entails that parents with fitter routines generate spinoffs with fitter routines. In other words, 'success breeds

success'. The second mechanism of routine replication between firms is through labour mobility. We extended Klepper's spinoff model to labour mobility as a vehicle of post-entry routine transfer between firms. Similar to Klepper's model, we posit that individuals can replicate (part of) their experiences with organisational routines. Although the entrepreneur may set-up the initial form of the organisational routine, labour mobility allows for post-entry organisational learning as new personnel adjusts routines. The mobility of new employees who have prior working experiences at competitors, functions as a vehicle of routine transfer between firms. The third mechanism of routine replication between firms is through inter-firm collaboration. Whenever employees from different firms are cooperating closely in a joint project, either research or production oriented, tacit components as well as codified components of routines are exchanged simultaneously. The diffusion of routines between firms might be hampered by organisational boundaries and shielded by their ambiguity, yet close cooperation between firms forms conduits of trust through which participants learn of each other's routinized practices.

Since routines are the object of selection in evolutionary theory, mechanisms of routine replication are expected to bear an important effect on firm performance. Firms that either inherit fitter routines from their parent firms, or obtain improvements of routines over time through inter-firm labour mobility and cooperation are more likely to survive vis-à-vis their competitors. We posited the following research question:

Research question 2: *Do replicated routines enhance the performance of fashion design firms?*

We found evidence that replicated routines do indeed enhance the performance of firms in the fashion design industry. All three mechanisms of routine replication among firms appeared to affect their performance. First, routine replication through spinoff creation played an important role in firm survival, in both the automobile (Chapter 3), as well as the fashion design industry (Chapter 4 and 5). Whether or not the entrant possessed relevant experience within the industry proved to be a determining factor for its performance. Spinoffs and experienced entrants outperformed inexperienced entrants, while spinoffs of better performing parents outperformed other spinoffs.

Second, we found that labour mobility can function in a similar way as spinoff creation as a mechanism trough which routines are diffused and appreciated by fashion design firms (Chapter 5). Instead of the entrepreneur, routines can be embodied in employees that are able to cross organisational boundaries and diffuse routines between firms with every career move. Are the firms that are able to attract new talent the ones that are able to keep their competitive edge and survive? In particular, we argue that key workers build up experiences with organisational routines as they move from one firm to the next. As such, new employees are not only a source of routine replication within the firm, but also of routine diffusion between firms. The pre-entry experiences of the entrepreneur may have laid down the organisational blueprint, but it is the post-entry influx of labour that enables the firm to adapt its routines to those of its competitors, and increase its performance. New talent conforms to the existing routines, and, while doing so, also confronts their fitness. Fashion houses are constantly looking for new designers to invigorate their creativity and realign their organisation with cultural and societal demand. The incorporation of new labour also functions as a way to pass on and preserve traditional design routines. Note that the former is more related to strengthening the firm's appeal to new clients, while the latter is more related to sustaining the existing clientele.

Another result has been that turnover in personnel, rather than firm size as such, determines the performance of fashion design firms. In this process of hiring and firing talent, we show that hiring the right employees, namely those from successful competitors, increases firm performance. It seems that the traits of prior organisations compromises the value of new designers for fashion houses. This suggests that designers indeed act as a vehicle of routine replication between firms, and implies that labour mobility is a mechanism through which firms are able to improve their current routines and enhance their performance. By positioning themselves in the labour mobility network, firms are able learn new routines and move through the competitive landscape.

Third, we found that routine replication through inter-firm cooperation affects firm performance (Chapter 6). In our study of the Dutch fashion design industry, fashion design firms that cooperate with other fashion design firms outperformed their competitors. We tested for different kinds of cooperative ties to other fashion designer firms. Cooperation can take the form of information sharing, joint marketing and sales projects, or joint design and production. Of these three types, the sharing of information can be seen as the most codified form of knowledge exchange. We find that only cooperation in production activities proved to be enhancing firm performance. We interpret this result as evidence for the proposition that routines are transmitted through cooperation. Information sharing proved to be inefficient to increase performance, while close cooperation on joint design projects turned out to be an important determinant of firm success in the fashion design industry.

In addition to the evolutionary mechanisms of routine replication, we test the extent to which local externalities determined the performance of fashion design firms. The economic geography literature traditionally explains the different performance of firms between regions in terms of agglomeration economies. We are particularly interested in localisation economies, or those local externalities that are industry specific. Spatial proximity to peers is considered to benefit firms in terms of increased opportunities to imitate competitors (Porter, 1990), access to a common labour pool (Marshall, 1890), or enjoy localised knowledge spillovers (Breschi and Lissoni, 2001), which are 'in the air' (Marshall, 1890) or part of a 'local buzz' (Bathelt, et al, 2004). We obtain the following research question:

Research question 3: *Do localisation economies enhance performance of fashion design firms?*

We found that localisation economies do not affect performance of fashion design firms. Firms located in close proximity to a high number of other fashion design firms do not perform better compared to firms located in less dense locations. Moreover, firms located in the four major fashion capitals, Paris, London, Milan, and New York, do not enjoy place-specific advantages.

Rather than affecting firm performance, localisation economies seem to affect local entry barriers. In Chapter 7 we find that on the local geographic scale firm density increases regional entry rates. We interpret these findings such that localisation economies in local clusters lower barriers to entry, while competition in luxury fashion design is international and deters entry on the global scale.

In Chapter 3 we address the effect of local density on firm performance for the benchmark case of automobiles. We find surprisingly different results compared to fashion design. We see that the local density of automobile firms negatively affects their performance. We interpret this as a

competition effect. The relative importance of transportation costs – especially in the earlier stages of the automobile industry's development – translate into a regional rather than national market for automobiles. This gave rise to many regional producers, each serving a local market. As the industry matured and technology standardization enabled economies of scale, the importance of transportation costs diminished, which opened up the national market and set in motion a process of conglomeration and geographic concentration. Importantly, localisation economies – as measured as the regional employment in the same or related industries – turned out to be positive. In contrast, in fashion design, competition has been international since the onset of the industry, and transportation costs of design products are relatively unimportant. Competition in the fashion design industry consists of niche creation and protection. The market for high fashion design is not standardised, nor is it scale intensive. As such, fashion designers are not each other's direct competitors. Each maneuvers to get a piece of the market based on a unique set of product (or image) characteristics. Design, branding, and marketing go hand in hand in a structure of monopolistic competition. Such conditions culminate in an atomistic market, which is made up of several hundreds of very small design firms, which live and die by the grace of the founder-designer. Under these conditions, the local density of fashion design firms does not aptly reflect competition. Rather, it reflects economies of localization attributed to the spatial proximity to peers. The ease of transport and imitation of designs are part of the reason for defensive actions in terms of product differentiation through branding and the establishment of intellectual property rights. These practices are not exclusive to fashion design, and can be seen in other cultural product markets, such as music and film (e.g. Frederiksen, 2002).

Location, in terms of both competition and localisation economies, offers an important additional explanation for the performance of automobile firms, aside from routine replication through spinoff dynamics. It seems, however, that the relevance of the localisation economies concept may be confined to the manufacturing industries. For the creative industry of fashion design, we do not find evidence for localisation economies that benefit firm performance, nor for any other place-specific element inherent to fashion design's four clusters. Instead, organisational prowess in fashion design is determined by routine replication rather than location per se. To be successful in fashion design it seems that knowledge of successful organisational routines is vital, and its diffusion among firms through spinoff creation, labour mobility and cooperation networks offers incumbents and aspiring entrepreneurs the strategic opportunity to acquire it. How do these firm-level dynamics (trans)form the spatial structure of the industry?

Research question 4: *How can we explain the spatial evolution of the global fashion design industry?*

We find that on the aggregate level mechanisms of routine replication determine the spatial and market evolution of the fashion design industry. All three mechanisms of routine replication have a geographic dimension that favours clustering. First, spinoffs tend to locate near their parents. These replication processes take place primarily, though not exclusively, within clusters. We find evidence for this fact in both the automobile and fashion design industry. Because of this tendency, the replication of routines through the spinoff mechanism is bounded in space. Second, labour mobility is localised. The mobility of labour is more likely between firms, which are spatially proximate to each other. In other words, mobile fashion designers seem to have a preference for future employers in the vicinity of their current employer. This result may be surprising considering the international career paths of several prominent fashion designers. However, our data shows that labour mobility is

primarily a local phenomenon. As such, labour may serve as a vehicle of routine replication between firms, but it does so on a predominantly local scale. Third, the formation of cooperation networks is influenced by spatial proximity to peers. In our study of the Dutch fashion design industry, we find that Amsterdam designers do not only cooperate more with other designers, but they do so mostly within the Amsterdam cluster.

We argue that spinoff creation, labour mobility, and cooperation networks act as path-dependent organisational learning mechanisms that dynamically result in the spatial structure of fashion design that we see today. Through spinoff creation, labour mobility, and cooperation networks the fashion design industry dynamically self-organises in an enduring concentrated spatial structure. The geographic dimension of these three mechanisms entails that routine replication is predominantly a local phenomenon. The emerging geography of organisational routines is reflected in the formation of industrial clusters. The presence of related industries initially provides relevant routines for the new industry in terms of experienced entrants, and successful routines are diffused throughout the industry through spinoff generation, labour mobility and cooperation networks (see Chapters 3, 4, 5 and 6). Our findings strengthen the evolutionary argument that the geographic tapestry of organisational knowledge is reproduced over time as new industries emerge, grow and decline, each building upon the expertise of the other.

We did not find evidence of localisation economies in the fashion design industry after controlling for routine replication mechanisms. However, can the three mechanisms of intra-industry routine replication described here, be viewed as a form of localisation economies? Marshall (1890) denoted localised knowledge spillovers as one of the three externalities generated by the spatial concentration of economic activity, besides a specialised labour pool and suppliers. Perhaps the way in which spinoffs, labour mobility, and network formation govern the diffusion of organisational routines among firms is a form of localised knowledge spillovers. There is reason to doubt this. First, whereas Marshallian localised knowledge spillovers are not shared outside the location, these three mechanisms of routine replication are able to transcend regional boundaries. Spinoffs, labour mobility, and networks may show a tendency towards localisation, they are not bounded by it. We have shown that transfers of routines occur quite often between clusters. Second, whereas Marshallian localised knowledge spillovers can be considered as a local public good, the three mechanisms of inter-firm routine exchange are exclusive. Not all firms in the location are able to enjoy the benefits of a parent-progeny relation, or the formation of inter-firm ties in terms of labour mobility and cooperation. In other words, firms in a cluster are not engaged in exchange with all other firms in the cluster. Nor can every firm appreciate the value of exchange equally, considering the fact that firms differ in their absorptive capacities of new knowledge (Cohen and Levinthal, 1990). Therefore, spinoff creation, labour mobility, and cooperation networks cannot be seen as part of Marshallian knowledge spillovers, which are exclusive to the location, and accessible and understandable by anyone in the location.

We find that non-local routine transfers depict a specific 'hub-and-spoke' pattern that re-enforces the spatial concentration of the fashion design industry. Certain cities act as international 'hubs' for spinoff creation, labour mobility and cooperation networks. Although Paris has lost its dominance in terms of number of firms, it remains the world's number one in two respects. First, Paris is more likely than New York, London and Milan to be selected as the place to set-up a spinoff company from incumbents located elsewhere. Second, Parisian firms are more likely to hire (and fire)

employees from other fashion designers around the world, compared to their American, Italian, and British counterparts. At some point during their careers, most of the world's top-designers have worked for Parisian firms. These two conditions translate into a star-like pattern of routine diffusion with Paris as the primary hub. At the level of the Netherlands, we can see a similar pattern in cooperation networks of Dutch fashion design entrepreneurs. Designers outside of the Amsterdam cluster cooperate more frequently outside of their region, and do so primarily with designers located in Amsterdam. Because Amsterdam designers are the most sought-after candidates for cooperation, network formation culminates in an industry-wide 'hub-and-spoke' pattern centred on Amsterdam.

These patterns further acknowledge the importance of the geography of organisational routines in explaining the spatial evolution of the fashion design industry. The localized replication of successful organisational routines enables one or a few regions to dominate others. The cluster's firms begin to function as a reservoir of organisational prowess to be tapped into by non-local firms trough labour mobility or cooperation. This process benefits the cluster's firms by providing (i) an unrivalled diverse source of external cooperation partners, and (ii) an unrivalled influx of labour into the cluster whose mobility either contributes to organisational learning or to local spinoff creation. In fact, several fashion designers that hailed from outside of the four fashion capitals went specifically to learn from established firms. Most of these designers decided to work for several of the cluster's firms, before setting up their own enterprise in the same location. By doing so, these designers further contributed to the replication process of successful routines that favoured clustering in this particular location. In this way, the local replication of successful routines trough spinoff creation, labour mobility, and cooperation networks sets in motion mechanisms of cumulative causation, which contributed to the spatial concentration of the industry.

Though the logic of routine replication holds for all clusters, local institutions can seriously affect the mechanisms of routine transfer. The specific history of Paris losing its dominance with the emergence of ready-to-wear fashion in the 1960s can be attributed to regional institutional lock-in associated with haute couture, which provided windows of opportunity for other clusters (see Chapter 7). We show that density in both the old and the new market segment seems to have a positive effect on ready-to-wear entry rates. The latter can be interpreted as localisation economies stemming from legitimation and localised knowledge spillovers. The former can be interpreted as a pool of related expertise that could translate in either haute couturiers diversifying to ready-to-wear as entrants, or access to a specialised labour pool. Interestingly, Paris had lower entry rates than could be expected from its density in haute couture firms. Based on historic reports on the Parisian situation, we interpret this result as a form of regional institutional lock-in, where the Parisian Syndicate Chamber of Haute Couture acted as an entry deterrent of Parisian couturiers in ready-to-wear. The branche organisation was set-up in the haute couture's formatting years and contributed to the establishment of the fashion designer profession. Although its specialised institutions may have benefited haute couture firms in the past, it acted defensively towards the emergence of the new market segment of ready-to-wear. As a consequence, the organisation locally deterred diversification entry from haute couture to ready-to-wear. In their inability to seize the opportunity early on, to expand upon their expertise in haute couture, the dominance of Parisian designers waned as new fashion capitals in the United States, England, and Italy established their prominence in the bourgeoning ready-to-wear market of the 1960s. In these locations experienced entrants fuelled entry, and the local replication of successful routines through the spinoff and labour

mobility mechanisms served the rise of New York, London, and Milan much like these mechanisms had shaped the rise of Paris decades earlier.

8.2 Contributions to the literature

Our study offers the first evolutionary analysis of industrial dynamics in a creative industry: fashion design. We provide new insights to the research field in two ways. First, we make contributions to the field of creative industry research in the economic geography literature by providing for (i) a dynamic analysis of the path-dependent development of creative clusters, (ii) we find that organisational routines rather than human capital affects firm performance in the fashion design industry, and (iii) we find that 'creative city' amenities may act as an attractor of fashion design entrepreneurs, but do not affect their performance. Second, we make contributions to the emerging field of evolutionary economic geography by providing for (iv) the first application of the industry life cycle model to a creative industry, and (v) the extension of Klepper's model of industry evolution to include labour mobility as a vehicle of routine diffusion. We discuss each of these contributions below.

First, we present the first study that provides a dynamic analysis of micro-level foundations that underline the spatial evolution of a creative industry: fashion design. Our results thus provide an explanation for the extreme and persistent geographic clustering in creative industries. We show the importance of routine replication in explaining firm performance and spatial concentration. Similar creative industries such as film production (Hollywood, Bollywood) and publishing (New York, London) may well exhibit the same patterns as found in this study.

Second, the human capital (e.g. Becker, 1975; Lado and Wilson, 1994) thesis may be partially wrong. It posits that human capital is a prime determinant of firm performance (Hatch and Dyer, 2004), and that cities are places where human capital predominantly develops (Glaeser and Maré, 2001). We find that it is not so much human capital of designers per se, but the specific routines they acquired at previous employers that render fashion design firms successful. In our study of the Dutch fashion design industry, we find that the human capital of the entrepreneur (measured in Bachelor degree or higher education) does not affect the performance of fashion houses. In our study of the global fashion design industry over the period 1926-2005, we find a similar effect: human capital (measured in the number of years experience in fashion design) does not affect firm performance. Note that in this study we take into account the human capital of both entrepreneur and employees. Rather than based on their human capital, we find that fashion designers outperform their rivals based on their experiences at incumbents, such that better incumbents act as better learning environments. Our results show that fashion firms are able to enhance their performance by hiring new designers, irrespective of their human capital, from successful competitors. We interpret this result as such that organisational routines rather than human capital determine the performance of firms in the fashion design industry. This result is in line with Nelson and Winter's (1982) argument for organisational routines as the primary determinant of firm competences and behaviour.

Third, fashion cities attract new employees and entrepreneurs through urban amenities and a tolerant social atmosphere, but do not enhance firm performance. We do not find significant effects of place-specific factors of fashion's four capitals on firm performance, nor from a concentration of

fellow fashion designers in general. However, fashion clusters experience disproportional numbers of entry, compared to other regions. In the Dutch case in particular, we examined whether or not this was due to migrant entrepreneurs, who prefer to start their firm in an environment that either had agglomeration economies, or urban amenities in line with Florida's (2002a,b) thesis on creative class. We find that designer entrepreneurs that moved to the Amsterdam cluster preferred the location because of both of these aspects. Hence, specific urban amenities such as a cultural amenities and an social tolerant environment, coupled with the reputation of Amsterdam as the fashion capital of the Netherlands and agglomeration economies, ensures a steady influx of new entrants in the Amsterdam region. We conclude that Florida's thesis that specific urban living conditions attract creative individuals seems applicable to the Dutch case of fashion designers. However, we do not find evidence for effects on firm performance in the fashion design industry. Fashion designer entrepreneurs in Amsterdam do not outperform their competitors in other locations. In our analysis of the global market of fashion design, we find a similar pattern: clusters experience disproportional high rates of entry, yet firms in the four fashion capitals do not outperform their competitors located elsewhere. As such, we conclude that even though a creative city may nurture entry and attract migrant entrepreneurs, it does not, by itself, affect firm performance. Rather, the performance of firms is determined by organisational capabilities determined by the make-up of routines.

Fourth, our study is the first to apply the evolutionary approach of the industry life cycle to a creative industry, which is highly concentrated in space but did not experience a shake-out as many manufacturing industries typically do. We show that a model of industry evolution through routine replication can account for firm performance and clustering in the fashion design industry. We find that fashion design did not experience similar population level patterns as automobiles, such as a shake-out. Yet, the spinoff mechanism that underlines the evolution of automobile industry, can also explain the evolution of the fashion design industry. Our study thus broadens the explanatory power of the spinoff model of industry evolution.

Fifth, this study extends the evolutionary model of routine replication to take into account post-entry labour mobility in addition to pre-entry experience of the entrepreneur. We show that labour mobility is a powerful additional mechanism through which routines diffuse among firms. The post-entry adjustment of routines through organisational learning is more than internal 'learning-by-doing', and includes external 'learning-by-hiring'. Hatch and Dyer (2004) argue that human capital selection significantly improves learning-by-doing which in turn improves firm performance. On the basis of our findings we argue that not so much human capital selection, but organisational routine selection drives firm performance. Of course, this result may be particular for the fashion design industry. It is up to future research to see whether the same results apply to other industries as well.

8.3 Suggestions for further research

Although our analysis of the fashion design industry has offered us new insights in the spatial evolution of an industry, these insights generate new research questions. We offer the following three suggestions for further research in the field of evolutionary economic geography and creative industries.

Further examination of the routine transfer process between firms

How does the process of routine replication exactly take place at the micro-level? Although we provided qualitative accounts of several fashion designers and houses that strengthen the interpretation of our results, there is a strong need for further research to examine how this transfer process between firms actually operates. Evolutionary economists have begun to map organisational routines in several organisations (see Becker, 2004 for an overview of the literature). Recently, the change in routines, rather than their rigidity is addressed (Feldman and Pentland, 2003). Our analyses suggest that routines are both rigid (i.e. the constant effect of the founder), as well as flexible to change (i.e. the labour mobility effect). In other words, it seems that entrants with less successful routines are able to post-entry learn parts of the fitter routines of its competitors through labour mobility and cooperation. However, the question arises whether or not the firm's ability to hire competent personnel is part of its organisational routine.

A related set of questions remains unanswered, as well. How can we explain differences between firms in terms of their ability to import new routines and recombine these with existing routines? How can we explain differences across places in terms of their ability to import new routines and recombine these with existing routines? In Paris a related industry did not emerge from the existing fashion cluster, while Coventry was the main cluster of the British bicycle industry prior to its dominance of the automobile industry. Can institutions act as 'regional routines' that govern the diffusion of 'organisational routines'? Answers to these questions would further the research in the geography of organisational routines and their effect on firm performance.

Further examination of the interplay between spinoff creation, labour mobility, and network formation, and their effects on the spatial evolution of industries

Spinoff generation, labour mobility and cooperation networks act as conduits of routine diffusion between firms in the fashion design industry. And, spinoff dynamics, labour mobility and cooperation networks all contribute to the spatial concentration of the fashion design industry. There are reasons to believe that the three mechanisms are interrelated. Bivariate correlations show that spinoffs are more likely than other entrants to (a) hire designers, (b) hire more experienced designers, and (c) hire designers from organisations with fitter routines (see Chapter 5). We also found that spinoffs cooperate more with fellow designers, compared to other entrants (Chapter 6). Although these correlations are not very high, they are suggestive of industrial dynamics that we do not yet fully understand.

Successful firms, in particular spinoffs, might act as magnets for creative and entrepreneurial talent, and as a magnet for collaboration partners. The performance of firms might simply act as an attraction mechanism for the most talented individuals. This implies that there may not necessarily be an inheritance process of organisational capabilities, and labour market dynamics are the main driver of firm performance and spatial clustering, to the extent that labour mobility is localised (Saxenian, 1994; Vinodrai, 2006). The spinoff model (Klepper, 2002) does not take into account the possibility that successful firms may act as 'magnets for talent', which would make their personnel, prior to their learning experience at the firm, more likely to become successful spinoffs. Likely, both mechanisms of talent attraction and routine inheritance are at work in a complementary fashion.

Can the industry life cycle thesis and routine replication model explain the spatial evolution of service industries?

Does the industry life cycle thesis also apply to service industries like banking, retail, fast food, and logistics? The industry life cycle thesis and the routine replication model of spinoff dynamics have been tested primarily for manufacturing industries, and our study presents the first case of a creative industry. The further application of the evolutionary model of routine replication and industry development to services would incorporate a major part of the economy into the framework. Routine replication in service industries has only rarely been researched (Phillips, 2002). Concerning evolutionary economic geography, the application to services would open up avenues of research that call for the establishment of a theory of the multi-locational firm (Stam, 2003, 2007). How are routines replicated between franchise organisations? This question would address the evolution of service industries ranging from fashion or food retail, to consulting and insurance. An evolutionary approach to service industries entails routine replication between subsidiaries as its main concern. Furthermore, the widespread locations of major multinationals entail the replication of routines between locations that are not only spatially but also culturally dispersed. An evolutionary theory of the multi-locational firm should address the issue of international 'transplantation' and 'translation' of organisational routines between subsidiaries.

In sum, an evolutionary approach to economic geography provides several new research avenues. The theoretical concepts from evolutionary economics apply well to the field of economic geography, and provide new explanations for widespread phenomena of clustering. We hope to have contributed to the evolutionary program by extending its theory to creative industries.

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Appendix

Figure 4.A. Correlation matrix of independent variables used in the Cox regression analysis.

		1.	2.	3.	4.	5.
1.	SPINOFF	1.000***				
2.	EXPERIENCED	-0.732***	1.000***			
3.	NO.PARENTS (LN)	0.907***	-0.663***	1.000***		
4.	YRS.PAR.PROD (LN)	0.953***	-0.697***	0.938***	1.000***	
5.	WWAR1	-0.018	0.016	-0.038	-0.024	1.000***
6.	WWAR2	-0.047	0.07	-0.052	-0.042	-0.022
7.	PARIS	0.190***	-0.122***	0.208***	0.185***	0.097**
8.	LONDON	-0.068	-0.046	-0.081*	-0.062	-0.061
9.	NEW YORK	-0.013	0.032	-0.045	-0.016	-0.028
10.	MILAN	-0.024	0.078*	0.016	-0.031	-0.03
11.	GDP.CAPITA (LN)	0.140***	-0.190***	0.179***	0.172***	-0.203***
12.	MIGRATION	0.549***	-0.402***	0.598***	0.601***	-0.003
13.	LOC.ECONOMIES (LN)	0.235***	-0.258***	0.253***	0.247***	-0.078*

* Significant at the 0.10 level, ** significant at the 0.05 level, *** significant at the 0.01 level.

Table 5.A. Correlation matrix of independent variables.

		1.	2.	3.	4.	5.	6.	7.	8.
1.	SPINOFF	1.00*							
2.	EXPFIRM	-0.84*	1.00*						
3.	YRSPARPROD FOUNDER	0.96*	-0.80*	1.00*					
4.	TALENT GAIN	0.22*	-0.17*	0.22*	1.00*				
5.	TALENT LOSS	0.08*	-0.04*	0.08*	0.63*	1.00*			
6.	YRSPARPROD NEWCOMERS	0.25*	-0.18*	0.26*	0.92*	0.51*	1.00*		
7.	YRSPARPROD VETERANS	0.05*	-0.03	0.06*	0.51*	0.56*	0.43*	1.00*	
8.	SIZE	0.35*	-0.28*	0.37*	0.32*	0.10*	0.32*	0.06*	1.00*
9.	HUMAN CAPITAL	0.36*	-0.28*	0.38*	0.32*	0.36*	0.29*	0.24*	0.50*
10.	PARIS	0.23*	-0.17*	0.20*	0.14*	0.17*	0.13*	0.08*	0.12*
11.	LONDON	-0.08*	-0.02	-0.06*	-0.07*	-0.09*	-0.06*	-0.08*	-0.06*
12.	MILAN	-0.10*	0.14*	-0.12*	0.05*	0.07*	0.05*	0.09*	0.05*
13.	NEW YORK	-0.02	0.02	-0.01	-0.06*	-0.08*	-0.04*	-0.07*	-0.04
14.	WWAR	-0.01	0.03	-0.02	0.01	0.00	0.01	0.02	0.01
15.	LOC.ECONOMIES	0.17*	-0.20*	0.17*	0.10*	0.11*	0.11*	0.05*	0.06*

* Correlations significant at the 0.05 level.

6.	7.	8.	9.	10.	11.	12.	13.
1.000***							
-0.056	1.000***						
-0.089**	-0.341***	1.000***					
0.121***	-0.382***	-0.348***	1.000***				
-0.015	-0.166***	-0.151***	-0.169***	1.000***			
-0.203***	-0.268***	0.101**	0.370***	-0.063	1.000***		
-0.094**	-0.064	0.056	-0.026	-0.024	0.144***	1.000***	
-0.145***	0.195***	0.184***	0.264***	-0.148***	0.656***	0.077*	1.000***

9.	10.	11.	12.	13.	14.	15.
1.00*						
0.24*	1.00*					
-0.10*	-0.32*	1.00*				
0.06*	-0.19*	-0.15*	1.00*			
-0.08*	-0.37*	-0.29*	-0.17*	1.00*		
-0.03	0.02	-0.02	-0.02	0.03	1.00*	
0.16*	0.36*	0.16*	-0.14*	0.26*	-0.12*	1.00*

Summary in Dutch - Samenvatting in het Nederlands

Inleiding

De recente groei van creatieve industrieën heeft de interesse gewekt van zowel beleidsmakers als academici. Het begrip "creatieve industrieën" kan worden gedefinieerd als industrieën die producten fabriceren die doorgaans worden geassocieerd met culturele, esthetische, of entertainment elementen, zoals film, televisie, mode, muziek, drukkerij, de beeldende kunst, sport, en reclame (Scott, 2000; Caves, 2000). Ondanks de groeiende literatuur over creatieve industrieën (Scott, 2000), creatieve steden (Hall, 2000), en creatieve beroepen (Florida, 2002a), weten we nog weinig van onderliggende factoren die de ontwikkeling van de markt structuur en ruimtelijk patroon van een creatieve industrie kunnen verklaren. Waarom ontwikkelen bepaalde plekken zich op bepaalde momenten tot centra van opmerkelijke creativiteit in de vorm van excessieve ondernemerschap, innovatie en economische groei? (Scott, 2006, p. 17)

Deze dissertatie gaat in op deze vraag in de context van één specifieke creatieve industrie: modeontwerp. De modeontwerpsector vertegenwoordigt verscheidene sleutel kenmerken van creatieve industrieën die haar onderscheidt van andere, meer traditionele verwerkende sectoren zoals schepenbouw of automobielfabricage. Een belangrijk verschil is het relatieve gebrek aan schaalvoordelen in het productieproces, de omgang met een onzekere vraag en de korte levenscyclus van mode producten. Bij modeontwerp staan creativiteit en innovatie centraal.

Doelstelling en onderzoeksvraag

De doelstelling van dit onderzoeksproject is de dynamiek in de marktstructuur en ruimtelijke evolutie van de modeontwerpsector te beschrijven en te verklaren aan de hand van zowel organisatorische als geografische factoren. De hoofdonderzoeksvraag luidt als volgt:

Hoofdonderzoeksvraag: Wat zijn de organisatorische en geografische factoren die de prestaties van modeontwerpbedrijven bepalen, en hoe beïnvloeden deze de ruimtelijke evolutie van de modeontwerpsector?

In deze dissertatie wordt deze vraagstelling benaderd vanuit een evolutionair economisch theoretisch perspectief (Nelson and Winter, 1982). In een evolutionair economische benadering is het fundamentele uitgangspunt dat het gedrag van bedrijven wordt bepaald door organisatorische routines die in meer of mindere mate rigide en bedrijfseigen zijn. In een evolutionair raamwerk wordt marktconcurrentie dan ook begrepen als een selectieproces van geschiktere routines ten koste van minder geschikte routines (Nelson en Winter, 1982). De heterogeniteit in organisatorische

routines wordt gewaarborgd door de toetreding van nieuwe bedrijven met nieuwe routines of organisatorische innovatie. In navolging van Becker (2004) worden organisatorische routines gedefinieerd als terugkomende actiepatronen op het bedrijfsniveau zodanig dat zij collectief en procesmatig van aard zijn. Daarmee zijn routines voor bedrijven wat vaardigheden zijn voor individuen. Routines worden ook wel metaforisch beschreven als organisatorisch 'geheugen', 'blauwdruk', of 'organisatorisch DNA' (Nelson en Winter, 1982).

Bevindingen

Routines zijn bedrijfseigen en bepalen in sterke mate de capaciteiten en prestatie van bedrijven. De replicatie van routines tussen bedrijven vormt daarmee een mogelijk verspreidingsmechanisme van organisationele capaciteiten en kunde. De belangrijkste vraag in de evolutionair economische geografie is door welke mechanismen organisatorische routines zich verspreiden onder bedrijven en zich ruimtelijk concentreren op bepaalde plekken (Boschma en Frenken, 2003). Om deze vraag voor de modeontwerpsector te beantwoorden moet eerst inzichtelijk worden op welke mogelijke manieren routines kunnen worden overgedragen tussen bedrijven.

Onderzoeksvraag 1: Welke mechanismen zijn te onderscheiden die replicatie van organisationele routines tussen modeontwerpbedrijven mogelijk maken?

In de evolutionaire economische literatuur worden drie mogelijke mechanismen van routine-overdracht tussen bedrijven genoemd (Boschma en Frenken, 2006): (i) creatie van spinoff bedrijven uit bestaande bedrijven, (ii) arbeidsmobiliteit tussen bedrijven en (iii) samenwerkingsnetwerken tussen bedrijven.

Het eerste mechanisme van routinereplicatie is de creatie van 'spinoff' bedrijven uit reeds bestaande bedrijven. Spinoffs worden hier gedefinieerd als bedrijven die zijn opgericht door medewerkers van een reeds bestaand bedrijf in dezelfde industrie. Het spinoffmodel van Klepper (2002, 2007) poneert dat de medewerkers van bestaande bedrijven (een deel van) de organisatorische routines van hun moederbedrijf implementeren in de organisatorische blauwdruk van het nieuw gevormde spinoffbedrijf. Spinoff bedrijven 'erven' aldus routines van hun moederbedrijven. Als zodanig zouden spinoffs de overige nieuwe bedrijven moeten overtreffen qua bedrijfsprestatie op basis van een voorsprong op kennis van de markt en het productieproces. Belangrijker, het overervingprincipe houdt in dat bedrijven met succesvolle routines meer, en meer succesvolle, spinoffs zullen genereren dan bedrijven met minder succesvolle routines. Met andere woorden '*success breeds success*'.

Routineoverdracht vindt niet alleen tussen bedrijf en spinoff plaats. Het tweede mechanisme van routinereplicatie tussen bedrijven is via de mobiliteit van arbeid (Nelson en Winter, 1982). Net zoals een spinoff ondernemer een voertuig is van routine overdracht in Kleppers model, kan routineoverdracht plaatsvinden als mensen van baan wisselen. Daarmee breid ik het model van Klepper dat zich richt op ondernemerschap, uit naar arbeidsmobiliteit als voertuig van routineoverdracht. De belangrijkste toevoeging van arbeidsmobiliteit als routine overdrachtsmechanisme is dat zij bedrijven de mogelijkheid geeft hun routines ná hun toetreding te veranderen op basis van ervaringen van medewerkers. Gelijk aan het spinoffmodel wordt geponeerd

dat individuen (een deel van) hun ervaringen met organisatorische routines kunnen implementeren in een volgende organisatorische structuur.

Het derde mechanisme van routinereplicatie tussen bedrijven is via samenwerkingsbanden. Wanneer de werknemers van verschillende bedrijven nauw in een gezamenlijk project samenwerken vindt uitwisseling plaats van zowel formele als meer informele componenten van organisatorische routines. De verspreiding van routines tussen bedrijven zou door organisatorische grenzen kunnen worden belemmerd door de inerte ambiguïteit van routines. Echter, de nauwe samenwerking tussen bedrijven vormt vertrouwenskanalen waardoor de deelnemers deelgenoot kunnen worden van elkanders geroutiniseerde praktijken.

Aangezien routines het onderwerp van selectie zijn in evolutionaire economische theorie, hebben mechanismen van routineoverdracht een belangrijk effect of bedrijfsprestatie. Bedrijven die bij hun start succesvolle routines erven van hun moederbedrijf, of verbeteringen in routines verkrijgen gedurende hun levensloop door arbeidsmobiliteit en samenwerking zullen waarschijnlijk beter presteren vis-à-vis hun concurrenten. Daarmee wordt een tweede onderzoeksvraag betrokken in dit onderzoek:

Onderzoeksvraag 2: Beïnvloedt replicatie van organisationele routines de prestatie van modeontwerpbedrijven?

Deze studie levert bewijs dat gerepliceerde routines inderdaad de prestatie van bedrijven in de modeontwerpsector verbeteren. Alle drie mechanismen van routine overdracht tussen bedrijven blijken prestatie te beïnvloeden.

Ten eerste blijkt dat routineoverdracht door de creatie van spinoff bedrijven een belangrijk effect heeft op overlevingskansen van bedrijven in de modeontwerpsector (hoofdstukken 4 en 5). Deze bevinding komt overeen met een eerdere studie naar spinoff bedrijven in de Britse automobielindustrie (hoofdstuk 3). Of de ondernemer wel of niet relevante ervaring binnen de sector had voor zijn of haar toetreding blijkt een bepalende factor voor de overlevingskansen van het nieuwe bedrijf. Spinoffs en ervaren toetreders uit andere (gerelateerde) sectoren presteren beter dan andere toetreders. Daarnaast blijkt dat spinoffs van beter presterende bedrijven meer succesvol zijn dan andere spinoffs. Deze bevindingen duiden op een overervingsproces van organisationele routines van moederbedrijf op spinoffs.

Ten tweede kan arbeidsmobiliteit op eenzelfde manier dienst doen als mechanisme van routineoverdracht tussen bedrijven (hoofdstuk 5). Uit de resultaten blijkt dat de doorloop in de modeontwerpers van een modehuis, in plaats van bedrijfsomvang op zich, bepalend is voor de bedrijfsoverleving. In dit constante proces van het aannemen en laten gaan van talent, laten ik zien dat het vooral van belang is om de juiste ontwerpers aan te nemen, namelijk diegenen die in dienst zijn bij succesvolle concurrenten. De waarde van ontwerpers voor hun nieuwe werkgevers hangt nauw samen met de prestaties van hun voorgaande werkgevers. Het impliceert dat arbeidsmobiliteit een mechanisme is dat bedrijven in staat stelt hun huidige routines te verbeteren en hun prestatie te verhogen. Door zich te positioneren in het netwerk van arbeidsstromen kunnen bedrijven nieuwe routines aanleren en zich bewegen door het competitieve landschap.

Ten derde blijkt dat routine replicatie door samenwerking tussen bedrijven een effect heeft op bedrijfsprestatie (hoofdstuk 6). In de studie van de Nederlandse modeontwerpsector blijkt dat modeontwerpbedrijven die samenwerken met andere modeontwerpbedrijven, beter presteren dan hun concurrenten. Opvallend is dat niet alleen het aantal samenwerkingsverbanden, maar vooral de vorm van samenwerking van belang is voor bedrijfsprestatie. Samenwerking tussen modeontwerpers kan bestaan uit het delen van informatie, gezamenlijke marketing en verkoop, of gezamenlijk ontwerp en productie. Van deze drie vormen van samenwerking heeft alleen gezamenlijk ontwerp en productie een positieve invloed op bedrijfsprestatie. Via nauwe samenwerking in ontwerp en productie is het waarschijnlijker dat bestaande routines overgedragen dan via minder intensieve vormen van samenwerking. Dit resultaat wordt dan ook zo geïnterpreteerd dat nauwe samenwerking in ontwerp en productie een mechanisme vormt van routineoverdracht.

In aanvulling op de evolutionaire mechanismen van routineoverdracht, wordt de mate getest waarin locale externaliteiten de prestatie van modehuizen beïnvloeden. In de economische geografie literatuur worden regionaal verschillende bedrijfsprestaties traditioneel verklaard aan de hand van agglomeratievoordelen. Dit zijn voordelen die alle bedrijven genieten in een bepaalde regio op basis van lokaal aanwezige sectorspecifieke of generieke factoren. Het eerste duidt op lokalisatievoordelen, die toenemen met de omvang van de specifieke sector, terwijl het tweede duidt op urbanisatievoordelen, die toenemen met het totaal aan economische activiteiten. In deze dissertatie is vooral aandacht voor sectorspecifieke factoren. Daarmee wordt gericht op factoren die vanuit de modeontwerpsector ontspringen en haar evolutie beïnvloeden. Ruimtelijke nabijheid tot gelijksoortige bedrijven biedt bedrijven voordelen in termen van mogelijkheden om concurrenten te imiteren (Porter, 1990), toegang tot vaardige werknemers en gespecialiseerde toeleveranciers (Marshall, 1890), of kennis 'spillovers' (Marshall, 1890). Een cruciaal verschil tussen regiospecifieke voordelen en evolutionaire mechanismen van routineoverdracht is het respectievelijk inclusieve en exclusieve karakter van voordelen die bedrijven genieten. Agglomeratievoordelen bevoordelen ieder bedrijf en zijn slechts beperkt door een geografische reikwijdte, terwijl voordelen als gevolg van routineoverdracht via spinoff dynamiek, arbeidsmobiliteit en samenwerking alleen ten goede komen aan de betreffende bedrijven. Daarmee bieden agglomeratievoordelen en routine overdrachtsmechanismen verschillende, doch complementaire verklaringen voor verschillen in bedrijfsprestatie. De derde onderzoeksvraag luidt als volgt:

Onderzoeksvraag 3: Beïnvloeden lokalisatievoordelen de prestatie van modeontwerpbedrijven?

Lokalisatievoordelen hebben geen wezenlijke invloed op de prestatie van modeontwerpbedrijven. Bedrijven die zijn gevestigd in nabijheid tot een groot aantal andere modeontwerpbedrijven presteren niet beter dan bedrijven die elders gevestigd zijn. Daarnaast blijkt dat bedrijven die zijn gevestigd in de grootste en bekendste modesteden, Parijs, Londen, Milaan, en New York geen plaatsspecifieke voordelen genieten. In Nederland is eenzelfde resultaat gevonden voor bedrijven gevestigd in het modecluster Amsterdam. In plaats van bedrijfsprestatie lijken lokalisatievoordelen eerder de locale toetredingsbarrières te beïnvloeden. Het aantal lokale nieuwe modeontwerpbedrijven neemt toe met het reeds bestaande aantal lokale modebedrijven bedrijven (hoofdstuk 7). Het aantal bestaande modeontwerpbedrijven op het internationale schaalniveaus blijkt negatief samen te hangen met het aantal lokale nieuwe modeontwerpbedrijven. Deze resultaten impliceren dat lokalisatievoordelen in clusters toetredingsbarrières verlagen, terwijl negatieve aspecten aan competitie in modeontwerp internationaal van aard zijn.

Ondanks het feit dat agglomeratievoordelen geen effect lijken te hebben op bedrijfssucces, hebben clusters wel een aantrekkingskracht op ondernemers in de modeontwerpsector. Uit een grootschalige enquête onder zelfstandige modeontwerpers in Nederland (hoofdstuk 6) blijkt dat modeontwerpers in hun locatiekeuze gevoelig zijn voor de aanwezigheid van andere modeontwerpers. Tevens laten zij zich leiden door een open sociaal klimaat, culture voorzieningen, en, in het geval van Amsterdam, door de reputatie van de hoofdstad als modecentrum. Deze bevindingen duiden erop dat clusters magneten zijn voor talent waarmee het cluster zich telkens kan vernieuwen. Het belang van een open sociaal klimaat en culturele voorzieningen bieden tevens ondersteuning voor Florida (2002) die de these poneert dat creatieve personen meer door het stedelijk woonklimaat dan door het stedelijk werkklimaat worden aangetrokken.

Een belangrijke vervolgvraag is hoe deze dynamiek op het bedrijfsniveau zijn uitwerking heeft op het aggregate niveau, namelijk de industriële organisatie en ruimtelijke structuur van de modeontwerpsector. Daarmee luidt de laatste onderzoeksvraag:

Onderzoeksvraag 4: Hoe kunnen we de ruimtelijke evolutie van de modeontwerpsector verklaren?

Een verklaring voor de geografische concentratie van modehuizen in een handvol steden moet niet zo zeer worden gezocht in lokalisatievoordelen, maar meer in de ruimtelijke dimensie van de mechanismen van routineoverdracht. Spinoff generatie, arbeidsmobiliteit en samenwerkingsbanden hebben elk ook een ruimtelijke dimensie. Spinoffs hebben de neiging om zich te vestigen nabij hun moederbedrijf (Klepper, 2002) en arbeidsmobiliteit (Almeida en Kogut, 1999) is tevens gelokaliseerd. Ook clustering in samenwerkingsnetwerken en industriële geografische clusters lijken vaak te overlappen (Giuliani, 2006; Ter Wal and Boschma, 2008). Door deze ruimtelijke dimensie werken de drie mechanismen van routineoverdracht de ruimtelijke concentratie van bedrijfssucces in de hand. Immers, succesvolle routines mogen dan worden verspreid via spinoff generatie, arbeidsmobiliteit en samenwerkingsbanden, maar dit gebeurt voornamelijk lokaal. Daarmee beïnvloeden deze evolutionaire mechanismen niet alleen individuele bedrijfsprestaties, maar ook de ruimtelijke structuur van een industrie. Kenmerkend voor een dergelijke evolutionaire processen is het padafhankelijke en onomkeerbare karakter ervan. Is een cluster eenmaal ontstaan, dan houden de voornoemde mechanismen van routineoverdracht een cluster vanzelf in stand.

Opvallend is dat niet-lokale routine overdrachten een specifiek 'hub-and-spoke' patroon vormen dat de ruimtelijke concentratie van modeontwerpbedrijven in de hand werkt. Bepaalde bedrijven en steden fungeren als internationale 'hubs' voor spinoff generatie, arbeidsstromen en samenwerkingsnetwerken. Alhoewel Parijs in termen van aantal modebedrijven in de afgelopen decennia is ingehaald door Londen en New York, blijft de Franse hoofdstad de nummer één van de modewereld in termen van spinoff generatie en het aantrekken en verspreiden van talent. Sinds de start van de modeontwerpsector, hebben de meeste top-ontwerpers van de wereld bij één of meerdere Parijse modehuizen gewerkt. Deze condities leiden tot een sterachtig patroon van routine replicatie en -verspreiding met Parijs als belangrijkst centrum. Op het niveau van Nederland is een soortgelijk patroon te zien rondom de stad Amsterdam, zij het op kleinere schaal. Hierbij wordt niet alleen duidelijk dat Amsterdamse modeontwerpbedrijven meer spinoffs genereren, maar ook dat Amsterdamse modeontwerp ondernemers meer samenwerken dan hun concurrenten elders, en dat samenwerkingen van niet-Amsterdamse ontwerpers veelal op Amsterdam gericht zijn.

Deze patronen versterken verder het belang van de geografie van organisatorische routines in de ruimtelijke evolutie van de modeontwerpsector.

De gelokaliseerde replicatie van succesvolle organisatorische routines maakt het mogelijk dat aantal bedrijven in één of enkele regio's andere regio's gaan domineren. De bedrijven in een cluster beginnen daardoor te functioneren als een reservoir van ongeëvenaarde organisationele kunde waaruit niet-lokale bedrijven kunnen putten via arbeidsmobiliteit en samenwerking. Dit proces bevoordeelt bedrijven in het cluster door (i) een groot scala aan mogelijke samenwerkingspartners, en (ii) een niet aflatende stroom van nieuw talent. In feite komen veel modeontwerpers van buiten de vier grote modesteden om te leren van bestaande bedrijven. Iedere nieuwe modeontwerper draagt via zijn of haar carrièrestappen bij aan de bestaande hiërarchie van modehuizen en steden. Dit zelfversterkende of cumulatief causaal proces is lokaal in gang gezet zodra Parijs, en later Londen, New York, en Milaan een dominante positie verworven. Het verwerven van een dominante positie kan afhankelijk zijn van enkele kleine verschillen in aantallen succesvolle bedrijven in vroege periodes in de geschiedenis van de sector (Arthur, 1994). De replicatie van deze kleine verschillen in succes via spinoff generatie zet een padafhankelijk proces van routine replicatie, verspreiding en ondernemerschap in gang dat enkele vroege toetreders in Parijs onafgebroken aan kop heeft gehouden gedurende de geschiedenis van de sector.

Ondanks dat deze logica van routine replicatie en ruimtelijke evolutie van de modeontwerpsector ook geldt voor de dominantie van Londen, New York en Milaan, kunnen locale instituties de mogelijkheden voor clustervorming door lokale routineoverdracht significant beïnvloeden. De specifieke geschiedenis van Parijs die haar suprematie verliest na de zestiger jaren kan worden verklaart aan de hand van 'institutionele lock-in' (hoofdstuk 7). De zestiger jaren vormen het toneel van de opkomst van een nieuw marktsegment in de top van modeontwerp: 'prêt-à-porter'. De verankering van Parijse bedrijven in de lokale branchevereniging (*Chambre Syndicate d'Haute Couture*) bemoeilijkte de toetreding van Parijse ontwerpers in het nieuwe prêt-à-porter segment. Dergelijke barrières bestonden evenwel niet in andere steden. Met name modeontwerpers in New York, Londen, en Milaan hebben van de nieuwe kansen in het prêt-à-porter segment gebruik gemaakt.

Bijdragen aan de literatuur

Deze studie biedt de eerste evolutionaire analyse van industriële dynamiek in een creatieve sector: modeontwerp. Daarmee is op twee manieren bijgedragen aan het onderzoeksveld over creatieve industrieën. In de eerste plaats draagt deze studie bij aan een beter begrip van de dynamiek van creatieve industrieën, en wel specifiek de modeontwerpsector, door (i) een dynamische analyse van de padafhankelijke ontwikkeling van creatieve clusters te laten zien over de gehele geschiedenis van de sector, (ii) het aantonen van het belang van organisatorische routines naast menselijk kapitaal voor organisatorische prestatie in de modeontwerpsector, en (iii) de bevinding dat een 'creatieve stad' woon- en werkklimaat weliswaar aantrekkelijk is voor modeontwerpers, maar hun prestaties niet beïnvloedt. In de tweede plaats levert deze studie een bijdrage aan het opkomende onderzoeksveld evolutionaire economische geografie door (iv) een eerste toepassing van de industrie levenscyclus model te leveren voor een creatieve sector, en (v) Klepper's spinoff model uit te breiden met de aanvulling van arbeidsmobiliteit als modus van routine verspreiding.

Suggesties voor verder onderzoek

Alhoewel dit onderzoek naar de industriële dynamiek van de modeontwerpsector nieuw inzicht geeft in de ruimtelijke evolutie van een creatieve industrie, genereert zij ook nieuwe onderzoeksvragen. Ik bied de volgende drie suggesties voor verder onderzoek in het veld van de evolutionaire economische geografie en creatieve industrieën.

Ten eerste dienen we ons inzicht te vergroten in de concrete processen die ten grondslag liggen aan routineoverdracht. In hoeverre is het vermogen van een bedrijf om competent personeel aan te trekken deel van de bestaande routine en achtergrond? Hoe kunnen we verschillen tussen bedrijven verklaren in hun mogelijkheden om nieuwe routines aan te trekken en te recombineren met bestaande routines? In hoeverre werken deze processen op het regionale niveau en moet worden gedacht over de aantrekkingsmogelijkheden van plaatsen op nieuwe routines? De antwoorden op deze vragen kunnen een belangrijke bijdrage leveren aan het debat over de geografie van organisatorische routines en bedrijfsprestatie.

Een tweede vervolgvraag betreft het samenspel tussen spinoff generatie, arbeidsmobiliteit en samenwerkingsnetwerken, en het effect ervan op de ruimtelijke evolutie van sectoren. Er zijn redenen om aan te nemen dat de drie mechanismen van routineoverdracht op elkaar inwerken. Uit het onderzoek blijkt bijvoorbeeld dat spinoffs meer ervaren assistent ontwerpers aannemen en actiever zijn in samenwerkingsverbanden (hoofdstukken 5 en 6). Succesvolle bedrijven, en dan specifiek spinoff bedrijven, lijken te fungeren als magneten voor creatieve werknemers en als aantrekkelijke samenwerkingspartners voor 'concullega's'. Kleppers spinoff model zou kunnen worden uitgebreid om dergelijke complexe relaties te incorporeren.

Tenslotte dient de vraag zich aan of het industrielevenscyclus model, zoals oorspronkelijk ontwikkeld voor de maakindustrie en zoals toegepast op een creatieve industrie als de modeontwerpsector, ook de industriële dynamiek van de dienstensector zou kunnen verklaren. Routinereplicatie in dienstensectoren is nog weinig onderzocht met uitzondering van de advocatenkantoren in de Verenigde Staten (Phillips, 2002). Gezien het specifieke multi-locationele karakter van dienstenbedrijven zou de evolutionaire economische geografie dan moeten worden uitgebreid met een locatietheorie van het multi-locationele bedrijf. Stam (2003, 2007) beidt hiertoe al een aantal belangrijke aanknopingspunten.

Samenvattend biedt de evolutionaire benadering van economische geografie een aantal interessante aanknopingspunten met bestaande literatuur en een aantal prikkelende nieuwe onderzoekswegen. De theoretische concepten van de evolutionaire economie zijn goed toe te passen in de economische geografie, en bieden nieuwe verklaringen voor het veel voorkomende fenomeen van clustering.

Curriculum Vitae

Rik Wenting was born on 19 April 1981 in Woerden, the Netherlands. He studied economics and geography at Utrecht University and business administration at Erasmus University Rotterdam. He graduated at Utrecht University in 2004 with an MSc in International Economics and Economic Geography. Subsequently, Wenting started a PhD research project at Utrecht University on the spatial evolution of creative industries. He has published articles on the economic geography of industrial dynamics in several international journals. Wenting has presented his research findings on scientific conferences in several European countries, China, and the United States. In addition, he participated in policy discussions with government officials and representatives of business and press.