

# **On genetic descendency and its role in the spatial evolution of the world's fashion design industry, 1858-2005**

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## **1. Introduction**

The burgeoning literature on the role a firm's history plays in its performance has begun to fill an area of research that has been underdeveloped up until recently (e.g. Geroski, 1995; Philips, 2002; Hodgson and Knudsen, 2004; Dunne et al., 2005; Buenstorf, 2006). More and more empirical research uncovers the importance of pre-entry experience of entrepreneur(s) for firm survival (Bruderl et al., 1992; Klepper, 1996, 2002, 2005; Agarwal et al., 2004; Eriksson and Kuhn, 2006; Boschma and Wenting, 2007). More limited, however, is our understanding of how these genealogical forces, through their likely localized nature, influence the spatial structure of industries. This paper combines Klepper's (2002) localized spinoff mechanism with Philips's (2002) genealogical approach to organizational life chances to explain the spatial evolution of the world's fashion design industry from its onset in 1858 through 2005.

A review of the empirical work on inheritance or parent-progeny transfer points out that descent does matter for performance (Philips, 2002; Buenstorf and Klepper, 2004). To which extent this is so, however, is still very unclear (Buenstorf, 2006). This paper aims to determine the importance of descent, or parent-progeny knowledge transfer, in explaining firm performance. We do this by analysing the genealogy of firms founded by previous employees of incumbent firms – spinoffs. The central research question addressed in this paper is hence: *to what extent are ideas and knowledge transferred from parent firm to its spinoffs within the fashion design industry, and in what way does inheritance and genealogy contribute to the individual success of designer firms?* This is the research question which is addressed in this paper. Furthermore, we focus on the role of this ‘lineage effect’ on the spatial clustering of designer firms in only a few locations, most notably Paris, France.

We test our hypotheses by using data on firms active in the top-segment of the fashion design industry. We use a unique dataset of the fashion design industry. The dataset includes firm-level data on year of entry and exit, the career path of the entrepreneur, the most prominent employees, (re-)location, and information on mergers and acquisition. We have compiled the data from various sources, most prominent being the Thames & Hudson Dictionary of Fashion and Fashion Designers by Callan (1998) and Watson’s 20th Century Fashion: 100 Years of Style by Decade and Designer (2004). In total we have counted 554 biographies of top fashion designers, active in either haute couture or ready-to-wear – the top-branches of the fashion spectrum.

Our three main contributions are related to the need for descent to be varied. We hypothesize that multiple parents give a spinoff a range of possible recombinations which is likely to benefit innovation or creativity and, subsequently, survival. Secondly, we hypothesize that being part of multiple families benefits survival in a similar way. Hereby we control for possible inbreeding effects. Thirdly, we control for pre-entry experiences that take place outside of the start-up region. Thus, we include geographic variance in descent as well as ‘genetic’ variance.

To test our hypotheses concerning genealogy, we use social network analysis software (Borgatti et al., 2002) to map the industry’s evolving ‘family trees’ or genealogy of fashion firms. Designers are considered to be the carriers of knowledge as they accumulate the gained experience at different fashion houses. These experienced designers are highly sought after by fashion houses, and, *vice versa*, entrepreneurs with a wealth of accumulated experience are attractive employers for young talent. Eventually, most designers start their own firm, and hence become spinoffs of incumbent firms. This spinoff mechanism (Klepper, 2002) has been argued to have accelerated spatial concentration in many industries, ranging from automobiles and tires to lasers and ICT (Philips, 2002). Klepper incorporates inheritance of capabilities from parent organizations to their spinoffs in his model, which would explain part of the higher performance rates of spinoffs *vis-à-vis* other *de novo* starters. Philips (2002) stresses the importance of a genealogical approach to determine firm survival. Both Klepper’s model and Philips’ framework are based on the idea that spinoffs copy (part of) the capability or routines of their parent firms. Second, they both find that better performing parents create more and better performing spinoffs. These spinoff dynamics might contribute to a spatial concentration of the industry. Early entrants whom by chance are better performers than their competitors, create more spinoffs, which create spinoffs themselves, etcetera. We assume that initially each designer has its own unique set of knowledge, which they can only transfer to their spinoffs. To a certain extent this type of reasoning is related to that of Connor and Prahalad’s (1996). They argue for a resource based theory of the firm based on irreducible knowledge differences between individuals. This type of reasoning is well suited for the fashion design industry, as it is largely composed of small sized firms, which are vying for

symbolic, tacit knowledge (Crewe, 1998; Scott, 2000). Of course, it may be less applicable to more large scale, less luxury-product industries in which firm success is more determined by cost-price margins, instead of assets such as personal reputation and remaining creatively ‘relevant’.

The rest of the paper is structured as follows. The following section gives a brief overview of the literature and reasoning behind our hypotheses. Section 3 describes our data collection and the history of the fashion design industry using quantitative data. Section 4 uses case studies and qualitative material to ascertain the plausibility of our hypotheses concerning parent-progeny knowledge transfer and the effects of genealogy. Section 5 explains our methodology and shows and discusses the results. Finally, some conclusions are drawn.

## **2. Inheritance and the importance of genealogy**

In evolutionary studies of industrial dynamics the variance in the performance of firms is usually explained by heterogeneity in firm routines, or the initial knowledge base (Nelson and Winter, 1982). Within this evolutionary framework, most empirical research on industrial evolution has focused on one of the key concepts it contains: inheritance or replication of routines (c.f. Klepper, 2002). In this respect these studies are closely related to the parent-progeny knowledge transfer studies in organizational science (Philips, 2002) Entrants suffer from a liability of newness (Stinchcombe, 1965) which they can overcome by acquiring pre-entry experiences. In other words, descent is argued to matter in explaining firm performance. Learning from parents gives the spinoff skills of production and marketing already attuned to the market. Previous studies have shown that these ‘blueprints’ caused by pre-entry experiences are an important determinant of firm activities over its lifetime (Klepper and Sleeper, 2005). This is why we hypothesize that spinoffs outperform other entrants (hypothesis 1). Here, a distinction is made between ‘*de novo*’ and ‘*de alio*’ entrants. *De novo* entrants are new firms, while *de alio* entrants are diversifying firms from other, usually related, industries. Spinoffs are *de novo* firms of which the founder has pre-entry experience working for incumbents. Because we expect any related pre-entry experience to benefit the founders in their endeavour, we hypothesize that founders with experience in related industries outperform entrants that have no related experience at all (hypothesis 2). We have defined fashion manufacturing, textile manufacturing and fashion or textile trade as related sectors to fashion design.

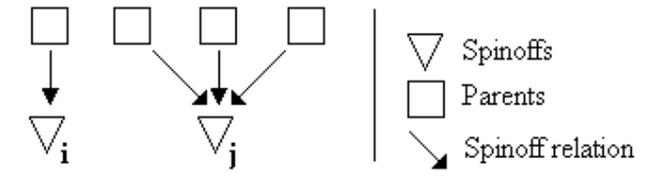
*Hypothesis 1. Spinoffs have lower hazards to exit than other entrants.*

*Hypothesis 2. Experienced firms have lower hazards to exit than other entrants.*

We assume that an entrant’s knowledge base increases with the amount of pre-entry experience. This suggests that the more parents a spinoff has, the better it performs. With more parents to learn from these spinoffs gain advantages vis-à-vis other spinoffs. Thus, even though we expect spinoffs to have more successful skills compared to other entrants, we expect the variance between spinoffs themselves to vary according to the number of parents a spinoff has. The skills learned by the aspiring entrepreneur at each parent is used to form a diverse set of knowledge of the spinoff. This type of reasoning seems plausible for the fashion design industry where success is determined by remaining creatively relevant. Creativity is defined here as the recombination of existing concepts and styles to a new fashion. Having experience at designing for different incumbents will endow the aspiring entrepreneur with a range of skills, ideas and market knowledge. Spinoffs with multiple parents have a higher

likelihood of finding an innovative new fashion style. Another beneficial effect of having multiple parents is the accumulation of reputation effects stemming from affiliation with incumbents (Phillips, 2002).

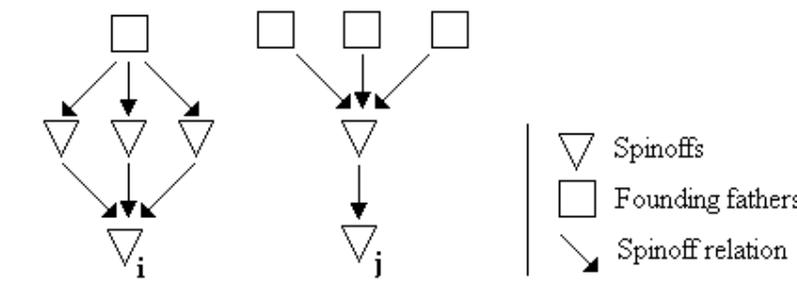
Figure 1. Conceptual representation of spinoff relations between firms.



*Hypothesis 3. The more parents a spinoff has the lower its hazard to exit.*

Although spinoffs may learn more from multiple parents than from one, it is possible that these parents are spinoffs themselves. This would mean that these parents make better learning environments than other incumbents. Thus, counting the number of parents would not capture all of the variance in the knowledge transfer from parent to progeny. Progeny would acquire through their spinoff-parents experiences passed down through even older generations. Entrants which are not spinoffs themselves would be the only possible parent organizations devoid of any of these ‘family’ effects. Taking into account the number of families that a spinoff combines might further our understanding of possible affects of genealogy. Another advantage of taking note of family-progeny transfer is the ability to control for any ‘inbreeding’ effects which are not captured by the number of parents alone. Inbreeding (Phillips, 2002) refers here to the diminished variance of knowledge gained from parents who share common ancestors (firm i in figure 2). Of course, it is also possible that a spinoff with only one parent has multiple ancestors (firm j in figure 2).

Figure 2. Conceptual representation of spinoff relations between firms.



We argue that spinoffs with multiple family lines outperform other entrants (hypothesis 4). Here, the number of families a spinoff is part of is equal to the number of ‘founding fathers’ in genealogy.

*Hypothesis 4. The more families a firm is part of the lower its hazard to exit.*

We localized nature of the spinoff process is due to the fact that spinoffs tend to locate in close proximity to their parents (Klepper, 2002). Through the replication of knowledge the spinoff process contributes to regional homogeneity (Phillips, 2002). This suggests that spinoffs from the same region are more likely to have the same parent than spinoffs from different regions. To the extent that different knowledge packages are beneficial for creativity and performance, we may expect that spinoffs with extra-regional parentage are more

successful than other entrants. Thus we hypothesize that geographic variance of descent increases firm survival (hypotheses 5 and 6).

*Hypothesis 5. Having an extra-regional parent lowers hazard to exit.*

*Hypothesis 6. Having an extra-regional family lowers hazard to exit.*

### **3. The evolution of the fashion design industry**

#### *3.1. Data collection*

To test our hypotheses 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, (re-)location, as well as information on mergers and acquisition. The data we collected are a compilation of various sources, most prominent being the Thames & Hudson Dictionary of Fashion and Fashion Designers by Callan (1998) and Watson's 20th Century Fashion: 100 Years of Style by Decade and Designer (2004). 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 historyoffashion.com is the most notable. The data encompasses information on 554 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. During this period 501 (90.4%) of these designers started their own firms. This means that 53 designers have not (yet) started their own firm during their careers in fashion, and have been active as free-lancers or employees. The data on each designer is biographical and hence offers complete information on each designer's career path. This makes it possible for us to determine pre-entry entrepreneurial experience by previous employment per employer and duration of each previous employment.

#### *3.2. The history of the fashion design industry, 1858-2005*

The fashion industry experienced sharp growth in the early 1900s (haute couture) and again in the 1960s (ready-to-wear). The early dominance of Parisian firms lasted until the 1940s, when London and New York and later Milan as well, consolidated their home market and achieved first mover advantages in new markets. The industry growth has been spurred initially by experienced entrepreneurs who entered the high fashion market exploiting their related knowledge, whilst later-on spinoff entrants tended to be the most prominent new entrants.

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 *haute couture* or high fashion design industry was to incorporate artistic creativity and technical excellence into the clothing design process. It created its own market designing clothing for royalty, the rich and famous, starting with Worth designing dresses for empress Eugenie in 1860. Indeed, the international character we see in fashion design today, was already present from its onset in the late 19<sup>th</sup> century. From 1889 through 1928 the industry grew from 8 to 52 firms. Up until the 1930s no city managed to considerably topple the dominance of the industry by firms located in Paris. In 1913 22 out of 30 firms (73.3 percent) were located in the French capital. However, in 1928 this share decreased to 53.8 percent, and in 1941 to 35.5 percent. In 2005 the share of Paris-based firms is 22.5 percent. As we can see in figure 1, the diminishing dominance of Parisian firms can be mainly attributed to the sudden rise and success of new entrants in New York, London and Milan. This shift in spatial concentration of the industry can to some extent be attributed to the introduction and subsequent growth of a new product-market in fashion design: *prêt-à-porter* or ready-to wear in the 1960s (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. This branche organization was established in 1911 to define and protect the profession of the French haute couturiers. An example of its seriousness is the expulsion of Cardin in 1959 because he had launched a ready-to-wear collection, the first couturier in Paris to do so. A good number of years later, when the number of foreign firms in the ready-to-wear market had grown considerably, Cardin was re-instated. As a consequence French couturiers only entered the ready-to-wear market as late entrants. This left first-mover advantages to new entrants in other locations, unrestricted by the *Chambre*'s reach. Cities such as London and New York already had build up a sizable fashion industry in the 1930s and 1940s and experienced a growing demand for designer fashion in the home-market, after the Second World War. This created a climate which proved suitable for new entrants, and as a consequence the spatial structure of the fashion industry became less concentrated around Paris.

When considering the entry possibilities, and the success of new entrants, we need to take into account the background of each entrepreneur. Pre-entry experience is one of the main determinants of firm performance in the industrial dynamics literature. We categorize entrants according to their founder's background using definitions from Klepper (2002) and Boschma and Wenting (2007) in (1) spinoff (i.e. *de novo* firm started by an entrepreneur with experience working in the fashion design industry for an incumbent), (2) experienced entrepreneurs (i.e. *de novo* or diversifying firm with experience in a related industry, such as the manufacturing of clothes or textiles), and (3) the inexperienced firm (i.e. *de novo* and diversifying firms with experience in an unrelated industry). Table 1 shows the number of firms by entrepreneurial background and entry cohort (each cohort represents approximately one-third of the population). In the period 1858 through 2005 210 spinoffs (41.9 percent) entered the market, 216 experienced entrepreneurs (43.1 percent) and 75 inexperienced entrepreneurs (15 percent). This shows that the bulk of the entrants in the industry have

Table 1. The number of firms in the fashion design industry, by year of entry and entrepreneurial background.

Background	Total (1858-2005)		Cohort 1 (1858-1961)	
	No.	%	No.	%
Spinoff	242	48.30	55	34.16
Experienced	175	34.93	87	54.04
Inexperienced	84	16.77	19	11.80
Total	501	100.00	161	100.00

Background	Cohort 2 (1962-1983)		Cohort 3 (1984-2005)	
	No.	%	No.	%
Spinoff	61	37.42	94	53.11
Experienced	78	47.85	51	28.81
Inexperienced	24	14.72	32	18.08
Total	163	100.00	177	100.00

entered with pre-entry experience which was either similar or related to the high fashion design industry. Over time we can see that relatively more and more spinoffs are generated, which is as expected since the number of total incumbents also increases. The relative number

of experienced entrepreneurs decreases over time. This is as expected, as the potential number of firms that might diversify into the high fashion design market decreases over time. Interestingly, the relative number of inexperienced entrants increases over time. This would indicate lower barriers to entry, which might be attributable to the development of and growth of ready-to-wear during the 1960s and onward.

It appears that the history of the fashion industry can be characterised as one which experienced growth in the early 1900s (haute couture) and again in the 1960s (ready-to-wear). The early dominance of Parisian firms lasted until the 1940s, when London and New York and later Milan as well, consolidated their home market and achieved first mover advantages in new markets. Experienced entrants, namely firms diversifying from related sectors, have initially spurred the industry's growth. These firms entered the high fashion market exploiting their related knowledge, whilst later on spinoff entrants tended to dominate the growth of the sector.

#### **4. Inheritance and genealogy in the fashion design industry**

Two questions. One with regard to parent-progeny knowledge transfer, in what way do spinoffs learn from their parents, and to what extent do they exploit this knowledge in their newly firms? The other with regard to the inbreeding effect on the quality or newness of knowledge from (multiple) parents, to what extent does learning from parents which have common ancestors effect the performance of spinoffs?

##### *4.1. Case study: Charles Frederick Worth – The father of haute couture*

The modern fashion industry started with haute couture, and haute couture started with Charles Frederick Worth in mid-nineteenth century Paris (De Marly, 1980). Worth was the first of many designers who found aesthetic perfection rooted in a foundation of technical excellence. He was the first to sign his work and the word *couturier* had to be invented for occupation. Worth's most important contribution to the start of a new industry, was his redefinition of the nature of the relationship between the garment's purchaser and its maker. Before him, even the most skilled and talented dressmakers were regarded as servants in 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.

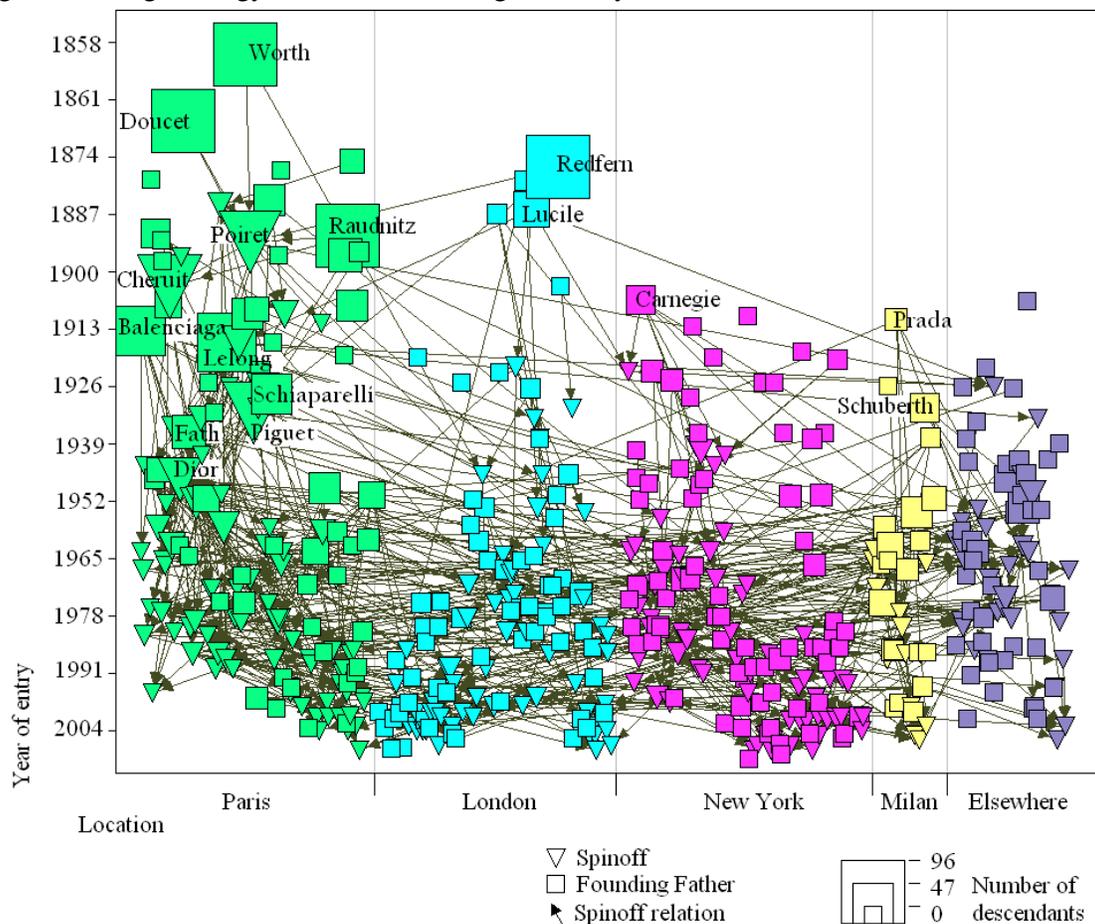
Worth started his career in the clothing industry by working for clothing manufacturers, first in England, and later for a Parisian firm called Gagelin. In the 1850s he persuaded Gagelin to open a dress department, which was a great success. Subsequently, in 1858, he felt that he should strike out on his own. The world's first "maison de couture" was set up by the Englishman in Paris, where, in 1860, he came to design empress Eugenie's official court clothing. In the following years Worth designed *haute couture* clothes for most of Europe's royalty. Only until the end of the nineteenth century did the industry take off, with a host of new entrants. By then Worth had made a lasting impression. He faced substantial competition for the first time when, in 1871, Jacques Doucet set up a salon in Paris. For a long time Doucet's name was the only one equalled with Worth (Perrin, 1996). The house of Worth was to last until 1953 when it was acquired by the house of Jeanne Paquin, a Parisian fashion house established in 1891. The merger was not built to last though, as Paquin-Worth closed its doors only three years later, in 1956.

Many talented young designers were trained by Charles Frederick Worth, and most started their own firm. Most notable on Worth's spinoffs was revolutionary designer Paul Poiret. Poiret started his career as a fashion designer in 1898, at Cheruit. In 1899 he started working for Parisian house Rouff and Redfern, based in London. In 1900, Doucet employed his design talents, and from 1901 to 1904 he worked for Worth. After these formatting years, Paul Poiret started his own firm in Paris. In the subsequent years, Poiret trained many fashion designers himself, such as Piguet and Greer, who would come to dominate the next generation of fashion designers.

#### 4.2. The genealogy of the fashion design industry

The case of Charles Frederick Worth and his protégé Paul Poiret indicates that there seemed to be a 'success-breeds-success' mechanism in the early fashion design industry. Early entrants in Paris spawned successful spinoffs, which generated successful new spinoffs themselves. This process is an indication that pre-entry experiences, or descent, of entrepreneurs mattered for the performance of their firms. The designers that worked for successful incumbents learned from their experiences there and have implemented at least part of this knowledge in their own firm. This was not only the case for designers in the early phase of the fashion industry. Up until today, many successful fashion houses are spinoffs of the great designers of the past, and their employees often turn out to be the success-stories of

Figure 3. The genealogy of the fashion design industry, 1858-2005



Source: Own elaboration of Callan (1998) and Watson (2004).

the next generation. Famous designer Christian Dior has influenced *haute couture* greatly after his start-up in 1947 in Paris (De Rethy and Perreau, 2002). However, before starting his own firm he worked at the houses of Piguet and Lelong. Dior's success is reflected in the success of his protégées, among them Yves Saint Laurent, Pierre Cardin and Marc Bohan. Another example of a successful spinoff is Japanese designer Gnyuki Torimaru (Yuki), whose first job was as a pattern cutter for the fashion house of Louis Feraud. Hereafter he went to work for the house of Michael, and also for Hartnell and Cardin. During this period Yuki acquired valuable experience which enabled him to consider branching out on his own in 1972 (Watson, 2004).

Figure 3 shows the genealogy of all firms in our dataset, over the period 1858 through 2005. It shows each entrant in the fashion design industry by entry year and location. Clearly, Paris has dominated the industry from its onset. Only after the 1950s do we see a sizable industry in London, New York and Milan. Figure 3 also shows whether a firm was a spinoff or a founding father. Thirdly, it illustrates the number of descendants per firm. This is calculated as the number of firms that have family relations with the focal firm, i.e. have inherited (part of) this firm's capabilities. Thus, the larger a node is in this network of spinoff-ties, the more spinoffs it has generated, or the more spinoffs its spinoffs have generated, etcetera. Interestingly, all major 'families' originate from Paris; Worth, Doucet, Raudnitz, Lelong and Schiaparelli are all Parisian entrants, and the most 'fertile' spinoffs as well (see Dior, Poiret, Balenciaga, Fath and Piguet in Figure 3). Londoner Redfern has to thank its highly fertile Parisian spinoff Poiret for its long list of descendants. Early entrants are of course more easily capable to produce a long list of descendents. Still, we only see a few of these that actually do so. And those that succeed to create a large family over time rarely originate from outside of Paris. Interestingly, all regions have identifiable family lines that trace the descent of the fashion designers of today back to the 1900s.

The importance of descent in the fashion design industry begs to question what motives successful incumbents could have 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. To answer this question we first have to answer another: what determines the creative performance of a fashion designer? The fashion design process is primarily creative, and is dominated by continuous fashion cycles of approximately six months. To cope with this pressure to innovate, designers themselves deem the exchange of ideas with peers as important (Crewe, 1998; Scott, 2000). Since these ideas are often hard to codify, face-to-face contact between designers becomes a necessity and often leads to spatial clustering of fashion design activities in 'creative cities'. Thus, one reason why successful incumbents might hire and train young designers might be to come into contact with new ideas and thereby increase the duration of their own creativity and success. Considering that designs can be relative easily copied by competitors, the hiring of young designers might prove more successful strategy than exchanging ideas with other incumbents. 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. For instance, the designs of Alber Elbaz at Lanvin are according to the specifications as his previous employer, Geoffrey Beene, taught him (Watson, 2004). This implies that experienced designers make more attractive employees for incumbent firms than designers who are just starting their career. Furthermore, 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).

The above mentioned process can be summarized as a process of knowledge exchange and accumulation for young designers through the movement from one job to the next,

gaining experience as they work at different fashion houses, which are part of different family lines. Labour mobility of future entrepreneurs results in a diverse set of parent-progeny transfers. Considering that creative or symbolic knowledge is often tacit, the parent-progeny or spinoff mechanism is an important process of knowledge exchange between fashion designer firms. In the next section we determine to what extent this would make the performance of firms to be dependent on their parentage.

## 5. Results

### 5.1. 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  $t$ . Independent variables include entrepreneurial background (i.e. a dummy variable indicating a spinoff background), location in Paris, the (logged) number of parents, and the cluster coefficient network position of a fashion firm. Here, the number of parents a firm has is measured as its in-degree centrality (i.e. number of incoming directed links with other firms). The Cox proportional hazard function can be formulated as follows:

$$\lambda(t|z) = \lambda_0(t) \exp\{\beta z\}$$

Where  $\lambda(t|z)$  is the hazard at time  $t$  dependent on covariates  $z = (z_1, \dots, z_n)$ ,  $\beta = (\beta_1, \dots, \beta_n)$  is the vector of regression coefficients for  $z$ , and  $\lambda_0$  denotes the baseline hazard function. All exit dates after 2005 were treated as right censored cases. This accounted for 346 cases (69.1%) of the total of 501 firms in our dataset. The large number of censored cases can be attributed to the fact that even though a lot of fashion firms did not outlive their founder, most do remain active in the market during the lifetime of its founder. Thus, the growth of new entrants after the Second World War and during the rise of ready-to-wear during the 1960s not only spurred the growth of the industry, but also the number of censored cases post-2005.

### 5.2. Cox regression results

In this section we present and discuss the results from the Cox regression analysis on firm survival. Table 2 shows descriptive statistics per variable. Table 3 shows the results of the four regression models used to test our hypotheses.

In model 1 we test hypothesis 1 and 2. It appears that having pre-entry experience matters. Both our experienced firm and spinoff dummy-variables yield negative effects on hazard to exit. However, only the spinoff variable has a significant effect. Therefore hypothesis 1 is accepted and hypothesis 2 is not. It appears that being a spinoff, by itself, increases firm survival. This is in line with earlier research (cf. Klepper, 2002). We control for any regional-specific effects in the industry's hot-spots by adding dummy variables for location in Paris, London, New York and Milan. All other locations are the reference category. A few firms have migrated 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. The regional dummy variables appear to have very different effects on firm survival. Throughout the different regression models Parisian firms perform worse than firms located elsewhere. This might be interpreted as the effect of local competition in the highly dense Parisian cluster (Porter, 2000). Still, the regional dummy-variable coefficients are only of marginal significance, if at all. These results suggest

Table 2. Descriptive statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Spinoff	501	0.00	1.00	.4830	0.50021
Experienced firm	501	0.00	1.00	.3493	0.47723
Paris	501	0.00	1.00	.2735	0.44618
London	501	0.00	1.00	.2435	0.42963
Milan	501	0.00	1.00	.0679	0.25176
New york	501	0.00	1.00	.2735	0.44618
No. parents	501	0.00	12.00	1.1238	1.62255
No. families	501	0.00	30.00	2.6766	4.73870
Extra-regional parent	501	0.00	1.00	.2475	0.43199
Extra-regional family	501	0.00	1.00	.3453	0.47594

Table 3. Cox regression results (standard errors in parentheses).

Dependent variable: hazard to exit the market.				
Variable	Model 1	Model 2	Model 3	Model 4
Experienced Firm	-0.337 (0.244)	-0.299 (0.195)	-0.295 (0.194)	-0.278 (0.197)
Spinoff	-0.597*** (0.219)			
No. Parents		-0.254*** (0.077)	-0.001 (0.112)	0.076 (0.121)
No. Families			-0.119*** (0.045)	-0.160*** (0.053)
Extra-regional parent				-0.785** (0.356)
Extra-regional family				0.572 (0.367)
Paris	0.374 (0.244)	0.414* (0.244)	0.434* (0.244)	0.328 (0.252)
London	-0.482* (0.284)	-0.478* (0.284)	-0.442 (0.284)	-0.459 (0.285)
New York	-0.164 (0.260)	-0.168 (0.260)	-0.211 (0.260)	-0.275 (0.263)
Milan	-0.526 (0.430)	-0.433 (0.432)	-0.521 (0.433)	-0.625 (0.437)
-2 Log Likelihood	1852.597	1846.409	1837.179	1832.511
Chi-square	22.704***	26.244***	32.594***	34.986***
N	501	501	501	501

\*\*\* Significant at the 0.01 level

\*\* Significant at the 0.05 level

\* Significant at the 0.10 level

that location-specific effects are negligible in determining the survival of fashion designer entrepreneurs. Pre-entry experience, gained from incumbents increases the life-chances of firms. Combined with the tendency of spinoffs to locate nearby their parents (Sorenson, 2003), these results suggest that the spatial clustering of the fashion design industry during its evolution was fuelled by spinoff dynamics.

In model 2 we test hypothesis 3. By replacing our spinoff-dummy with the number of parents a spinoff has, we analyse whether it mattered to be a spinoff of several parents or of only a few. It appears that the number of parents a spinoff negatively and significantly lowers its hazard to exit. Hypothesis 3 is accepted.

In model 3 we test hypothesis 4. We tested whether it mattered from which parent firm the spinoff hailed, controlling for inbreeding effects. We take into account the number of families a spinoff belongs. Spinning off from a parent who was itself a spinoff from a wide variety of parents and ‘grandparents’, etcetera, proved to be beneficial to the survival of designer firms. With a significant coefficient of  $-0.119$ , hypothesis 4 is accepted. Interestingly, when we control for the number of families, the coefficient for number of parents is no longer significant. This suggests that having pre-entry experience in the industry, and more specifically, having a diversity of parentage seems to contribute well to the survival of fashion designer firms.

In model 4 we test our final hypotheses 5 and 6. The extra-regional influence in the genealogy of firms was measured using two dummy-variables. Only the coefficient of the dummy-variable measuring extra-regional parents appears to be significant, and is negative. This suggests that in line with hypothesis 5, firm survival is increased if its founders have gained pre-entry experience in extra-regional incumbents. Taking all models’ results into account, we can summarize that having pre-entry experience in the industry, and more specifically, having a diverse genealogy both in terms of parentage as well as geography contributes to the survival of fashion designer firms.

## 6. Conclusions

We have shown that there is a strong qualitative indication that ‘lineage’ or parent-spinoff learning played a large part in the day-to-day experiences of fashion designers throughout the industry’s history. Our conclusions concerning the effects of genealogy on firm survival in the fashion design industry are threefold.

First, we have shown that parentage determined firm survival: spinoffs with multiple parents *and* spinoffs with parents with a more diverse ancestry outperformed other entrants. When controlling for inbreeding effects, it appeared that having multiple families is more important than multiple parents. Thus, there seems to be room for a trade off; firms that only have one parent can still perform quite well, if this parent has a very diverse set of ancestors. Third, we find strong evidence suggesting that aside from these genetics of descent, firm survival is determined by the geographic diversity of its genealogy as well.

Our results indicate that even though spinoff dynamics are apparent in the fashion design industry, and spinoffs tend to outperform others, the diversity within the genealogy of each spinoff is an important factor in their survival. Agglomeration economies appeared to be strikingly absent. We conclude that the spinoffs mechanism contributed to the concentration of the world’s fashion design industry in only four major centers: Paris, New York, London and Milan.

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