DRUID Working Paper No. 05-14

Embodied Knowledge Transfer: Comparing inter-firm labor mobility in the music industry and manufacturing industries

By

Lars Frederiksen and Silvia Rita Sedita

Danish Research Unit for Industrial Dynamics

www.druid.dk

Embodied Knowledge Transfer: Comparing inter-firm labor mobility in the music industry and manufacturing industries

Lars Frederiksen

Copenhagen Business School
Department of Industrial Economics and Strategy
Solbjergvej 3, 5th Floor
DK-2000 Frederiksberg C
E-mail: lf.ivs@cbs.dk

Silvia Rita Sedita

University of Padua
Department of Economics
Via del Santo 33
35123 Padova, Italy
E-mail: silvia.sedita@unipd.it

September 6, 2005

Abstract:
This paper adds new knowledge to the phenomenon of transferring embodied knowledge through labor mobility by means of a comparative study of the entertainment and manufacturing industries. Explorative in nature, the paper takes advantage of unique data on the Danish labor market (i.e. IDA) to investigate labor mobility patterns for the two selected industries and to detect internal differences within industry segments and regarding creative intensive and invention activities in particular. We use the music industry as a proxy for the entertainment industries.

Key words: Embodied knowledge transfers, labor market dynamics, inter-firm mobility, creative intensive and invention activities, entertainment industries, manufacturing industries

JEL Codes: J62, D83, L00, Z10, L60

Acknowledgements:
Comments from Stan Metcalfe, Morris Teubal, Keld Laursen, Lionel Nesta, Mark Lorenzen, and participants at the Tenth Annual DRUID Conference 2005 are gratefully acknowledged. The normal disclaimer applies and all errors remain ours.

ISBN 87-7873-179-8

Introduction

"*Entertainment - not autos, not steel, not financial services – is fast becoming the driving wheel of the new economy".*

(Wolf 1999, p.4)

Knowledge transfer and spillovers are generally emphasized as a key component driving a proficient development of industries (Almeida & Kogut 1999; Argote & Ingram 2000; Breschi & Lissoni 2001). This paper is concerned with how knowledge is transferred through labor markets within entertainment industries compared to the manufacturing industries, the latter functioning as a backdrop. It aims to provide empirical evidence that inter-firm labor mobility is more frequent in creative and invention activities than in routine-based ones such as production and distribution.

The knowledge spillover literature frequently employs patent and patent citation data, reporting largely the transmission of explicit knowledge between firms (Jaffe, Tratjenberg, & Henderson 1993). Such research design appears to contrast the modern knowledge based approach to the economy, where more and more crucial knowledge for sustainable competitive advantages of firms proves tacit in nature and thus often embodied in the skills, talent and judgment of individuals (OECD 1996). Moreover, research on knowledge spillovers has frequently focused on social and spatial aspects (i.e. localized knowledge spillovers) (Breschi & Lissoni 2001) typically within the empirical domain of manufacturing firms (often in high-tech industries, such as bio-tech and ICT). This includes, for instance, firm founders and key employees who are tied down to particular locations (Sorensen 2003) and by demographic attributes like the age of the labor force (Dahl 2004). Arguably, this literature does not adequately address *activities and knowledge types* for explaining the transfer of embodied knowledge.

This paper relocates the debate on knowledge spillovers on two fronts: first, it applies the concept of embodied knowledge transfer to propose a more sensitive notion of knowledge flows[1], and second, it includes a new industry setting, namely, the entertainment industries, were innovation activities are design-based rather than science-based and built on specific elements of creative inputs. In accordance with the social and spatial factors suggested, we focus on industrial differences and the diversity of intra-industry activities, which plausibly play an important role in labor flexibility.

Tepper (2002) suggests that increased efforts are needed in developing comparative studies between entertainment and 'traditional' industries as is an increased focus on labor markets within the entertainment industries. Accordingly, this explorative study marries two lines of interest: the embodied knowledge transfer through labor mobility and the dynamics of the

entertainment industries. In the paper these issues are analyzed using public register data on labor mobility across firms as a proxy for knowledge transfer of a human resource quality (i.e. embodied knowledge (Blackler 1995)). By embodied knowledge we mean the body of tacit understandings, skills and judgment held by an individual, which cannot be transferred without her physical movement. It is these competences plus experience and motivation acquired in one part of the economy or relevant social/cultural life that can be usefully transferred through a job change (Tomlinson 1999).

Three empirical questions aimed at three different analytical levels (i.e. industry, activities and individuals) are investigated: 1) Are individuals changing jobs more frequently in the entertainment industries than in manufacturing industries, and do the former industries therefore have a higher level of circulation of embodied knowledge? 2) Is inter-firm labor mobility determined mainly by industry or activity specificities, thereby demonstrating that embodied knowledge transfer takes place more often in creative and inventive activities than in routine–based ones? 3) Do the explanatory factors for labor mobility regarding creative intensive and invention activities in manufacturing and entertainment industries align with or diverge from one another? By conducting this analysis we intend to stir up the emerging debate about the specificities and myths of the entertainment and creative industries, which are often recognized, without elaborate analysis, as being particular and different.

We test the hypothesis that the frequency of inter-firm mobility for individuals in the music industry (used as a proxy for entertainment industries) is higher compared to that of a traditional industrial setting, namely manufacturing industries. For both industries we then explore the intra-industry factors that determine labor mobility. The results reveal that the significant factors for explaining inter-firm mobility of individuals are related to the character of the activities undertaken within the industry.

Additionally, we test the factors that may explain differences between parts of the two industries undertaking activities of creation and invention, finding that pecuniary (high hourly earning) and reward based ones (i.e. career progression) are more likely to characterize motivations for individuals to move to another job in manufacturing than in the music industry.

The remainder of the paper is structured as follows: Section 2 introduces the research field and questions. Sections 3 and 4 develop the theoretical argumentations on labor market mobility and knowledge transfer, with particular focus on the entertainment industries. Hereafter, in Section 5, we present the three testable hypotheses. The paper proceeds in Section 6 by outlining the methodology applied, the models developed and used, and the results. Finally, we offer

concluding remarks and propose ways ahead for further research on embodied knowledge transfer.

2 Research field and questions

2.1 Entertainment industries research

Industries that develop, produce and distribute experiences and thus, products and services for entertainment are currently expanding in terms of the number of employees, turnover and exports rates (Howkins 2001; The European Commission 2005). Some commentators claim that we live in a period of transition towards not only a service-based but also an experience-based economy (Pine & Gilmore 1999). To be in the vanguard and take advantage of this economic development, it is crucial for firm managers, regional developers and national politicians to increase their knowledge about particular features of the key dynamics of these industries – do they differ from those of traditional industries (i.e. manufacturing) and thus, is there a need for revising theories and policy programs dealing with such industries? As a brief illustrative example of the importance of these industries we present the case from the Department of Culture, Media and Sport[2] in the UK, which announced that the entertainment industries in the UK accounted for 8.2% of Gross Value Added (GVA) in 2001 and grew by an average of 8% per annum between 1997 and 2001. Moreover, exports from these industries contributed £11.4 billion to the balance of trade in 2001, representing around 4.2% of all goods and services exported from the UK, and grew at around 15% per annum over the period of 1997-2001. Such empirical observation alone seems to call for further analysis specifically targeted at the single sectors making up this rising industry segment.

Nevertheless, a gap is identified in the industrial dynamics literature with respect to transfer of embodied knowledge, as relatively little is known about this aspect for innovation processes in the entertainment industries[3] (See: Faulkner & Anderson 1987; DeFillippi & Arthur 1996). Modest research concerning these industries is informed by quantitative studies of labor market mobility through which embodied knowledge flows and far less is discovered in the literature on quantitative comparative studies between conventional industries like manufacturing and entertainment industries[4]. The scarce consideration of entertainment industries by economists might stem from the perception that the industries' end products, product development processes, including aesthetic and symbolic knowledge resources as well as various forms of related work ethos of artistic self-realization and intrinsic motivation of key knowledge providers are supposedly more frivolous and riddled with heterogeneity than the invention, innovation and

production of cars, pharmaceutics, guns, etc. (Andersen & Miles 1999). Consequently, a dominant interpretation is that these industries can only to a very limited extent be analyzed from a business economics perspective. Becker (1982), Jones and DeFillippi (1996), and Cowen (2000) and Menger (1999) are among the few attempts to explore the dynamics of the entertainment industries related to the division and organization of labor.

2.2 A knowledge-based view on labor mobility

Connected to the growing importance of knowledge as a strategic resource for the competitiveness of firms (Spender & Grant 1996; OECD 1996), it is highlighted that firms may continue to use and reuse their knowledge, sedimented over time in their practices, despite dramatic changes in employees, technology and the products developed and produced (Langlois & Robertson 1995). However, markets[5] can also support a productive (re)combination of knowledge resources either through trade or via labor market mobility, both concerning intra- and inter-industry knowledge spillovers. (Metcalfe & Warde 2002). Scholars underline that it is central to understand not only the process of knowledge creation within firms (Nonaka, Toyama, & Nagata 2000) but also the process of knowledge flows between firms in the form of networks and strategic alliances (Dyer & Singh 1998; Gulati 1998; Contractor & Lorange 2002; Grabher & Powell 2004), which facilitate access, acquisition and production of novel knowledge (Grant & Baden-Fuller 2004). However, it is implicit in many studies that a high level of circulation of embodied and hence often tacit knowledge rather than explicit knowledge among firms is believed to be a condition supporting firms to increase their flexibility, performance and innovative capabilities (Angel 1991; Saxenian 1994; Cappelli 1999; Feldman 2000; Dahl 2004). Hence, it is argued that labor market mobility is among the most important channels for transferring tacit knowledge, and explanations of patterns of labor market mobility are therefore a research arena of attention (Fornahl, Zellner, & Audretsch 2005).

We refrain from the traditional debate on the costs of transferring tacit and explicit knowledge (von Hippel 1994), suggesting an adjacent divide between embodied and encoded knowledge (Blackler 1995). Embodied knowledge is less predictable in nature due to its casual ambiguity (being strictly individual and thus never fully explicable), while the encoded knowledge (i.e. information) can be socially shared because of its explicit nature (if the transmission costs do not overcome the benefits from its use). The latter is a low value resource, since it is rather predictable and also open for imitative processes. Therefore, we assume that in general, it is of greater value for the firm to appropriate embodied knowledge resources.

Much of the resource-based literature focuses on identifying the kinds of resources that are likely to be less mobile (Peteraf 1993). The appropriation of value produced by the firm's human resources comes especially from the activities of a particular personal talent, whose gifts are by definition inimitable (Teece 2003), but to a certain extent available for the firm on a factor market (Barney 1986). Following this argument, we expect firms to develop mechanisms to retain crucial human resources, entertaining long-term relationships with their employees, to finally reach the degree of stability needed in order to support learning processes and to develop routines based on tacit knowledge embedded in the knowledge repositories of the organization (see, for example, Lundvall 2004). However, this does not appear to be the case regarding creative intensive activities. Therefore, an interesting question is whether there are significant differences between and within industries concerning the degree of labor mobility (for instance, differences between high-tech or low-tech manufacturing, entertainment etc.) and with respect to the characteristics of mobile workers (in terms of age, hourly earnings, career perspectives, etc.).

2.3 Labor mobility and knowledge transfer

The idea of sparking knowledge creation by transferring knowledge through the mobility of individuals is not new. For centuries, artists and scientists have visited places and people new and different from their original environment in order to study and learn. The mobile person is supposed to access and acquire new knowledge, both explicit and tacit, from her "journeys". Besides, mobility is considered a great tool for building social relations and facilitating the establishment of informal networks (Fornahl, Zellner, & Audretsch 2005).

From an organizational point of view, knowledge accumulates during the career of an individual and a potential employer can thus take advantage of the worker's previous experience, as it is assumed that an employee shares her knowledge from past jobs in later ones and knowledge as such flows between firms through the movement of individuals.

In general, the function of labor market mobility can be viewed as a device for achieving knowledge spillovers. These spillovers of knowledge have been emphasized, at least since Marshall (1925), as a key externality for firms in a given industry (i.e. the importance of the labor pool for clustering) and thus an explanation for potential economic growth by sharing productive knowledge. Furthermore, labor mobility sustains positive externalities by creating and maintaining social relations that for a number of industries are vital for the capability to carry out sustained innovation (Eisenhardt & Tabrizi 1995). This is because social relations transmit information that can be deciphered through community based key-codes, translating it into an embedded social knowledge underpinning aspects such as: evaluation of technological

discoveries, judgment of available talent and assessment of managerial decisions by rivals and collaborators, as well as discussion of demand situations (Saxenian 1996). Transferring tacit knowledge through human resources mobility as well as information through social relation structures helps keep costs of coordination low and gives better opportunities for cognitive alignment and thus, adoption of common conventions (i.e. language, institutions of trust and safeguards of reputation, etc.), which may benefit firms collaborating in creation and invention activities (i.e. product development), where a productive reassembling of various specialized but dispersed complementary knowledge resources makes it possible to undertake complex tasks.

However, as Rosenkopf & Almeida (2003) maintain, it is important to question how much and which parts of the embodied knowledge is actually shared through daily work processes of close interaction and communication between a knowledge holder and a recipient, and thus, to inquire whether the relationship between knowledge flows and labor mobility is significant.

3 Theoretical background

The type of knowledge we approach in this paper is not encoded, and not easy to articulate and transfer, and hence not ubiquitous. Rather, the knowledge resources we are interested in tend to have the character of being difficult and costly to codify, complex, intangible and sticky. They are mainly rooted in matters of formulating ill-defined problems, making non-routine judgments and decisions, and are hence hard to diffuse through traditional means of trade and communications (Simon 1969). Humans are the living repositories and carriers of these types of resources. In order to understand this research field we theoretically adopt a knowledge-based view, perceiving in particular embodied knowledge transfer as a driver for value creation embedded in all industry activities undertaken.

3.1 Knowledge transfer in different perspectives

Management studies have put emphasis on knowledge transferring across firms in various forms of exchange- and learning-based relationships in order for firms to succeed (Dyer & Singh 1998; Khanna, Gulati, & Nohria 1998).

However, the focus in this literature has seldom revolved around which types of activities demand most knowledge transferring; in other words, are they concerned with distribution and production or creation and invention processes? Correspondingly, does the knowledge transfer mainly involve knowledge of standardized procedures, algorithmic in nature and to some degree predictable (Amabile 1979) or of non-routine search procedures, demanding other types of know-how and problem-solving abilities? The latter, we think, depends largely on tacit knowledge

and thus embodied judgment through heuristics. Accordingly, the literature referred to rarely touches upon differences across industry segments and thus ignores a crucial aspect of knowledge transferring: whether the knowledge type involved in the value creation process, if it is scientific technical or symbolic aesthetic in quality, influences the pattern of labor mobility.

Geographical studies have focused on the issue of inter-firm knowledge transfer individuating forms of organizing development and production based on: 1) Short or long distance; 2) Vertical and horizontal inter-firm orientation; 3) Along relatively permanent and stable relationships (i.e. networks, clusters) (Maskell & Lorenzen 2004); or 4) Strictly connected to the territory and its culture (i.e. industrial districts) (Becattini 1979; Belussi & Pilotti 2002). In all cases tacit and explicit knowledge transfers occur, which differ from each other in terms of the level of intrinsic uncertainty and the role knowledge transfer plays in the process of building competitive advantage.

3.2 Channels of knowledge transferring

Channels for knowledge diffusion between firms and industries are numerous. The most frequently acknowledged ones include: mergers and acquisitions, strategic alliances and networks of different kinds, and labor mobility. Each of these channels typically indicates a different scale level, a different source of knowledge (Foss & Pedersen 2002) and related different strategic choices and options for management to access certain resources, permanently or temporary (Ebers 1997).

Yet, these channels for knowledge transfer differ in quality and stability, according to the costs and benefits of transferring knowledge. Some researchers analyzed the knowledge transferring phenomena, questioning the relative effectiveness of different channels for activating the knowledge transfer. Among others, Rosenkopf and Almeida (2003) investigated two mechanisms for facilitating knowledge flows between semiconductor firms, which are both able to overcome limitations due to geographical or technological distance: alliances (organizational-level phenomena) and mobility (individual-level phenomena). In their empirical study, mobility of inventors, analyzed through patent data citations, seems to facilitate inter-firm knowledge flows, while alliances do not show the same overarching tendency. Thus, the validity of mobility as indicator of knowledge transfer is supported.

3.3 *Measuring knowledge transfer through labor mobility*

The research method used so far to study knowledge transfer has been rooted primarily in the patent data system. Hence, most of the industries where these types of analyses have been

applied belong to high-tech groups, individuating biotech or high-tech networks of learning (mostly in ICT, pharmaceuticals and chemicals).

Knowledge detected by patent data citations is prevalently encoded and neither illustrative of the wider ranges of not-traced contacts between inventors, nor illuminative of the cross-fertilization of expertise and know-how shared among co-workers. Austrian economists (Oakman 1986) have indicated skepticism about adopting patents as a reliable measurement of economic and inventive activity. Desrochers (1998) insists on the lack of applicability of the patent data system for registering linkages across industries because the industry of origin for a patent is not known by the patent office. What is *known* is only the technical nature of the invention.

To tackle this important restraint on the application of the method to industries in general, and to the entertainment industries in particular, it is necessary to search for other alternative criteria to measure intra- and inter-industry knowledge spillovers.

We propose looking at individual mobility patterns rather than citing individual collaborations[6]. By changing the approach we pave the road for an alternative way of measuring embodied knowledge transfers, which is also applicable to parts of medium and low-tech industry, and, at the individual level, to occupations other than mainly engineers and scientists.

4 Entertainment versus manufacturing industry specificities

Our aim is to increase the present understanding of knowledge transfer through labor mobility in entertainment industries (i.e. here the music industry is used as a proxy), applying the manufacturing industries as a backdrop reference category. Therefore, this section describes the key characteristics of the entertainment industries. On the basis of the evidence from 30 semi-structured interviews with key respondents of the Danish music industry[7] as well as from desk research of the music industry (Frith 1990; Shuker 2001), we expect to find differences between the two industries (please see Appendix 1 for a stylized interpretation of the key differences and similarities between creative intensive and invention activities in entertainment and manufacturing industries).

4.1 Entertainment product specificities and knowledge content

Entertainment industries may be defined by the products that they create (Scherer 1980). We think that such an 'IO' definition is parsimonious since important elements are omitted such as the knowledge resources and processes involved in product development activities. Still, by entertainment products we refer to products that embody some degree of artistic substance and

provide some degree of enjoyment or option for self-expression (Brunet 2004). In contrast to services, intangible goods (Hill 1999) emerging from the entertainment industries are simply entertainment products, intellectual assets or knowledge-based products (Quah 2002).

Entertainment industries develop and deliver products that in general are intended to satisfy an aesthetic, expressive or entertainment need of the consumer (sign value) and of the creator rather than to hold a purely utilitarian value (use value) for the purchaser as expected mainly by products arriving from manufacturing firms (Hirsch 1972; Holbrook & Hirschman 1982; Lash & Urry 1994).

Innovation activities in the entertainment industries are understood to be design-based but somehow discovery driven rather than science-based and thus, innovation is as mentioned build on specific elements of creative and somehow craft-based inputs and not mainly on traditional technology change.

Several studies have shown that encoded knowledge is of limited use in the entertainment industries and firms depend seriously on particular individuals' embodied knowledge as well as community-based resources of information sharing and diffusion as important resources needed for success (Lampel, Lant, & Shamsie 2000; Grabher 2002a; Grabher 2002b). That is, the individual input for developing these products constitutes a key resource based on creativity, artistic vision and talent (DeFillippi & Arthur 1996). This initial input for product development may be perceived as somewhat comparable to the concept of invention within the field of economics of innovation (Freeman & Soete 1982), typically aimed at the explorative activities for creating novel products of manufacturing industries.

Moreover, decisions concerning artistic and sometimes also humdrum activities for problem-solving depend to a large extent on heuristics rather than on general scientific, technical and algorithmic knowledge typically acquired through education activities and formal learning. The knowledge type that dominates activities in the manufacturing industries may sometimes wrongly be defined as explicit, but, following Mowery et al. (1996), we point out that indeed it must hold a large component of tacit embodied knowledge in order to be productive.

Therefore, despite differences in the type of knowledge providing key competitive advantages for firms populating the entertainment and the manufacturing industries, we assume that the activities underpinning processes of creation and invention share some communality in labor mobility patterns. For the music industry, such activities refer to the phases of conceptualization, origination and creation, which are based on a high level of open-end experimentation, craft work and intuition (Powell 1987) – also called 'stylistic innovation' (Menger 2003) or 'artistic innovation' (Castañer & Campos 2002). For the music industry these activities include

songwriting, creating instrumental arrangements, mixing recordings, playing music, etc. Regarding the manufacturing industries these activities of invention and creation allude typically to the segment of high-tech firms characterized by a high intensity of use of technical and scientific knowledge for problem solving reflected, for instance, in large investments in R&D (please see Appendix 1). Our attention is centered on activities of creation and invention that are possibly partly overlapping but not identical to activities of innovation. The latter refers rather to aspects of implementing creativity and invention in a commercial context (Fitzgibbon 2001).

Qualitative research[8] informs us that a high density of embodied knowledge transfer distinguishes creative intensive and invention activities of the two industries from more conventional standardized activities (i.e. medium- and low-tech manufacturing firms and firms undertaking production, distribution and retail activities in the music industry). These activities do not appear to depend on the same beneficial aspects of human capital saturation due to the minor importance of non-routine activities, search procedures, need for diversity and friction, analyses of signs and symbols, and invention through judgment and individual talent for problem finding and solving, but rather focus on competitiveness arriving from reproducibility, low costs, and economies of scale.

Implicitly, we support the claim that entertainment industries, in important aspects of their industrial dynamics, especially labor market mobility for embodied knowledge transferring, rather than differing from the industrial dynamics of industries traditionally used for theory testing (i.e. bio-tech, IT, chemicals, etc.) actually show aligning features concerning activities of creation and invention (Handke 2004).

4.2 Industry structure, innovation and projects

Activities in the entertainment industries appear on average to be organized in smaller firms than in manufacturing, and their life cycles tend to be shorter (Power 2003). These aspects may influence the level of labor mobility, since people working in entertainment industry move around more than in manufacturing industries, due to a higher level of entries and exits of firms.

Another divergence regards, as claimed by Caves (2000:201), the notion of innovation: "*innovation in the creative industries* (i.e. entertainment) *differs importantly from innovation in humdrum industries* (i.e. manufacturing)" and therefore, he reminds us that in regard to innovation in entertainment industries we are often dealing with changes on the demand side (i.e. tastes) rather than changes in product and process technology, which is implicitly perceived as the domain of innovation in manufacturing. Nevertheless, changes on the supply side in entertainment

industries often depend on creative intensive and invention activities among artists, producers, mixers etc.

Finally, few oligopoly firms controlling distribution channels dominate the entertainment industry. However, economies of exploitation are only one way of achieving success in the entertainment industries. Good performance still requires an intense experimentation phase and thus, search procedures and matching activities in order to constantly supply and develop new talents (Hesmondhalgh 1996; Gander & Rieple 2002) and hence invent and innovate for new products. The entertainment industries are influenced by both supply and demand side effects, for example, short product life cycles and therefore great pressure to sustain product development and create variation. These activities are organized primarily in short-term inter-firm projects for developing the major entertainment products, as for instance, sound recordings (Davis & Scase 2000; Hesmondhalgh 2002). This means that specialized individuals and firms holding complementary skills and thus knowledge are only gathered for a limited period of time and within a predetermined budget line for creating a product (Faulkner & Anderson 1987; Sydow & Staber 2002). In contrast, in manufacturing firms, project-based activities often seem to be organized inside the firm (see, for example, Wheelwright & Clark 1992). For entertainment industries, this implies that sometimes workers are connected to a particular firm for only a brief period of time and traditionally move between firms in order to carry out their jobs. Such an organizational pattern of product development naturally affects the pattern of labor mobility reported in the statistics. A final note is that work in the entertainment industries is often part time and is done in tandem with another job in a non-entertainment industry (Benhamou 2003; Institute for Employment Research 2003).

5 Hypotheses

The main assumption of this work is that labor mobility can be used as a meaningful proxy for reporting embodied knowledge transfer, as is well justified by parts of the literature reviewed in the previous sections. The aim is to detect features of labor mobility across industries (entertainment vs. manufacturing), to assert the existence of an industry-specific attitude towards inter-firm embodied knowledge transfer, and to investigate which activities (and consequently the underlying knowledge needed to perform the tasks) demand high levels of labor mobility. To support our arguments, three testable hypotheses are put forward.

Since we initially presume that creative intensive and invention activities, which are non-routine in nature, mainly characterize entertainment industries, especially regarding the processes of new product development and resource acquisition, we expect to find here a higher propensity

towards embodied knowledge transfer through labor mobility than in manufacturing industries at large. These observations, together with the argumentations proposed in the previous sections about the particular features of entertainment vs. manufacturing industries, lead to our first hypothesis.

Hypothesis 1: The frequency of inter-firm labor mobility is higher in the music industry than in the manufacturing industries at large.

However, given the relationship between creativity and the need for variety, we expect to find intra-industry differences and inter-industry reassembling patterns of labor mobility, especially in the segments of the industries where creation and invention activities dominate. In entertainment industries creative intensive activities take place mainly in the phase of origination (the idea and conceptualization of a new movie, the inspiration and creation of a new song, arrangement or play, etc.). We are referring here to the creation of new symbolic and aesthetic knowledge.

In manufacturing, analogous creative intensive and invention activities take place in the segments of the industries where a large portion of the turnover is invested in R&D. This is the case in the high-tech segments of the manufacturing industries (pharmaceuticals, aerospace, ICT activities etc.). Here, the knowledge used and developed is mainly of a scientific and technical nature.

Therefore, for individuals employed in both of the two industry segments characterized by high creation and invention intensity, we expect to find a larger propensity towards labor mobility, despite the existing difference in the specific type of knowledge embedded in the activities and need for product development, as asserted in our second hypothesis.

Hypothesis 2: There is a higher frequency of inter-firm labor mobility within parts of the industries where invention and creative intensive activities are carried out (such as high tech manufacturing firms and music industry segments focused on creation and origination) than within other industry parts involved in more routine-based activities (such as low and medium tech manufacturing firms or entertainment production, distribution and retail).

On the basis of research on the dynamics of the music industry, particularly focused on the Nordic countries (Lorenzen & Frederiksen 2003; Power 2003) we expect the music industry to be based on talent and experience rather than education, and thus, mobility to be less dependent on the educational level as in traditional industries as manufacturing. This clearly connects to the

idea about the varying importance of knowledge types embedded in different products and in various product development processes (i.e. scientific/technological vs. symbolic/aesthetic, etc.).

As a result, we believe that the two industries (music and manufacturing), and specifically the creation and invention intensive segments, diverge in terms of the weight and direction of the determinants of inter-firm labor mobility. Therefore we expect to find a different impact on the propensity towards mobility when exploring some individual characteristics, both related to human capital qualities, to social, spatial and demographic factors, institutional aspects and to the specific relationship with the hiring firm. The last hypothesis is formulated as follows.

Hypothesis 3: The explanatory factors of the individual propensity towards labor mobility, within the parts of the industries characterized by higher inter-firm labor mobility, differ when comparing music and manufacturing employment.

6 Empirics

6.1 Data

The data for the analysis is drawn from the IDA database[9], which belongs to Statistics Denmark. The IDA database[10] contains all-inclusive, longitudinal and integrated data on establishments, employers and employees. It provides unique data on dynamics of establishments (birth, death and growth); flows of workers (turnover, transition between labor market states), and interactions between characteristics and flows of establishments and workers. Since the database keeps track of the year of birth of establishments, and of the year in which a worker was hired, variables such as establishment age and worker tenure can be derived. The distinctive feature of the database is that it makes it possible to connect persons with companies. It is thus possible to characterize persons on the basis of information about the companies in which they are employed and, correspondingly, it is possible to describe companies on the basis of information about the employees[11]. The database contains information about the entire Danish population and all companies with employees and has been updated annually since 1980, so that it at present covers the period 1980-2000[12].

6.1.1 Sampling procedure

In order to make an assessment of the explanatory power of the hypotheses developed, the paper presents empirical data analysis on the whole population of individuals involved in the

Danish music industry and a 10% sample of the individuals employed in the Danish manufacturing industry, based upon a combination of national statistics on workplaces and persons.

As spelled out by Pratt (1997) and underlined by information gathered through our qualitative research, we may perceive the music industry as a product development (pickers) and product deliverance system (providers), where the value added to the product is supplied by various intertwined networks deriving from specialized activities, both upstream and downstream. Following this line of thought, the music industry value system contains at least four main components, identified by 12 NACE codes of sub-sectors (Lundequist & Power 2002; Power 2003)[13].

We can thus list the four components of the music value systems as follows. In brackets are reported the percentages of individuals occupied in each segment of the industry in the population (see Appendix 2 for details): 1) Creation and origination: this includes activities related to the creation of artistic ideas and artifacts and thus involves artists, musicians, authors, dancers, actors, producers, composers, etc. (42%)[14]; 2) Product development and production: this includes making commercially viable products that involve music production, music performance and copyrights, music studios, recoding studios, sound technicians, agents, and managers, record companies, management of rights as well as reproduction issues (19%); 3) Distribution and retail: sales and performance sites for exchanging rights hinting at aspects of customer behavior, including record and video stores, stores selling music instruments, and venues for performing arts (37%)[15]; and 4) Machinery and equipment: manufacturing of the means of production, embracing equipment, instruments and related services such as producers and suppliers of studio equipment, light and stage gear, music instruments, software-based music instruments, video producers, etc. (2%).

For comparative purposes in relation to the music industry population we use a significant random sample of the Danish manufacturing industry as a reference category. The intention is to deepen the analysis of labor mobility dynamics and embodied knowledge transfer using a specific control group for contrasting the findings of the music industry and for deriving useful insights on the differences between entertainment and traditional industries.

This reference category is built according to the NACE code classification of industries, and it is then further split into four sub-groups, according to the level of investment in technology, as it suggested by the OECD (2001) classification (see Appendix 3 for details). We can then individuate the following structure of the Danish manufacturing industry. In brackets are reported the percentages of individuals employed in each segment of the industry in the sample:

high-tech industries (10%), medium high-tech industries (26%), medium low-tech industries (24%) and low-tech industries (40%).

Both the music industry population and the manufacturing sample used here for statistical analysis include individuals that are registered as employed in the year 1999. Thus, the sample includes 35.347 (100%) individuals, of whom 6.271 (18%) persons were operating in the music industry and 29.076 (82%) worked in the manufacturing industries.

6.2 Measures

Dependent variable. The dependent variable used in measuring inter-firm labor mobility is MOB. It is built taking two factors into account: workplace change and industry change. A matrix includes all possible combinations of them, where, as a result, each cell includes one distinct type of labor mobility (see Tab. 1).

Basically we count a change each time a person changes his/her workplace or industry at least once in a three-year time period (between 1998 and 2000). The majority of the sample does not move at all during the three years selected (85%), but a high percentage of individuals decide to move either to another firm and/or to another industry.

Tab. 1: An operative classification of labor mobility types. In brackets are shown the frequency and percentage of the mobility of individuals in the sample.

Workplace change	Industry change	
	No change	Change
No change	No mobility (29904; 84.60%) MOB=0	
Intra firm mobility	Intra firm mobility (within the industry) (28, 0.08%) MOB=0	Intra firm mobility (across industries) (439, 1.24%) MOB=0
Inter firm mobility	Inter firm mobility (within the industry) (673; 1.90%) MOB=1	Inter firm mobility (across industries) (4303; 12,17%) MOB=1

Tab. 2: Variables description

Variable	Description
INDUSTRY	Type of industry: • Music industry (INDUSTRY=1); • Manufacturing industries (INDUSTRY=0).
MUSIC	Music industry categories: • Creation and origination (MUSIC=1); • Product development and production (MUSIC=2); • Sales and performance (MUSIC=3); • Machinery and equipment (MUSIC=4).
MANU	Manufacturing technological groups: • High tech (MANU=1); • Medium-high tech (MANU=2); • Medium-low tech (MANU=3); • Low tech (MANU=4).
EDU	Years of schooling
EXP	Years of work experience
TEN	Employees seniority (job tenure)
SEX	Gender: • Male (SEX=1); • Female (SEX=0).
PROG[16]	Career progression: • Career progression (PROG=1); • No progression (PROG=0).
SIZE	Firm size (number of full time equivalents)
FAGE	Age of the firm (years)
HE	Hourly earning
METRO	Location: • In metropolitan area[17] (METRO=1); • Other (METRO=0).
UNION	Union membership: • Unionized worker (UNION=1); • Not unionized (UNION=0).
NJOB	Number of secondary jobs held in a year

Therefore, the dependent variable MOB is equal to 1 if the individual changes workplace to another firm at least once in the three-year period and 0 otherwise.

Explanatory variables. To gain insight into the labor mobility phenomenon in the two industries (music and manufacturing), to measure the role of this tool for knowledge transfer in different and more or less creative and invention intensive activities, and finally, to explore the individual motivation to change workplace to another firm, we select a pool of explanatory variables, which are listed and briefly described in Tab. 2.

6.3 Statistical methods and regressions results

Since inter-firm labor mobility is a dichotomous dependent variable, the means of estimation is a binary logit analysis. In particular we estimated five logistic regression models, the results of which can be found in the following.

6.3.1 A comparison of the labor mobility phenomenon across industries - testing Hypothesis 1

We perform a logistic regression analysis on inter-firm labor mobility, to assess the differences between the music industry and the manufacturing industries.

The evidence is shown in Tab 3. When looking at the coefficient estimation and the odds ratio, we find strong support for the notion that inter-firm mobility in the music industry is much higher than in the manufacturing industries. Thus, Hypothesis 1 is confirmed.

6.3.2 An exploration of inter-firm mobility within industries - testing Hypothesis 2

We estimated two similar logistic regression models (one for the music industry and the other for the manufacturing industries), with the objective of deepening our understanding of industry inter-firm mobility patterns.

Each of the models, together with their comparison, allows us to infer something about the attitude towards mobility within the two industries selected and the underlying differences within the activities carried out in their sub-categories (value system position and technology intensity respectively). Some control variables have been introduced related to characteristics of individuals and firms that are likely to influence labor mobility.

Since the objective of the analysis is to test the intra-industry heterogeneity (within the music and the manufacturing industry), the following will present the results obtained from performing the logistic regression analysis firstly on the music industry population and secondly in the manufacturing industry sample.

Tab. 3: Logistic Regression Results, inter-firm labor mobility in music industry versus manufacturing (dependent variable = MOB).

Independent variables	Model		
	Coeff.	Std.Err.	Odds Ratio
Constant	-1.993***	0.018	.
Industry (Industry=1)	0.825***	0.035	2.282
No. of observations	35347		
% Correct Predictions	25.2		
Chi-square [df=1]	522.80***		
R-square	0.0147		

† $p < .10$; *$p < .05$; ** $p < .01$; ***$p < .001$

Tab. 4: Descriptive Statistics, music industry[18]

	N	Min	Q(0.25)	Median	Q(0.75)	Max	Mean	Std. Dev.
EDU	7957	0	10	13	14	20	12.375	3.376
EXP	7957	0	3	8	15	20	9.037	6.648
TEN	7957	0	0	2	6	19	4.092	5.473
SIZE	7957	0	6	20	79	835	127.098	256.645
FAGE	7957	0	6	15	19	19	12.642	6.543
HE	7957	0	15	20	25	377	21.150	15.314
NJOB	7957	0	0	0	0	10	0.147	0.584

The quartile Q(p) is the value such that the probability that a random variable will be less than or equal to Q(p) is at most p (with 0≤p≤1).

Music industry analysis

Tab. 4 presents descriptive statistics on the music industry control variables, and shows the results from the logistic regression model estimation. The model indicates that inter-firm mobility is generally more likely to affect individuals working in the segment "creation and origination" (reference category) than in the others, as suggested in Hypothesis 2 (see coefficient estimation and odds ratio for the variable MUSIC in Tab 5). The overall model shows a statistically significant Chi-square and predicts 77% of the responses correctly.

Tab. 5: Logistic Regression Results, music industry (dependent variable = MOB)

Variable	Model		
	Coeff.	Std.Err.	Odds Ratio
Constant	-0.072	0.1992	.
MUSIC			
MUSIC=2	-0.620***	0.088	0.538
MUSIC=3	-0.511***	0.073	0.600
MUSIC=4	-0.298	0.238	0.743
EDU	0.035***	0.009	1.036
EXP	-0.056***	0.006	0.946
TEN	-0.218***	0.014	0.804
SEX (SEX=1)	0.095	0.059	1.100
PROG (PROG=1)	-0.307***	0.067	0.736
SIZE	-0.001***	0.000	0.999
FAGE	-0.003	0.005	0.996
HE	-0.002	0.002	0.998
METRO	0.048	0.062	1.049
UNION	-0.002	0.069	0.998
NJOB	0.400***	0.048	1.492
No. of observations	7957		
% Correct Predictions	77.3		
Chi-square [df=14]	1287.470***		
R-square	0.149		

†$p < .10$; *$p < .05$; ** $p < .01$; ***$p < .001$

Summing up the evidence provided by the model, including short comments on the control variables, it is clear that in the music industry the mobile workers are prevalently employed in the "creation and origination" part of the industry, they are generally highly educated and possess little work experience; they are often stimulated to change their workplace if there is a prospective of working on new and interesting projects, that a small size firm can not offer. Accordingly, the number of secondary jobs held in a year positively influences the propensity to change workplace. More extensive comments on the determinants of labor mobility are found in relation to the invention and creative intensive activities while testing Hypothesis 3, as reported in Section 6.4.

Manufacturing industries analysis.

Tab 6. presents some descriptive statistics on the manufacturing industry control variables while Tab. 7 shows the results from the logistic regression model estimation. The logistic regression model for the manufacturing industry sample, reported in Tab. 7 indicates that inter-firm mobility is generally a phenomenon that primarily characterizes firms belonging to the high-tech industry segment. Other technology groups show in fact a lower probability of counting an inter-firm workplace change compared with the high tech reference group, as is expected in Hypothesis 2. The overall model predicts 71% of the responses correctly, and the model Chi-square is statistically significant.

Summing up the results, the model estimation suggests that in the manufacturing industries mobile workers are mainly females, employed in high-tech segments, highly educated and with limited work experience. Moreover, the workplace location in a metropolitan area has a positive impact on the propensity for workers in the manufacturing industries to change jobs. Finally, the propensity to move to another job is also positively influenced by the number of secondary jobs held within the year.

Tab. 6: Descriptive Statistics, manufacturing industries[19]

	N	Min	Q(0.25)	Median	Q(0.75)	Max	Mean	Std. Dev.
EDU	27390	0	10	13	14	20	11.982	3.065
EXP	27390	0	12	16	20	20	14.872	4.744
TEN	27390	0	1	5	11	19	6.668	6.000
SIZE	27390	0	34	117	365	4083	376.308	71.553
FAGE	27390	0	11	19	19	19	14.806	5.769
HE	27390	0	18	22	26	575	23.693	11.235
NJOB	27390	0	0	0	0	5	0.0275	0.197

The quartile Q(p) is the value such that the probability that a random variable will be less than or equal to Q(p) is at most p (with $0 \leq p \leq 1$).

Tab. 7: Logistic Regression Results, manufacturing industry (dependent variable = MOB)

	Model		
Variable	Coeff.	Std.err.	Odds Ratio
Constant	-0.579**	0.181	.
MANU			
MANU=2	-0.258***	0.070	0.772
MANU=3	-0.289***	0.073	0.749
MANU=4	-0.184**	0.066	0.832
EDU	0.033***	0.007	1.033
EXP	-0.058***	0.004	0.943
TEN	-0.121***	0.005	0.886
SEX (SEX=1)	-0.158***	0.047	0.854
PROG (PROG=1)	-0.184***	0.054	0.832
SIZE	0.000†	0.000	1.000
FAGE	0.008*	0.003	1.008
HE	0.001	0.002	1.001
METRO	0.117**	0.043	1.124
UNION	-0.023	0.073	0.978
NJOB	0.830***	0.071	2.291
No. of observations.	27390		
% Correct Predictions	71.4		
Chi-square [df=14]	1661.016		
R-square	0.060		

†$p < .10$; *$p < .05$; ** $p < .01$; ***$p < .001$

6.3.3 Inter-firm mobility across creative intensive and invention activities - testing Hypothesis 3

The last step of the analysis is undertaken by testing Hypothesis 3, as we now look specifically within the industry segments carrying out creative intensive and invention activities (e.g. for manufacturing, the high-tech segment, and for music, the creation and origination segment), which we found to hold higher levels of inter-firm mobility than the rest of their respective industries.

To achieve our purpose, we convert the control variables included in the previous logistic regression analyses into explanatory variables for testing the similarities existing between the factors that influence the mobility choices of individuals in the creation and invention segments of each industry with the highest levels of inter-firm mobility.

A couple of new logit binary models have been estimated (see Appendix 5), and the results are summarized in Tab 8, which informs us of the presence of differences between the determinants of inter-firm mobility in the creation and invention activities respectively of the music industry and the manufacturing industries.

Evidence from this new battery of statistical analyses lead us to accept Hypothesis 3 since individuals in the two segments do not show the same behavior, and thus the motivations conducive to mobility choices diverge.

Tab. 8: Comparing the explanatory factors across industry segments (existence and direction). Logistic regression results (dependent variable = MOB). 'NO' indicates no significant relationship, '-' indicates a negative but significant relationship, while '+' indicates a positive significant relation.

Variable	Effect on inter-firm labor mobility	
	Creation and origination (MUSIC=1)	High Tech (MANU=1)
EDU	+	NO
EXP	-	-
TEN	-	-
SEX (SEX=1)	NO	NO
PROG (PROG=1)	NO	-
SIZE	-	+
FAGE	NO	-
HE	NO	+
METRO	+	NO
UNION	NO	NO
NJOB	+	+

6.4 Results and discussion

The analyses performed provide evidence of the inter-firm labor mobility phenomenon, and allow us to make inferences about knowledge transfer dynamics in the two industries. The choice of analyzing a short run mobility period (i.e. occurring within three years) is intended to capture the behavior of frequent movers, which can be interpreted as representatives of the dominant attitude in an industry structure where people fluctuate among firms, undertaking activities of product development organized in temporary projects. Yet, our sample does not capture persons employed on spot market contracts for a limited period of time.

Results from the logistic regression analysis shown in Tab. 3 confirms Hypothesis 1, revealing a greater propensity towards inter-firm mobility in the music industry than in manufacturing industries. Labor flexibility and a network of embodied knowledge flows for creativity enhancement appear to characterize entertainment industries rather than manufacturing industries. Such observations match the findings of Grabher within the advertising industry, where the dominant logic underpinning learning and thus knowledge transfer is one of 'learning by switching' – and thus, a mantra for organizing product development of 'always change a winning team' (Grabher 2004a) indicating the need for diversity in skills and *thought worlds* (Dougherty 1992) and a general recombination in knowledge resources in product development in order to create and invent successfully (Guimerà et al. 2005). Since product cycles are shorter and demand is generally more volatile within entertainment industries than manufacturing, the need for labor mobility is correspondingly higher within the former. This point can be partially explained by the intrinsic specificities of the two industries outlined in Section 4.

Hypothesis 1 is thus better explained when looking for evidence related to Hypothesis 2. The observation that there is a strong relation between creative intensive and invention activities and the need for mobility and thus embodied knowledge transfer is confirmed by the logistic regression results, which show that the probability of inter-firm mobility is higher for some parts of the two industries, specifically in the origination and creation of the music industry and in the high-tech industry segment of manufacturing. We can establish a parallelism between the two industries analyzed. Invention intensive manufacturing industries (i.e. high-tech) and creative parts of the music industry 'value chain' (i.e. product origination and development), both strategically characterized by the prevalence of non-routine activities and tacit knowledge and emphasis on product development performance, are more similar than different. The need for invention and creation in the two parts of the industries gives rise to an accentuated attitude towards mobility and thus embodied knowledge flows. This confirms Hypothesis 2.

Concerning the robustness of the empirical evidence provided for testing Hypothesis 2, we verified the results of the logistic regression models by comparing them with findings obtained by replicating the same analysis using data from the 1995 IDA database. The cross-section analysis verified the outcomes described here[20].

The final step of our elaborations concerns the analysis of the determinants of inter-firm mobility within the industry parts engaged with creative intensive and invention activities, which are, as shown above, related to the parts of the two industries showing high labor mobility.

Hypothesis 3 is partially accepted as we discovered differences between the two industry parts in the relative impact of our explanatory variables (i.e. elucidating the individual motivations) on the mobility phenomenon. When comparing the two industry segments in terms of the factors that are more likely to affect labor mobility, logistic regression analysis reveals that their intensity and direction differ slightly, and thus individuals of the two industries diverge with respect to factors explaining the motivation to change job.

In general for both industries, the propensity towards workplace change for individuals of both industries is determined by the type of relationship the worker attains with the employing firm and the structural characteristics of the firm itself. That is, the longer the tenure, the higher the probability to stay in the same job and in the same firm. Similarly, the amount of work experience accumulated functions as a barrier for workplace change because of the specificity of knowledge that links individuals to their task and furthermore to the particular context of the employing firm. Another obvious explanation may be that individuals with more long-term experience have already attained a good job and are thus not motivated to search for another job in another firm. The size of the employing firm is negatively correlated to the tendency to move,

since large firms are assumed to be able to provide more opportunities to climb the career ladder or simply to perform different tasks[21].

In the music industry, our analysis demonstrates that it is neither the prospective of career progress nor pecuniary incentives of high hourly earnings that motivate individuals undertaking creative and inventive activities to change their job. What positively influences the propensity for workers undertaking creative intensive and invention activities in the music industry to change job is the aspect of firms being located in a metropolitan area. This finding echoes the intuition that the performers of artistic work are often drawn to urban settings that display a high degree of diversity and tolerance, which inspires creativity (Jacobs 1969; Florida 2002). Also of importance for workers in the high labor mobility part of the music industry is the positive tendency to change jobs caused by holding a high number of secondary jobs within the year. This means that if an individual holds one or more secondary job, she would be more inclined to change jobs. Such aspects may be explained simply by arguing that persons with more opportunities in terms of different jobs may be inclined to change workplaces more often.

In the high tech part of the manufacturing industries, we find that mobile individuals are motivated to change firms due to the incentive of a high hourly wages and are similarly motivated to stay in the firm if they are given the option of internal career progression. This could be the case because individuals employed in this segment of the industry, despite the creation and invention activities they carry out, are not to the same extent as in the music industry driven by an inner urge to satisfy their need for communicating and unfolding an artistic vision or message. This discovery is in line with an argument presented by Caves (2000), who maintains that workers in most of the literature are conceived as ignorant regarding what kind of work they undertake as long as they are well compensated. Since firm age influences the attitude of people to move, this effect could easily be explained by the structure of the high tech industry, which is somewhat characterized by a high level of enter and exit rates relative to the manufacturing industries at large and therefore, a large number of firms are young.

7 Concluding remarks and further research

The literature on industrial dynamics of knowledge transfer and knowledge spillovers has mainly focused on high-tech manufacturing such as biotech, ICT etc. We contribute empirically by enlarging this research field, adding a new type of emerging and important industries to the research arena, namely the entertainment industries. Moreover, we add to the literature by using a different research design rather than citation and patent data as indicators for inter-firm

knowledge transfer, which we believe is more appropriate in the realm of high-tech firms engaged in developing patents.

In our investigation of the key factors influencing the inter-firm labor mobility phenomenon we conduct an analysis nested in three hypotheses, which allows us to detect and contrast industries, activities and individual specific characteristics of embodied knowledge transfer in entertainment and manufacturing industries.

We find differences across the two industries with regard to the intensity of labor mobility; not surprisingly, the music industry contains in general a higher intensity of embodied knowledge transfer than the manufacturing industries.

The output of our empirical study of intra-industry effects on labor mobility shows that embodied knowledge transfer is affected by the specific activities that are carried out within each of the two industries rather than by industry, individual, firm or institutional level factors. We infer that labor mobility patterns are aligned more with inter-industry, among the segments concerned with creation and invention activities, than intra-industry (within music industry or the manufacturing industries). Therefore, we may infer that the kinds of activities undertaken in certain industry parts are more important for explaining inter-firm labor mobility, and thus knowledge transfer, than the industry to which the firm belongs in general statistic classifications, regardless of the underlying type of knowledge (scientific and technical vs. symbolic and aesthetic) and products created and developed. We may conjecture that the idea of classifying industries by products is not always suitable – at least regarding aggregated data - and we propose instead a form of categorization of firms and industries based on the characteristics and qualities of the activities and work practices that may provide more precise empirical insights. Hence, these elements challenge the way we build the nomenclature for classifying industries connected to products delivered (i.e. output) rather than to the actual activities undertaken and thus the knowledge needed to perform certain activities (i.e. input).

To further our examination we compared the determinants of labor mobility between the two industry parts that show high levels of mobility. We demonstrated that within the two parts of the industries undertaking creative intensive and invention activities there are differences in the individual motivations to move from one firm to another. The main divergence in explaining labor mobility is that scientists and technicians, who are assumed to be the main employees in the creative intensive and invention segments of manufacturing, tend to be motivated to move by pecuniary rewards as well as by options for career progression. In the entertainment industries we do not find these elements to be significant. We suppose that this is the case because artists, being the most highly represented group carrying out creative intensive and invention activities in

the entertainment industries are motivated by intrinsic factors and community recognition more than individualistic benefits.

It should be underlined further that, stemming from the evidence produced, creative intensive industries (such as high-tech manufacturing groups and creation and origination activities in the music industry) to a great extent have recourse to mobile workers to perform their activities. Clearly, an industrial structure is in place, supported by inter-labor mobility and thus 'temporary' employment, for undertaking activities involving invention and creativity. Hence, we believe that most tasks carried out concerning product development and origination in both the high-tech manufacturing and the music industries tend to be project-based and thus pre-defined by deadlines, budgets and somewhat pre-determined tasks and hence, agreed upon end goals of the efforts invested (Lundin & Söderholm 1995).

One policy implication to be drawn for supporting the development of entertainment industries might consider their similarities with the high-tech manufacturing industry, providing common patterns of human resource recruitment, exploitation, and deterrence (in the form of education and business models). These solutions should facilitate formulas of temporary employment properly structured to favor both the demand and the supply side of the labor market, facilitating both knowledge transfer and better quality of life. At the same time, firms should develop mechanisms of internal knowledge retention and flexible integration, to allow the sedimentation of the various and frequent, but short-term, knowledge inputs.

There are several limitations to this study. We suggest some caution in interpreting our results, firstly in regard to some biases on the choice of the industry definition. The category 'Manufacturing industries' contains firms aggregated under a two or three digit NACE code, whereas the music industry, used as proxy for the entertainment industries, is gathered on a six-digit level. As a consequence we are aware that the results concerning manufacturing in general and the high-tech industry in particular suffer from the greater variability in the types of firms, products and activities than the ones in the music industry. Secondly, we acknowledge that aggregated data is only to some extent useful for examining aspects of individual motivation for labor mobility due to heterogeneity in explanations. Furthermore, the descriptive statistics alert us to the fact that inter-firm mobility is generally low; the majority of individuals entered in the study do, in fact, not change their workplace over a three-year period. Still, the Danish labor market is among the most mobile ones in Europe[22].

Nonetheless, the paper implicitly links up to the current debate on industry dynamics where creative intensive and invention activities are arranged in temporary organizational forms (Goodman & Goodman 1976; Lundin & Söderholm 1995; Gann & Salter 2000; Lampel &

Shamsie 2003). As such, the paper adds a different view to the ongoing debate about learning in project-based industries (Grabher 2004b) since we, in keeping with the recent organizational trend towards temporary employment and short-term contract based relationships (Ekstedt et al. 1999; Ekstedt 2002), investigate inter-firm embodied knowledge transfer, which constitutes a key element of learning in knowledge intensive project based activities. The project-based activities that take place in these forms of labor organization are not initiated to reduce labor costs, but to ensure the existence of an environment suitable for creating variation in product development activities, and thus, adopted from the viewpoint of knowledge creation.

Ways ahead for unfolding this research agenda on embodied knowledge transfer in entertainment industries could be linking our findings to firms' performance indicators, using financial data or looking at rates of entries and exits. Such analysis may be executed using the firm level equivalent to the IDA database, namely, the related database F-IDA.

Secondly, we see an interesting research pattern within the entertainment industries in integrating more firmly the quantitative analysis with more qualitative material, in order to create more fine-grained hypotheses concerning the characteristics of temporary organizations for creation and invention and thus, more specifically, to outline factors explaining individuals' urge to move between firms. Especially for managers in the entertainment industries such research could be attractive since currently their key assignments are to a large degree related to human resource practices involving scouting, recruiting, attracting and managing personnel in temporary project-based environments dominated by high labor circulation.

Finally, an appealing avenue for further studies would be to enlarge the sample to include all individuals of the entire entertainment industry in Denmark (e.g. film, PC games, advertising, architecture, music, etc.) as well as possibly include more industries from, for example, services, to verify whether similar patterns of embodied knowledge transfers were discovered in contexts other than the music industry.

Appendix 1: The stylized dominant characteristics of creative intensive and invention activities in entertainment and manufacturing

Characteristic	Entertainment industries	Manufacturing industries
Knowledge type and context	• Embodied • Symbolic, aesthetic • Community specific	• Embodied • Scientific, technical, and engineering • Community specific
Innovation type	Design-based	Science-based
Process for making judgment and decisions	Heuristics	Analytical
Learning	Experiential (experience-based)	Instructive (education-based)
Concrete activities	Songwriting, performing, and arranging, etc.	Testing, research, patenting, etc.
Product nature	Intangible	Tangible
Incentive	Urge to communicate a vision	Pecuniary aspects
Key person	Artist	Inventor
Value for consumer	Sign-value/Satisfaction	Use-value/Utility
Product development process	• Recombination and use of unconventional patterns of thoughts and cognitive models as well as sometimes different disciplinary skills and thus, need of friction between established views on a particular problem to solve. • The process is often experimentation and exploration, often by prototyping depending clearly on the costs and size of the product development project	
Demand	• Volatile and difficult to predict	

Appendix 2: The music industry population

The music industry population is selected according to guidance provided by Pratt (1997) and Power (2003). Here the music industry is represented by the following NACE codes.

Creation and origination:

923120: Performing artists and producers of artistic work

Industry (Product development and production)

221400: Publishers of sound recordings

221500: Other publishers

223100: Industry for the reproduction of sound recording

246500: Industry for prepared unrecorded media

Distribution and retail (sales and performance):

514330: Wholesale (CDs, tapes, records, videotapes

524530: Stores for records & videotapes

524540: Stores for music, instruments & music scores

923110: Theatre & concert hall companies

923200: Running of theatres & concert halls

923400: Other entertainment activities

Machinery & equipment

363000: Industry for music instruments

Due to the ways national statistics are created, a few of the category types involved are rather broad, including additional activities that are not music related. However, all categories were checked to make sure that music industry related activities were included. Still, categories like "performing artists and producers of artistic work", "other publishers", "running of theatres & concert halls", and "other entertainment activities" may clearly involve individuals performing activities other than those strictly limited to the music industry. However, these persons still carry out activities within the wider definition of the entertainment industries.

Appendix 3: About the classification of industries based on technology

Due to our interest in the analysis of the manufacturing industry, we have adopted the NACE classification (Rev.1) for distinguishing between activities belonging to this industry. In order to create a detailed picture of the industry, without losing significance, we would like to adopt a further classification, which allows for the creation of manufacturing sub-groups.

In doing so, we are particularly concerned about the target of the analysis. Constrained by the absence of statistics on the Danish amount of investments in R&D for each firm, we catch this information by adopting the classification of manufacturing industries based on technology (OECD, 2001). This classification (as shown in the table below) proposes a distinction between four technology groups:

1) High technology industries;
2) Medium-high technology industries;
3) Medium-low technology industries;
4) Low-technology industries.

The cut-off points are determined according to two indicators of technology intensity:

- R&D expenditure divided by value added;
- R&D expenditure divided by production.

The division of manufacturing industries into technology groups is determined after ranking industries according to their average of aggregate OECD R&D intensities in the years 1991 to 1997.

Other classifications are actually available (among others: Pavitt, 1984; Evangelista, 1999), but they present some limitations to an extended application in different countries and different periods, because of their national and temporal specificity (UK, 1945-1979; and Italy, 1992 respectively). Although it is less detailed, the OECD classification has the advantage of being valid in all of the OECD countries, and of being constantly up-to-date. A new classification (same classes, more detailed "knowledge intensity" indicators), in fact, is expected in the next future.

Technology groups		R&D intensity[1] for 13 OECD countries, 1991-97 average														
	NACE Rev.1	Total[2]	USA	CND	J	EU[2]	D	F	I	UK	E	S	DK	N	FIN	IRL[3]
High-technology industries																
Aircraft and spacecraft	353	14.2	14.6	10.1	9.9	14.6	28.1	14.1	11.9	9.3	16.0	15.3	.. (4)	0.9	0.9	.. (4)
Pharmaceuticals	244	10.8	12.4	7.4	9.6	10.0	8.4	8.7	6.0	18.6	3.1	21.5	14.8	11.8	14.0	5.2
Office, accounting and computing machinery	300	9.3	14.7	6.8	7.5	4.3	7.5	5.6	7.2	2.0	2.6	12.0	5.4	7.8	3.1	0.6
Radio, television and communication equipment	32	8.0	8.6	12.7	6.0	10.2	13.0	10.3	11.7	5.2	6.3	17.8	7.7	25.7	11.4	8.6
Medical, precision and optical instruments	33	7.3	7.9	.. (5)	8.1	5.9	6.1	11.1	1.0	3.5	2.1	8.2	6.1	3.1	7.0	2.0
Medium-high-technology industries																
Electrical machinery and apparatus, n.e.c.	31	3.9	4.1	0.9	6.8	2.4	2.4	2.6	1.0	4.8	0.9	2.6	1.5	2.0	4.5	1.7
Motor vehicles, trailers and semi-trailers	34	3.5	4.5	0.2	3.1	3.6	4.6	3.2	3.3	2.9	0.8	6.1	.. (6)	1.8	1.8	1.2
Chemicals excluding pharmaceuticals	24 excl. 244	3.1	3.1	0.8	4.7	2.5	4.4	2.4	0.8	2.5	0.6	2.2	1.7	2.2	2.8	0.4
Railroad equipment and transport equipment, n.e.c.	352+354+355	2.4	.. (7)	0.2	2.6	2.6	5.5	2.6	1.2	1.5	1.2	2.5	0.3	0.8	9.4	0.0
Machinery and equipment, n.e.c.	29	1.9	1.8	1.2	2.2	1.8	2.3	2.0	0.5	2.1	1.0	4.0	3.2	2.6	2.4	1.1
Medium-low-technology industries																
Coke, refined petroleum products and nuclear fuel	23	1.0	1.3	0.6	0.7	0.9	0.3	0.9	0.3	2.9	0.4	0.4	.. (4)	0.8	0.8	.. (4)
Rubber and plastic products	25	0.9	1.0	0.4	.. (8)	0.8	0.9	1.6	0.5	0.4	0.5	1.5	0.8	0.7	1.7	0.8
Other non-metallic mineral products	26	0.9	0.8	0.2	2.2	0.5	0.7	0.8	0.1	0.5	0.2	0.9	0.4	0.5	1.4	0.9
Building and repairing of ships and boats	351	0.9	.. (7)	0.0	0.8	0.9	1.4	0.4	1.2	0.7	1.5	2.0	0.8	0.5	0.7	1.2
Basic metals	27	0.8	0.4	0.6	1.3	0.6	0.6	1.1	0.3	0.4	0.2	0.8	0.6	1.5	0.7	0.4
Fabricated metal products, except machinery and equipment	28	0.6	0.7	0.4	0.8	0.4	0.5	0.5	0.2	0.4	0.2	0.8	0.2	0.5	1.1	0.9
Low-technology industries																
Manufacturing, n.e.c. and recycling	36-37	0.4	0.6	.. (5)	0.4	0.3	0.5	0.4	0.1	0.2	0.2	0.3	2.3	0.4	0.7	0.4
Wood, pulp, paper, paper products, printing and publishing	20-22	0.3	0.5	0.2	0.4	0.2	0.1	0.1	0.0	0.1	0.1	0.7	0.1	0.3	0.5	0.2
Food products, beverages and tobacco	15-16	0.3	0.3	0.2	0.7	0.2	0.2	0.3	0.1	0.4	0.1	0.4	0.4	0.3	0.6	0.4
Textiles, textile products, leather and footwear	17-19	0.3	0.2	0.4	0.7	0.2	0.5	0.3	0.0	0.2	0.1	0.5	0.1	0.6	0.6	1.0
Total manufacturing	15-37	2.5	3.1	1.2	2.8	1.9	2.5	2.4	0.8	2.1	0.6	3.7	1.6	1.4	1.9	1.0

Classification of manufacturing industries based on technology. ***Source:*** **Adaptation from: OECD, ANBERD and STAN databases, May 2001.**

Note:
1. R&D intensity defined as direct R&D expenditures as a percentage of production (gross output).
2. Aggregate R&D intensities calculated after converting countries' R&D expenditures and production using 1995 GDP PPPs.
3. Production from industrial surveys.
4. NACE 23 and 353 not available for Denmark and Ireland.
5. NACE 36-37 production includes NACE 33 for Canada.
6. NACE 34 included in NACE 35 for Denmark.
7. R&D expenditures in "Shipbuilding" (351) are included in "Other Transport" (352+354+355) for the United States.
8. NACE 25 production does not include plastics for Japan.

Concerning Designations and abbreviations for the countries used:

USA	United States
CND	Canada
J	Japan
EU	Europe
D	Germany
F	France
I	Italy
UK	United Kingdom
E	Spain
S	Sweden
DK	Denmark
N	Norway
FIN	Finland
IRL	Ireland

Appendix 4: Building the variable PROG (Progression in career)

PROG is built looking at the position in employment in the years 1998-199-2000. The position in employment is given by the variables WP1 (position in 1998), WP2 (position in 2000), WP3 (position in 1999) (see table for details).

WP1 and WP3 Position in employment in 1998 and 2000	Value	Meaning
	0	Not working
	1	Unknown position
	2	Employees, basic level
	3	Employees, medium level
	4	Employees, higher level
	5	Top managers
	6	Employer
WP2 Position in employment in 1999	Value	Meaning
	1	Other employees
	2	Employees, basic level
	3	Employees, medium level
	4	Employees, higher level
	5	Top managers
	6	Employer

If in 1999 or 2000 the position in employment is higher than in 1998, we have a career progression within the 3 sample years:

If WP1<WP2 or WP3>WP2 then PROG=1; otherwise PROG=0.

Appendix 5: Logit regression models estimation for the parts of the music and manufacturing industries carrying out creative intensive and invention activities

Variable	Model		
	Coeff.	Std.Err.	Odds Ratio
Constant	-0.572**	0.283	.
EDU	0.037***	0.013	1.038
EXP	-0.050***	0.010	0.951
TEN	-0.266***	0.023	0.766
SEX (SEX=1)	0.005	0.091	1.005
PROG (PROG=1)	0.006	0.103	1.006
SIZE	-0.001***	0.000	0.999
FAGE	0.003	0.008	1.003
HE	0.001	0.003	0.999
METRO	0.187*	0.101	1.205
UNION	0.086	0.106	1.090
NJOB	0.316***	0.053	1.372
No. of obs.	3294		
% Correct Predictions	82.1		
Chi-square	810.915		
R-square	0.218		

Logistic Regression Results, music industry, segment: origination and creation activities (dependent variable = MOB).
†$p < .10$; *$p < .05$; ** $p < .01$; ***$p < .001$

Variable	Model		
	Coeff.	Std.Err.	Odds Ratio
Constant	-0.374	0.509	.
EDU	0.014	0.021	1.014
EXP	-0.050***	0.013	0.951
TEN	-0.133***	0.019	0.875
SEX (SEX=1)	-0.113	0.124	0.893
PROG (PROG=1)	-0.414**	0.173	0.661
SIZE	0.001***	0.000	1.001
FAGE	-0.025**	0.010	0.975
HE	0.009**	0.004	1.010
METRO	-0.153	0.123	0.858
UNION	-0.083	0.226	0.920
NJOB	0.586**	0.270	1.797
No. of obs.	2709		
% Correct Predictions	75.1		
Chi-square	306.097		
R-square	0.107		

Logistic Regression Results, manufacturing industry, segment: high-tech industries (dependent variable = MOB).
†$p < .10$; *$p < .05$; ** $p < .01$; ***$p < .001$

References

Adorno, T. W. (2001), "Culture industry reconsidered," in *The culture industry*, Routledge, Florence, KY, US, pp. 98-106.

Almeida, P. & Kogut, B. (1999), "Localization of Knowledge and the Mobility of Engineers in Regional Networks", *Management Science*, vol. 45, no. 7.

Amabile, T. M. (1979), "Effects of external evaluation on artistic creativty", *Journal of Personality and Social Psychology*, vol. 37, no. 2, pp. 221-233.

Andersen, B. & Miles, I. Orchestrating Intangibles in the Music Sector: The Royalties Collecting Societies in the Knowledge Based Economy . 1999.

Ref Type: Unpublished Work

Angel, D. P. (1991), "High-technology Agglomeration and the Labor Market: The Case of Sillicon Valley", *Environment and Planning D*, vol. 23, pp. 1501-1516.

Argote, L. & Ingram, P. (2000), "Knowledge transfer: a basis for competitive advantage in firms", *Organizational Behavior and Human Decision Process*, vol. 82, no. 1, pp. 150-169.

Barney, J. (1986), "Strategic factor markets: Expectations, luck and business strategy", *Management Science*, vol. 32, no. 10, pp. 1231-1241.

Becattini, G. (1979), "Dal settore industriale al distretto industriale: alla

ricerca dell'unità di indagine della economia industriale", *Rivista di Economia e Politica Industriale,* vol. 1.

Becker, H. S. (1982), *Art worlds*, University Presses of California: Columbia and Princeton, CA, US.

Belussi, F. & Pilotti, L. (2002), "Knowledge creation, learning and innovation in Italian Industrial districts", *Geografiska Annaler*, vol. 84, no. 2, pp. 125-139.

Benhamou, F. (2003), "Artist's labour markets," in R. Towse, ed., *A handbook of cultural economics*, Elgar, Cheltenham, UK, pp. 69-75.

Blackler, F. (1995), "Knowlegde, knowledge work and organizations: an overview and interpretation", *Organization Studies*, vol. 16, no. 6, pp. 1021-1046.

Breschi, S. & Lissoni, F. (2001), "Knowledge spillovers and Local Innovation System", *Industrial and Corporate Change*, vol. 10, no. 4, pp. 975-1005.

Brunet, J. (2004), "The social production of creative products in the television and film industry", *International journal of art management*, vol. 6, no. 2, pp. 4-10.

Cappelli, P. (1999), *The new deal at work - managing the market-driven workforce* Boston, Massachusetts, US.

Castañer, X. & Campos, L. (2002), "The Determinants of Artistic Innovation: Bringing in the Role of the Organizations , Vol.26:29-52", *Journal of Cultural Economics*, vol. 26, pp. 29-52.

Caves, R. (2000), *Creative industries - Contracts between art and commerce,* Harvard Univ. Press, London, UK.

Contractor, F. J. & Lorange, P. (2002), "The growth of alliances in the knowledge-based economy," in F. J. Contractor & P. Lorange, eds., *Cooperative strategies and alliances*, Pergamon, Elsevier Science, Oxford, UK, pp. 3-25.

Cowen, T. (2000), *In Praise of Commercial Culture*, Harvard University Press: Cambridge, MA.

Dahl, M. S. Embodied Knowledge Diffusion, Labor Mobility and Regional Dynamics: Do Social Factors limit the Local Development Potential? 2004.

Ref Type: Unpublished Work

Davis, H. & Scase, R. (2000), *Managing creativity -The dynamics of work and organisation,* Open University Press, Buckingham, UK.

DeFillippi, R. J. & Arthur, M. B. (1996), "Boundaryless Contexts and Careers: A Competency-Based Perspective," in M. B. &. R. D. M. Arthur, ed., *The Boundaryless Career, A New Employment Principle for a New Organizational Era*, Oxford University Press, Oxford, pp. 116-131.

Desrochers, P. (1998), "On the abuse of patents as economic indicators", *The Quarterly Journal of Austrian Economics*, vol. 1, no. 4, pp. 51-74.

Dougherty, D. (1992), "Interpretive barriers to successful product innovation in large firms", *Organization Science*, vol. 3, no. 2, pp. 179-202.

Dyer, J. H. & Singh, H. (1998), "The Relational View: Cooperative strategy and sources of interorganizational competitive advantages", *Academy of Management Review*, vol. 23, no. 4, pp. 660-679.

Ebers, M. ed. (1997), *The formation of inter-organizational networks* Oxford, UK.

Eisenhardt, K. M. & Tabrizi, B. N. (1995), "Accelerating Adaptive Processes - Product Innovation in the Global Computer Industry", *Administrative Science Quarterly*, vol. 40, no. 1, pp. 84-110.

Ekstedt, E. (2002), "Contracts of work in a project-based economy," in K. Sahlin-Anderson & a. Söderholm, eds., *Beyond project management*,Liber AB, Malmö, Sweden, pp. 59-81.

Ekstedt, E., Lundin, R., Söderholm, a., & Wirdenius, H. (1999), *Neo-industrial organising - renewal by action and knowledge formation in a project-intensive economy*, Routledge: London.

Faulkner, R. R. & Anderson, A. B. (1987), "Short-Term Projects and Emergent Careers - Evidence from Hollywood", *American Journal of Sociology*, vol. 92, no. 4, pp. 879-909.

Feldman, M. P. (2000), "Location and Innovation: The New Economic Geography of Innovation, Spillovers and Agglomerations," in G. L. Clark et al., eds., *The Oxford Handbook of Economic Geography*, Oxford University Press, Oxford.

Fitzgibbon, M. (2001), *Managing innovation in arts: making art work*, Greenwood publishing group Inc.: Westport, CA. US.

Florida, R. (2002), *The rise of the creative class*, Basic Books: New York, US.

Fornahl, D., Zellner, C., & Audretsch, D. B. (2005), *The Role of Labour Mobility and Informal Networks for Knowledge Transfer*, Springer: New York, US.

Foss, N. J. & Pedersen, T. (2002), "Transferring knowledge in MNCs: The role of sources of subsidary knowledge and organizational context", *Journal of International Management*, vol. 8, pp. 49-67.

Freeman, C. & Soete, L. (1982), *The Economics of Industrial Innovation*, Pinter: London.

Frith, S. (1990), *Facing the music: Essays on pop, rock and culture*, Mandarin: London.

Gander, J. & Rieple, A. (2002), "Inter-organisational Relationships in the Worldwide Popular Recording Music Industry", *Creativity and innovation management*, vol. 11, no. 4, pp. 248-254.

Gann, D. M. & Salter, A. J. (2000), "Innovation in project-based, service-enhancing firms in the construction of complex products and systems", *Research Policy*, vol. 29, pp. 955-972.

Goodman, R. A. & Goodman, P. L. (1976), "Some management issues in temporary systems: a study of profession development and manpower - the theater case", *Administrative Science Quarterly*, vol. 21, no. 3, pp. 494-501.

Grabher, G. (2004a), "Learning in projects, remembering in networks?: Communality, sociality, connectivity in project ecologies", *European Urban and Regional Studies*, vol. 11, no. 2, pp. 103-123.

Grabher, G. (2004b), "Temporary architectures of learning: knowledge governance in project ecologies", *Organization Studies*, vol. 25, no. 9, pp. 1491-1514.

Grabher, G. & Powell, W. W. (2004), "Introduction," in G. Grabher & W. W. Powell, eds., *Networks*,Edward Elgar, Cheltenham, UK, p. xi-xxxi.

Grabher, G. (2002a), "Cool projects, boring institutions: Temporary collaboration in social context", *Regional Studies*, vol. 36, no. 3, pp. 205-214.

Grabher, G. (2002b), "The project ecology of advertising: Tasks, talents and teams", *Regional Studies*, vol. 36, no. 3, pp. 245-262.
Grant, R. M. & Baden-Fuller, C. (2004), "A knowledge accessing theory of strategic alliances", *Journal of Management Studies*, vol. 41, no. 1, pp. 61-73.
Guimerà, R., Uzzi, B., Spiro, J., & Amaral, L. A. N. (2005), "Team Assembly Mechanisms Determine Collaboration Network Structure and Team Performance", *Science*, vol. 308, no. 5722, pp. 697-704.
Gulati, R. (1998), "Alliances and Networks", *Strategic Management Journal*, vol. 19, no. 4, pp. 293-317.
Hesmondhalgh, D. (1996), "Flexibility, post- Fordism and the music industry", *Media, Culture and Society*, vol., pp. 469-488.
Hesmondhalgh, D. (2002), *The cultural industries*, Sage: London, UK.
Hill, P. (1999), "Tangibles, intangibles and services: a new taxonomy for the classification of output", *Canadian Journal of Economics*, vol. 32, no. 2, pp. 426-446.
Hirsch, P. (1972), "Processing Fads and Fashions: An Organization-Set Analysis of Cultural Industry Systems", *American Journal of Sociology*, vol. 77, no. 4, pp. 639-659.
Holbrook, M. B. & Hirschman, e. C. (1982), "The experiential aspects of consumption: consumer fantasies, feelings and fun", *Journal of consumer research*, vol. 9, pp. 132-140.
Howkins, J. (2001), *The creative economy: how people make money from ideas*, Penguin Books: London.
Institute for Employment Research 2003, *Bulletin: A balancing act: artists's labor markets and the tax and benefit systems* 72.
Jacobs, J. (1969), *The Economy of Cities*, Random House: New York.
Jaffe, A., Tratjenberg, M., & Henderson, R. (1993), "Geographic localization of knowledge spillovers as evident form patent citations", *Quaterly journal of economics*, vol. 108, pp. 577-598.
Jones, C. & DeFillippi, R. J. (1996), "Back to the future in film: Combining industry and self-knowledge to meet the career challenges of the 21th century", *Academy of Management Executive*, vol. 10, no. 4, pp. 89-103.
Khanna, T., Gulati, R., & Nohria, M. (1998), "The dynamics of learning alliances: competition, cooperation and relative scope", *Strategic Management Journal*, vol. 19, no. 3, pp. 193-210.
Lampel, J., Lant, T., & Shamsie, J. (2000), "Balancing act: Learning from organizing practices in cultural industries", *Organization Science*, vol. 11, no. 3, pp. 263-269.
Lampel, J. & Shamsie, J. (2003), "Capabilities in motion: New organizational forms and the reshaping of the Hollywood movie industry", *Journal of Management Studies*, vol. 40, no. 8, pp. 2189-2210.
Langlois, R. N. & Robertson, P. L. (1995), *Firms, Markets, and Economic change: A dynamic Theory of Business Institutions*, 1 edn., Routledge: London.
Lash, S. & Urry, J. (1994), *Economies of signs and space* **London, UK** .
Lorenzen, M. & Frederiksen, L. Experimental Music: Innovation, Projects, and Dynamic Capabilities in the Pop Music Industry. 2003. Unpublished Work
Lundequist, P. & Power, D. (2002), "Putting Porter into Practice? Practices of Regional Cluster Building: Evidence from Sweden", *European planning studies*, vol. 10, no. 6.
Lundin, R. & Söderholm, a. (1995), "A theory of the temporary organization", *Scandinavian Journal of Management*, vol. 11, no. 4, pp. 437-455.
Lundvall, B.-Å. Why the New Economy is a Learning Economy. Working Paper 2004-1. 2004. Unpublished Work
Marshall, A. (1925), *Principles of economics*, London.: Macmillan.
Maskell, P. & Lorenzen, M. Firms and markets, networks and clusters, traditional and creative industries. 2004. Unpublished Work

Menger, P.-M. (1999), "Artistic labour markets and careers", *Annual reviews of sociology*, vol. 25, pp. 541-574.
Menger, P.-M. (2003), "Sociology of art," in R. Towse, ed., *A Handbook of Cultural Economics*, Edward Elgar Publishing, Cheltenham, IK.
Metcalfe, J. S. & Warde, A. (2002), *Market relations and the competitive process*, Manchester University Press: New York.
Mowery, D., Oxley, J., & Silverman, B. (1996), "Strategic alliances and inter-firm knowledge transfer", *Strategic Management Journal*, vol. 17, pp. 77-91.
Nonaka, I., Toyama, R., & Nagata, A. (2000), "A firm as a knowledge-creating entity: A new perspective on the theory of the firm", *Industrial and Corporate Change*, vol. 9, no. 1, pp. 1-20.
Oakman, B. (1986), "Patents: an Austrian perspective", *Economic Papers (The Economic Society of Australia)*, vol. 5, no. 1, pp. 74-81.
OECD 1996, *Employment and growth in the knowledge-based economy*, Head of publication service, OECD.
Peteraf, M. A. (1993), "The cornerstone of competitive advantage", *Strategic Management Journal*, vol. 14, no. 3, pp. 179-191.
Pine, J. B. & Gilmore, J. H. (1999), *The experience economy - work is theatre & every business a stage,* Boston, Mass. US.
Powell, W. W. (1987), "Hybrid Organizational Arrangements - New Form Or Transitional Development", *California Management Review*, vol. 30, no. 1, pp. 67-87.
Power, D. 2003, *Behind The Music: Profiting from sound: A systems Approach to the Dynamics of the Nordic Music Industry*, STEP/Nordic Innovation Centre.
Pratt, A. C. (1997), "Production values: From cultural industries to the governance of culture", *Environment and Planning A*, vol. 29, no. 11, pp. 1911-1917.
Quah, D. Matching demand and supply in a weightless economy: market-driven creativity with and without IPR's. 2002. Unpublished Work
Robins, J. A. (1993), "Organization As Strategy - Restructuring Production in the Film Industry", *Strategic Management Journal*, vol. 14, pp. 103-118.
Rosenkopf, L. & Almeida, P. (2003), "Overcoming local search through alliances and mobility", *Management Science*, vol. 49, no. 6, pp. 751-766.
Saxenian, A. (1996), "Beyond Boundaries: Open Labor Markets and Learning in Silicon Valley," in M. B. &. R. D. M. Arthur, ed., *The Boundaryless Career - A New employment principle for a new organisational Era*, Oxford University Press, New York, pp. 23-39.
Saxenian, A. (1994), *Regional Advantages: Culture and Competition in Silicon Valley and Route 128*, Harvard University Press: Cambridge, MA., US.
Scherer, F. M. (1980), *Industrial market, structure and economic performance*, Rand McNally College Publishers: Chicago, US.
Shuker, R. (2001), *Understanding popular music*, 2. ed , Taylor & Francis: London.
Simon, H. A. (1969), "The architecture of complexity," in *The Sciences of the Artificial*, MIT Press. Cambridge, MA, pp. 192-229.
Sørensen, J. B. (2004), "Recruitment-based Competition between Industries: A Community Ecology", *Industrial and Corporate Change*, vol. 13, no. 1, pp. 149-170.
Sorensen, O. (2003), "Social networks and industrial geography", *Journal of Evolutionary Economics*, vol. 13, pp. 513-527.
Spender, J.-C. & Grant, R. M. (1996), "Knowledge and the firm: overview", *Strategic Management Journal*, vol. 17, pp. 5-9.
Starkey, K., Barnatt, C., & Tempest Sue. (2000), "Beyond networks and hierarchies: latent organizations in the UK television industry", *Organization Science*, vol. 11, no. 3, pp. 299-305.

Stinchcombe, A. L. (1959), "Bureaucratic and Craft Administration of Production: A Comparative Study", *Administrative Science Quarterly*, vol. 4, no. 2, pp. 168-187.
Sydow, J. & Staber, U. (2002), "The Institutional Embeddedness of Project Networks: The Case of Content Production in German Television", *Regional Studies*, vol. 36, no. 3, pp. 215-227.
Teece, D. J. (2003), "Expert talent and the design of (professional services) firms", *Industrial and Corporate Change*, vol. 12, no. 4, pp. 895-916.
Tepper, S. J. (2002), "Creative assets and the changing economy", *Journal of Arts Management Law and Society*, vol. 32, no. 2, pp. 159-168.
The European Commission 2005, *Future of creative industries - Implications for research policy*, European Commission, Directorate-General for Research, Brussels.
Tomlinson, M. (1999), "The learning economy and embodied knowledge flows in Great Britain", *Journal of Evolutionary Economics*, vol. 9, pp. 431-451.
Towse, R. (2003), *A Handbook of Cultural Economics*, Edward Elgar: Cheltenham, UK.
von Hippel, E. (1994), "'Sticky information' and the locus of problem-solving: Implications for innovation", *Management Science*, vol. 40, no. 4, pp. 429-439.
Wheelwright, S. C. & Clark, K. B. (1992), *Revolutionizing product development*, Free Press: NY, US.
Wolf, M. J. (1999), *The Entertainment Economy - How Mega-Media Forces are Transforming Our Lives*, Random House, New York, US.

[1] The notion of knowledge *transfer* is particularly useful in relation to labor mobility, as we actually focus on embodied knowledge being transferred once and for all in one direction and thus do not face any uncertainty about aspects such as whether some knowledge really moves only at one point in time and in which direction knowledge is really moved. This latter aspect would imply utilizing the more open concept of knowledge flows.

[2] http://www.culture.gov.uk/creative_industries/default.htm

[3] The label of 'entertainment industries', referring to industries that develop and distribute products and services that have artistic and symbolic content and provide the purchaser with entertainment and experience (e.g. movies, PC games, music, etc.)(Hirsch 1972; Holbrook & Hirschman 1982; Caves 2000; Towse 2003; Brunet 2004), is preferred to that of 'creative or cultural industries' (Adorno 2001) since the former signals more precisely an interest in industries involved in developing and distributing often mass produced yet one-off prototype products specifically for entertainment. Thus, the label does not comment on the level of creativity, as most industries seem to encompass elements of creativity in their products and development, production, marketing and distribution processes.

[4] Maskell and Lorenzen (2004) and Grabher (2004b) are among the few scholars who have investigated knowledge transfers issues in both traditional and so-called creative industries.

[5] When referring to the market, we mean the marketplace for input resources such as skills in an Austrian sense, where economic agents interact in order to produce and trade goods. Hence, this market should not be confused with demand markets for products.

[6] Entertainment industry equivalents to patent citation could, for instance, be information derived from labels attached to movies or records and thus, right holders.

[7] These were carried out between March 2002 and November 2004 in connection with the ongoing PhD project of one of the authors: "The market-based organizational forms of product development: user communities and short-term inter-firm project ventures in the music industry".

[8] 30 semi-structured interviews with key players of the Danish music industry were carried out between March 2002 and November 2004 in connection an ongoing PhD project: The market-based organizational forms of product development: user communities and short-term inter-firm project ventures in the music industry. This research revealed that most product development efforts in the music industry are undertaken in short-term inter-firm project-based organizations, employing participants on either 1) short-term spot market contracts (e.g. the skill of a studio musician can be bought for only a couple of hours), 2) temporary employment contracts related to completing a task (e.g. contracts that link the core personnel of the product development to the project for a period of time,

normally 6-18 months) or 3) long-term employment in a firm, yet working in different project-based settings involving multiple firms.

[9] IDA is the acronym for 'Integrated Database for Labor Market Research'.

[10] Those data covering the whole Danish economy are available because Danish authorities collect detailed information on many aspects of the economy and people's lives due to extensive welfare policies. A CPR number uniquely identifies all registered persons. Similarly, a central business register, CVR, number identifies all firms and workplaces. The register supervision authorities approve all registers. If unapproved, the data collection in the registers is illegal. Authorities having several registers may not merge them unless they obtain approval from the register supervision authorities, which is often very difficult.

[11] The data used in this study includes persons whose primary employment/ownership (primary source of income) is connected to a firm in the music industry or in the manufacturing industries (i.e. NACE code selection).

[12] The IDA database has established the foundation for publications in journals such as 'Industrial and Corporate Change' (see, for instance, Sørensen 2004).

[13] Please note that there are difficulties in using public register data (like the IDA data used here) to capture the activities and structural aspects of entertainment industries due to a high degree of part-time employment and the lack of specificity in the NACE code system, which makes it impossible to differentiate between the activities people actually do. Thus, it is virtually impossible to clearly define the boundaries between people involved in activities in the music industry *per se* from individuals such as actors, dancers, writers, etc. performing activities within related entertainment industries.

[14] This category is built on one NACE code, which contains artists and content providers, some of whom can be said to undertake activities outside the realm of a narrowly defined music industry. Please see Appendix 2 for further comments on this subject.

[15] Please note that some of the stores selling products originating from the music industry also deal in products from other related entertainment industries – both software and hardware. Also, places for distributing live performances, such as music venues, may also host theater shows or similar activities.

[16] See Appendix 4 for a detailed explanation of how the variable PROG is built.

[17] By metropolitan area we mean the four main cities in Denmark: Aalborg, Aarhus, Copenhagen and Odense.

[18] Note that 7957 is the number of employees/employers with a relation to the music industry in at least one of the three-year periods of time taken into account the analysis. This number differs, of course, from the number of persons involved in the music industry reported in Section 6.1.1, which is related only to the year 1999; since there is a movement in and out of all industry segments over time.

[19] Note that, similarly to what is pinpointed above in Note 18, 27390 is the number of employees/employers with a relation to the manufacturing industry in at least one of the three-year periods of time taken into account in the analysis. This number differs, of course, from the number of persons involved in the music industry reported in Section 6.1.1, which is related only to the year 1999; since there is a movement in and out of all industry segments over time.

[20] The analysis carried out using the 1999 IDA database makes it possible to describe labor mobility patterns occurring during the three-year period 1998-1999-2000. Similarly, the analysis performed on the 1995 IDA database make it possible to shed light on the labor mobility that takes place during the three-year period 1994-1995-1996. As a consequence, the results discussed in the paper are time robust and cover globally approximately a seven-year period (1994-2000).

[21] Additionally, even though the control variable for the degree of unionization did not appear significant for explaining the motivation for job changing in the high level inter-firm mobility segments in the music industry or the high tech manufacturing industry, we found that 65% of individuals within the music industry in general are unionized and within creation and origination activities, 63% are unionized. This is a rather low degree of unionization when compared with the manufacturing industries, in which 94 % of all persons are unionized, and 93 % of the persons populating the high tech manufacturing industry are unionized.

[22] "Mobility is high in the Danish labour market. Out of a total workforce of 2,875,000, 800,000 positions are occupied every year. In this respect, the Danish labour market resembles the American labour market more than the other European markets" http://www.workindenmark.dk/Labour_market/0/4/0