Organizational Knowledge and Learning in the Context of the Knowledge-Based Economy: Networks as a Source of Learning and Contacts in the Multimedia Sector

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Abstract

Over the last few decades, many other countries have found themselves in a context characterized by increasing globalization of production and exchange of goods, services and capital, as well as by the spread of the knowledge-based economy (OECD, 1996; Foray and Lundvall, 1995; Soete, 1996; Storper, 1995; or the "new economy" as some scholars call it, e.g. Beck, 1992) and by persistently high unemployment (reaching chronic proportions in Quebec and several other provinces) (Tremblay, 1997). The Knowledge Economy implies a redefinition of the economic sectors and a far-reaching transformation of the labour market, particularly in terms of job mobility and career development (CST, 1998; Christensen, 1989). It is clear that careers are increasingly fragmented, with people having to move through a number of projects, jobs and firms during their lifetime. This constitutes a considerable challenge for adult learning, since learning used to be provided by the firm within internal labour markets. Now, especially in sectors such as multimedia, characterized by extreme mobility between firms, but also by a need for permanent learning, the challenge for firms to capture strategic advantages presents itself in a new perspective. In our view, these new careers, described by some as "nomadic" (Cadin, 1998; Arthur, Claman and De Fillippi, 1995; De Fillippi and Arthur, 1998; Hendry and Jenkins, 1997; Hendry, Arthur and Jones, 1995) and by others as "discontinuous" (Tremblay, 1997), leads us to question our vision of organizations and organization theory.

Over the last 2 years, we have conducted research on people who work in the multimedia industry (in particular in the Cité du Multimédia in Montreal). Our paper will describe the new visions of networks and careers that were presented to us by workers in the multimedia sector, but also by their employers, who must preoccupy themselves with preserving the competitive advantage of their firm by trying to harness the knowledge of workers in a context of nomadic careers. We conducted interviews with some 50 workers in 17 firms and with a dozen employers or heads of firms.

We will conclude our presentation with a formulation of a proposal concerning elements which should be included in a new vision of organizations, or questions which need to be addressed.

The new economic sectors characterized by mobility and nomadic behaviour present insights into what a new theory of organisations would need to integrate, although it is too soon to draw

conclusions as to what this new vision of organization theory should be. Clearly it needs to take into account networks of firms, but also networks of workers, especially professionals and technicians who are at the core of the competitive advantage of the firm.

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Introduction

During recent decades, Canada, like many other countries, has been exposed to what is widely labelled the knowledge-based economy. This implies a far-reaching transformation of the labour market, particularly in terms of learning, mobility and career development. Careers are increasingly fragmented, with people having to move through an ever greater number of jobs, projects and firms during their lifetime, especially in sectors such as multimedia.

We thus examined the transformations that were generated by this context, in terms of individuals' careers and their methods of learning and training. Learning and training are crucial to the new economy sectors which must continuously innovate (Beck, 1992; CST, 1998, a, b).

The new knowledge-based economy --of which multimedia is a part-- has a strong impact on the way the development of an organization's skills or competencies is envisaged, especially in the highly project-based multimedia sector (De Fillippi and Arthur, 1998) which involves high worker mobility. Indeed, in these project-based sectors, the firm's intelligence is based on the quality of the "networks of skills" which form it and not on the skills of each of the employees (Le Boterf, 1994, p. 140). In this context, both individuals, and, it would appear, the industry, develop skills through mobility. However, it is often not easy for firms to integrate competencies, thereby developing organizational learning that is so essential for innovation (Foray and Lundvall, 1995; Feutrie and Verdier, 1993). Suppliers and subcontractors are increasingly integrated into the organization's network of competencies, which gives rise to formidable challenges relating to the confidentiality of some projects and developments, but also relating to individual and collective competency development.

Thus, "the qualification and collective efficiency of the firm largely depends on its ability to pool together different kinds of know-how, to manage the complex and heterogeneous knowledge that is distributed therein" (Le Boterf, 1994, p. 140). (translation)

This study examines how firms' collective competencies and efficiency can be developed and how highly mobile employees can learn in a non-unionized workplace (Brown and Duguid, 1991; Rabasse, 1999). It considers how firms can better manage the complexity and heterogeneity of knowledge that is necessary for multimedia production and how some firms succeed, despite high mobility in the sector, in creating a capital of skills for themselves and in being regularly, if not permanently, innovative. It questions the role of unions in this context of new nomadic career patterns and the development of skills portfolios and poses the question as to whether these new patterns will prevail over the labour market.

2. Overall Research Question

Multimedia firms, through their emphasis on projects (Le Diberdier, 1998; Leslé and Macarez, 1998), are calling into question many prevailing principles and theories of management (De Fillippi and Arthur, 1998), for example, in labour economics, the advantages of closed internal markets for the creation and exclusivity of competitive advantages (Tremblay and Rolland, 1998). Thus, the theories of the economy of innovation such as strategic management are based on the idea that firms develop "key skills" or key resources over the years. However, how can these key skills be developed in a context of high staff mobility and extensive exchange of information between computer analysts and other multimedia workers? How can tacit, informal knowledge be transferred without a core of stable and experienced staff? This question appears to be particularly important given that mutual assistance and co-operation at work are vital economic factors for ensuring productive efficiency in the current context (Soete, 1996; Stern, 1995; Vickery, 1999).

A second argument of the theories of the firm and strategic management maintains that firms create their competitive advantage by possessing exclusively and using resources that cannot be imitated and reproduced. How can a firm create a competitive advantage for itself when the knowledge-based resources are integrated into individuals who are highly mobile and who participate in a firm's projects and then leave it to move on to other projects led by other organizations?

A third argument of these theories suggests that skills are accumulated through competition between firms in recruiting and developing the human capital that is needed for their projects. How can this human capital be brought together, and which social and market processes will make it possible to identify, evaluate, select and, especially, retain this capital in order to complete projects?[1]

Lastly, in this type of sector, a large part of learning the "tricks of the trade" is through observation (Jones, 1993, 1996; Jones and De Fillippi, 1996). In strategic management theories, it is argued that this "unproductive or lost time" (apparently lost indeed!) will translate into a return on learning that benefits the employer. However, in the context of project-based firms, the benefits that are derived from learning will often benefit other projects and other employers or firms. This, therefore, is another issue to be examined in this study.

These new nomadic careers go against the model of the upwardly mobile career that is found in the models of internal labour markets, more specifically, the model of closed internal markets (Tremblay, 1997; Vernières, 1982), which was tightly controlled by a single firm and, in most cases, a single union.

3. Objectives and Research Methods

Based on the perspective stated above, we examined the individual career paths of multimedia workers in order to determine whether or not they are really as mobile as is said, since it is asserted by some that the mobility of workers in the new economy may simply be a myth. We thus considered the sources and methods of exchange and learning, the current methods of collaborative work in workplaces and the factors that foster collaborative work, management and

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[1] These questions are based on De Filippi and Arthur's text (1996).

the development of collective knowledge as well as the integration and creation of new techniques or innovative products.

Through a study of the work process, we also attempted to identify the sources of individual or collective learning in the organization and the way each employee's knowledge is managed.

Lastly, we attempted to determine how, in the context of the new knowledge-based economy, the organization can develop individual and collective learning to the maximum in order to obtain innovations and a better performance or productive efficiency as well as better management and integration of the knowledge of individuals (Storper, 1995; Stern, 1995). We believe that the links between knowledge management and social interactions largely determine productive efficiency or performance and therefore, the survival of organizations. Our research program thus involves analyzing these two dimensions and the factors mentioned above.

Our study is thus based on the following two fundamental dimensions: nomadic careers (Cadin et al. 2000) and the development of collective skills (Amherdt et al. 2000).

This paper will deal with the first of these two dimensions.[2] First, the concept of the nomadic career is introduced and situated in the theory of new careers. Second, the links that can be made with the other dimension of the research will be set out. Third, and lastly, the results observed will be presented, that is, the existence of nomadic careers in the multimedia sector, but also the evidence that other career models exist as well. We will explain the methods of operation of these new careers which are different from those of closed internal markets largely regulated by the unions.

However, let us begin by presenting the methodology of the study. Case studies were conducted in 18 firms where interviews were carried out with multimedia workers and also, as far as it was possible, with heads or managers of firms (it was possible in 12 cases). In the majority of firms, interviews were conducted with three or four employees, except in two cases where it was only possible to conduct one interview. In one case, this was due to the very small size of the firm (2 persons), and in the other case, it was due to problems within the organization which prevented us from pursuing the interviews. These interviews with individuals relate to their career path, their methods and sources of learning, their social interactions, their method of work and knowledge development, and their assessment of collaborative or team work. A total of some 60 interviews have been conducted to date, including interviews with 12 managers.[3]

The interviews with the heads of organizations consisted in drawing up a profile of these organizations, finding out about the managers' career profiles, their method of managing knowledge and human resources and the results that they expect from their employees in terms of performance, learning and mobility.

4. Nomadic Careers

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[2] On the second concept and its related analysis, refer to …

Careers have traditionally been analyzed from the perspective of the internal labour market or a large hierarchical firm that is most often unionized and in which blue- and white-collar workers climb up the hierarchical ladder to make a career. Horizontal and other types of mobility have not been addressed to the same extent because, among other reasons, they were traditionally viewed as lack of advancement and thus of career, and perhaps also because unions have strongly imposed the model of the ladder or closed internal market as a typical example of a career (Tremblay and Rolland, 1998). However, the concept of career has evolved in recent years (Amherdt, C. H. & Dejean, K, 1998; Cadin, 1998). Thus, a number of career theorists have begun to put forward a different vision of careers, and some of them have even referred to a new paradigm which challenges the prevailing paradigm of the upwardly mobile hierarchical career -- the "boundaryless careers" approach (Arthur and Rousseau, 1996), translated as "nomadic" careers (Cadin et al. 1999).

It should be noted that the thinking about career transformation emerged out of the thinking about organizational transformation. In fact, scholars studied "boundaryless organizations" first (theme of the 1993 Academy of Management Conference, as noted by Cadin et al. 2000). Then, having observed the emergence of new organizational forms such as business networks and other forms of large hierarchical organizations, they began to look at the effects of these transformations on individuals and their careers.

This follows the studies by Miles and Snow (1996), who were the among the main, if not the first authors to systematize thinking about the links between forms of organization and types of career. Although other authors, in particular Chandler, have considered organizational forms, not many management scholars have examined the development of forms of employment and careers in this context. Economists and sociologists have certainly highlighted the rise in job precariousness associated with the new realities of the labour market, but there again, few authors have made the link between organizational form and career type, hence the relevance of Miles and Snow's studies (1996).

As noted by Cadin et al. (2000: 77), Miles and Snow (1996) show that "for each organizational form, there is a corresponding set of particular career characteristics. To overcome this determinism in which organizations dominate careers, they envisage something quite different from the network or cellular form – in which it is the career which determines the organization or rather the requirements to intensify learning that lead to an organizational redesign." (ceci n'est qu'une retraduction provisoire; à insérer la citation originale de Miles and Snow en anglais). This seems to aptly apply to the multimedia sector, as will be seen below.

The concept of skill is important in the vision of nomadic careers, as in the studies on the new forms of work organization. In fact, while the traditional practices of industrial relations and personnel management were based on the notion of a specific job, which was in itself linked to a Taylorist vision of the organization, the notion of skill is essential as soon as it involves models of flexible production or business networks (Cadin et al. 2000).

This vision is also part of the new visions of innovation. While the traditional visions emphasize the importance of the R&D department in a large organization for developing innovations, the new activity sectors which are based more on SMBs (such as biotechnology and multimedia) bring out the fact that other organizational forms can also lead to innovation (Tremblay and

Rolland, 1998). Thus, new theories of innovation (Le Bas, 1995) stress that it is possible to innovate through what some people have called "cross-pollenization," that is, the exchange of knowledge and experiences that lead to an innovative process. Therefore, "the circulation of ideas and people activates innovation like a bee that gathers pollen from flower to flower." (translation)

In the nomadic careers approach, skills are viewed from a singular perspective and have been extensively redefined. Thus, according to Cadin et al. (2000), three different components are used to account for career conditions in a knowledge-based economy. Like the "Resource-Based Strategy" approach, which identifies three components of the firm (core competencies, networks of partnerships and organizational identity), the nomadic careers approach makes the distinction between three components of competency which are continuously interacting with each other:

1. *Knowing how* refers to knowledge, abilities and even acquired routines;
2. *Knowing whom* implies privileged relationships, social networks and contacts;
3. *Knowing why* takes into account interests, passions, values and identity construction (Cadin et al. 2000).

Another important aspect of this approach highlighted by Cadin et al. (2000) is that it considers careers on the basis of different social spaces, communities of practices (Sharp, 1997; Lueg, 1999) or informal communities, while management and industrial relations scholars have always tended to analyze careers on the basis of the organizations' interests and requirements. This is perhaps normal since "career" has usually been described as upwardly mobile in large hierarchies which were generally governed by a set of rules negotiated by unions and managers, who tended to confine their analysis to the organization.

The new vision goes beyond this focus on the organization, opening up the understanding of careers, learning and identity construction, to many other informal communities with which individuals are associated and in which information, ways of seeing things, ways of thinking, tricks of the trade or job opportunities are transmitted (Cadin et al. 2000). It is in studies on business networks, especially networks of SMBs that this type of exchange and transfer have been observed, in particular the case of the Silicon Valley (Saxenian, 1995; Cadin et al., 2000).

This presentation of the concept of nomadic careers ends with a diagram that sums up the theoretical core and its related key concepts, based once again on the studies of Cadin et al. (2000: 79).

CAREER COMPETENCIES
(knowing how, whom, why)

EXPERIENCES   CAREER CAPITAL
(professional, volunteer,   (human, social, cultural)
personal)

INSTITUTIONAL CONTEXTS
(company, profession, industry, society)

The notion of experience is considered here not only in terms of assets but also in terms of knowledge management as suggested by Nonaka and Takeuchi (1995). These authors show that creation of knowledge requires successive phases of integration of knowledge, clarification of tacit elements, then re-internalization of the explanation (Tebourbi, 2000; Cadin et al., 2000). The authors agree that the individual is not always aware of the knowledge that he or she has acquired as part of past experiences.

Nomadic career theorists divide the various assets mentioned above into "knowing how, whom and why." Career capital results from an accumulation of career competencies, as defined above. Economists are familiar with the concept of human capital (Tremblay, 1997; Tremblay and Rolland, 1998), but nomadic career theorists view the concept in its broader sense. Many scholars use the metaphor of the competency portfolio to underline the freedom of the actor, the fact that he or she is continuously making choices, whether or not they are aware of it. These choices are then translated into "competency effects" that are derived from real-life experiences (Cadin et al., 2000). It is thus a circular flow originating from experience to form career competencies, which create career capital, and which will only make sense in a given institutional context.

The above are the main theoretical elements of nomadic careers on which this study and the results from the analysis of our interviews with workers in the multimedia sectors are based.

Taxonomy and Results

As noted by Cadin et al. (2000), the nomadic careers approach refers to a constructivist interactionist paradigm which was used to consider the two objective and subjective dimensions of career. Thus, since the emphasis was on the images, the construction of meaning, and people's motivations in their career paths, a qualitative method and semi-structured interviews were retained. On the basis of our research goal, we adopted a process of semi-structured interviews and our questionnaire was based on the one used by Cadin et al. (2000), after discussions with the latter about developing a Quebec-France comparative study of the multimedia sector. Elements related to our specific interests -- learning and skills development[4] -- were added to the initial questionnaire used by Cadin et al. (2000).

With regard to careers, past studies by Cadin et al. (2000), which examined a broader population rather than focusing on a single sector, gave rise to a taxonomy that groups together five categories of careers, based on the stacking method (Dubar and Demazière, 1997, cited in Cadin et al. 2000). We also drew on this method to analyze our own interviews, with some of our cases being used as "examplars" or ideal-types for a category. Each of the categories identified are defined by objective factors (the number of changes of jobs and firms, the nature of the changes, and so on) and by subjective factors (professional identities, the relationship to the work and the the firm), based on Cadin et al. (2000).

The different groups of this taxonomy are presented briefly here. The results of our interviews in the multimedia sector are then described, and the interviewees are classified by career type and professional identity (according to Cadin et al., 2000).

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[4] This aspect is briefly addressed in this paper and will be developed further elsewhere, see …

The first group includes *traditional organizational careers* described as *sedentary*. The career of these people largely takes place within one organization, alternating between upward and horizontal mobility in similar fields, depending on the opportunities that come up. (It will be shown that some heads of multimedia SMBs first started out in this type of career before quickly deciding to "go into business").

The second group includes *migrants* or those who move from one place to another within an organizational perimeter. They have always worked for the same firm but have experienced fairly radical changes of environment or occupation.

The third group includes *itinerant workers* or those who move around according to the logic of the craft which is also referred to as the craft employment systems by labour economists (see Tremblay, 1997; Osterman, 1987). The career of these individuals is centred on a specific craft or activity sector and they often change employer in order to gain more responsibility. This group includes mainly professionals, in particular computer analysts, but may also include some blue-collar workers.

The fourth group is made up of *cross-boundary workers* or those who move back and forth between the organization and the market, that is, they move between the status of employee and self-employed worker. They have greater autonomy in relation to the employer than the previous categories of workers. These individuals rely on organizational resources (relations, clients, etc.) to build up their career. Cadin et al. (2000) also listed technical skills among organizational resources, but in the multimedia industry, given the method of skills development, it seemed preferable to consider them as personal resources. Therefore, people who use personal resources as technical skills in their career will be seen as belonging to the group of nomads, insofar as they are not strongly attached to the organizations and move around in the labour market with their portfolio of professional skills.

Lastly, the fifth group is made up of *nomads* or those who cross organizational boundaries. According to Cadin et al.'s study, this might mean people who have been unemployed for long periods of time, who have worked for different organizations for a short time, and who are often self-employed workers.

The multimedia workers in our study are mostly found in the last three categories. Thus, the category of nomads was broadened to take into account people who are in one organization at a given time but who are ready to move on rapidly if the current job is no longer challenging for them.

5.1. Nomadic or Cross-Boundary Careers

The interviews show that the majority of multimedia workers do indeed fit into the categories of nomads or cross-boundary workers. They are mostly people who are not strongly attached to their organizations and even less interested in union representation, but who are more concerned about the challenges offered by their work. Thus, projects and professional experiences serve to develop their career competencies and professional networks (knowing how, whom and why) which will give them career capital, making them largely "independent" in the labour market, or

at least this is what they believe. It should be noted that at the time of our interviews (end of 2000-beginning of 2001), the telecommunications and e-business (dot.com) industries were on the verge of a downturn and the majority of workers were quite optimistic about their future.[5] In this context, we met few self-employed workers but their number might increase as a result of hard times in these industries. Although few of those we met were self-employed workers, because we had chosen to conduct case studies on SMBs and VSBs, a predominant type of business in the sector (Leslé and Macarez, 1998; Price Waterhouse Coopers, 1998), they nevertheless had a profile resembling that of self-employed workers. Moreover, some of them have already been or plan to become self-employed workers if their jobs no longer provide them with the challenges sought … or if they lose their jobs.

As was shown above, we consider the people who use personal resources as technical skills in their career as belonging to the groups of nomads insofar as they are not strongly attached to their organizations and move around in the labour market with their portfolio of personal skills.

Apart from classifying individuals into one group or another and in order to allow for a better understanding of this classification, it is useful to examine a number of elements on which our interviews were based. This will also give us an interesting vision of the new careers which are emerging in the new economic sectors. Moreover, it should noted that a number of unions are interested in unionizing these groups, which are related to the film and video industry that includes self-employed workers who have recently been unionized or grouped into associations. Our study sheds light on these workers' interests and, consequently, on the goals that unions must focus on if they want to unionize them -- goals that are quite different from the traditional bargaining goals (classifications, wages, and so on).

It should be specified that we chose to "let the actors talk," with the view that it is better to give more room for the interviewees to tell their own stories than to sum up all the elements heard into a set of information and arguments that would have been entirely reconstructed (Hill and Meagher, 1999).[6]

5.1.1 Nomads and their Contact Networks

Like many young people who entered the workforce during the 1980s and 1990s, those working in the multimedia industry often held several precarious jobs, sometimes in various sectors, before turning to employment in the multimedia sector (Price Waterhouse Coopers, 1998) and deciding to build their careers in this industry.

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[5] New surveys will be carried out from March 2002 onwards and it will be interesting to compare the situation. We do not believe that there will be a major change in perspective because a number of workers in the sector have already experienced job difficulties in the past, and everything will depend on how the particular sector and the economy in general evolve.

[6] In fact, the qualitative material can be processed in two ways. The researchers can sum up the elements heard into a set of arguments or they can keep the interviewees' words to tell their stories. We have used both methods here but have left considerable room for the interviewees. This helps to preserve a form of methodological transparency between the various levels of what is put forth, that is, "the story told by the researchers" and "that of interviewees." (Hill and Meagher, 1999)

Thus, A, a young, 23 year-old woman, underwent a radical career change, fitting the profile of a nomad:

"First, I did some training in the food service industry, after getting my secondary school diploma, and I worked for two years in this sector. In 1999, I decided to do a practical training session with the federal government—it was for people who want to change careers and who don't have any specific training. I heard about the program through a friend of mine. It was mostly small office jobs, but I worked a lot with computers. Before that program, I didn't even know how to turn a computer on and off. In 2000, I got my job here—and I have no intention of leaving!"[7]

Another young man, T, aged 32, said, "I started out in construction, through personal contacts, but I left construction because I didn't like it at all. After that, I went into music and then I changed again because it was too hard to break into the arts community. I had responsibilities (a wife and child), so, for their sake, I needed more security and stability. My wife encouraged me as I took steps to change careers. I took some time to think about what I liked and what I wanted to do, and then I took the leap into the computer field. I first got in here through a practical training session at the firm."

Several people, in fact, made detours through other fields (mechanic, international cooperation, teaching) or held various odd jobs before getting into the computer field. This career change usually required additional training and then a practical training session, or work-term, in a firm. Often, it was this work-term that opened the door into the computer field. Personal contacts often played a role as well, as did, somewhat less often, strictly work-related contacts.

A limited number of workers entered the workforce by creating their own jobs through self-employment, and two individuals have maintained their self-employed status, working on a contract basis in the firm where they are currently employed, while nonetheless considering themselves to be "employees." However, this kind of combination--self-employment, while being considered an employee of the firm--is quite rare (2 cases). Some workers, however, have kept up small contracts with other clients, especially in the case where the present firm does not provide them with full-time work. Experiencing a period of self-employment, especially after a period of unemployment, while not common to the majority of workers, is nonetheless relatively frequent for workers in this field.

Most of the workers that we interviewed fit into the nomad category, based on the fact that they have held various odd jobs, gone through radical career changes or spent some time as self-employed workers, and that they are often seeking more autonomy and challenge in their work. However, a certain number of those interviewed should be considered as itinerant workers, as their logic of action has mainly been based on the logic of the craft.

Thus, a 36 year-old woman, whose job changes have been based on the logic of the craft, would come under the category of itinerant worker. She held four jobs in the computer field before

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[7] We have occasionally, as in this case, carried out small changes to the text without, however, changing the meaning or the general tone of the interviewee's words.

finding her present position, which she found through her professional network, while her previous job was found through a personal contact:

"Through a contact, in the other firm where I used to work, I worked with B, the founding president of the firm. When he bought this company, he came to see me about working with him in his firm and I accepted right away…"

A young man in his thirties, C, would also fit into the category of itinerant worker, following the logic of the craft:

"I finished my initial training in 1991, and got a job in research and analysis in software ergonomics from 1993 to 1999, and then I got this job in 1999."

Two other men, S and R, aged 36 and 37, also fit into the itinerant worker category. They have moved around within the computer sector, mainly through personal contacts and based on the logic of the craft. What they seek is greater responsibility, new projects to work on and team work. S was self-employed for a time, following a period of unemployment, and could therefore be put into the nomad category. However, his logic of action has been highly coloured by professional goals.

5.1.2 Desired Mobility in the Search for Challenge

Workers in the multimedia and computer industries seek challenge and creative, stimulating projects to work on. While some workers got into computers following a period of unemployment or due to difficulties breaking into other areas, such as music or film, or, still, in order to achieve greater financial and professional stability (more rare), a small majority chose to work in this sector right from the outset, having pursued the appropriate studies from the start. Subsequent moves within the sector have been motivated for the very large part by the search for challenge, autonomy, freedom, professional recognition, flexibility and initiative, all words that were frequently used by the people we interviewed.

As C, a man in his thirties, put it, "I need intellectual challenge, and I have to enjoy my work. For me to stay in a job, these two conditions have to be met, otherwise, I'm outta there!"

B, a 36 year-old woman, told us, "For now I'm looking more to fulfil my professional goals than at the strictly financial aspect of the job."

As we have seen then, some workers in the multimedia industry have experienced a period of unemployment or had trouble breaking into a sector such as music or film and are therefore looking for greater financial stability. However, these individuals make up a minority. Most of the workers we interviewed entered the workforce without experiencing a period of unemployment or any great difficulty, even if this sometimes meant holding a series of odd jobs and, in some cases, undergoing a radical career change.

Some workers talked about having sought teamwork, a more collective style of work, a less hierarchical organization. They wanted to "free themselves from the large firm," to use K and L's

words. And G, besides seeking challenge, also wanted to escape from the hierarchy of the traditional firm. "I left my job because it was boring. There was a very strong hierarchy at the firm. There was little room for communication between the members of the organization (the employees) and the employer. Each person worked on his or her little job, individually. It was exactly the opposite from the firm I'm working for now. Now, I feel that I am recognized as a real professional in my area. Knowing that I have influence within the firm and that my ideas and suggestions count. I feel that I'm participating in the professional development of other people at the firm."

Most of the individuals that we interviewed are young and started their careers directly in a SMB, but some, such as K, had left large firms. "The most important step in my career was when I decided to leave firm X. There was this mentality there…I think they hadn't necessarily understood that people no longer join the firm, and then spend the rest of their lives there, as was the case in the past. But since it's a prestigious firm, the bosses still have that mentality. When I was working for X, I had a few talks with my boss. I told him, 'Listen, what I don't want for my career is to go that way, I want to go the other way. He answered that I had to conform to the way things were done at X... One thing I know is that as soon as someone finds a more interesting job, especially in computers, they can't be held back anymore. They just put their job résumé on the Internet and two weeks later, they have a job somewhere else."

L is also critical of the large, hierarchical firm. "They are big machines, out of date. I was sent interfaces in mainframe and I had to convert them into Windows. It was incredible, but I didn't have any say in it. When I finished a job, I had to convince my boss and then he had to convince his. We had to go through countless levels before reaching the final client, and at each step along the way, there was a chance that the product would be sent back to me to be reworked. I didn't like that, having no contacts, being so far-removed from my client like that. I was too young to put up with that… Oh! I definitely prefer small firms to large ones…"

While those we interviewed were not necessarily seeking self-employment, most were trying to remain independent of organizational boundaries or hierarchies, finding challenge important in their work. As most of the firms we studied were SMBs where collective work is valued and hierarchy more or less absent, the reasons workers change jobs—the reasons which led them to these organizations and keep them there--have to do with the presence of interesting projects and challenges, as well as flexibility within the organization and in terms of work schedules.

5.1.3 Making Use of Mobility Networks (Knowing Whom)

It has been our observation that professional mobility is usually sought when individuals feel that their personal and technical development is being hindered, that the projects they are being given lack challenge or that their desire for autonomy is being stifled.

Workers often achieve mobility through recourse to personal networks, which tend to come into play slightly more often than professional networks, although the lines between these two different networks become somewhat blurred at times. Thus, P said, "I mostly had a personal--more than professional--network, but many of my personal contacts dating back to that job are

now here at this firm. Over time, studies and work ended up blending together, and so did my personal and professional networks."

A young, 28 year-old woman highlighted the importance of her personal network, despite having integrated into a professional network through, among other things, her computer studies, a necessary step for all workers in the field. "I wanted to do something else, after working in accounting and as a receptionist, and doing some studies in sociology…and I decided to go into computers. I talked a lot about it with my boyfriend before taking the plunge and he always encouraged me to go on. I chose the computer field out of personal interest. Later, I got a job as a programmer in this firm through a personal contact."

A young man in his thirties, C, pointed out that head-hunters can act as a substitute for "knowing whom" in the multimedia industry. "I left my last job because I was bored, there was no more challenge for me and I wanted a change. I went through a head-hunting firm. So far, this new job seems to be giving me what I'm looking for, that is, interesting challenges..."

F, a 30 year-old woman, recently graduated from the École des Hautes Études Commerciales de Montréal (HEC), entered the workforce by creating her own job through self-employment, and then obtained a salaried position through a personal contact. She said the job market and the way information circulates encourage mobility: "Everyone knows each other in this activity sector. Staff move around a lot, many people change jobs, moving to other firms. So it's important to keep these contacts. One day you might want to change jobs too. There are more offers than there is demand."

Personal Web sites seem to be another source of mobility and several people maintained that they would use the Internet if they had to change jobs again. Thus, rather than looking for the ideal firm, G created his own Web site and the firm came to him. "It was the firm that found me through my personal Web site. They had me come for an interview. I was still working at another firm at the time."

Most workers in the multimedia industry that we interviewed are young, and so have not yet necessarily experienced many stumbling blocks along the way. However, this fear is present in the minds of all, and is the first reason given for past or possible future job changes. Most feel that mobility is easy after a few years in the field, since everyone knows each other, everyone knows the firms, and information gets around quickly (among other ways, through the Internet). In short, the "knowing whom" component of competency is quite well developed in the field.

Conclusion: Careers and Mobility Networks

One thing that came out in our interviews was that workers in the multimedia industry are essentially nomads, but there are also some itinerant workers. As we carried out interviews in SMBs and not among self-employed workers, the latter do not figure prominently among our interviewees. However, despite this fact, it is apparent that the reality of self-employment is present in the sector. As has been pointed out, many workers have gone through a period as self-employed workers and some combine this status with a main contract within the firm they are presently working for, in the case where this contract does not provide full-time work. Sometimes

this is the case when someone is just entering the sector or during hard times for the firm. Still, if we were to include in our study all multimedia workers, the number of cross-boundary workers, who move back and forth between the status of employee and self-employed worker, would be higher. This must be kept in mind when sketching an overall picture of the industry.

It has been our observation that many people have had experience in other, many-varied activity sectors, such as working as a mechanic, or in music, film, the food service industry, accounting or teaching. These workers underwent a major career shift, ultimately leading them into the computer field. It must be said that job opportunities in this growing field combined with generally high unemployment in Quebec during the 1990s, certainly made the computer sector, and more specifically the multimedia sector, "attractive" sectors on the market.

Given the fact that many workers in this field have held various odd jobs, especially those who have worked in other sectors, the major career shift that some of them have made, and the presence of self-employment along the way, it can be considered, despite their relatively young average age, that most of them fit into the nomad category.

The few itinerant workers among them, on the other hand, got into the computer industry and have not moved away from it. They have followed the logic of the craft, that is, seeking out the best work conditions, greater responsibility, more autonomy and greater challenge.

The motives behind professional mobility in the multimedia or computer industry are, moreover, essentially the same for all workers in this field. These include the search for challenge, autonomy, freedom and recognition, as shown by studies on other project-based sectors (De Fillippi and Arthur, 1998; Jones and De Fillippi, 1996; Hendry, Arthur and Jones, 1995).

Entrepreneurship is attractive for some individuals, but as we only dealt here with employees (and not heads of firms, who we have interviewed elsewhere), we cannot elaborate upon this dimension at length. It should be mentioned, however, that entrepreneurship does hold some appeal for several of those working in this sector, especially those who have had some experience in large firms and who were disappointed by this experience.

We have touched on the fact that unemployment was high in Quebec during the 1990s. Before the economic recovery and the existence of programs aimed at supporting job creation within the Cité Multimedia, the climate was rather uncertain, even for workers in the computer industry, although this sector was among those which suffered least from the years of recession and unemployment. It should be noted, moreover, that aside from the several success stories within the multimedia and computer fields, these sectors of the new economy are volatile sectors and the dependence of some firms on the stock market is sometimes translated into financing, employment or redundancy problems. In this uncertain economic climate, then, networks (*knowing whom*) seem important to people working in the multimedia field, as for those who work in film (Jones 1996; De Fillipi and Arthur, 1996). Networks of personal contacts are called upon extensively to provide information on available employment, and it is often through these networks that jobs are found. Furthermore, the presence of a more immediate, personal, even family-related network was observed when it came to offering the support needed for the major career shift into the computer field that was made by some of the individuals we interviewed.

As for the component of competency, *knowing why,* or making sense of one's work experiences, it can be said that most workers in the sector focus on the challenges offered by their job. We observed a strong desire for autonomy and for gaining responsibility at work, a desire for the possibility to express creativity and a spirit of initiative among workers in the multimedia field. The core identity is thus largely focused on autonomy and professional challenge, even though many workers, when asked to say what was most important to them in life, underscored the importance of their personal and family lives. Their self-image, nonetheless, rests to a great extent on the opportunities for self-fulfilment and development at work.[8]

Furthermore, it was our observation that personal and professional networks have an important impact on skills development, which is, without a doubt, closely tied to career development. The diversity of the experiences of nomad workers in the multimedia sector fosters the acquisition of multiple career competencies, which, in turn, translate into career capital (human, social and cultural) that these individuals can exploit in the workforce and in their professional networks, just as was observed by Cadin et al. (2000) for French nomad workers.

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[8] The component *Knowing how,* which refers more fully to the acquisition of professional competencies, is further developed in another article on this study (…….2001).

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