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Career Coupling: Career Making in the Elite World of Musicians and Scientists

Abstract

This article analyzes the interaction between the careers of people working in artistic and intellectual worlds. Two ethnographic studies constitute the basis for the analysis of career building in connection with the careers of other actors. The concept of career coupling represents the process by which professional success is achieved through the forging of relationships between novice and elite actors. Career coupling in the social world of virtuoso musicians is compared to that of career coupling in the social world of elite scientists. It was found that both groups achieve status in a similar fashion by moving through a three-stage process: (1) matching; (2) active collaboration; and, (3) passive collaboration. It is argued that the analysis of career coupling developed here can also be transferred to other professional fields.

Keywords

Career; Professional strategies; Socialisation; Education of elites; Higher education

Introduction

This paper defines the interaction between the careers of two actors in a particular field (herein illustrated as virtuoso musicians and elite scientists), which I call career coupling. I will use the concept of career in accordance with the interactionist tradition of the Chicago School (E., Hughes, 1971 chap. 14; H.S., Becker and A. Strauss, 1956; H.S. Becker, 1970, chap. 11). This concept defines the course of professional life as a series of stages which differ in the quality of interactions according to the individuals who play a relevant part in their professional environment. I have elaborated on this concept based on the observation of career-making people working in the elite environment and the analysis of their career features. Those features--especially the process of reputation building--are the basis of artists' and intellectuals' career constructions (Heinich, 1999; Zieman, 1987). Career coupling is a social process, which concerns the parallel professional routes of two or more actors who cooperate, each in their own specialty, during the time necessary for them to change their rank in their respective professional worlds. By this process, the actors hope to climb in their professional hierarchy. In other words, the career coupling consists of interaction between two or more careers. The

"coupling" means that the actors, who are involved in this process, build their careers jointly. Without this close collaboration they do not evolve in their professional worlds.

Three phases are necessary in order to be able to state that such collaborations are career coupling. The first phase is the matching process, the second is active collaboration, and the third is passive collaboration. After the first stage of matching, when the actors decide to work together, they enter into the phase of active collaboration, which consists of intensive work and a close professional relationship between collaborators. At this stage, the people who belong to their professional milieu learn that the actors are collaborating. The names of the collaborators are joined and thus, their careers are joined too. The actors active in the career coupling process build their reputations together. The success of one became the success of both. In the third stage of career coupling--passive collaboration--the collaborators do not work together intensively, like in the stage of active collaboration. Each person evolves independently, but the development of the ex-collaborator's career continues to influence the reputation of the partner. A crucial difference between those who collaborate and those who are involved in the process of career coupling is that in the second case after some period of collaboration the reputation of career coupling actors is built together and this reputation is interdependent. The strong bond between the careers of the people involved in the career coupling process constitutes the most important and distinctive criteria for differentiating the career coupling collaborators from those who cooperate to a lesser degree. The association of the names of collaborators among those in the professional milieus is the result of the process of career coupling.

This article is based on the study of the world of artistic elites, which was the primary subject of interest, and on the new fieldwork in the world of scientists--chemists, physicists and biologists--who work together in the same specialization. While the status of a researcher does not pose any particular problems of categorisation, the status of a violin soloist needs explication. I am taking into account the definition formed by Daniel L. Westby (1960: 225): "Soloist status – this term as used here means a self-employed, entrepreneuring free agent--not to the first men of the wind section, who are also referred to as soloists. Such names as Menuhin, Heifetz, Serkin and Rubinstein come immediately to mind." My work concerns people who are perceived by professionals in their special fields as ones who, by virtue of their occupations, are international elite members.[i] This specificity and the elitist character of this field play an important role in the analysis of the process of career making. In this paper, however, I do not present an exhaustive analysis of careers, and this is why many important aspects of careers, such as turning points, key events, capitalisation of various resources, the system of gratification, et cetera are not discussed here.

In this paper, the presentation of the career coupling process is based on the frequent cases of coupling between a master and her/his apprentice. The relationship between these categories is analysed principally through the aspect of the advisor's role in a student's career (Reskin, 1979; Campbell, 2003; Wagner, 2004). This influence is pertinent in the life of the participants who I observed. In the artistic field, the first question all people ask a young virtuoso is, "Who is your professor?" And in the scientists' world: "Whose lab are you in?" However, the career-coupling process works in both directions. Not only does the master's career influence the apprentice's professional life, but also the apprentice's career interacts with the master's career.

I believe that this phenomenon concerns also other categories of actors (equivalent in professional hierarchies, position, age, etc.). Given that the results of both studies (in the artistic and scientific worlds) overlap, I am also lead to believe

that the concept developed here can apply to other professional groups although each field has its own peculiar differences.[ii]

Methodology

This research is based mainly on qualitative methods, which were conducted according to the Chicago School Tradition (Glaser, Strauss, 1968; Hughes, 1996; Konecki, 2000) and particularly on active observation (Peretz, 1998), including periods of participant observation in the world of virtuosos, observations in laboratories and more than one hundred formal semi-open interviews concentrating on the biographies of my respondents (seventy percent of the interviews were conducted with actors in the soloists' social world and thirty percent with the scientific researchers). My research was carried out in seven different countries: France, Poland, Germany, Italy, Spain, Canada and the USA. Nevertheless, this activity was very dispersed in numerous foreign countries, but because of the small population of elite circles (soloists' teachers and students[iii] and the scientists working in laboratories of the same specialization), these milieus have a very high level of inter-acquaintance. The actors easily recognize each other and can very quickly place one another in their respective worlds.[iv]

In my fieldwork, I have observed the lives of ninety violinists and I have had contact with about thirty parents of young virtuosos. I have collected data on the activity of more than twenty violin teachers. In addition, I have done interviews with the violinmakers and concert organisers. I have also established good relationships with twenty researchers working in bio-chemical physics laboratories. I have done interviews with scientific conference organizers and merchandisers of scientific equipment. I have supplemented the data with biographical books about celebrities from the world of violin and worlds of physics, chemistry and biology. For eight years, I have used the method of participant observation and played different roles: a young virtuoso's relative, a translator, a concert organizer, a member of the association for young talents, host family druing the time of violin competitions, a guide for people taking part in a scientific conference, and a sociologist.

I will divide my article into three parts. The first part is a short comparison of the characteristics of the worlds of the artistic and scientific elites. The aim of this comparison is to show that the functioning of the elite milieus of these two worlds is similar. The second part is a presentation of the stages of careers that concern two major categories in my research: teachers and students from artistic and scientific fields. Detailed information on their professional routes allows me to more completely explain the process of career coupling, the analysis of which constitutes the last part of my paper.

The World of Soloists – The World of Scientists

Literature Review

Studies of musicians' work are principally concerned with the musicians who work in ensembles, especially orchestra musicians (Faulkner, 1983; Gilmore, 1987; Ravet and Coulangeon, 2003) or jazz musicians (Becker, 1963; Coulangeon, 1999; Buscatto, 2003). If the literature about musicians is extensive, to my knowledge it does not include sociological publications concerning the soloists' class. The perception of a soloist's career being such an individual and unique trajectory and the exclusiveness of the soloists' world could constitute two major obstacles for a

fieldworker. The lack of research on artistic elites is in contrast with the richness of work connected with the elites of the intellectual world, and particularly about scientists (chemists, physicists and biologists). Their careers were and are the subject of many studies. The most helpful studies in my analysis were those which concern the socialization of the scientists' students (Traweek, 1988; Delamont & Atkinson, 2001; Campbell, 2003), the specialisation and modification of scientists careers (Ziman, 1987), the impact of rapid discovery upon the scientist's career (Reif & Strauss, 1965) and the relation between age and scientific performance (Cole, 1979). The careers of the scientific elite, even the winners of the Nobel Prize, have constituted the subject of the social research done in this area (Moulin, 1955, Zukermann, 1977; Merton, 1973; Friedman, 2001). Combining the above-mentioned findings with my ethnographical research, I can compare the main characteristics of both fields.

Evolution of Professional Activity

In the world of science, the progress of the last few years has provoked enormous changes in the organisation of the work of scientists. The most important features are the growing sizes of research teams, the increase of industry-based collaboration (Latour, 1989), and the introduction of new work practices such as the "demo" (Rosenthal, 2001). In contrast, in the world of soloists, the organisation of everyday work has remained the same as in the times of Niccolo Paganini n the 19th century.[v] Recording is the only technique that has introduced any modification in instrumental practices. The virtuoso performers need to practice nearly eight hours a day in order to maintain their technique level.

Evaluation of Artistic or Intellectual Activity

A common feature, which seems to constitute a major difference between the two worlds, is the problem of evaluation. Artistic education is based on subjective judgement and relative evaluation, but according to Robert Campbell (2003: 898), contrary to the popular view of the rational and objective nature of science itself, "science education is an intersubjective accomplishment, arising out of a good deal of trial, error and negotiation among faculty and students".[vi] Pierre Joliot, professor of College de France and director of the laboratory of bio-physical-chemistry, remarks in his book that, "Evaluation of a creative research sets the same problems as evaluation of all forms of artistic expression" (Joliot, 2001: 61).

Passion – Work- Vocation

Both worlds have a number of features in common, such as a passion for the profession, which most scientists and virtuosos mention spontaneously in interviews. They consider passion to be the origin of their creativity, actions and professional decisions. The necessity of having a vocation for their profession and the integration of their private and professional lives, are often spontaneously declared by participants in the two worlds and were mentioned in publications by authors who studied the artistic or intellectual worlds (Becker, 1963; Heinich, 1999; François, 2000).

Professional Internationalism

Another characteristic common to both elite fields is the internationalism revealed in many aspects of their lives. Work teams in the laboratory, just as groups of virtuosos (soloists' class), are composed of people of different origins. In addition, the professional activities of the actors take place in various countries. They work, for example, in Russia, then in Germany or Switzerland and after that, they move to the Americas. Such paths are true for musicians as well as for scientists, whose geographical mobility is well-known.[vii] Scientists and virtuosos move for long periods of time not only because they move from one laboratory to another or change residence, but also due to short events which give rhythm to their professional lives. The causes of mobility are lectures and meetings for the scientists and master classes, and festivals and virtuoso competitions for the musicians. These meetings are characteristic for both milieus for two reasons. The first reason is that they give opportunities to educate successors. The second reason is that they constitute venues of professional communication within each world, by which the actors state the existence of their world and confirm that they belong to a very narrow elite. These meetings also present these actors with the opportunity of constructing or confirming their reputation, which is fundamental for their career, a topic that will be discussed later.

The Socialisation of Actors

Training future generations of the elites is one of the main features of these worlds, and it explains why the two major categories of actors are students and their teachers. It is on the basis of their relationships that we can analyse the phenomenon of career coupling. Before we concentrate on that, I suggest a presentation of the model of the professional routes that occur in each world being examined. It is obvious, however, that each scientific or artistic specialization entails a specific socialization process. The timing of education is different for mathematicians, physicists or sociologists (Cole, 1979). Even within the world of musicians, the education calendar is not the same for a pianist, a violinist or a singer (Wagner, 2004). Socialization also varies from one area to another. In contrast to the socialization in the musical world based on individual teaching, in the scientific world a huge part of the socialization is realized within a team. However, the main features of socialization analyzed here, stemming from the examples of violinist virtuosos and physicists, biologists and chemists, are common.

Soloists' Education

I will analyze the relationship between young virtuosos and a series of different categories of participants from their world.[viii] The first stage consists of a very strong cooperation between a professor, a young musician, and musician's parents. This strong and professional collaboration is possible because more than 9 in 10 students have a parent who is also a musician.[ix] The second stage, which I define as "the crisis period," concerns only the teacher and the young virtuoso without parental control. The relationship between them changes. The young soloist transforms from a docile pupil to a doubting adolescent, who looks up to "the master." The last stage is liberation from the teacher's control. This last stage is a modification of the interaction between these two actors. Virtuosos make new ties with other professionals of their world (such as accompanists, conductors, sponsors and

violinmakers).[x] These persons do not necessarily belong to the network of the teacher, contrary to the first and second stage of the process of virtuoso training. Young soloists build their own network of support (Gilmore, 1990: 149). Without these relationships, access to the soloist market is impossible. This access is determined by a sequence of different and complex selections (Wagner, 2004). One of the tools to select soloists is competition. The members of the competition's jury choose performers to win soloist slots. Only such winners are in a position to become soloists, but the selections of winners are open to criticism within the soloists' milieu. The difficulties of assessing artistic performance, in addition to the pushing of supporting networks, make the selection of winners (the "best" virtuosos) very difficult. As one 18-year-old violinist, born in Eastern Europe and living in the EU, suggests in an interview after an international competition:

> I don't know what to think and what to do. Look at that! They all (members of the jury) said different things: the first one liked Bach, but not Paganini, the second, just the opposite. The third liked Beethoven and he shot me down for my virtuoso piece, and the last said that I played my virtuoso piece excellently. He said he had never before heard such a good performance, but on the contrary, Beethoven was terrible. He said that I had many problems with intonation. And in this manner, they justified my failure. I do not know what to think because I heard other competitors, who passed the first stage and I am sure that they are much worse that I was. OK! They (the jury) were unanimous in two things: that I had a big talent and a bad coach. And look! (He shows me four business cards). They all invited me to join their classes and to work with them!

The world of the violin virtuoso is highly competitive, and the young virtuosos are the subjects of permanent selection throughout their educations. It takes more than 15 years for a soloist to be trained. The first contact with the professional world takes place with the introduction into the concert market at the age of about 4 or 5. At 18 to 25, they acquire full access to the adult concert market, which corresponds to the "midtown" in the "subworld of concert organisation" in Samuel Gilmore's analysis of organization of the concert world (Gilmore, 1987).

Scientists' Education

As far as the training of scientists (biologists, chemists and physicists) is concerned, I refer to my own fieldwork data and mainly to the findings of Robert Campbell (2003)[xi], and Sara Delamont and Paul Atkinson (2001). In accordance with their articles, I distinguish three stages, which are determined by the students' approach to the knowledge they must acquire. The first stage is the acquisition of theoretical knowledge during graduate studies. The second stage involves the acquisition of "bench work" craft during the period of doing their PhD. The third stage, which is postdoctoral, consists of not only acquiring the skill of writing papers and making oral communication, but most importantly, acquiring the skill of translating personal doubts about technical failure into the usual troubles of routine scientific work. Young researchers realize their three stages of socialisation between the age of 18 and 32, and the training of scientists takes from twelve to fifteen years (Traweek, 1988).

Elite socialization

Despite the fact that those two training stages of education do not rely on similar criteria, major similarities can be pointed out by comparing both training paths. In both worlds, numerous factors make socialisation a very important element for acquiring professional competence. One of them, and the most important one, is the necessity of transmitting tacit knowledge, which is a crucial component of both scientific and artistic works. This kind of knowledge can only be taught through personal contact with a practitioner--through oral culture, trial-and-error and practical examples. What plays a great role in this socialisation process is the strong projection of "heroes," which are transmitted by the teacher. Each domain has its own "heroes." For the scientists, they are Albert Einstein, Enrico Fermi, and famous members of Joliot-Curie family, and for violinists, David Oïstrach, Yehudi Menuhin, Isaak Stern, Maxim Vengerov or Vadim Repin. This phenomenon of "professional idols" is described by Joseph Hermanowicz (1998) for science and Robert Faulkner (1983), and Izabela Wagner (2006) for musicians. These authors show the consequences of projections, such as the "awakening" of a great professional ambition, which is indispensable to support the efforts of all categories of actors who are responsible for the transformation of a young student into a professional. Another consequence of the power of "idols" is the phenomenon of "comparative failure."[xii] Students must readjust their goals and transform the ambition for greatness (for example winning the Nobel Prize or the Indiana Violin Competition and playing recital in the Carnegie Hall) into more realistic objectives, such as working on a very good team on interesting projects and making important discoveries, or playing solo or in a chamber ensemble in the mid-level concerts. The difference between both fields lies in the age at which the actor must accomplish such adjustments: for scientists it is after they are thirty and before they are forty, and for the violinists, it is before the age of twenty. The professional precocity of violin virtuosos develops much earlier than for scientists.

Initiators' Careers

If socialisation in the two worlds varies with respect to age, the difference disappears when dealing with initiators. For the careers of musicians, I refer to my own fieldwork data, and for the scientists I add the study of John Ziman (1968) to my own results. The careers of the soloists' professors[xiii] and academic teachers begin between the ages of 26 to 30. It cannot be said that there is an age limit for being a teacher. In the case of researchers, they do not always have the institutional position of academic teachers, but in their laboratory work, they introduce young student researchers into the world of scientific practice, and this is why I consider this occupation to be teaching as well.

Both paths are analysed here from the point of view of the division of work. I distinguish three stages of their careers. The main occupation in the first phase is based on the central activity of an actor. For a researcher, it is work in the laboratory. For a violin professor, it is teaching pupils. The second stage consists of having been recognized as a good professional in their world and, by consequence, changing the amount of time spent on their principal activity. For a researcher, the new activity consists of management and formal teaching, and this transformation results in a decrease in time spent in laboratory research. For the soloists' professor, this second stage involves teaching students at a high level and acquiring the status of a member of competition juries. He can also select the future members of this elite. Hence, progressively, the main activity of actors moves from the work which gives the activity

its name, (teaching – teacher, or research – researcher) to management, administrative activities, and the activities associated with being experts in their respective fields. The third stage of a successful route in the milieu of soloists and scientists evolves to almost total withdrawal from the initial activities, so as to assume the role of an expert and policy designer.[xiv] The actors take strategic positions, for example, in the Ministry of Research, Ministry of Culture or at the university; they organise or preside over conferences, festivals or competitions. All those people who manage to go through the three stages have a "good reputation" in their particular worlds. Particularly in the case of researchers, the reputation crosses the boundaries of their milieu--in the case of Nobel Prize winners, for instance. Sometimes, some of them will keep their first activity: they have their "class of soloists" or "their lab," but they do not spend very much time in this activity.

The Career Coupling Process

The reciprocity of dependencies

The process of career coupling involves interactions between two types of careers: those of an initiator and of a newcomer. The two categories must work together. For young people it is obvious. Socialization into elite circles is carried out through the education they get from members of the elite. For those of the elite, it is also necessary to collaborate with young people, because their original activity is in part or totality realized by their students. For example, directors of laboratories, busy with maintaining their prestige[xv], need the PhD and post-doc students to carry out experiments (e.g., do bench work) and to come up with news ideas, which the directors use in their papers and speeches.[xvi] An example is the case of a PhD's European researcher in a scientific laboratory at an American research university, who collaborated with his professor (also European) on the same project. This experimental work is the subject of papers signed in the first place by the professor who, thanks to his student's research, developed his career and won grants. The importance of students' work is not specified with any well-known codes. Most violin soloist teachers are involved in the same process. They do not intensively practice playing the violin (from six to eight hours a day) and the sole results of their professional activity rest in their students' playing qualities. Thus, the career of a teacher depends on the development of the careers of his/her students. Such dependency is best illustrated by the case of Eastern European violin teachers who immigrated in the 1990s. They struggled to take their best students, who are their "business cards," to Europe or to the US. Without these "imported star students," the teachers' careers would easily collapse. Indeed, these immigrant teachers would have to build up new classes of soloists, just as they would lose their earlier reputation thus moving back to a previous stage in their careers. I frequently observed the same phenomena in the scientific milieu.[xvii] For example, in one university laboratory, the professor had emigrated from Germany to the US, taking his old university student along. Because of the lack of new researchers in the US, which is a frequent subject of discussion between laboratory directors in the corridors at scientific conferences, the dependence of successful professionals on their young collaborators' successes, is both relevant and blatant in the world of science. In the opinion of older scientists, we are facing a period of crisis. One of them describes the evolution of the market of physicists in the following words:

> Twenty years ago, a young researcher was a white Anglo-Saxon man; after that we had white women. We can say that it was the time of the feminine laboratory; perhaps I exaggerate, but there were many women. After that,

> we had the people from Eastern Europe, and now we must import the Asians and Indians. The profession is not interesting for young, talented western students--they become lawyers and executives. Science attracts many people now…we need young people and we have a crisis time.

In contrast to the scientific world, where laboratory directors explain the crucial demand for young people (PhD or post-doc students), in the soloists' world, professors never show that they are looking for new students, as a soloists' teacher with a good reputation "must be very busy." Participant observation of this world enabled me to find out that, despite this attitude, the professors are always ready to hear and assess a new candidate for coupling.

The three stages of career coupling

We can distinguish three main stages in this process: matching, active cooperation, and passive collaboration. The "matching process" consists of the selection of collaborators. In the first stage of coupling, the previous reputation of the actors plays an important role in the matching process, according to the studies concerning the artistic world by Robert Faulkner (1983) and Ezra Zuckerman, et al. (2003). A new candidate coming from a famous virtuoso master, a famous soloists' class or from a university with a good reputation[xviii] has a better chance of successfully finding a match than an unknown candidate. To optimize the results of cooperation, the skills and the reputations of the two categories of collaborators must be similar, since one of the actors, with a good position in the field, cannot work with an actor who is unknown in the actor's social world. It is very frequent that each person estimates the potential of a candidate for coupling differently, as in the following example of Gino--a violinist, born in Romania, to a family of musicians of Gypsy origin. He worked with two teachers, whom I interviewed. The first teacher, 55 years old, educated in Moscow, living in France says:

> You know, Gino is a Gypsy, and he will become a great musician, but he lacks a head--he has not a great culture; he does not read enough, and he plays only instinctively. It is good for playing Sarasate[xix], but this is all! […] In addition, he has a very troublesome custom. He forgets to pay me. I am forced to ask, 'Listen Gino, did your father forget to give you money for the lesson?' And he responds: 'Oh, yes, I forgot!' And he pays me one part, because the father will complete the bill the next time, he says. However, I am sure that his father gives him all the money, but Gino takes a part for himself in the meantime. OK… You know, this is the personality!

A second teacher, who worked with Gino at the same time, says:

> Gino is an extremely gifted student--a wonderful talent, and he plays as nobody else the virtuoso pieces! He will learn Mozart too. He will make it, because he makes very good progress.

Hence, matching is a decisive factor in the process of career coupling, in which the expectations of the actors must correspond.

Now, I will present the students' principal criteria used in making the choice of professor (at the last stage of their education). Some interviews show that the reputation of a teacher plays the most important role in the student's choice. A 24-year-old violinist, born and educated in Poland and Germany said:

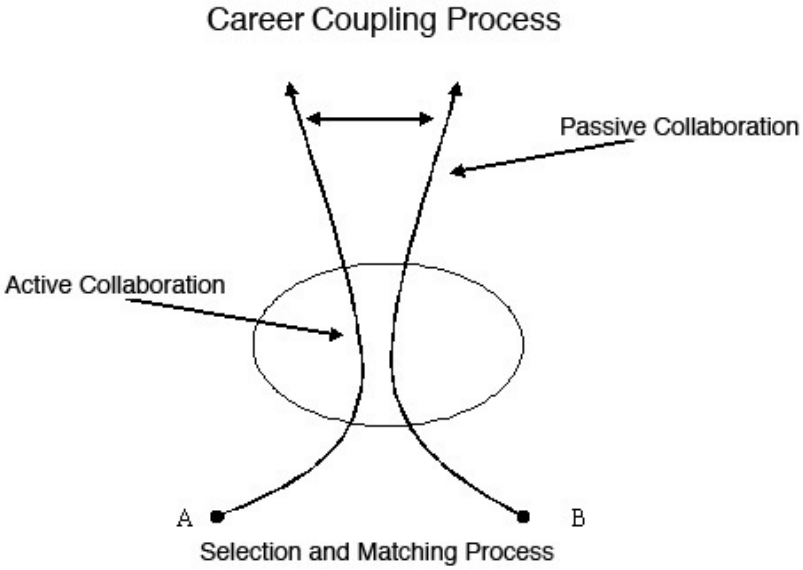
> When you are 24, you play on your own! It is not for learning that you go to a teacher, because at 24, you already know how to play. You go to have

> the universal key to the stages--the big ones, not the small ones! You have to make your name in this small world.

Another 24-year-old violinist, educated in the EU and USA said:

> I chose this teacher because he is well known in the whole world. OK, I have very few lessons with her, and this is all very well that she does not teach me anything new, as far as playing is concerned. However, on my CV, it is very important. (listing her as the teacher)

The choice of a partner in a professional career is difficult. Pierre Joliot, the director of the historical laboratory created by Maria Curie-Sklodowska and Pierre Curie in 1921, writes in his book that the period before engaging in their career (which, in my analysis corresponds to matching) is very important for young people because: "it should allow candidates for research positions – and team directors – to limit the errors of switching (choosing one's profile) that will have a disastrous hindering effect throughout their careers. Through the style of research the team director imposes on his laboratory, the affinities which can exist between him and young researchers seem to me one of the most essential criteria for this choice" (Joliot, P., 2001: 202).[xx] The criteria of choice are numerous, but the following quotation from a thirty-five-year-old physicist is a good illustration of the first period of coupling: "I worked with them--for a new laboratory--for a few months. They were satisfied with me, and I could do my research as I wanted, and we still continue to work together--we collaborate." On the other hand, if the two parties are not satisfied because, for example, the master is too strict and the apprentice expects some independence, they break their collaboration. This was the case of a researcher, who had "looked for a good PhD mentor" for more than a year, and as he says, "He was right," because after one year of work with a very open and tolerant laboratory director, he made an internationally important discovery, which was the biggest discovery of his life.



Graph 1

Active Cooperation

When, after the period of matching, the two categories of actors are satisfied, we can see that the second stage of coupling, which I call "active cooperation," begins. In order to create favourable conditions for collaboration, the members of each category spend a lot of time together outside their workplace. Valeria A. Hernandez, in his ethnography of French laboratory research, describes this type of strong collaboration between the PhD student and his mentor as an "ideal" relationship, which is desirable to all PhD students--the harmonious collaboration of two people involved in the same passion and working on the same project of research (Hernandez, 2001, chap. 4). Events like conferences or festivals enable the possibility of staying in the same hotel, having meals together (e.g. the "cookie breaks" described by Owen Smith, 2001) or participating in team-building events, such as football matches or concerts. As in the case of some young physicists who might go to a rhythm-'n-blues concert to see the leader of the band, who is their mentor, or the violinist who goes to Church with his professor only for the pleasure of accompanying him and not because of his religious beliefs, the personal and professional lives interact. Professor Lederberg, Nobel Winner of 1958 describes his relationship with Francis Ryan: "He was my mentor at Columbia College, a very important one. It was the first time I had a chance to work very closely with an active scientist, and really understand the actual operations and workings of a scientific career. (…) I took their (professors) courses, and learned a great deal from them, but with none of them did I have very personal relationships, as I did with Francis. I ended up working in his lab and spending more than half of my time that was not occupied with my studies working on Neurospora (a mould) in his lab."[xxi]

In the artistic world, a professor can sometimes provide accommodation for his student--this being quite a common behaviour among Eastern European musicians who immigrated in the 20th century. Galamian's flat in Manhattan is a famous example (Schwartz, 1983).[xxii] This proximity influences the dynamics of work, which is crucial to the stimulation of results.

The stage of active coupling is a period of constant negotiation between the actors, and sometimes these negotiations are not easy, as suggested by this 19-year-old violin student:

> She (the teacher) wanted to play my mother, a little… Yes, I think that it embarrassed me. I did not want her to know where I was at midnight; I hope that she understands this now… But this was natural because she wanted me to work very hard. I can only be grateful to her. This is why I say that she is, at the same time, a tyrant, and that is normal. Yet at the same time, she works with me a lot, and I do not have to pay for all her time. She says that I am her--her means of showing her knowledge. And, we are tied together; we have a common interest, and that is all…

During the stage of active collaboration, each actor constructs their career using the knowledge or abilities of the career-coupling partner. The novice is enriched with the initiator's knowledge and the initiator yields profit from the performances of his young follower. This valorises and "nourishes" the master.

Coupling of reputations

Through these actions, the actors of the two categories (initiators and students) build their careers together, and their social world quickly knows about their coupling. This

is because of the small size of the elite milieu where all people know each other and everybody knows the position of each actor in their own special field. For example, in the worlds of violin-soloists or bio-computing or cellular genetics specialists, the participants know one another personally or through their productions (e.g., CDs, news from competitions, scientific papers and oral accounts of discovery). In these milieus, the information about the actors and the level and improvement of their work spreads very quickly. This knowledge about them is the basis of their reputation. In the worlds where careers are built through the process of career coupling, Robert Merton's "Matthew effect"[xxiii] applies to both partners. This extension of the Matthew effect is the consequence of career coupling, in which the reputation is built in reciprocity. People's reputations begin to be tied to one another as a consequence of their collaboration. As one of the researchers in photosynthesis told me, *"theoretically, you must make yourself a name, but in reality, you cannot do this unless you known someone"* (in the sense of working with someone who already has a name). An unknown actor becomes recognized by the milieu through a well-known career partner.[xxiv] The extension of reputation does not have only positive effects for the actors because the coupling process can reflect bad reputation, as well as good. In addition, the actors should be attentive to the reputation of their coupling partner, as is suggested by the following example. The conductor of a German orchestra advises a young virtuoso of 20 on her project of intensive collaboration with one teacher, who works with the student from time to time:

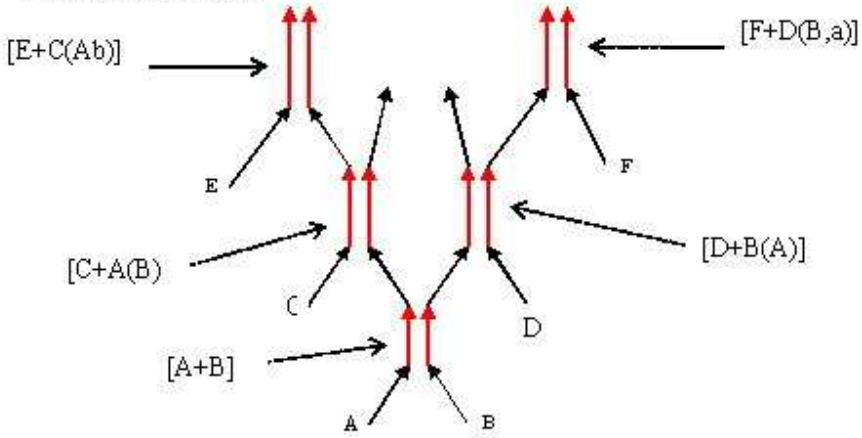
> You must be careful, because to join his class is dangerous. He has not a very good reputation in Germany, and you will have very much difficulty getting concerts after your education in this class. You will only perhaps win some competitions, where he is in the jury, and that is all. Think about this before you engage in these classes.

Passive collaboration

At this stage, when the professional environment recognizes the link between the actors in such a career coupling, they recognize that the acquisition of professional skill and knowledge is accomplished. At this stage, the activities of both actors are less mutually dependent than they were when they were in the period of active collaboration. Therefore, we can conclude that the actors are in the third stage of career coupling, which is called "passive collaboration." In the case of the previously mentioned pattern of teacher and student interaction, this period would correspond to the introduction of a young professional into the labour market. In this time of both names being paired, young soloists mention their teachers' names in the personal biographies printed in concert programs or in the media. Teachers include the names of former students in publications and the media. In the world of science, young researchers do not manage their own projects, but they co-sign papers with former teachers and they maintain relations on different occasions. I could observe during conferences, that former PhD students showed they had close relationships with their former tutors, who were at the peak of their careers or retired, and had become "living legends."

Coupling of Reputation - The Result of Career Coupling Process

First stage - Selection and matching time: black arrows
Second stage - Active collaboration: red arrows, coupling between A and B [A+B]
Third stage - Passive collaboration, coupling of reputation [E+C(Ab)]: E collaborates with C which is in the third stage of career coupling with A, which is in the third stage of career coupling with b; despite direct collaboration E with A and E with B, E has a benefit of symbolic collaboration with B through the collaboration with other partners.
(the capital letters symbolize direct collaboration, the lowercase letters symbolize indirect collaboration).



Graph 2

To sum up, careers in the artistic and intellectual worlds are determined by recognition within the milieu and the reputations that are built due to the coupling of actors. The somewhat haphazard nature of finding positive interaction between careers, in the sense of career coupling, can lead to professional failure. The absence of coupling opportunities may even force actors to change occupations. This is what happened to a molecular biologist, who after working in a prestigious laboratory, and having collaborated for a short time with the team of a Nobel Prize winner, had to immigrate for family reasons, and then had to resign from her research job because, in the new country where she had settled, she *"did not find a stimulating person to collaborate with, do some creative work with and improve from a scientific point of view."* After three years of work, isolated in her new team, she abandoned her research. Similar examples could also be found among virtuosos.

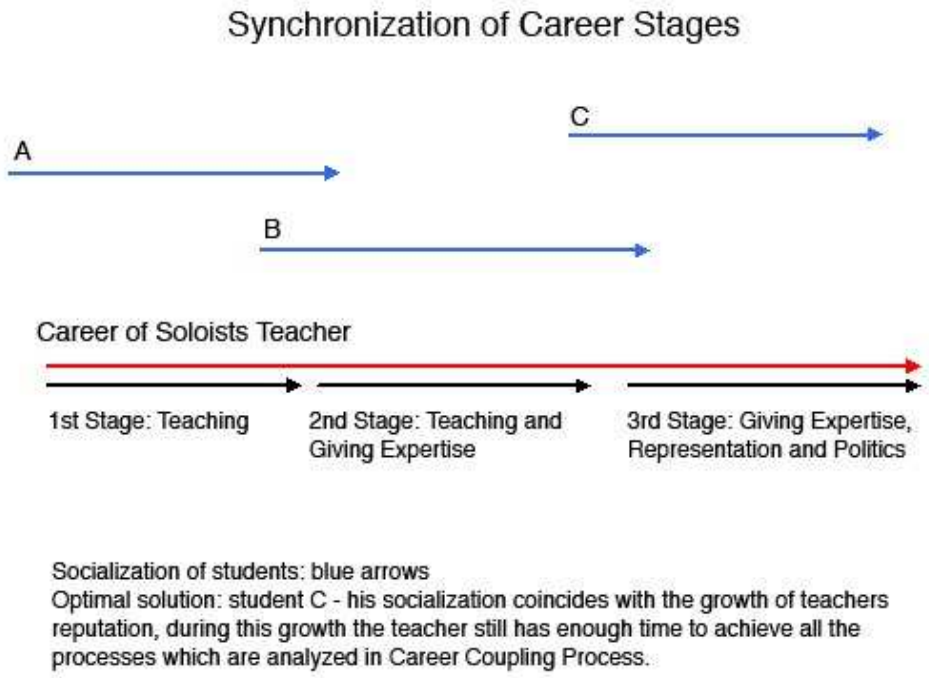
Synchronization of Career Stages

Not all coupling processes are optimal. For the success of both actors, the stages of both of these categories of careers must be synchronized. This is clearer in the case of virtuosos because their socialization is longer and takes place at an earlier stage in their lives. The following extract of an interview illustrates a bad synchronization of the stages of a young virtuoso and her teachers' careers:

> At six, I came to M.T.'s class and I stayed with him until I was sixteen. He was hard… he had personality, big presence, very strong… and he was overwhelming, and some people could not stand him. Then, I moved to Mrs. B. She is excellent for technical teaching, she is always available, and she spares me a lot of her time, unlike M.T, who is a great violinist, a great musician. I think that his main contribution to my violin education… was a

> desire to play…because if you have a teacher of this kind, of this greatness… However, in the day-to-day work, he did not spend enough time with his students; he very often missed lessons … I lost my time… I could have come to Mrs. B. sooner. All I am learning here, I should have acquired before. I do not regret studying with M.T., as I learned a lot. He gave me things Mrs. B. will never be able to give me... However, it is true that I should have studied with her earlier. The best solution would have been to have had them in opposite order.

As this extract suggests, synchronisation in career coupling is of the utmost importance. The novices in the first stage of their occupational life do not need a great master, who is in the last stage of his career, and who is really too busy to teach. In addition, the young actors in the final stage of their socialization process cannot enjoy all opportunities if their career is coupled with a master in the first stage of his career. In the absence of a high reputation, and because of a low position in the milieu, and the haphazardness of powerful networks, the initiator does not introduce the coupling collaborator into the labour market.



Graph 3

The synchronization process differs between one field and another. In the case of virtuosos, their education is very long and a musician has many teachers. In addition, because such training is individualized, the relationship between the actors is very strong. Also, as a result of the technical specificity of violin, a change of teacher has a great impact on a virtuoso's training. Hence, the optimal solution is that a student and a teacher go through the stages of their careers at the same time. This rarely happens and is difficult to be achieved for many reasons.

In the case of scientists, the transition from one teacher to another is not problematic because a major part of their education is completed in large teams. They change specialisation and move from one laboratory to another. Each training stage is completed in a different institution.[xxv] For them, optimal synchronisation means a good choice of collaborators at each stage of their training. The optimal synchronisation in career coupling involves collaboration between young people, who in the beginning, need an initiator who gives them the technical knowledge necessary for a young person to achieve a professional level of performance. When an adequate level of production is reached, the results of their work can be shown in the milieu, and novices begin to build their reputations. This is why young actors need a person who can help them acquire a strong position in the circle of the elite group. The careers of scientists and virtuosos are built from the first contact with the professional world. Consequently, education is an integral part of their careers (Wagner, 2004).[xxvi]

Conclusion

This paper suggests that career coupling constitutes a fundamental social process employed by professional groups for maintaining social control (especially through the acceptance of newcomers in their milieu and constant evaluation of the work of the members of elite). John Ziman states that the position of scientists in their milieu depends on their reputation, which is "tacit and often ephemeral" (Ziman, 1987: 84). By career coupling, the actors assure their ascension and position in their professional world. In the elitist milieu, career coupling plays the role of building positive expertise and recognition of a high level of skill, because the specificity of knowledge limits the expertise, which is reserved to the few members within the world of the given specialization. In light of the analysis of the career coupling process, the dynamics of building a career in the intellectual and artistic milieus are similar to a mechanism of gearing, which allows actors to move in the professional space. Agents cooperate with each other because they believe that their collaboration will let them approach what they perceive as professional success. This movement is not always upwards, a point that I shall elaborate on in a future article.

Career coupling is also perceptible in other milieus and other types of careers. I will conclude with an example of career coupling between two famous scientists who do not represent the case of a teacher-student relationship. One of them described his own experience of "career coupling" in an interview which I conducted:

> My relations with MM were very interesting because he was a man who had this quality, which is very rare nowadays--an interest in people who do not think the same way other people do. (…) He spent his time reading papers of the least known laboratories because, he said, he knew all they did in the big ones. In addition, this is how he came across my paper. (…) In my career, I made… OK, I think that we can consider that 'a discovery' which I could not explore and interpret properly. And, he did it. (…) The people (of the milieu) knew that I was connected with MM… I remember that meeting, at a time when people thought that we were the two "lords of scientific research", and the people were happy and waited for "the battle between the leaders". The people waited for my reaction after his critique of my discovery, and I found myself in this very unlikely situation that I had to defend his critique and good interpretation of my discovery because my own interpretation was not perfectly correct… (…) With MM, we always had this kind of relationship--a mixture of competition in the positive sense of

> the term, and also, on the contrary, from time to time we did things together until he died… and my assessment is that this was the person who made my career in the high sense of the term because he pulled me out of the perfect isolation in which I lay--and he struggled to do it--and finally … not a bad investment, indeed… I provided him with the basis for his main recognition.

This model of career coupling paves the way for future research. The process of career coupling presented in this paper takes into consideration specific worlds (violin-virtuosos and researchers in biochemistry), and its application to other professional worlds should include the features of each of those worlds. This paper is only concerned with the general outline of career coupling, but this phenomenon also includes competition, breaking off of collaboration, re-coupling, conflicts and the failure of projects – all these processes being able to take place simultaneously. Meanwhile, I continue to examine this articulation between different kinds of career building since the process seems vastly diffused in the professional world. The problem of synchronisation of careers, the simultaneous building of reputation and the interrelation of the two types of careers in the life of the same person (for example, in the world of soloists, the accumulation of the reputation from soloist to teacher, concert organizer or orchestral conductor) and the perception of the coupling process by the actors involved will be the major focus of my future research. This approach to analysing careers in the two professional worlds examined provides a model of career coupling. In this way, we come to a better comprehension of the functioning of professional milieus.

Endnotes

i In accordance with W. Reader (1966), I consider soloist musicians as a professionals group. This position is not shared by the specialists of the professional world, and for example Eliot Freidson (1994: 117-136) states that the features of artists' work do not qualify this group as professionals. The world of artists is huge and in the space of artistic work we can distinguish the people, whos work has all the characteristics of professionals. The soloist musicians group constitutes that case. My study shows that: entrance into this milieu is reserved for the people who are accepted by the soloists; the education is realized by the actors who belong with the world of the soloist; the control of the milieu dominates other types of control such as that of state institutions; the soloists group have their own culture. By consequence, I do not to consider the young virtuosos as amateurs (Stebbins, 1992), and their activity as “serious leisure” (Stebbins, 2004). The young virtuosos have the professional diplomas to certify their professional skill and many treat this activity as a source of income (the concert bonus, the competition prizes, and scholarships). The musical training constitutes the main activity of participants (even the virtuoso child spends most of their time on violin practice than on their school studies) and their early career constitutes a large part of their later adult, professional career. All characteristics of adult careers are present in the young virtuosos’ careers (Wagner, 2006). Even the young virtuoso performances are considered by professionals from their speciality as “a professional activity.”

ii The results of my research are concerned only with the world of virtuoso violinists and scientists working at the crossroads between biology, chemistry and physics. That said, I believe this research can be extended to others fields.

iii Each soloist teacher has her/his "class of soloists." There are, however, few teachers with an elite reputation. For example, in the USA from 1945 to 1990, according to Boris Schwartz (1983), author of "Great Masters of the Violin," there were only four famous teachers.

iv As a consequence, the examples cited in this paper lack information about the circumstances (and places) that accompanied the collection of data. In turn, I am able to preserve the anonymity of the participants.

v Paganini was a first violin-virtuoso and his career makes a strong impact on the history of music (see in Penesco 1997: 165-177).

vi For the problem of evaluation in research, see Callon, Laredo, Mustar (1995).

vii According to the categories of emigration elaborated by Charles Tilly (1990), who considers the movement of persons who stay in their original network not as an emigration, but a mobility, I consider the actors within the soloists' and scientists' worlds as not part of the 'emigrant' category, but rather, part of the 'mobile professionals.' They work for time to time in the place of their origin, and they practice their style and organisation of work.

viii For a complete analysis of virtuoso training see Wagner, 2004.

ix I. Wagner, PhD dissertation; the data includes the occupation of both parents (not only the fathers) of young European violin students, and the biographies of famous violinists of the 20th century.

x I consider these relationships to be "weak ties" (Grannovetter, 1973), which are most important during the period of acquiring a soloist position. Without the sponsoring of theses actors ("good fathers" in the soloists' world), and especially the celebrities of the musician world, young violinists will not be successful in the concert market (Wagner, 2004). In the case of scientists the same phenomenon was described by Reskin (1979), and Hall for physicians (1949).

xi Campbell quotes the work of Sharon Traweek (1988), who defined the stages involved in the formation of scientists.

xii For comparative failure in science see Hermanowicz (1998), Campbell (2003), Merton (1996) or Zuckerman (1977), and for music see Faulkner (1983).

xiii The category of the soloists' professor requires further explanation. It is in exceptional circumstances that a soloist who plays a full time concert tour (more than fifty performances per year) can teach regularly at a full professor's position. The most frequent situation is that the soloist teaches the master class sporadically – gives master lessons a few weeks a year and spends the majority of his time playing concerts as a soloist. The majority of teachers who conduct the soloist's class do not regularly play as soloists, because they can not devote enough hours a day for practicing in order to maintain the high level of violin skill. The majority of soloist's professors choose teaching careers.

xiv According to Latour's (1987) research on technology, this kind of activity can be considered as external (with various types of collaborators from outside the laboratory) in contrast to a researcher in the white blouse/gown – in the laboratory.

xv For an excellent illustration of the activities of a laboratory director, who is in the third stage of his career, see Latour (1989: 373-383).

xvi See Walford (1983: 252).

xvii Corine Lesnes, a US journalist says, “Nearly half of PhD students in the sciences (hard sciences and technical divisions) come from outside the USA, especially from Asia” (French Journal Le Monde, 29 January, 2005, p. 8).

xviii Regarding the impact of famous universities on scientists' careers see Fox (1983: 292-294) and Hermanowicz (1998).

xix A virtuoso and composer from Spain, well known for virtuoso pieces inspired by Spanish folklore.

xx Joliot Pierre, (2001); p. 202: "L'organisation de stages de courte durée dans différents laboratoires dès la maîtrise ou lors du diplôme d'études approfondies (DEA) devrait permettre aux candidats chercheurs - et aux directeurs d'équipe - de limiter les erreurs d'aiguillage dont les conséquences néfastes se poursuivront tout au long de leur carrière. A travers le style de recherche que le directeur d'équipe impose à son laboratoire, les affinités qui peuvent exister entre lui et le jeune chercheur me paraissent l'un des critères essentiels de ce choix."

xxi "Interview with Prof. Lederberg, Winner of the 1958 Nobel Prize in Physiology and Medicine" conducted by Lev Pevzner, March 20, 1996 in "Nobel Prize Internet Archive"; http//almaz.com/nobel/medicine/lederberg-interview.html; (November 4, 2006).

xxii See Schwartz (1983) for A description of Galmian’s activities in US.

xxiii See Merton (1996: 318-323).

xxiv According to Latour (1993), this personal recognition is one of the components of the "scientific credibility capital." The others factors are: data, trough, concepts and articles (p. 107: "Ce capital de crédibilité n'est pas réservé à la reconnaissance (symbolique) que les chercheurs peuvent avoir les uns pour les autres (…) mais à l'ensemble de cycle - données, vérités, concepts et articles compris").

xxv See Hermanowicz (1998), chapter two.

xxvi For details on the impact of the soloist class on virtuoso careers see Wagner (2004).

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