Business Networks and Meso-level Institutions in Nineteenth-Century Paris

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The word “networks” is very extensively used – even by historians – to talk about families as well as clubs, classmates, etc.: in fact everything that is not a formal institution. Now that we are all fully aware that “networks (social links, unofficial organizations…) matter”, it is however important to distinguish ties (kinship ties, business partnerships, common involvement in clubs…) that differ in their strength, duration, in their voluntary character, etc. Is it also important to question the strong connotations of the word “networks”, which conveys ideas either of corruption, favoritism and unfairness (for example in the French republican tradition) or of adaptability, non-bureaucratic work organization and modernity (in today’s managerial vulgate – cf. Boltanski and Chiapello, 2000). To avoid these traps, historians should benefit from getting aware of social networks analysis techniques and concepts. Even if many historical case studies do not provide data suitable for really formalized analysis, 30 years of discussion on how to describe a network and how to think about its origins and its effects on behaviors should not be ignored[1]. Social networks analysis deals with questions like multiplexity (are your friends at the same time your associates and your relatives, or do you keep separate networks?), networks dynamics and the dual nature of links (they may be seen as constraints as well as resources for individuals). Another useful feature of network analysis is that adopting this point of view leads the researcher to look for evidence on the existence or non-existence of each potential tie between each pair of persons that he or she studies. This requirement often leads to discover that even if, at first glance, the amount of personal ties appears impressive – to the researcher as well as to the contemporaries –, most of the individuals are in fact not linked at all, or only very remotely. We should always bear in mind that a tie is more visible (on a graph as well as in a narrative description) than an absence of tie, although the latter may be very significant.

These methodological concerns may be useful for a better understanding of the complex relationships between 19th-century Parisian entrepreneurs’ social life, economic activities and institutional involvements. 19th-century France has often been described either as totally centralized, with an already strong State, or as lacking any kind of economic regulation after the abolition of guilds and quality norms during the Revolution. During the last 15 years, historians have however demonstrated the influence and efficiency of various meso-level “institutions” (in the loose sense of the word), including family firms as well as notaries, industrial conciliation boards (*conseils de prud’hommes*) and Chambers of Commerce (Hirsch, 1991, Plessis, 1993, Hirsch and Minard, 1998, Hoffman et al., 2001, Cottereau, 2002). My own PhD thesis about the Paris Chamber of Commerce in the 19th-century (Lemercier, 2003) and my current research dealing with a broader system of meso-level economic institutions aim at going one step further. What remains to be done is to investigate the relationships between different possible forms or organization, from the most private ones (like matrimonial strategies) to the most formalized ones (like the Bank of France or Commercial Courts).

Each form of organization provides a different solution to general economic problems such as access to information or transaction costs reduction. Mixing network strategies and institutional strategies may sometimes increase the total benefit for a given firm or entrepreneur: for example, a good matrimonial choice may make the election to an advisory board easier; then, inside this institution, members are able to establish new private links – in addition to getting insider information. But "network" and "institutional" strategies may also be seen as alternatives, for example when new unofficial unions try to provide information and services to merchants who lack good personal connections.

To understand the dynamics of such a system of networks and institutions, sometimes acting in synergy, sometimes competing, I gathered data on 822 members of Parisian economic institutions between 1800 and 1871 (Chamber of Commerce, Commercial Court, boards of the Bank of France, Municipal Council), most of whom were at the same time bankers, merchants and/or industrialists. These data include information on individual "institutional carees" and on private ties (family ties and business partnerships). Using this database along with more substantial knowledge of what institutions actually did, I will try to assess the changing weight of private ties on individual institutional careers, questioning the existence of firm-level or family-level strategies to control economic institutions. I will also elaborate on the notion of institutions' networks: what may shared membership in different institutions allow (for the members and for the institutions)? What do institutions exchange?

Parts I and II of the paper give an introduction to the case study. Part I includes a description of the institutions surveyed. Part II is a discussion of two individual cases, which helps to disentangle the issues included in the question "do networks matter?". Parts III and IV describe the general patterns of the reconstructed network of private ties between institution members (III) and the evolution of this network (IV) and give hypotheses about interaction between private ties, institutional involvement and economic strategies.

I- Firms, institutions and general interest.
The case of five Parisian meso-level economic institutions.

This paper is part of a broader study of meso-level economic institutions in the French 19th century. By "meso-level", I mean institutions that are neither a real part of the administration nor spontaneous businessmen or employers unions. They enjoy an official status and benefit to some degree from public resources (money, enforcement power, monopoly…) but their members, appointed or elected according to various procedures, are not civil servants. They are not paid for their activity in these institutions (except for attendance fees) and, even if they give part of their time to such tasks, they are free to go on with their profession or business. Especially in the case of businessmen, this leads to two connected questions: why do they accept such positions[2]? If it is, at least partly, because they think that it will improve their business position, does it mean that the institutions are the slaves of some private interests? This is a very important issue because such institutions participate in decision on economic policies at a national level (they are asked for advice or they spontaneously advocate for particular decisions) and/or in the creation and enforcement of local norms (specific for a town and/or a branch).

My study of the Chamber of Commerce has shown many ties among these institutions in the process of decision-making (coordinated campaigns, mutual information…) and the biographies of the Chamber's members show that multiple involvements and complex careers across several institutions were very common. But the five institutions studied here obviously were neither the only places where the economic policy was discussed nor the only places where their members were involved. Decision-making also involved the Parliament and the administration, but few Parisian businessmen were deputies: including the Parliament or some parts of the administration in the survey would lead to lose the homogeneity of meso-level institutions. On the other hand, philanthropic associations for example share many members with these meso-level institutions. But they do not share their ambiguous place on the border of the administration: they are voluntary associations with no official role in decision-making.

I have therefore chosen to study five institutions[3] which may be defined as "meso-level institutions" and which shared a significant proportion of their members. They were all located in Paris, but it would be very difficult to define them as "Parisian" in the sense of "local", given the centralization of the French economic and political systems (Lemercier, forthcoming). Many of their decisions had a national impact. Comparative research on similar institutions in smaller towns (the choice of the institutions being based on a preliminary study of multiple involvements and individual careers) would be very useful. I will now give a brief description of each of the Parisian institutions.

The Commercial Court (Tribunal de commerce)

It was created in the 16th century to judge disputes involving the commercial law (usually between merchants) and it was only slightly reformed during the Revolution[4]. The Paris Court often influenced the evolution of the national commercial law, not only by the way of jurisprudence but also by advocating for reforms and being asked for advice. The commercial judges were active (or, for a small proportion, retired) merchants, bankers or industrialists. From 1790 to 1807 and from 1848 to 1851, they were elected by all persons paying the trade tax in Paris. In the other periods, they were elected by several hundreds of *notables commerçants* who were themselves chosen by the prefect (who generally asked for and followed the advice of the Chamber of commerce) with no formal criteria, but with the idea that they should have the best possible reputation: it was a kind of elite built by cooptation.

The Municipal Council

During the Revolution, a uniform system of local administration with elected councils was created. But Paris remained an exception to the common law[5]. The Parisian Council had less decision power than in other cities, because the prefects' authority remained very strong. But the Council had at least some influence on economic issues such as the choice of location for new equipments (canals, warehouses…) or the organization of some trades (bakery, butchery...). To decide on such issues, common committees with the Chamber of Commerce were regularly created. Most of the time, the municipal councilors were appointed by the government, the only exception being between 1834 and 1847, when they were elected by the wealthiest citizens. Of course not all councilors were businessmen. But some were. And many of them were members of the other meso-level institutions.

The General Board (conseil général, *also called* conseil de régence) *of the Bank of France (GBBF)*

It was created in 1800, like the Bank itself. It included three *censeurs* and fifteen *régents* and, after 1806, a governor and two subgovernors[6]. It defined the Bank's general policy (e.g. the level of interest rates or the creation of new types of banknotes) and it answered to the firms' particular credit requests. During the century, the Bank's field of action became more and more national (as opposed to Parisian), but the members of the GBBF had to live in Paris to attend the (at least) weekly meetings and they were generally involved in other aspects of the Parisian economic activity. The governor and subgovernor were appointed by the government, but the *régents* and *censeurs* were elected by the Bank's most important shareholders. The turnover was slower in the GBBF than in the other institutions: the members were always re-elected, so that changes only happened when a member died or resigned. In such cases, the candidate supported by the GBBF was often – but not always – elected.

The Discount Council of the Bank of France (conseil d'escompte)

It was created in 1803. It decided if the Bank would accept each commercial paper presented by a Parisian firm – which implied to have a good idea of the reputation of each firm and in fact of each person. The members were appointed by the GBBF. Whereas most of the GBBF members were bankers, the discount councilors were generally specialized merchants or industrialists (some trades being nearly always present, like wood trade or bookselling). But 25% of the discount councilors managed to become *régents* or *censeurs*: the frontier between the two institutions was not hermetic.

The Chamber of Commerce

The Paris Chamber of Commerce was created in 1803. There were Chambers of Commerce in the Old Regime France, but not in Paris; they were abolished in 1791 along with the guilds. When they were re-established, their role was – in theory – only advisory and they had no means to administer local equipments and services or to define local norms. In fact, some of the Chambers regained their previous powers. In Paris, the Chamber was above all an important source of advice and statistical information for the government as well as for the local prefects. Advice and statistics obviously could be biased in favor of one branch or firm, but the Chamber generally adopted the language of general interest. Given that the authorities did not have many alternative sources of information, the Chamber influenced many decisions (although it is impossible to say how many). In addition, from the 1840s on, the institution began to create or to administer equipments for merchants such as a library, warehouses or a silk conditioning place (a form of quality control). The Chamber's members wrote reports and decided on the administration of the equipments. The first members were elected by a few businessmen who had themselves been chosen by the Seine prefect. Their followers were chosen by means of pure cooptation up to 1832[7]. Then they were elected by 50 to 60 persons, including the outgoing Chamber but also the commercial judges and a few other electors chosen by the outgoing Chamber and the judges. In 1849, for one election of the whole Chamber, all persons having paid the trade tax for a few years could vote. After

1852, the Chamber was elected by the same *notables commerçants* who voted for the Commercial Court.

Each institution included 10 to 60 members. Their work was collegial. Subcommittees were appointed to deal with particular problems, but the idea of a common deliberation was essential: the institutions' archives always try to hide internal divisions; reaching a general agreement and defining "the institution's position" was essential. Even if there were of course forms of specialization and hierarchy among members, all of them theoretically had the same role. The members were very reluctant to admit the idea of a balance between interests (which was nearly a taboo in the French political thought in the century after the Revolution) and they generally refused to describe themselves as representatives of something particular. It was only in 1867, when employers' unions had gained influence in Paris, that the commercial judges and the members of the Chamber of Commerce were baldly chosen as representatives of a given trade – and even then they always stressed that their personal merit mattered more than their representative character. There were obviously forms of representation of interests (of various scales and sorts) and balance between interests before, but they could only with great difficulties be mentioned as such. The idea of disinterestedness, of giving some time for public service, of working for the general interest of the economy, was omnipresent in contemporary descriptions of the institutions, in obituaries of their members, etc. It placed these people in a double bind: they were elected or appointed as businessmen, because they were currently involved in business, which gave them specific skills and knowledge of the businessmen's reputations, wishes, problems etc. But at the same time they had to use the language of general interest and not to speak as lobbyists for their particular firm or trade.

This context makes the study of hidden networks or interest groups all the more interesting but also difficult. "In the name of whom do the members speak/act?" is a key question to understand the new institutional system created after the Revolution and based on the abolition of specific guilds. Do the members fight for the general interest (variously defined), for their firm and/or family, for a branch opposed to another one (cotton vs. wool, cotton spinning vs. cotton weaving etc.), for a particular place, for the employers or for the bourgeoisie? There is no general answer to this question, but it is possible to define a major trend for each member, for each institution and for each period of time. Here I will concentrate on the question of families, firms and family firms: What do we mean when we say that a man represents his family or firm in an institution? Is it possible to prove that some families had the possibility to influence some institutions for their own interest? From the point of view of the individual, did the fact of belonging to certain families or firms open specific opportunities for institutional careers? And what were the alternative networks or resources used when family or firm don't seem to matter? To understand the complexity of the problem – and particularly of the definition of a "family" –, before turning to more formalized analyses, it is useful to describe two individual cases with some detail.

II- Dynasties and informal networks. Two individual case studies.

A typical dynasty?

Henry Davillier was born in 1813 (Plessis, 1985, Stoskopf, 2002). He was the son of Jean-Charles Davillier and the nephew of Jean Joseph Davillier – two brothers coming from the south of France who created a bank in Paris and an indienne manufacture in Alsace in the very beginning of the 19th century; then they opened textile manufactures in other departments. At the age of 25, Henry became the associate of his father, who had concentrated on the bank activities, while Henry's older brother Edouard became head of the textile manufactures (but the two branches remained united in one society until 1862). From the beginning of the 1850's, Henry became one of the directors of many banks, railway companies and insurance companies. He was a commercial judge from 1847 to 1853 and a member of the Chamber of Commerce from 1853 to 1867 (immediately treasurer, then president). In 1864, he became a *régent* of the Bank of France until his death in 1882 – in 1864, there was a competing candidate who was himself the son of a subgovernor of the Bank. As a *régent*, Henry Davillier replaced his brother-in-law and former associate (more specialized in the industrial activities) Alexandre Sanson-Davillier. Alexandre, before becoming a *régent* in 1847, had been a member of the Commercial Court (1828-1831), the Chamber of Commerce (1829-1838), the Discount Council (1831-1846) and the Municipal Council (1832-1846). He may himself, in his institutional involvement, be seen as a follower of Jean Joseph and Jean-Charles Davillier, who were members of the Chamber of Commerce (both), the Discount Council and the Municipal Council (Jean Joseph – who was directly succeeded by Alexandre in the Discount Council), the Commercial Court and the GBBF (Jean-Charles – who was directly succeeded by Alexandre in the GBBF).

Such examples are often used in books about businessmen (the same being true for politicians) to prove the weight of some families of firms, which seem to be able to send a person to any institution, regardless of the political context or the appointment procedures. For the proof to be more convincing, it would nevertheless be useful to assess the representative character of such a case, which would have a different meaning if it was unique (the question then would be: Why are the Davilliers so much interested in economic institutions and how to they manage to be appointed?), common (Why do only some families act like that?) or general (Do the families of firms compete for access to the institutions and for influence on their policy choices? Do they merge in temporary or long-term alliances?).

Before trying to deal with the problem of "representative character", we must drive other lessons from the example. It is only in the GBBF that we find, strictly speaking, a dynasty, Henry (1864-1882) following Alexandre (1847-1863) who followed Jean-Charles (1801-1846). In the other institutions, we find long periods without any Davillier. Or do we? It may well be that other associates or in-laws of the Davilliers, with different names, were members of the institutions studied. And in fact we find that Charles Legentil (Chamber of Commerce, 1831-1855; Discount Council, 1831-1843; Municipal Council, 1835-1837; *régent*, 1844-1855) was Alexandre's brother-in-law. But he was neither a banker nor a manufacturer: he was a merchant of cloth and fancy goods (in association with other in-laws).

Family, firm and family firm: who are the collective actors?

This first example leads us to the difficult definition of a family and a firm. We may consider that the associates in a partnership very probably share the same economic interests (even if they may at the same time be associates in other firms in other economic sectors with distinct or even competing interests). But, even if we choose not to consider the more complicated problem of shareholders or directors of companies, it is difficult to follow the precise history of each firm. And what do former associates share? Probably a common knowledge of the economy and of each other, not necessarily anything else.

As for families, it is difficult to trace their limits: second cousins may have nothing in common; they may even not know each other, whereas in other cases their kinship tie may be the first basis of economic association. And brothers may not speak to each other or may at least have different economic interests. But it is well known that many French firms of the 19th century, even among the most important, were family firms or at least partnerships with strong personal links between the associates. Jean-Pierre Hirsch described this phenomenon, writing that the partnership was a " complementary instrument of family strategies, used to settle those questions not already resolved by means of marriage ; for it encompassed other sectors of the family domain and for different lengths of time " (Hirsch, 1991). In the case of banks, the transition from a familial "high bank" to modern banking (deposit banks, stock companies…) during the Second Empire has often been studied, either in terms of a fight between old and new men or in terms of successful adaptation of a part of the high bank (Plessis, 1985, Bergeron, 1991, Stoskopf, 2002). This phenomenon is not specifically French: even in places where it was easier to create a new bank under the form of a stock company, commercial banks appeared as "the financial arms of extended kinship networks", able to raise capital to invest in various economic sectors – and this system did not necessarily prove inefficient in economic terms (Lamoreaux, 1986).

Looking at the procedures implemented to limit the influence of family ties in some of the institutions studied shows that there was no consensus among the contemporaries on the limits of potentially dangerous interest groups. In 1849, the opinion of the Chambers of Commerce themselves was asked on several possible reforms of the institution, including the idea of forbidding the simultaneous election of close relatives or associates (Chambre de Commerce de Paris, 1850). The provinces Chambers gave various answers as to what degree of kinship should be forbidden, encompassing all possibilities from no prohibition on kinship at all to prohibition on any form of kinship whatsoever. These differences in opinion may reflect a prior situation reigning in each Chamber. The opinion of the Paris Chamber of Commerce was as follows:

"Complaints have been made on several occasions regarding the simultaneous presence of two brothers or two associates in the same Chamber. We do not agree that this implies the same disadvantage. Two brothers rarely exercise the same type of commerce or industry. Even if this situation occurs, their having separate and distinct interests can not therefore lead to a systematic agreement between them in order to influence negatively on the deliberations of the Chamber. This, however, is not the case regarding two associates whose views and interests are held in common. We therefore conclude that the new legislation should forbid only the presence of several associates to sit in the same Chamber. Moreover, this restriction seems necessary only with regard to those associates operating under a collective name".

This position was adopted in an 1851 decree – repealed in 1852. Note that when this answer was written, the president of the Paris Chamber was Charles Legentil, whom we already mentioned, and the secretary was Horace Say (also a municipal councilor and a former commercial judge), who, apart from being the son of Jean-Baptiste and himself the author of books in political economy, was the son-in-law of Legentil's brother-in-law François Casimir Cheuvreux (a former commercial judge). Moreover, Horace Say, Legentil and Jean-Pierre Casimir Cheuvreux, the son of François Casimir, had long been associates in the trade of fancy goods and cloth, before Say and Legentil quit the business life to concentrate on public debate and economic institutions. Leaving aside this discrepancy between the Chamber's statement and the situation of its own ruling members, we can conclude that the differentiation between firm and family interests in terms of dangers of manipulation was by not means obvious in the middle of the 19th century. The case of the commercial courts seems to point in the same direction, since a 1810 law (still enforced in the 1860s) enacted a compulsory king's authorization for relatives (by blood or marriage) at the first and second degree to be judges in the same court, even if the alliance followed the election – and no authorization was possible for courts of less than 8 judges[8]. The commercial judges were obviously even more subject to suspicion of favoritism than the members of other institutions; but "favoritism" usually means that a judge will help a plaintiff or defendant that he personally knows (internal rules oblige him to decline in such cases). The idea that two personally tied judges could be dangerous is different. It seems to convey two implicit notions: firstly, that parents have similar interests; secondly, that the court has a policy of its own (its jurisprudence?) and that particular groups should not disproportionately weigh on it – which justifies restrictions to the free choice of the voters.

If we come back to the Chamber of commerce's answer, a last noticeable point is the fact that the coalition of two people in an assembly of fifteen was seen as dangerous; on the other hand, there was no discussion about the succession of brothers or associates in the same institution. It points at the necessity of differentiating the potential effects of private ties on institutions: these ties may influence the choice of new members without having the effect of creating powerful pressure groups (even in minority) inside the institutions.

Invisible dynasties, successful isolates

If we return for a moment to individual cases, it is not very difficult to contrast the example of Henry Davillier. We must first take into account the fact that some important family firms were totally or almost totally absent of the institutions studied. In all texts about Henry Davillier, we find the name of the Rothschilds, with whom he led many financial transactions. But only one Rothschild, Alphonse, is part of our institutional story (he became a *régent* in 1855, the election being disputed). The criterion of French nationality was definitely a cause of this absence; in some of the institutions, anti-Semitism may also have played a role (my dataset includes very few Jewish bankers). But other reasons were probably more important. The Oberkampf family is nowhere to be seen, contrary to some of its allies (the Mallet family, the Feray family, Martin d'André) and although its manufactures were closer to Paris than the Davilliers'. In fact, when Louis Feray was appointed to the General Council of Manufactures (a national institution on the model of Chambers of Commerce), his father-in-law Christophe-Philippe Oberkampf considered that it was a « loss of time » (Chassagne, 1989). In the case of other absent families, we will probably never know if their absence was a voluntary choice or if other competing groups managed to make their appointment to any institution impossible. But the important idea is that there were alternative strategies to the involvement in Parisian economic institutions for such families.

Not only were some prominent families absent from the meso-level institutions. We also find the reverse case with members of these institutions without direct kinship ties in the same milieu: "isolates" – a term that will need a more precise definition. Unfortunately, few of them have left memoirs, so that the alternative resources of the men who seem to lack family or association ties cannot be easily retraced. Gustave Roy is a useful exception (Roy, 1906). He became a member of the Chamber of Commerce in 1872. He had no close kinship or partnership tie with any of the other men studied here. The son of a rich cotton producer from the provinces, he attended a Protestant secondary school. The majority of his networks, in his own opinion, came from his fellow classmates. Nonetheless, encountering financial problems in 1848, he reports having requested assistance from François Delessert, who was the owner of his apartment but also a *régent*, a former president of the Chamber of Commerce and a member of a family with multiple institutional positions. However, Roy's request went unanswered. Thus, although it is possible, with such sources, to retrace unexpected potential links, the personal choice to make these links efficient or not remains unpredictable. Subsequently, Roy received help from Alexandre Sanson-Davillier, thanks to his wife's family's indirect connections with the Rothschild family. If we try to quantify his assertion, it means at least 4 or 5 degrees of separation between Roy and Sanson-Davillier: if we chose such a criterion to reconstruct a network of "potential solidarity" between prominent Parisian businessmen, it would not look very serious and it would probably lead to a network where all men would be connected to one another (and to every prominent politician and probably scientist as well). Anyway, for Roy the link proved effective, although we could have considered it a priori as too weak and indirect. It is also thanks to his wife's family that Roy got in touch with the Moreau family, wood merchants who were present in many meso-level institutions: he often dined with them.

But when he wrote about his institutional career, Roy concentrated almost exclusively on advancement through means of professional expertise, not thanks to personal networks. A first request for expertise on cotton threads and fabrics was personally addressed to him by the Ministry of Commerce during negotiations of the 1860 treaty between France and Great Britain. He went on to become a member of an advisory body dealing with patents, the *Comité Consultatif des Arts et Manufactures*. Then, in addition, a banker whom he was doing business with and a school classmate (who had become an iron seller) encouraged Roy to run for the Chamber of Commerce. He had to be selected by the *Commission intersyndicale du commerce* (Interunion of commerce), a body which was created in 1867 by the new employers unions and which began to control the election to the Chamber of Commerce and to the Commercial Court. The official selection criteria mixed personal skills and representation of all trades, ostensibly refusing the idea of favoritism based on private ties.

Roy's case might be regarded as discouraging since the author mentions very informal ties that would not have been known without such an exceptional source, and because it points at the difference between a potential connection and an efficient one. But, even if Roy was obviously not a complete isolate or a "self-made-man", it seems reasonable to say that his networks were not of the same kind as Henry Davillier's. Then we can wonder what part of the meso-level institutions' members was more like Roy or more like Davillier (the answer probably being different for each institution and period). And in the case of strong private connections in the institutional milieu, we can try to investigate their consequences from the point of view of individuals, firms and institutions.

III- A structured and heterogeneous network. The effects of social capital concentration.

Network data

My dataset includes all the men who were members of at least one of the five institutions studied at least for a few months between 1800 and 1871. 1871 was chosen because of the change in the political regime and because of the creation in 1867 and growing influence of the Interunion of commerce. In addition, there was a very important turnover in several institutions in 1872. For the more dynamic part of the study (part IV of the paper), the 822 men in the dataset were classified in 4 groups ("periods" or "generations") according to the date of their first election or appointment in one of the institutions studied: 1785-1803 (when most of the institutions were created or reformed) for 92 of them, 1804-1831 for 253, 1832-1848 for 275 and 1849-1871 for 294. 1831 and 1848 are year of political changes and reforms in the appointment procedures of some of the institutions (with an important turnover).

Some of these men are already well-known thanks to historians who found and published invaluable information about their kinship and economic ties (in addition to those already cited, Gille, 1959, Bergeron, 1978 and Chassagne, 1991 were among the most useful for me). A majority of my network data comes from these studies, although I found additional ties in archival records and I am still trying to improve my information. This means that this information is slightly asymmetric depending on periods and institutions. Ties between men who were only commercial judges may have been underestimated. But for other kind of ties, the quality of information seems not so bad.

When I created my database thanks to the literature, I concentrated on standardizing my definition of ties. When the aim is to give the best possible information about one individual, it is very interesting to cite remote ties and to use every available source (for example to cite all wedding witnesses). Here I want to compare hundreds of cases, so that I chose to concentrate on the strongest ties that I will describe in the next section.

The problem of tie dating is much more difficult to deal with. If we take the simple case of a father and his son, the son may be seen as benefiting from his father's inheritance; but when the father gained a position, he was isolated. We could treat the tie as asymmetric. But in many cases it is difficult to define this asymmetry. I chose to treat the ties as symmetric, but I used the decomposition in 4 periods to give a more dynamic view of the network. Dating the ties themselves raises another problem: a father-son tie begins with the birth of the son, but ties between relatives by marriage depend on the wedding date and partnership ties have a beginning and an end. It would be extremely difficult to take the precise date of all ties into account. I have chosen not to count ties created after the persons entered the institutional system – and in fact I have found that the vast majority of ties were created before. As for associations, I have considered all links above a minimum duration and importance: this definition is much more intuitive. And the result is to mix “associates” with “former associates” in one tie[9]. Some of these problems may be solved in the future, but the problems with studying the dynamics actually seem to be intrinsec to network data. The best solution to deal with them is definitely to use changing scales and to confront quantitative results with qualitative checking.

The network of kinship ties

If we only consider first-degree kinship ties (father-son, brothers), we can distinguish 33 family groups of 2 to 4 men including 9% of the population studied (graph 1[10]). In the vast majority of cases, we know that these men were associates too, at least for a part of their life. The density of this network (the probability for each man to have a first-degree link with each of the other men studied) in of less than 0.2%. Such strong ties (which in fact mix successions, indirect successions and simultaneous involvements in the same or in several institutions) seem to be very unusual among the members of the meso-level institutions. The picture shows little change if we add more remote but still close kinship ties (grandfather-grandson, uncle-nephew, cousins) (graph 2). We then see 42 groups of 2 to 5 men, including 13% of the population, with a density of 0.2%. But a dramatic change appears if we choose to include marriage ties as well as blood ties (graph 3). Here we have much “weaker” ties, since my definition of a “marriage tie” includes not only the common case of father-in-law-son-in-law links but also everything that I considered to be recent and well-known alliances between two lineages. With this criterion, 38 components including 2 to 65 men appear. All together, they include 24% of the population – but the overall density of the network remains under 0.4%.

Here it is important to wonder what such quite large groups could mean for their members. Were they conscious of the existence of such structures? Did they share something (interests?) or did they exchange something (information?) preferentially inside such groups? The answer is not obvious. The graph shows that the groups vary in density. The largest component is not very dense and its members may not be conscious of all links inside it. It seems obvious that Latteux and Pénicaud did not consider each other as relatives and they probably did not even know that a path could be retraced between them. But remember the case of Roy: sometimes, 4 or 5 degrees of separation seem a short path. And it is probably even more the case if a redundancy exists, creating a “clique” in terms of network analysis[11] – perhaps a milieu in terms of social history – like in some parts of the largest component, for example around the Delessert or the Davillier families.

The network of partnership ties

Let's now look at association ties (graph 4). At least 15% of the men studied have at least one such tie inside the population (overall density: 0.2%). The graph shows one very large component with 68 members and 23 other groups of 2 to 4 simultaneous or successive associates. This picture is dependant on choices made for the definition of "associate"[12] and its static nature is a problem. But it suggests interesting hypotheses. First, we must consider that in the population studied, alliance does not always imply association: 15% of the ties between relatives by marriage are at the same time association ties; 22% of the associations unite allied lineages. It is difficult to comment on the magnitude of these figures because of the lack of comparable studies, but we should bear in mind that we deal with two distinct kinds of ties in the majority of cases.

The readers familiar with the time and place will also note that the unity of the main component depends on Alphonse de Rothschild – who, as we saw it, arrived very late in the institutional story and whose partnership ties were of a weak sort – and on Jean-Baptiste Say's economic activities – which were second to his intellectual work and did not last very long. Such comments do not imply that it is useless to retrace networks or that there is another, perfect way to do it. They only underline the necessity to change scales and to have a precise knowledge of each individual case in order to interpret the structure thanks to the individual cases – and the individual cases thanks to the structure. Here it is obvious that the Delesserts and the Davilliers do not necessarily share the same economic interests, but it is also useful to describe Rothschild and Say as bridges between these two groups. And the existence of such bridges, which creates a large component, is something specific: on the contrary, the majority of small family groups remain isolated. Here we have something to interpret that is neither a family nor a group of people only defined by objective attributes, but a set of – even remotely – interconnected persons. This component doesn't necessarily have a collective strategy, but it probably influences individual careers.

The fact that many well-known "high bank" families are part of this component reminds us of the flexibility of partnerships in that milieu (although ties like "being directors of the same stock company" are not included) and of the fact that high bank is connected to more specialized merchants or industrialists (coal and iron merchants, forge and mine owners, wool, wood or wine merchants…). It is also noticeable that 24 men appear in the main component of the kinship network and also in the main component of the partnership network. But the two components are not exactly the same: for example, Laffitte used association more than alliance (at least with people involved in economic institutions: he may have used alliance to create ties with other milieus). Finding the same kind of people, namely high bank families, at the core of each network is nevertheless an incitation to mix the two kinds of ties and to describe the global network.

The whole network and the "high bank"

If we mix all kinds of ties, we find one large component with 132 individuals (16% of the population), 31 smaller components with 2 to 9 members and 586 complete isolates, who represent 70% of the population studied (graph 5). We must therefore bear in mind two facts. On the one hand, a large majority of the members of the economic institutions are not even remotely linked to any of their "colleagues" if we take kinship ties and strong economic ties into account. On the other hand, many of the small, densely tied family/firm groups are merged in one large component whose members are probably not aware of its general structure, but which also very probably constitutes a dense milieu where many things – information above all – are exchanged.

This large component has few weak points (erasing one or two people would not be sufficient to destroy it), even if denser subgroups appear which probably pursue their own particular interests (coal and iron merchants around the Periers and the Moreaus-Lafonds, saint-simonian bankers around Laffitte, two poles of the high bank with the Delesserts and the Davilliers…). The only real cutpoints are the links between the large and dense high bank group and the smaller groups in the upper part of the graph. But the large component is very robust to the addition or deletion of ties[13]. It could be argued that this structure is an artifact due to the mixing of ties and persons which are in fact part of different generations. I will try below to describe the network's evolution. But I first want to discuss the possible definition of the component as "the high bank"; then I will comment on the two main patterns of the whole network: the existence of a vast majority of isolates and the fact that a majority of ties are included in one large component.

May we define this large component as "the high bank"? Even if some high bank families are to be found in smaller components (like the Foulds), it is noticeable that no high bank family of the first generation (as defined by Bergeron, 1991) is totally absent from the institutions or isolated from the point of view of private links between institutions members. Only for the members of the Chamber of commerce do I have exhaustive and homogenous data about their business activity. I classified them as "bankers" if they were at least one time defined as bankers in contemporary records (particularly when they were appointed or elected to a new position), "merchants" if they were at least one time defined as "*négociants*", a word associated with the idea of a non-specialized, large scale trade, and "specialists" if they were always defined by a specialty (e.g. wine or iron), either as merchants or as industrialists. The members of the Chamber of commerce have a mean degree of 2.7 in my dataset[14], but the bankers among them have a mean degree of 5.6, compared to 1.3 for the merchants and 1.6 for the specialists. Three quarters of the bankers belong to the large component, compared to less than one third of the others. And only 12% of the bankers are isolates, compared to half of the others. These differences hold for each of the periods studied.

On the other hand, the largest component is not only "the high bank". From the 69 members of the Chamber of Commerce who are part of it, only half called themselves bankers, at least sometimes (and not all of them were part of the high bank families as defined by Bergeron, 1991). But the bankers seem to constitute the core of the component, with many ties among themselves and with the others. In the component, the mean degree of the members of the Chamber of commerce is 4.4, but it is 7 for the bankers and 3.5 for the others. All the more refined "centrality" measures provided by network analysis software point in the same direction; For example, we can wonder how many of the component members each man can "reach" by a path of length two (with one or two ties between them): this is called "reachability at level two". The mean figure for the Chamber members is 15, but it is 22 for the bankers and 12 for the others. With the maximum degree (10 to 15), we find the bank families Delessert (with three members), Perier (four members), Davillier (three members) and Mallet (two members) along with Michel Frédéric Pillet-Will and Jacques Laffitte: together they form the core of the milieu that could be defined as "the high bank in the institutional world". With the maximum reachability at level two (20 to 45 reachable persons), we again find Benjamin and François Delessert, Scipion Perier and Michel Frédéric Pillet-Will, but also Vital Roux, Jean-Baptiste Say and Jean-Baptiste Chaptal (son of the famous minister). The latter benefit from their indirect ties: they have relatively few direct ties, but these ties connect them to core persons in the network. They are merchants or industrialists and not bankers, but they play a very important role in the birth of the business schools and in saint-simonian networks. The group that seems to weigh most on the economic institution is united around these persons and not only around prominent high bank families. It points at the interesting and not so often studied question of the ties between economists and businessmen in the first half of the 19th century. It also shows that the high bank, from the point of view of private ties and institutional involvement, was not a closed group but had preferential ties to some merchants and industrialists – ties that would probably deserve a more precise and qualitative study.

The large component is therefore not "the high bank", even if its core includes prominent high bank families. And it unites only a minority of the institutions members. Does it mean that private ties do not matter very much in the world of meso-level institutions? And what is the component: an interest group, a set of useful ties, a social milieu…?

The concentration of social capital and its effects on individual careers

For large networks, it is difficult to define the meaning of a global density figure: the number of possible ties for each individual obviously has certain limits, which mechanically decreases density for large networks. But in our case, it is interesting to see that even when mixing several kinds of private ties and various configurations of succession or simultaneous involvement in institutions, 70% of the men appear as isolates.

This result may partly be due to lack of information, above all about possible ties between men who were only commercial judges. Another possible reason is the fact that many municipal councilors were not at all businessmen: they were probably less likely to be connected to businessmen. If we keep out the men who were only commercial judges or only municipal councilors, the total population falls to 301 (graph 5b). Among them, 34% are included in the large component of the whole network (which is still connected), 20% are part of small components and 46% remain isolated. On the contrary, only 5% of the remaining 521 men were part of the large component. If we draw the general picture without them, it seems less dense but the overall structure remains unchanged, except for the quasi disappearance of the bridge between high bank and iron-wine-wool specialized trade and of the group around Horace Say and Charles Legentil. Going one step further, we can limit the picture to the ties between men who were members of at least 2 different meso-level institutions (graph 5c) or members of at least 3 institutions (graph 5d). In the first case, the structure is still very similar, with several connections between the denser groups built around the Davilliers, the Delesserts, the Periers and Laffitte. In the second case, the skeleton of these small and interconnected groups of men involved in many institutions remains visible.

There is indeed a correlation between being a member or the largest and densest component (not only having many ties, but being connected to specific persons) and holding multiple institutional positions. To sum it up, we can say that 35% of the men with at least two positions are part of the largest component (and 55% of those with at least three positions) whereas only 43% (resp. 22%) are isolates. This also means that the concentration of resources happens at an individual level: one or a few persons in the family or firm are sent to several institutions (on the contrary, it would have been possible for relatives or associates to share this task, each of them being elected to only one institution).

In fact, the milieu defined by the largest component seems to concentrate on two institutions: the Chamber of commerce (even among the men who were only members of the Chamber, 40% belong to the largest component, compared to 16% for the whole population) and the General Board of the Bank of France (among the men who only held this position, 37% belong to the largest component). On the other hand, only 12 and 15% of the men who were only commercial judges or municipal councilors exhibit at least one tie in the population and 4 and 7% of them are in the principal component. The *conseillers d'escompte* exhibit an intermediary position (36% with links, 18% in the large component). The size of each institution and their turnover rate partly explain these results (it may have been difficult to find a sufficient number of potential judges or municipal councilors in or around the largest component), but other factors involving the prestige and power of the institutions, the skills needed and the time necessary to be an active member certainly do play a role.

Anyway, the members of the largest component may have had better institutional career opportunities. In fact, they spend an average 13.2 years as members of at least one of the institutions studied[15], compared to 11.8 years for members of smaller components and 6.5 years for isolates. The fact of having at least one tie in the world of institutions therefore seems useful. Having a large degree, in networks terms, also seems to have a specific effect: the men with one tie and those with two ties spend an average 11 years in the institutions, compared to 12.6 for those with three or four ties and 15.6 for the 54 men with five to fifteen ties. In each case, the fact of being a member of a small component or of the largest one seems to have little or no impact: it is the number of potentially useful ties that seems to influence the multiple elections or appointments, rather than the fact of being a member of the large component.

If we look at the career in each institution separately (and therefore at the chances for reelection), the figures are much less clear. Nowhere do we find such a linear correlation between number of ties and number of years in charge. The main effect of private ties seems to be an easier transition from one institution to another, more than the re-election in the same institution. But we find two exceptions, pointing in opposite directions. On the one hand, in the Commercial Court, the lowest average durations are found among members of the large component (3.5 years, compared to a general mean of 4 years) and among the men with at least 5 ties (3.2 years). It may also be noticed that people with many ties or members of the large component do not have more chances than the others to become president of the Commercial Court.

On the other hand, in the General Board of the Bank of France, the average duration of stay is 8.5 years for isolates, 11.8 years for members of small groups, 18 years for members of the large component and 20.9 years for people with at least 5 ties inside the large component. But as *régents* and *censeurs* very often keep their position until their death, these figures may be the mechanical consequence of a lower age of election. In fact, the average age of election to the GBBF is 49.3 years old, but it is only 48 for members of the largest component, compared to 50.3 for members of small components and 51.3 for isolates. The influence of the degree seems less significant, except for the men with 5 ties of more (with a mean age of 47.4, compared to 50.1 for the others). In fact, a closer examination of the figures shows that this recruitment at a younger age for members of the large component is only effective for the men who began their institutional career after 1832 – and even more after 1848 (with a mean of 45.8 years old for the largest component compared to 54.8 for the other men).

Do we find similar effects on the age of election in other institutions? Unfortunately, there are many missing data on dates of birth. But we can look at the case of the Chamber of commerce. Here, the average age of first election is 43.7 years old for the members of the largest component, compared to 48.3 years old for the members of the small components and 49.6 years old for the isolates. It remains true for each time period, the average election age of members of the large component always being two or three years under the general average. This effect seems to be mainly caused by the number of ties (with a regular decrease from 49.4 years old for people with only one tie to 42.5 years old for people with at least 5 ties), but with an additional effect of being a member of the large component for men with few ties (with an average age of 51 years old for the men with one tie outside the large component, 46 years old for those with one tie inside it, and a similar but smaller effect for the men with 2 to 4 ties). Therefore, a good network position seems to give a chance of entering the Chamber at a younger age. But it does not seem to influence re-election, which seems to be more correlated with real involvement in the institutions' activity[16].

Giving such details is useful to show that the effect of networks is by no means uniform. It dispels the too simple idea that "capital goes to capital", that any kind of resource may be transformed to any other kind and that every individual's aim is to hold every possible position. Each group probably has a specific institutional strategy and the evolution of the institutions' roles and appointment procedures may induce general changes in priorities. It is only thanks to a comprehensive study of the system of institutions, including economic, social and political perspectives and taking into account the scales of individual, group and institution that we may be able to interpret such results. For example, my substantive study of the Chamber of Commerce and related institutions leads me to hypothesize that the Commercial Court was considered by members of the prominent families (especially in the high bank) as a compulsory first step (sometimes described as a *stage* [traineeship]) to improve their skills and to gain reputation; but they left that time-consuming position as soon as possible. This hypothesis is based on detailed examination of career paths as well as qualitative evidence about the disadvantages of the task of commercial judge. About the complex and changing effect of ties on the age of election to the GBBF, my insufficient substantive knowledge of the institution – especially in the 1815-1848 period, which has not been studied in detail by historians – does not allow me to suggest an explanation. It may only be argued, as we will see below, that high bank families concentrate their strategies on this institution after 1848, which may have helped to increase the effect of networks on election age. As for the Chamber of commerce, the phenomenon seems more classical in network terms: if you have many ties of any kind in the institutional world, it is useful for you; if you only have a few ties, they are more efficient if they give you access to a densely connected milieu. But it does not explain why we don't find such mechanisms in the other institutions.

The specific case of successions

To sum up, what we have already discovered implies that having many private ties in the world of economic institutions may provide a more various institutional career to an individual and that, under some circumstances, it may allow him to start it at an earlier age. Family reputation or support from inside the institution (in a context of cooptation) appear as substitutes for personal experience in business, skill in writing, etc. (and vice versa). But it does not imply that families pursue collective strategies aiming at controlling or influencing the institutions or at least at being present inside them (in order to be informed of what is happening and able to promote the family's or firm's interests). Looking for direct successions in each institution may help to investigate this other question. We have seen that the only institutions with a significant weight of private networks were the Chamber of commerce, the GBBF and maybe the Discount Council. But in fact they experienced, strictly speaking, few direct successions.

The Chamber of commerce had a rule forbidding immediate reelection (or, after 1832, allowing it only one time) so that it experienced an important turnover; but some members came back in after a year or more away. Such a rule offers many opportunities to observe successions: if one family or firm wanted to be always present in the Chamber, it had to create a turnover between at least two members. As successions are hardly ever described as such in the archives, their definition may be questionable, but, among ca. 320 elections to the Chamber, 20 at most (6%) may be considered as direct successions between relatives or associates. There is almost no succession after 1820. A majority of the cases and the most explicit ones (with expressions such as "Odier, from the firm Gros Davillier and company") happen in the Davillier and Delessert families and firms in the first years of the Chamber. This type of succession is more common in the General Board of the Bank of France. With the same criterion, ca. 20% of the elections to this institution may be considered as direct successions, and this phenomenon seems more evenly distributed along time than in the Chamber of Commerce. On the other hand, in the case of the Discount Council, direct successions seem to account for less than 10% of the appointments (but my information on personal ties is probably less complete in this case). The General Board also seems to be the only place where such questions are baldly spoken of, with candidates' speeches to the shareholders calling back to the former position of a father, brother-in-law, etc. (Plessis, 1985).

Election by shareholders seems to result in more cases of direct succession than can be found in direct cooptation (as in the Chamber of Commerce) or political appointment (as in the Municipal Council). The sole consideration of the electoral system used would therefore lead to false predictions about the ties between those elected. However, such a paradox can be explained. In the case of pure cooptation or appointment, the person(s) who decide generally have access to information on the specific skills and individual opinions of the candidates. On the other hand, the shareholders, in the case of the Bank of France, being greater in number and not always personally acquainted with the men they have to choose, may have a more limited understanding of the nature of the GBBF's task and consequently may tend to trust rather in a family or firm name. Direct succession sometimes seems to be less the result of deliberate favoritism or personal acquaintance than of a lack of information leading to rely more heavily on symbolic assets. The non-existence of diploma related to business skills or to the skills needed in institutions (even if more and more merchants' sons studied law in the end of the century) is probably one of the reasons why such phenomena were so important in all the institutions: there was no objective criterion for the convenient competences.

Even an aggregated description of the network of private ties among institutions members has proved very heuristic. It helps to question *clichés* or lazy explanations such as the link between cooptation and favoritism. It shows that "networks" may have various potential effects and that the definition of "interest groups" is not obvious. More substantively, it may help to answer to the complex question of "the limits of the high bank", often debated by specialists. And it provides ways to assess the weight of private ties on careers without relying too much on unrepresentative examples.

IV- The co-evolution of private networks and institutions networks

Four snapshots

We have concentrated on the question of the influence of networks on individual careers. But another, perhaps more important question is the problem of potential manipulation of institutions by interest groups. To test this idea, we may count the number of "representatives" whom a given group could rely on in a given year. We have seen it is not easy to define such an interest group (particularly inside the largest component). To try to answer to that question, we may however give a picture of the ties which directly unite the persons who are in charge in a given year. It will also give us a first idea of the evolution of the whole system, even if it is impossible to give a film including each year: therefore, only snapshots of 1803 (the first year with all the institutions already created), 1823 (with a comparison to 1827), 1843 and 1863 are given (graphs 6 to 9[17]).

As table 1 sums it up, the density of ties inside the institutional world shows a continuous decrease between these dates, with important differences among the institutions. Whereas the Chamber of Commerce falls from a very high integration of its members in the institutional world in the first two snapshots to figures around average, the GBBF experiences an increase in ties that goes contrary to the general tendency, but that stops abruptly in the last period. The Discount Council keeps a high level of interconnection with few changes and the Commercial Court keeps a low level with few changes, whereas the Municipal Council follows the general decrease with lower figures (although it experienced a very specific mode of democratic election from 1834 to 1848). Such results give an incentive to have a closer look at the differences among the institutions and across time.

What about control of an institution by one group at a given time? Let's consider in graphs 6 to 9 the chains of more than two persons present in the same institution at the same time. In 1803, they are only to be found in the Chamber of Commerce, with one group of four (specialized in the trade of wool and iron, with really strong association and alliance ties) and two groups of three (one very solid with the Davilliers and associates; the other maybe with affective links more than economic common interests: Roux has begun his career as an employee of the Delesserts and is so close to Cordier that he became his children's guardian). It leaves only 5 of the 15 members of the first

Chamber of Commerce outside any of these groups. This result is interesting because the 60 persons who elected these 15 members for the first time had been chosen by the Seine prefect Nicolas Frochot: the weight of certain private groups is by no means the product of pure cooptation, but it is the consequence of a choice made by a civil servant who always spoke against any kind or "particular interest". This may be explained partly by his own personal connections and partly by a lack of information leading him to trust reputation; anyway, it is an interesting fact which again speaks against lazy explanations such as "cooptation = power of private networks, appointment = political criteria, election = choice independent from private networks".

In 1823, the graph is very different. It is not the product of the random choice of the year: the 1827 graph (graph 7b) is extremely similar, despite of an overall turnover of 45% between the two dates. Here we find, tied together however indirectly, a significant part of the large component that we described above, including 15 men in 1823 as well as in 1827. Together they hold 8 of the 18 elected positions in the GBBF (8 in 1827) and 6 of the 15 positions in the Chamber of Commerce (7 in 1827), so that they are not far from forming a majority – not to mention 3 of the 12 positions in the Discount Council (2 in 1827), 3 in 24 in the Municipal Council (2 in 1827) and 1 in 25 in the Commercial Court (4 in 1827). This group, in which bankers are an overwhelming majority, seems to have an eye everywhere and a significant influence on two major institutions. But is it a group? The pivotal place of Roux and Laffitte in it is unquestionable. The 1820s is the time of the "canals fever" and other speculations of the same sort, involving what is often called "saint-simonian banking" and implying changing configurations of partnerships. Therefore, even if they may compete sometimes, it may well be thought that these men share some common interests and work together to promote them, particularly in the Chamber of Commerce, which is often asked for advice on questions related to canals.

In 1843 and 1863, the situation again looks very different. The components are smaller and less dense (they look like chains) and the only institution including more than two tied members is the General Board of the Bank of France. Among the 18 *régents* and *censeurs*, we find in 1843 two groups of three (one of them also including the subgovernor Charles Vernes) and one group of four – around the Delesserts, the Davilliers and iron sellers like Lafond: the same groups that were present at the origins of the whole network. But they were then more concentrated on the Chamber of Commerce. In 1843, they were mainly confined to the General Board, even if they keep some ties to the other institutions. In 1863, it is still around the Davilliers and the Delesserts that we find the only noticeable groups, only one of them keeping 4 *régents*. Has the GBBF become the only meso-level institution important for the promotion of the interests of such high bank (and related) families? Or is it the only institution where they still have an easy access, which would mean that networks and reputation are no longer important factors to be elected elsewhere? It is not easy to differentiate between constraint and strategy at such a macro level and more precise studies of the institutions and the firms are needed to understand that phenomenon. But giving an accurate description it is already an important result.

The construction of the network

Using snapshots of some years is not a very satisfactory way of understanding the evolution of the whole system, because the fact of being tied to previous members of institutions must not neglected. Graphs 10 to 13 give an alternative view of the network's evolution, using the partition of the population in four periods according to the first date of election or appointment to a meso-level institution (1785-1803, 1804-1831, 1832-1848, and 1849-1871). It is a proxy for the idea of generation, these generations being defined to capture the effects of reforms of the institutions studied.

From the 92 people who entered the institutions between 1785 and 1803, 36 are already linked in small chains. The 16-persons component encompasses people who then became the skeleton of the large component of the whole network: the Perier and Delessert families are already linked by other bankers. But connections with the Ternaux-Moreau group (more specialized merchants and industrialists), the Davilliers and the group of intermarried *régents* (around Delon) remain to be created – or, if some of these connections already exist by the virtue of alliance or association, they pass through men without any institutional role in the beginning of the century.

The second period may be viewed as a time of construction and stabilization of the new (or reformed) institutions: it is the period when their roles were gradually defined and when their existence and functions became common knowledge for the economic elite. The graph shows a dramatic increase in the number of members of the main component of the network (from 16 to 87 members if we include the two first periods: in 1831, two thirds of the final large component already exist). Its general form, with all its subgroups, appears already stabilized, even if some connections are still weak (with little redundancy). We can intuitively identify two kinds of new members in the component: some of them, like the sons of Claude Perier, are tied to one or two particular men of period 1 and seem to follow their steps, to have been chosen as their followers, maybe to continue to represent a family or firm. Others, like Jacques Laffitte and his associates, or Antoine Odier or Michel Frédéric Pillet-Will, create new links between subgroups and therefore shape the new large component. Qualitative knowledge of the data shows that the component was at the same time built by these new men (maybe elected because they were common relatives or associates of several already present small groups) and by new ties (new partnerships or new marriages): the milieu defined by the large component seems to be at the same time in the process of uniting itself and of self-recruiting for the institutional positions. This double evolution is very important for the institutional system: from the 253 "new men" of the second period, 23% (55 persons) fell into the large component (bringing with them isolates or small chains from the first period). And if we exclude the newcomers who were only members of the Commercial Court or the Municipal Council (we have seen that they had a more peripheral position in the whole network), we see that 40% of the other newcomers contributed to the building of the large component.

On the contrary, the third and fourth periods not only added less people to the large component, but they did not modify its structure, the new men/ties very often being redundant to older ones. Only 6 to 8% of the new men fell in the large component and they only increase its density instead of reshaping it. It is also noticeable that the smaller components exhibit few new family or firm groups. Moving to statistical accounts of the same reality confirms the existence of a dramatic change in the beginning of the 1830's and of an even stronger tendency to isolation after 1848. Table 2 shows the decrease of the private ties among newcomers: it affects every kind of tie as well as the network degree. Even if their longer stay in the population studied may explain the more numerous links of the most ancient members, it seems difficult to believe that it is the only explanation to the decrease. The fact that the proportion of members of small components practically remains the same – the evolution being from members of the main component to complete isolates – shows that something happened which is not mechanic but was linked to an evolution of the whole business relational system and of the roles and identities of the economic institutions.

Discussion of factors of evolution

The general decline of private ties among newcomers in the meso-level institutions (and between them and their predecessors) and the fading of the large component built around high bank institutions members are the aggregate result of probably subtle and entangled evolutions at the micro levels of individual and collective strategies and at the macro level of firms specialization and institutions specialization. The changes modified at the same time the structure of opportunities (which institutions did exist, what they were able to provide to firms in terms of influence on economic policy or in terms of information, what was needed to become a member in terms of skills or available time…) and the individual or collective aims (with, for example, a classical question: did the bankers want to make more profit or to retire and live like gentlemen?). It seems impossible and maybe not very useful to quantify the precise impact of each of these factors. It is nevertheless interesting to try to differentiate them and to think about their interaction.

Stating the very complexity of the evolution is a way to escape lazy explanations like "modernization implies less weight for private ties, especially kinship ties". Finding a less dense and structured network in the last period studied does not mean that "networks do not matter anymore", nor does the structure in the first years deserve to be called "archaic". There are still families, firms (even family firms) and groups trying to control institutions in the end of the 19th century. But career paths, functional links and hierarchy between institutions have changed and the most efficient ties are not the same anymore. Another point of view could lead to say that "networks matter more than in the beginning of the century": the important point is to define the networks we are interested in.

To illustrate some of the aspects of the evolution leading to the image of "less networks", I will concentrate on three important factors: the specialization of institutions; and the concentration of the large component's strategies on the Bank of France; the growing place of careers based on alternative resources, namely expertise and representative character. Then I will suggest a possible interpretation of the general evolution in terms of quest for information, which seems complementary to the more obvious "pressure groups" interpretation.

Institutional specialization

The idea of a growing specialization among the meso-level economic institutions, starting in the beginning of the 1830s and accelerating after 1852 – and stabilizing in the beginning of the Third Republic – is supported by qualitative and quantitative examination of what the institutions did as well as by data on individual career paths. Each of the institutions studied gained new, more routine-like attributions and/or had to meet more frequently to treat more cases than before; the number of members often increased to facilitate this growing activity, but not in sufficient proportion according to contemporaries. For example, from the 1850s on, the Chamber of commerce had to discuss every change in railway rates and many technical questions about measures used for each kind of product, which left few time to the discussion of general economic issues. The increase in the number of cases submitted to the Commercial Court led the judges to separate in more or less specialized "chambers" and to spend more time in the court.

I cannot here give full detail on each institution (which may be found in the already cited specific studies), but the general trend seems unquestionable. Each position becomes more time-consuming and needs more specialized skills, with specific specializations needed in each institution and also often among members of each institution. The notion of "expert" of each trade was more and more used in the Chamber of Commerce and in the Commercial Court, which probably gave an incentive to choose more specialized businessmen and fewer bankers as members. In addition, new meso-level institutions were created or reinforced to deal with new problems: the *Conseils des prud'hommes* created in the 1840s in Paris conciliated disputes between employers and workers; the *Comité consultatif des arts et manufactures* (of which Gustave Roy was a member) dealt with more industrial questions and especially with patents… Multiple involvements in many institutions seem to have become at the same time less common and more diverse. There was no longer a simple set of institutions, articulated around the Chamber of Commerce and the Bank of France (with the Commercial Court as a probation place), that could be "the place to be" for a densely interconnected part of the economic elite. Not only did the members of the institutions seem to belong to unconnected interest groups, but it is dubious if there was still a system of institutions in terms of careers.

As a result, in my dataset, the men who entered the system after 1848 were much more likely to be elected to only one of the five institutions studied than before (table 3)[18]. Graphs depicting the exchange of members between institutions for each generation (graphs 14 to 17) show a general decrease in the third and fourth periods[19].

New strategies for the "high bank"

If we turn more specifically to members of the "large component" of our network (around the high bank), several hints point at the idea that after 1832 and even more after 1848, they concentrated on the General Board of the Bank of France or left meso-level institutions in general, sometimes to enter the political system more directly. My micro study of the Chamber of Commerce showed that, although members of prominent high-bank families (such as François Delessert and Henry Davillier) or of linked merchant families (such as Charles Legentil and Horace Say) kept the influential and visible positions of president or secretary of the Chamber of Commerce during many years after 1832 and even after 1852, they may be seen as exceptions. When they opposed their colleagues on policy matters (for example when François Delessert advocated for the law again child labor in the name of philanthropy or when Horace Say pointed at the importance of teaching political economy to merchants, two positions typical for the high bank culture of the 1800s-1830s), there were sharp debates and they only convinced a minority.

The few indicators that we now have about the real involvement of members in the institutional all-day work point to the same direction, showing a concentration of people from the large component on the GBBF: not only are they more present in it than in other institutions, but they also appear to be more active in it. According to Alain Plessis' (1985) criteria, members of the large component seem much more involved than the others in discussions in the GBBF during the Second Empire: Plessis cites half of them as very active, compared to less than 20% of the others. It means that although only half of the *régents* and *censeurs* whom he studied were members of the large component, they represented more than three quarters of the influential speakers, probably weighing disproportionately on the Bank's policy. It must be said that Plessis only counts discussions on general matters, leaving technical, routine discussions outside the analysis: it may be argued that the men from the large component concentrated on general discussions even more than on the GBBF.

Results about the Chamber of Commerce seem to point to the same direction. My study of the relationships between network position and involvement in all-day work gives opposite results for successive generations[20]. Among the first members of the Chamber who entered it in 1803, those who became the founders of the large component were much more active than their colleagues (with 4 subcommittees per year on average during their stay in the Chamber, compared to less than 1 for the others). For the members who entered the Chamber between 1804 and 1832, the differences were small, but the isolates seemed a bit less involved than the others. On the contrary, for the members entering between 1833 and 1848, the members of the large component took part to 3.3 committees per year on average, compared to 4.4 for the isolates and 4.1 for the members of the small component. The difference is in the same direction and more significant if we consider the average number of Chamber meetings attended each year. For members of 1803, the average is 25 for the members of the large component and 16 for the others; similar figures for members entering the Chamber in 1804-1832 are 17 vs. 19, and for members entering between 1833 and 1848, they are 17 vs. 24: a reverse situation compared to 1803. Despite of their multiple economic and institutional involvements, the founders of the large component found time to really participate in the Chamber of Commerce's advisory activity; on the contrary, despite of their more specialized career, their followers seemed to be less active. Perhaps being a member of the Chamber was then only a source of prestige or a probation position (like the position of commercial judge). Even if some representatives of the large component were still elected to the Chamber and even became presidents or secretaries, they had, by any criteria, become a minority.

During half a century, the meso-level institutions' attributions in general (and particularly those of the Chamber of commerce) were not clearly defined, because a new institutional system had to be created after the abolition of old regulations during the Revolution. But this experimental period, when perhaps many individuals, families and firms did not know exactly what to expect from membership in each institution, had an end. In fact, the evolution was rather incremental, even if turning points around 1832 and around 1848-1852 may be found. But around 1870, a new system based on increased institutional specialization was born that did not leave place to the interaction between private networks (especially around the high bank) and institutional networks created by complex careers.

New networks?

Was this new system based on new kinds of networks, forms of recommendation and reputation? Even if I currently do not have exhaustive individual data about membership and responsibilities in unofficial guilds and then in *chambres syndicales* (the standard name for the first non-workers unions), there is little doubt that the answer is to be sought in this direction. At a macro level, I have showed that from the 1840s on, the idea of a spontaneous organization of trades was no longer associated with archaic and inefficient Old Regime traditions, but was openly discussed among economists, bankers etc. as well as in socialist or Christian circles (Lemercier, 2003 – see also Kaplan and Minard, 2004). In the Chamber of Commerce, this resulted in the growing place given to the notion of expertise in a particular trade, allowing to choose some members because they knew for example wood trade and not only because of their personal merit (including objectivity on economic matters). In a second step, the word "*representativité*" (representative character) became baldly used. The exceptional 1849 universal franchise election played a great role in this evolution. From then on, lists of candidates to the Chamber mentioned trade specialties even more than previous institutional experience. The ultimate stage of this evolution was, in 1867, the birth of the Interunion of commerce, which considered that the choice of members had first to be based on a balance between trades and only secondarily on personal merit. The parallel birth and success of *chambres syndicales* naturally created a new set of potential candidates: the heads of these new unions. It is during the Second Empire that they became a majority in the Chamber (Lacombrade, 2002). This emphasis put on intra-trade networks reduced the part of the large component based on private ties in the recruitment to the Chamber. But it allowed for forms successions (father-son etc.): small components continued to exist in the network of the last years. More technical skills as well as the ability to promote the interests of a particular trade emerged as the most praised competence for members of the Chamber of Commerce.

The same may be said about the Commercial Court. In fact, it seems that this institution was the first to enter the way of expertise and representative character (Lemercier, 2003), probably partly due to the technical requirements of the position (to judge all cases, the court should include specialists of all the main trades). In fact, it is interesting to notice that many of the first isolates (in terms of the network studied here) who entered the Chamber of Commerce came from the Commercial Court, which allowed them to enter the institutional system and then to prove their personal merit. It would be interesting to look precisely at the case of the Discount Council to see if such mechanisms related to expertise, representative character and finally *chambres syndicales* played the same role. On the other hand, *chambres syndicales* probably were less interested in the GBBF and the Municipal Council, institutions on which different elites concentrated to deal with different matters, thus destroying the previous networks based on multiple institutional involvements as well as private ties.

Information asymmetries

If we finally adopt the point of view of firms and concentrate on more strictly economic phenomena, how is it possible to understand the evolution? "Networks" in general are often seen as informal institutions allowing to lower transaction costs and/or information asymmetries[21]. It must be added that they are often very useful if you want to confiscate information. Here it may be argued that in a context of very important economic uncertainty (particularly during the Empire wars, when trade prohibitions very often changed: it was the context of the birth and growth of most of the institutions studied) as well as "institutional uncertainty" (uncertainty on where it was important to be present in order to weigh on policy decisions or to know in advance what would be decided), building a network based on private ties between family firms as well as on multiple involvements in several institutions was particularly useful for the high bank and the merchants and industrialists evolving in the same milieu. Being present in meso-level institutions, even without controlling their decisions, may have been crucial to get insider information. In addition to information coming from the government (when it asked for advice on its projects, thereby revealing them) or from the economic actors in general (who, when they asked the Discount Council for credit or when they brought their cases to the Commercial Court, provided information on the state of their business), meso-level institutions could provide information coming from the other members themselves. This may have been a reason to maintain a certain amount of diversity among the members, although cooptation often would have authorized one or two family firms to control the institutions. Including people with whom you were more remotely related (whose merit you knew, but with whom you did not necessarily share all interests) could allow you to create a kind of club in order to exchange certain kinds of information (the kind that you did not want to keep only for your firm but that you did not want to become public either). In this perspective, keeping a small place for isolates (from the point of view of private networks) who had proved their merit for example in the Commercial Court and who could give information on specialized trades also could make sense. This interpretation is probably particularly accurate for the Chamber of commerce in 1804-1832, when evidence shows, for example, that many discussions about topical economic issues, rumors etc. took place in the end of meetings.

But this closed system did not last very long, because of changes in the strategies of the insiders as well as because of outsiders protests. An important factor was very probably an increasing differentiation between banking, industry and long-distance trade, particularly with the increasing autonomy of "exporters" in the 1840s: they invented this new word and created specific clubs to exchange information on new markets (like China)[22]. On the other hand, one of the main aims of the new *chambres syndicales* was to deal with information problems: for example, they asked their members to report on the credit situation of their clients, and this information was only given to other members. Private information enterprises such as financial journals also multiplied from the 1830s on and the State tried to create statistical information on the economy in general. It may be argued that this diversification of information sources, along with the fact that being a member of some of the meso-level institutions more and more implied to concentrate on technical matters and less and less to enjoy discussion with other members of the elite, reduced the "club function" of these institutions. It raises the question of the nature of the new sources and ways of information exchange for the high bank families: maybe the answer is to be sought in the new kind of selective network built by interlocking directorates of stock companies from the 1860s on. As for the new men from the *chambres syndicales*, it seems that they made a different use of meso-level institutions, either as forums to promote sector-based interests or as tools to create public services useful for small and medium business – it is at least the case for the Chamber of commerce, which created quality control services, a public library, business schools etc.

Conclusion

The purpose of this paper is partly methodological. Facing the growing use of the word "network" by historians, it may be useful to differentiate between sorts of networks and to investigate their origins and consequences. Assessing what formal analysis allows us to understand – and what it cannot do – was another aim. Quantitative results and graphic illustrations appear very useful to retrace a global structure and to give some evidence on the weight of a specific network on a specific behavior. But, like every kind of formalization, this method is very sensitive to choices in data coding; more generally, it is only useful if the researcher has a substantive knowledge of the field. Changing scales is one interesting thing that may be done with network analysis: it is useful to confront the points of view of the whole structure, of small groups and of individuals. It requires qualitative information on each scale.

In addition to methodological lessons, this attempt at a systematic treatment of the "networks question" gives original results not only about meso-level economic institutions and institutional careers, but also about business itself. Even in the already well studied field of the high bank, it helps us to understand the precise limits of this milieu and the chronology of its changing institutional strategies. More generally, the network study falsifies simple assumptions like "social capital allows election or appointment to any position", allowing a more precise test of various hypothesis.

Such a study raises questions of comparative nature. It would be very useful to conduct similar research particularly in smaller French cities. It has often been argued that the larger the city, the more anonymous the personal relationships: does this hold for business elites? On the other hand, information problems were probably very specific in Paris, which may have been the source of specific institutional strategies. Comparative research would also help to understand what is specific in the Parisian case, for example if we found two large components instead of one. More generally, the figures given here, for example on the proportion of successions or on the effects of networks on election age, may serve as references for other studies that would address the question of "*notables*" in political or scientific institutions as well as in the world of business in 19th century France. An enormous work has been done in collecting biographies of elite members, but it is often difficult to extract general results from such data. Here I suggest possible ways to treat them in order to answer to precise historical questions.

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[1] I am currently working on a survey paper on networks analysis and history. A good and simple introduction is Erickson (1997); for a discussion of causal models underlying network analysis, see Emirbayer and Goodwin (1994). Useful textbooks in French are Degenne and Forsé (1994) and Lazega (1998). The webpage http://www.sfu.ca/~insna/ provides useful information and free software including the programs used here (Borgatti et al., 1999; Borgatti, 2002). The present paper only uses very simple descriptive tools of network analysis but has benefited from its conceptual framework.

[2] Many businessmen actually turned down election to the Commercial Court, but it hardly ever happened in the other institutions studied.

[3] An "institution" is here defined by the existence of a particular group of members with specific meetings aimed at fulfilling a particular role. Therefore, the Seine District Council (*conseil général*) and the Paris Municipal Council are considered as one institution, which I call "Municipal Council", although there were in fact sometimes only one council, sometimes two (but with a majority of common members and meetings). On the contrary, I treat the General Board and the Discount Council of the Bank of France as two different institutions because they have different members, chosen for different missions and according to different procedures.

[4] There are no serious historical studies of the French Commercial Courts, especially in the 19th century. I am now working in that field of research. A general view is given by Coutant (1998). For more detail and lists of members Legrand (1905) is still useful.

[5] The Councils archives burnt in 1870, which has caused a lack of historical research (despite of the existence of printed documents). Stephen Sawyer is currently working on the Paris Municipal Council in the 19th century. Member lists and biographical information are given by Pronteau (1958, 1960) and Fleury and Gille (1972). General ideas about the Parisian administration may be found in Roussier (1970) and Tulard (1976).

[6] The boards of the Bank of France have been very precisely studied by Szramkiewicz (1974) and Plessis (1982 for the Discount Council, 1985 for the General Board).

[7] The 15 members of the year n elected the 5 new members for the year n+1. Cooptation could have turned to infinite re-election of the same people. To hinder that, before 1832, a one-year interval was compulsory after each 3-years term. After 1832, it was possible to be immediately re-elected one time, but the one-year interval remained compulsory after 6 years, 9 years etc.

[8] In Paris, such authorizations were actually asked for and granted. I found no decree about the case of associates, but since few studies of commercial courts exist and my own is just beginning, this point has still to be investigated.

[9] I have also added the few cases when the relationship was “employee” and “former employee”.

[10] It must be stressed that on all network graphs, the only rigorously defined thing is the existence or non-existence of a line between each pair of nodes. The position of the nodes on paper, the distance between two nodes etc. are arbitrary (they are in fact chosen partly by the computer and partly by the researcher to make the graph readable). I found it useful to give such pictures so that the reader gets a general idea of the structure of the networks, but I am well aware of problems related to graph interpretation. That’s why I always try to give a more quantitative idea of network parameters.

[11] A clique is a set of people among whom all potential ties actually exist (each person is related to all the others).

[12] For example, if we chose to ignore the fact that Scipion Perier, Jean-Baptiste Chaptal and Michel Frédéric Pillet-Will were partners for a few years, it would reduce the size of the main component. But most of the component is much denser and therefore more robust.

[13] I have actually added and deleted some ties in the process of writing this paper, because of improvements in my information. It did not change the overall structure. Its robustness is due to the redundancy of ties: few members of the large component have only one tie and there are practically no chains without redundancy. If we « delete pendings » to define the core of the network (deleting the people with only one tie, then doing it again and again), the process stops very quickly and 102 men remain in the component with at least two ties each (graph 5a).

[14] The degree is the number of different persons to whom one given person is directly tied.

[15] Here I only take into account the years between 1800 and 1872, so that a small part of the data is right-censored.

[16] I have tried calculations using rates of absenteeism during the first term and involvement in subcommittees. Since there are missing data and the population is very small, I do not give here a detailed account of the results. Techniques using Boolean algebra, often useful for “small Ns”, may help to solve this problem in my future research.

[17] The isolates are not represented on the graphs. The individual nodes are in the same position as in the whole network graph (graph 5) in order to allow comparisons.

[18] The Discount Council was an exception, with more erratic figures. Despite the pioneering work by Alain Plessis (1982), this institution would deserve a specific, long-term study. Plessis points that in 1870, the question of the representation of precise trades (including new economic sectors) in the Discount Council was openly discussed, which would indicate that, like in other institutions, expertise and representative character were more and more significant for the choice of members.

[19] As well as interesting specific features such as the similar position of the Municipal Council for the 1804-1831 and 1832-1848 generations, despite of the change from appointment to democratic election of members, or the fact that in the first periods, direct ties between the two boards of the Bank of France were less important than ties between each board and the Chamber of commerce. From the point of view of institutional history, these graphs would deserve a more detailed description and interpretation, but as

the emphasis is here on business history and the role of private networks, I will keep the point for eventual oral discussion.

[20] Unfortunately, I do not have comparative data about 1848-1870. But it must be said that the work in the Chamber was then organized in a different way, with few *ad hoc* subcommittees, most of the reports being prepared by standing specialized committees. This in turn points in the direction of more technical specialization and less general discussion, which does not contradict the other results of the present paper.

[21] See for example the call for papers: http://www.h-economica.uab.es/10simposioHE/Call%20for%20papers.pdf.

[22] On exporters, Lemercier, 2003; on economic specialization among elites, Plessis, 1982 and 1985 are particularly interesting.