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Research themes, databases and network analysis in business history

Alberto Rinaldi (alberto.rinaldi@unimore.it)
(Dipartimento di Economia "Marco Biagi, Università di Modena e Reggio Emilia, CiMET and RECent)

Erica Salvaj (esalvaj@udd.cl)
(School of Business and Economics, Universidad del Desarrollo (UDD), Santiago, Chile and Visiting Scholar at Universidad de San Andres, Argentina)

Susie J. Pak (paks1@stajohns.edu)
(Department of History, St Johns University, New York, United States)

Daniel S. Halgin (danhalgin@uky.edu)
(Gatton College of Business and Economics, University of Kentucky, Lexington, United States)

Abstract:

This paper discusses the application of Social Network Analysis (SNA) to corporate networks in a long-term and historical perspective. Starting with the basic concepts of corporate networks and the main research themes it has addressed in business history, the paper then introduces how historical quantitative archival data can be played with and turned into excel data suitable for the study of social networks by using software such as UCINET or Pajek. The paper then provides some examples of how this methodology has been used at both the macro and the micro levels: national corporate networks in Argentina, Chile and Italy from 1900 to 2017; business networks and economic elites in Southern Italy in the 19th century; the social club memberships, partnership ties, and interlocking directorates of J.P. Morgan & Co. in the early twentieth century. Finally, the paper discusses new perspectives for the application of SNA in business history, including the study of other networks than those of directors, i.e., shareholders' networks, networks that are created by joint membership of think-tanks, syndics, policy-planning group, university board, employers' associations, philanthropic associations.

1. *Introduction*

This paper reviews and discusses the application of Social Network Analysis (SNA) to corporate networks in a long-term and historical perspective. Starting with the basic concepts of corporate networks and the main research themes it has addressed in business history, we then introduce how historical quantitative archival data can be played with and turned into excel data suitable for the study of social networks by using software such as UCINET or Pajek. Finally, we provide some examples of how this methodology has been used at the macro, meso the micro levels: national corporate networks in Argentina, Chile and Italy from 1900 to 2017; local business networks and permanence of economic elites in Southern Italy and in Naples in the 19th century; the social club memberships, partnership ties, and interlocking directorates of J.P. Morgan & Co. in the early twentieth century. These case studies elucidate how SNA can unveil new connections and spark creative thinking to play with new research perspectives from the use of traditional sources such as lists of firms and their directors, syndics, managers and shareholders. We will also demonstrate how SNA allows researchers to ask and answer questions in a more systematic way than it had previously been possible but in surprising ways to reveal the *absence* of ties.

2. *Basic concepts and main research themes*

The biggest contribution of SNA to business history has been to shed new light – in a long-term perspective – on corporate network structures, their evolution and determinants as well as on the organizational outcomes of the firms involved (David & Westerhuis 2014; Cordova-Espinoza 2018).

Corporate networks represent a "non-visible" structural institution in a society that enables and inhibits the decisions of shareholders, managers and directors. These "informal mechanisms" are a relevant element in the study of corporate governance. The two most studied networks are shareholders networks (Kogut 2012) and directors networks (David & Westerhuis 2014). In this section we focus on the latter, which are commonly referred to as Interlocking directorates (IDs). An interlock is the link formed between two firms when a person is a director of both. IDs constitute the structure (or at list part of it), in which economic life is embedded (Granovetter 2005). In other words, IDs are a "transcendent network" where each actor assimilates and transmits the influence of innumerable other actors, both proximate and remote (Useem 1984).

A distinction can be made between those who claim that IDs are irrelevant and those who think they are important for corporate control analysis. Among the former, there are the theorists of managerial control of the firm: they argue that control is exercised by management inside the firm and the board of directors works only as an organ of representation and as an image for the market (Koenig et al. 1979; Silva et al. 2021).

Among the latter, two main approaches stand out. On the one hand, there are those who see IDs as a control mechanism. This view dates back to Hilferding's (1968 [1910]) theory of "finance capital" and was pushed a step further by Kotz's (1978) "bank control model". According to this view, control of credit flows and, more rarely, part of firm's equity enables banks to determine firms' strategy. IDs are a major instrument to enforce this control through the presence of bank fiduciaries on company boards. Mintz & Schwartz (1985) argued that IDs are instruments for banks to influence industrial firms with discretion, a perspective which was recently re-asserted by Colvin (2014). On the other hand, there are those who see IDs as a coordination and communication mechanism driven by convergence of interests. In particular, resource dependence models argue that restrictions on resources, information, or markets stimulate firms to create business groups,

whose presence can be detected through the analysis of IDs. The hypothesis is that firms use IDs as means to co-opt or absorb, partially or completely, other organisations with which they are interdependent (Hillman et al. 2009). In the case of the bank-industry relationship, IDs are not an instrument for banks to exert control over industry but are driven by a convergence of interests between banks and industrial firms (Haunschild & Beckman 1998), a point which is emphasized, in the business history literature, by Fohlin (2007, 2012). Another strand of literature analyzes IDs from the perspective of links between individuals. Here the network of IDs is considered an indication of the cohesion of the corporate elite (Mizruchi 1996; Carroll 2010). A dense network is an expression of the cohesion of the elite and of its capability to act in a coordinated way. Dense networks erect barriers against free riding, as network members can monitor and sanction each other. Networks can also impose a certain code of ethics amongst the members of the elite. As a result, in largely held joint stock companies, IDs can replace ownership as mechanism of control (Windolf 2014). Thus, most connected interlockers constitute an "inner circle" with higher degree of social cohesion and political influence (Useem 1984).

These different perspectives are mutually exclusive as each of them attributes the existence of IDs to only one reason, justified by the theory. Opposed to these views, a pluralistic interpretation of IDs was advanced, which emphasizes not the reason but the plurality of modalities in which the phenomenon of IDs manifests itself. The underlying idea is that ID analysis cannot verify any theory *ex ante* but can be very useful in the understanding of a wide range of themes in business history and in the analysis of the structure of corporate systems (Granovetter 1993).

An ID can simultaneously influence the flow of knowledge of opportunities and the capability to act by access to different resources, lower information and transaction costs, give privileged access to markets, and impact on firm status, reputation, and power. A much-debated question is the relationship between IDs and firm performance. Evidence in this respect has eventually turned out to be inconclusive and it is not sure that more interlocked firms are also more profitable. This can be a reflection of uncertainty over the causal order of the interlock-profitability association. On the one hand, the desire of more reputable directors to join the boards of best performing firms and access to resources through IDs can be said to improve firm performance; on the other hand, banks often send their fiduciaries to monitor bad performing firms (Mizruchi 1996).

The use of SNA in business history has allowed researchers to open new perspectives in the analysis of systems of actors wherein economic action is embedded. The focus on IDs and corporate networks has revealed to be particularly useful in noticing new – and sometimes surprising – connections among firms, financial institutions, economic elites and the state. In turn, these have triggered new interpretations of the structures of coordination, control and power in capitalist societies (Hall & Soskice 2001; David & Westerhuis 2014; Sapinki & Carroll 2018).

The pioneering project "They rule.net", an interactive visualization of the interlocking directories of the largest US companies, for example, aims to make visible some of the power relationships of the US ruling class. The goal is to play with, browse and generate networks of influence of the boards of some of the most powerful individuals and companies in America. "They Rule" can visualize something abstract like the connections between individuals and offers a materiality to that power (by means of icons with name and surname). Additionally, it is a tool that stimulates more questions about the conflicting interests of powerful business leaders.

3. *Sources, databases and methodology: Interlocking directorates in Argentina and Chile from 1900 to 2010*

The project on Argentina and Chile's corporate networks began with the observation of business elite in Chile at the annual meeting of a well-known business association (see image 1 in

Appendix). Participation in this meeting was serendipitous and led to the following questions: how did connections created through associations, which seemed to assist in the creation of cohesion between businesspeople, affect the connections among their firms? Is there overlap between the cohesive business elite and a connected structure of firms and business groups? Image 2 (Appendix) reveals the various levels of analysis that we addressed in studying these research questions, not previously explored, about the structure and evolution of Inter-firm relationships in Argentina and Chile.

As scholars trained in social networks methodology, we began to play with the idea of collecting network data and applying social network analysis to explain this social phenomenon. We decided to focus on the years 1900-2010, a long-time span which covers the entire 20th century and the first decade of the new millennium (Lluch & Salvaj 2012, 2014; Salvaj 2013). We relied on historical data sources that had never been used before in SNA and ID research (See image 3 in Appendix), such as the Yearbooks of Argentina 1923, 1937; Limited Companies Guide of 1944, 1954, 1970; Official Gazette of Argentina 1990, 2000 or the annual reports of the companies. Additionally, we relied on historical data from numerous libraries and physical repositories such as: Library of the Buenos Aires Stock Exchange, General Inspection of Justice, Central Bank of Argentina and Chile, Bank of Buenos Aires, Library of the Ministry of Economy of Argentina and Chile, and the Official Gazette of Santa Fe (See Lluch & Salvaj 2014 for more information).

As data collection and analysis evolved, we discovered new connections shaping the ID networks of the two countries. Foreign multinational enterprises (MNEs) and business groups (BGs) emerged as highly relevant and central players whereas banks, which had played a pivotal role in shaping these networks in Europe and North America, were much less relevant in Argentina and Chile. These findings led us to ask new questions: What led MNEs and BGs to occupy such a central position in the two countries? How do BGs relate to each other over time? What kind of relationships do we observe among private BGs, MNEs and the state? (Lluch & Salvaj 2014; Lluch, Salvaj & Barbero 2014; Salvaj & Couyoumdjian 2016, Bucheli & Salvaj 2014, 2018). For the purpose of our research, we defined BGs as legally independent firms, operating in multiple (often unrelated) industries, linked by persistent formal (e.g., equity) and informal (e.g., family, common directors) ties.

The process of data collection and database construction deserves special attention. To acquire the historical data, we relied on several older, meaning traditional, historical sources (see image 3). The identification and subsequent conversion into digital files created significant value because it concentrated information that was scattered in many physical repositories and libraries spread throughout Argentina and Chile. Our project received financial support from the Chilean government, which made it possible to hire assistants to collect and transform the data from physical repositories into digital files. Thus, when junior researchers consider embarking on a project of these dimensions, it is important to keep in mind the need to access grants to support this type of research.

Before collecting the data on board members, we had to develop rankings of the largest firms up to the 1970s. For recent years (from the 1980s onwards), we used rankings prepared by *Revista Mercado*, an Argentinean business magazine, and *America Economia*.[1] Historical rankings were another unique contribution of the project. We created, for the first time, rankings to identify the largest companies in each country from 1900 to 1980 (for every 10 years). We used company share capital and/or sales as proxy of company size, depending on data availability for each year.

[1] *Revista Mercado* publishes the traditional ranking of the companies with the highest turnover in Argentina; it has been published for 25 years, *AméricaEconomía* is a business magazine that covers Latin America in Spanish and Portuguese. In December 1989, the 300 Largest Companies in Latin America was published, which a year later would become the special edition of the 500, an analysis of the Latin American economy based on its 500 largest companies, which would be a regular ranking of publication ever since.

Based on the rankings, we collected information on board members of the 25 largest banks and the 100 largest non-financial companies of each country. Our dataset is neither a time series nor a panel. It is based on benchmarks taken about 10 years apart from each other and that cover a time span longer than a century, from 1900 to 2010.

One of the challenges of collecting data for such a long interval of time is periodization. Our decision to collect data every 10 years was influenced by the guidelines of David & Westerhuis's (2014) international corporate networks project and served to compare Argentina and Chile more accurately with the other countries included in the project. This periodization could mean a limitation and at the same time an opportunity to work on future corporate network projects collecting data with shorter periods of time, e.g., 5 years. This would partly solve problems such as the death of especially connected directors who might take their network connections with them and that our 10-year periodization does not allow us to identify. Based on these data we calculated network statistics that answered our research questions. We calculated the most commonly used measures in SNA (David & Westerhuis 2014). In terms of tools, we used UCINET to analyze the data and calculate all the network measures and Gephi to build graphs.

The process was rewarding. We created a unique dataset that approached business networks in Argentina and Chile from different angles and resulted in several academic publications. We implemented interdisciplinary work with business historians, sociologists, management scholars, political and computer scientists. This interdisciplinary approach provided plausible interpretations of the phenomenon of interest. The whole process led us to qualitative historical analysis and study how structural breaks or external shocks impact on these networks affecting the dynamics operating within the corporate elites of Argentina and Chile. Our main finding reveals that, in the long run, the Argentinean corporate network disentangled into a highly fragmented one, but that this was not the case of Chile. In Chile, we had a very stable and cohesive network (Salvaj & Lluch, 2012; Salvaj, 2013). In Argentina, we observe in the first half of the century a connected network, but from the 1950s onwards it began to fragment, and the decline continued until 2000, when most companies became isolated. We argue that the historical path followed by corporate networks was mainly driven by changes in the economic structure of the local capitalism, the institutional ruptures and political instability of the country and by the dynamics operating at the internal cycle of corporate leaders in Argentina (Lluch & Salvaj 2012, 2014; Salvaj 2013).

4. Sources, databases and methodology: Imita.db in Italy

Imita.db (acronym for IMprese ITAliane Database = Italian Firms Database) is one of the largest databases on joint-stock companies in historical perspective in the world[2]. This database is the electronic version of the serial source *Notizie statistiche sulle principali società italiane per azioni*. The latter is composed of a series of 26 volumes, edited and published by Credito Italiano[3] from 1906 to 1925, and by the Associazione fra le Società Italiane per azioni (Assonime)[4] from 1928 to 1984[5]. After that year, this source is no longer available as the publication of the *Notizie statistiche* came to end. The project of making an electronic version of this source took several years and was funded by Miur, the Italian Ministry for University and Scientific Research.

[2] The database is available on line: http://imitadb.unisi.it
[3] Credito Italiano was Italy's second largest German-style universal bank from its foundation in 1895 until the abolition of universal banking in Italy in 1936.
[4] Assonime is the Association of Italian Joint-Stock Companies.
[5] For the complete list of these volumes and details of this database, see Vasta (2006).

Imita.db contains information regarding companies, boards of directors, syndics[6] and balance sheets of a large population of Italian joint-stock companies for several benchmark years[7]. The source includes all the joint-stock companies listed on one of the Italian stock exchanges, together with those companies located in Italy whose share capital at the closure of the last balance was higher than a set threshold, which varied from year to year[8]. On the whole, the database contains data on more than 38,000 companies, almost 300,000 directors, and more than 100,000 balance sheets. Representativeness, in terms of share capital, is very high as Imita.db covers over 90% of the total universe of Italian joint-stock companies in all but the first two benchmark years (1911 and 1913) and the last one (1983), for which the proportion is around 85%. This makes Imita.db unique as databases that are used for the study of corporate networks in historical perspective in the other countries are usually much smaller.

The construction of such a large database spurred many researches that shed new light on several aspects of Italian economic and business history[9]. Thus, for the pre-WW2 years, Vasta & Baccini (1997) – applying SNA to Imita.db – found that the Italian corporate network was not characterized by such a strong centrality of banks as previous literature (e.g., Gerschenkron 1962; Cohen 1967; Confalonieri 1992, 1997; Fohlin 1999) had claimed. The location of banks at the center of the network could be detected in 1911 and even more in 1927, but this was no longer the case in 1936, after the collapse of the larger German-style universal banks. By that time, insurance companies and utility companies had replaced banks at the center of the system (Baccini & Vasta 1995). These authors also found that a highly stable system of interlocks existed in parallel to that centered on the banking system, and remained substantially unchanged over the years. This result is very similar to what has been shown by Fohlin (2007) for Germany, where in the pre-WW1 years there was also a dense web of IDs amongst non-financial firms. Vasta *et al.* (2017) analyzed the role of the largest German-style universal banks[10] in the Italian corporate network in four benchmark years: 1913, 1921, 1927 and 1936. On this purpose, they presented a counterfactual experiment which shows what would happen to the structure network if the universal banks and all their directors had been eliminated. Their counterfactual exercise showed that the centrality of the universal banks in Italian corporate network varied over time: it increased from 1913 to 1927, but it decreased sharply in 1936, as a consequence of the Great Depression. At the same time, their analysis confirmed that the Italian corporate network was structured to a remarkable extent on a sizeable and stable system of corporate interlocks that existed in parallel to that centered on the universal banks. This latter system can be detected for all benchmark years, including 1927, which marked the apex of the influence of the universal banks. Vasta *et al.* (2017) also showed the influence, at least in Lombardy and some other areas of the North, exerted by local banks that had developed a dense web of ties with industrial firms in both capital-intensive and labour-intensive industries. Rinaldi & Spadavecchia (2021) addressed this point further and analysed the networks of

[6] Syndics are special auditors of Italian joint-stock companies. Their duty is to exercise control and supervision over the management of the company, to monitor the decision taken by the board of directors and to take administrative decisions if the latter fails in its duties (Teti 1999).

[7] Data for companies and boards of directors are available for 1911, 1913, 1921, 1927, 1936, 1952, 1960, 1972 and 1983; for boards of syndics for 1936, 1952, 1962, 1972 and 1983; for balance sheets, time series are available for the span from 1900 to 1971 and for 1982 and 1983.

[8] The threshold was set at 1 million Italian lire until 1940, with the sole exception of 1914, when it amounted to 500,000 lire. In 1952, the threshold was raised to 10 million, then to 25 in 1956, 50 in 1961, and 100 from 1964 through 1972. Finally, for the benchmark year 1983 the threshold was further raised to 2 billion lire.

[9] Computation has been conducted with software Pajek. For an expanded textbook on the use of Pajek, see De Nooy *et al.* (2018).

[10] Bankruptcies and mergers changed the landscape of universal banks in Italy: Banco di Roma was founded in 1880, Banca Commerciale Italiana in 1894 and Credito Italiano in 1895. Società Bancaria Italiana was established in 1904 but it merged in 1914 with Società Italiana di Credito Provinciale, establishing the Banca Italiana di Sconto, which bankrupted in 1921. What remained of the Banca Italiana di Sconto gave rise to the Banca Nazionale di Credito, which in 1930 merged with Credito Italiano.

IDs of the major universal banks and twenty most "central" local banks from 1913 to 1936. Their main findings are that the networks of the two types of banks were largely independent, with universal banks being affiliated principally to larger concerns in electricity, transport and storage, and financials; and local banks to riskier, younger and smaller firms in light manufacturing. These authors also explore whether the bank-industry relationship in Italy reflected the hegemony of banks and followed a bank-control model (Kotz 1978). Their results do not support that view, but they indicate that IDs were driven principally by a convergence of interests between banks (monitoring customers) and industrial firms (interested in tapping capital and credit flows), with the latter exerting a slightly higher influence over the former. This significantly differentiates Italy from Germany and the USA, where banks had a more dominant position in the corporate system.

Imita.db also prompted fresh research on the structure of Italy's corporate system in the post-WW2 years. Rinaldi & Vasta (2005) analysed the structure of the Italian corporate network in the 1952-72 years. They found that a dense system of IDs played an important role in guaranteeing the stability of the positions of control in the major private firms. In 1952 and 1960, the network, centred on the larger electrical firms, showed its highest cohesion. This centre dissolved after such a major institutional shock as the nationalisation of the electricity industry in 1962 and was replaced by a new and less cohesive one, hinged on financial intermediaries: banks, insurance firms and some finance firms. More generally, contrary to conventional wisdom (Ragozzino 1969; Chiesi 1982, 1985), these authors held that banks maintained an important role throughout the period investigated. The 1936 put an end to universal banking in Italy, but in fact it produced varied effects: formerly large nation-wide universal banks were forced to make a profound change in their strategy and substantially reduced their links with the rest of the system, whereas small local banks were less affected by the law's provision and shifted to a more central position in the network. Finally, these authors found that SOEs and private firms were strongly interconnected. Thus, contrary to Chiesi's (1982, 1985) well-known claim, in the early 1970s the centre of the Italian corporate system was not marked by the presence of two poles, one state-owned and the other privately-owned, clearly distinct one from the other, but by one large pole that included both SOEs and private firms. The dense web of IDs between SOEs and private firms was a consequence of the nature of state intervention and the formation of a big state-owned sector of the economy in Italy in the 1930s. In fact, the latter was conceived as a way to rescue ailing private firms hit by the Great Depression and a form of support to private entrepreneurship. A subsequent work by Rinaldi & Vasta (2012) expanded the analysis to the decade that followed the "Golden Age (1972-83) and found that this time span was marked by a sharp decline in the cohesion of the Italian corporate network which was due by an increasing disconnection between SOEs and private firms. By 1983, SOEs had been marginalized from the centre of the network just when they had reached their largest size in the Italian economy. The crisis of the 1970s made SOEs more reliant on state funding and exposed to political pressure. This seems to have made private firms more reluctant to appoint SOE managers on their boards of directors.

Imita.db constituted the main base for the construction of a smaller database for the longer time span from 1913 to 2017. This database was built in compliance with the guidelines of David & Westerhuis's (2014) international corporate networks project and includes the top 250 firms (50 financials and 200 non financials) by total assets for eleven benchmark years: 1913, 1921, 1927, 1936, 1952, 1960, 1972, 1983, 2001, 2010 and 2017. As to directors, only members of a board of directors have been included, leaving out syndics. This database provides homogeneous data that serve to analyse the evolution of the structure of the Italian corporate network over more than one century and to compare it with the other countries included in the project.

For the benchmark years from 1913 to 1983 the data were drawn from Imita.db. For the remaining benchmark years (2001, 2010 and 2017), the top 250 firms were drawn from *Le principali società italiane*, the annual report on Italian joint-stock companies edited by R&S-Mediobanca (Italy's largest merchant bank). As this source does not report the names of directors,

for 2001 and 2010 we extracted them from Infocamere, a large dataset of Unioncamere, the association of the Italian chambers of commerce. Infocamere contains information regarding all businesses (both corporate and non-corporate) registered at any Italian chamber of commerce, including shareholders, directors, syndics, attorneys and balance sheets, starting from the late 1980s. For 2017, we instead extracted the names of the directors from Aida, the databank of the Italian joint-stock companies of Bureau Van Dijck.

Also this smaller database prompted fresh research (Rinaldi & Vasta 2014, 2018; Rinaldi & Spadavecchia 2022) that showed that the Italian corporate network was very cohesive from 1913 to 1960. The highest cohesion was observed in 1927, when the influence of the larger German-type universal banks was at its apex. Conversely, the network started to decline in 1972 and its disentangling became sharper in subsequent benchmark years (see Images 4 and 5). By comparison, Italy experienced an earlier, and sharper, decline of its corporate network than the other major advanced economies, especially Germany, France and the USA, as shown by decreasing density levels and increasing fragmentation of the components. Also, the drivers of the decline seem to have been different. In the other nations, the most important explanatory factor for decline was a conscious strategy by banks to disengage from industrial firms in the age of globalization and financial deregulation. In Italy the major drivers of the erosion of the corporate network were institutional shocks: the nationalization of the electricity industry in 1962, the privatization of SOEs in the 1990s and the incoherent reforms of Italian capitalism enacted in the same decade[11].

At the same time, the network kept being dominated by a large main component that in 2017 included nearly half of the firms in our database and represents an important sign of resilience and stability. Some central actors contributed to guarantee stability to the core of the network: Mediobanca (Italy's largest investment bank), the state (through the SOEs that escaped privatizations in the 1990s) and some entrepreneurial dynasties and – after the new 1993 Banking Law reintroduced universal banking in Italy – commercial banks and insurance firms (and the latter is an evolution opposite to that which took place in the other major industrialized nations).

5. *Sources, databases and methodology: the IFESMez database for the Naples area*

Less explored than national corporate networks, regional and local networks are an emerging field for the use of SNA in historical perspective. The IFESMez (acronym for Imprese, Finanza, Economia e Società nel Mezzogiorno = Firms, Finance, Economy and Society in Southern Italy) database is a novel source in this field[12]. The primary source for this database is Mercantile Court archival funds (from 1883 on, Civil Court) available at the Naples State Archive. The database collects data from official documents (e.g., memoranda of association, balance sheets, appointments of directors, minutes of general meeting, etc.) provided to the courts by firms of any legal form. The universe of firms includes firms legally registered in Naples and firms that are

[11] A set of incoherent reforms of Italian capitalism was enacted in the 1990s. The new 1993 Banking Law, inspired to the coordinated market economy model (Hall & Soskice 2001), reintroduced universal banking in Italy, i.e., an institution potentially conducive to the generation of IDs. Conversely, the new 1998 Corporate Law was inspired to the liberal market economy model and had the goal to improve minority shareholder protection, thereby reducing the scope for IDs (Simoni 2020). The latter was followed by new regulations explicitly aimed at curbing IDs, which – according to the new dominant shareholder value approach (Lazonick & O'Sullivan 2000) – were seen as one of those rent-seeking institutions that should be replaced by free market competition. Thus, the "Preda Code" was introduced in 1998, a set of self-regulatory best practices to be adopted by listed Italian firms that, after its 2002 update, were explicitly aimed at curbing IDs. In 2011 the "Save Italy" decree enacted by the Monti government introduced a ban on IDs in the financial sector. Since then directors of banks, insurance firms and finance-companies have not been able to hold seats in any competing financial firms or groups.

[12] The database is accessible on line: www.ifesmez.unina.it

registered elsewhere but operate in Naples, or firms that are linked to actors and firms in Naples through actors that are co-shareholders, directors, or managers. Archival data have been integrated with information drawn from other sources such as grey literature, publications (i.e., journals, books, etc.), electronic sources, genealogies, etc. Since Southern Italy's business activity extended beyond boundaries that varied over time, data collection has required the spatialization of archival and printed sources. Thus, data have been collected from Italian, French and Swiss archives and libraries (State Archives and Notary Archives of Naples; Italy's State Archine in Rome; CARAN, CAEF and Municipal Archive in Paris; CAMT in Roubaix; National Libraries of Naples, Paris and Geneva)[13].

Overall, the IFESMez database contains information about 3,500 firms – founded and/or operating in Naples and its province – and nearly 28,000 individuals for the 1800-1913 years. Information on firms includes the start/end date of its life, the main objective of the firm as stated in its founding act, legal form (partnership, limited liability, joint-stock, etc.), sector of activity, legal address, starting capital and yearly balance sheets, mergers and acquisitions, the number of offices, and the names of individuals or other firms related to the firms at different levels, including owners, shareholders, partners, managers, directors, syndics, etc. Information on individuals includes sex, date of birth, legal address and the name of other individuals and firms that related to the individual for whatever reasons. The construction of the database has been specifically designed to detect network ties both within firms and between firms and individuals. The actor-by-firm ties are based on the individuals' roles within firms, such as founder, partner, shareholder, chairman, CEO, director, syndic, notary, executive (e.g., general manager), etc.

The IFESMez database triggered new findings on business networks and persistence of economic elites in Naples and Southern Italy in the 19th century, seen as a factor that slowed down modernisation. Traditional pre-unitary economic elites persisted well over such a major institutional shock as Italy's political unification in 1861. Their long-term business relations established in the Bourbon pre-unitary period, the capacity to develop strong collusive ties with potential competitors – i.e., foreign actors interested in operating in Southern Italy after unification – and closeness to politics both before and after Unification explain how Southern economic elites were able to entrench their power positions. Finance played a crucial role in determining persistence of Southern elite. In fact, network power was mainly associated with participation in financial firms, both before and after Unification, which however brought about a functional change from insurance towards banking (Schisani *et al.* 2021).

Participation in public utilities was also associated with network power. Financial intermediaries controlled by traditional local elite were willing to fund ventures of transnational business groups in Southern Italy's utilities. The latter were thus relieved of the burden to establish their own financial industry in the host region. In this way, traditional elites curbed potential increasing competition in Southern financial sector after Unification. In Naples, the municipal government controlled by traditional local elites granted monopolistic control over the city's lighting provision to the local utility company controlled by foreign capitalists, when other Italian municipalities headed towards public utilities municipalisation (Schisani & Caiazzo 2016).

6. *Sources, databases and methodology: the networks of J.P. Morgan & Co. from 1895 to 1940*

In the literature on SNA, IDs are considered affiliation ties or ties that represent shared characteristics between different nodes in a network. The term "affiliations" usually refers to membership or participation data, such as when we have data on which actors have participated in which events. These ties are significant because often the co-membership in groups or events is an

[13] For a detailed description of the database, see Schisani & Caiazzo (2016) and Schisani et al. (2021).

indicator of an underlying social tie. An affiliation tie can also represent an available path between nodes without having to show that path was actually taken. Co-participation can been seen as "providing opportunities for social ties to develop, which in turn provide opportunities [for] things like ideas to flow between actors" (Borgatti & Halgin 2011).

One of the best known studies of affiliation ties is Davis *et al.*'s (1941) *Deep South*, which analysed the overlapping participation of Southern society women and the way in which racism was embedded in the social and economic organizations of the American South in the 1930s. Another landmark study is Padgett & Ansell's (1933) *Robust Action and the Rise of the Medici, 1400-1434* on "the centralization of political parties and elite networks that underlay the birth of the Renaissance state of Florence", which explained the importance of family ties to the network of Cosimo de Medici. Building on these and other studies (Mills 1956; Baltzell 1964; Dye 1976; Domhoff 2006), we engaged in an in-depth case analysis of the banking firm of J.P. Morgan & Co., focusing on the formation of their affiliation ties within the American financial community between 1895-1940.

The study of the Morgans' economic ties, especially their IDs, has been extensively investigated in both economics and sociology (see Roy 1983; Simon 1988; De Long 1991, 1992; Hannah 1997; Frydman *et al.* 2015). While the formal organization of their social ties has been less rigorously documented, the social nature of their business is well known. Private investment bankers were generally organized as unlimited liability partnerships, which meant that their financial data were not public. In lieu of this information, clients and investors relied upon monitoring the individual and social behavior of the partners as signals of their creditability and solvency. For this reason, the personal reputations of private bankers were extremely important as a signal to outsiders with regards the economic stability of their firm. Pak (2013b) has detailed how social ties in the form of family relations, social club memberships, and school ties enabled the Morgans to establish an institutional structure for cohesion within the firm, access to information and resources outside the firm through informal or extra-legal relationships not regulated by the state, a culture of exclusivity that signalled the firm's standing and its ties relative to their competitors or other elite bankers.

Prior to reaching these conclusions, however, it was important to ask how we knew that a specific kind of affiliation tie, social in nature, was a relevant measure to study the economic structure or function of the firm. Though qualitative data persuasively argue that social networks and social ties were important, our case study sets out to understand *which* social ties were the most relevant to study the internal organization of the Morgan firm and also their relationships to other firms. In our case study, whose results are elaborated at length in Pak (2013a), this author tested whether or not social clubs, specifically, were an appropriate measure. To do so we combined the study of the firm's economic ties, specifically the partners' percentage capital in the firm, their IDs, and their syndicate partnerships with the partners' memberships in social clubs. Her findings demonstrated first that social clubs were a useful measure to study their economic network. Second, they showed that their economic network was strategically organized in relations to its social network. Finally, they offered an explanation for how and why efforts by the government to regulate economic networks starting in the Progressive era were constrained by the institutional structure of the financial community.

To test if social clubs were relevant, we ran a correlation between the Morgan partners' social club membership with the percentage capital that a Morgan partner had in the firm. A partner's percentage capital in the firm was fundamentally an indicator of how central a partner was to the firm. The more percentage capital or liable the partner was for the profits and losses of the firm, the more central he was to the operation of the firm. This was distinct from the amount of capital that a partner had invested in the firm, but they were often aligned, meaning the partner with the greatest investment was also the most central to the firm. When Pierpont Morgan was alive, for

example, he far exceeded all partners for both, owning upwards of 40% in the firm's percentage capital and being liable for their profits and losses (Pak 2013a). Using a longitudinal fixed effect time series analysis, we found that Morgan partners active in core social club circles with other partners were more likely to increase their capital ownership in the firm in the following five-year period. Combined with the qualitative study of the records of the partners, our conclusion was that social clubs were an appropriate measure for studying the Morgan partners' social relationships as economic actors, one that allowed them to develop cohesion and build a sense of common identity as the reliance on family ties declined over the course of the 20th century.

After we determined that social clubs were a useful measure for determining a partner's position within the firm, we turned to the question of whether it was a useful measure for analysing the firm's external relationships—to clients and to syndicate partners, who could be other banks or individuals. First we studied whether there was any correlation between social club membership and the participation that firms were given in the Morgan syndicates. In order to identify a relevant group of firms within the banking community, we looked at the directors and partners of the top 18 national banking institutions as identified by the US House of Representatives in 1912 during their investigation on the concentration of money power or the Money Trust investigation (also called the Pujo hearings, 1912-13. Hereafter called the "Pujo dataset")[14]. Combining the Pujo dataset on IDs with the amount of syndicate participation of each bank in the Morgan banks from 1894 to 1912, we then correlated these data with the social club memberships of the Pujo bankers. The conclusion was that the Morgans tended to work more with participants with whom they had closer social ties meaning that those bankers with more board overlaps and social club overlaps had greater syndicate participation in the Morgans' deals than those who did not.

Then, in 1914 before the passage of the Clayton Anti-Trust Act, the firm announced that Jack Morgan (J.P. Morgan, Jr.), the then-senior partner after the death of Pierpont Morgan in April 1913, and several partners would step down from dozens of board directorships. The Morgans did not step down from all their IDs, which indicates that they had made specific choices. We used this historical moment as an opportunity to study if social club memberships had a bearing on which IDs the Morgans left. Gathering a dataset of all the directorships of the Morgan partners in 1912, we studied their overlapping social club ties with the 1481 directors over 215 clubs. The findings affirm qualitative data in the archives of the Morgan partners that they did not believe the loss of the IDs would affect their business, meaning that the Morgan partners had other ways of communicating with and accessing information and resources of the companies, whose boards they left[15]. We also found that the Morgans were not connected to a majority of the directors but a small group of elite directors, which indicating a level of hierarchy within the financial community. In other words, the financial community did not have to be entirely cohesive overall in order for bankers to use their social *and* economic ties strategically, which had the impact of making it more difficult for the government to regulate the community simply on the basis of their economic ties.

Similar to the process described above on gathering data on Argentinian, Chilean and Italian corporate networks, and on networks in the Naples area, studying the social and economic networks of the Morgan firm was painstaking, sometimes excruciatingly so. The analysis of the Morgan syndicate books alone took almost three years, to say nothing of the legwork involved in tracking down all of the issues of the *Social Register* for multiple cities (including the Index). But several advances in archival access have made it easier for researchers working today. Many issues of the *Social Register* have been digitized and are available on www.hathitrust.org. The Morgan syndicate books have also been digitized and are available through the website of the Morgan Library and

[14] To see how the 18 financial institutions and 152 corporations were chosen, see *Money Trust Investigation*, Part 14, 980-1003. Figures 1 and 2 are Exhibits No. 243 and 244, Feb. 25, 1913, two diagrams of affiliations between the Morgans and other bankers and their clients.

[15] Untitled document, undated but most likely 1914, Thomas W. Lamont Collection, Box 110-1, Baker Library, Harvard Business School. See also, for a related issue on reducing stock-holding interests, Forbes (1981).

Museum for the years 1882-1933, an invaluable addition to the field that includes the records of Drexel, Morgan & Co., J.P. Morgan & Co.'s predecessor firm. Prior to this, they were only available as actual paper historical artefacts and accessible at the Morgan Library in person[16].

Ultimately, the deep engagement with the archival historical records far outweigh the trials and obstacles. With SNA, we can also address one persistent challenge that historians face—the reality that we cannot simply assume our units of analysis are relevant for all times and places. The Morgan project demonstrates how SNA can also be used to both engage with the historical data and also question the validity of our assumptions about the meaning of data presented in the historical records.

7. New directions for future research

What are the new directions and applications of SNA in business history in a context where more and more digitalized archives will become available? As shown, business historians can use SNA in a creative and playful ways to engage with more recent debates and provide new original and plausible interpretations. Recently, one of the most outstanding results of research in this field has been to show the weakening of national corporate networks nearly everywhere in the world since the 1980s and the advent of globalization (David & Westerhuis 2014). But what are the reasons for this? Are they the result of corporate governance reforms explicitly aimed at limiting the size of boards of directors and the number of directorships each director can hold? Can they be because of a change in banks' strategy that chose to disengage from industrial firms as banks moved away from traditional lending towards fee-based forms of business, i.e., investment banking? What are the other factors contingent on the institutional setting of individual countries? And, more significantly, is this decline in cohesion leading to the end of national corporate networks and to a loss of a corporate elite (Mizruchi 2013) or to their recomposition into "small worlds" (Kogut 2012)?

Other possible areas for investigation include the emergence of transnational networks (Heemskerk et al. 2016; Murray 2016), and the role of regional networks. As we have seen, example, Vasta et al. (2017) and Rinaldi & Spadavecchia (2021) found that networks centered on local banks that link these to local industrial firms are a long-term structural trait of Italian capitalism. Schisani & Caiazzo (2016) and Schisani *et al.* (2021) have discovered new evidence on persistence of traditional elites in Southern Italy and their capacity to co-opt potential competitors. The disentangling of national corporate networks should also prompt the study of other networks than those of directors, i.e., shareholders' networks, syndics' networks (at least in Latin countries in which this figure exists), networks that are created by joint membership of think-tanks, policy-planning group, university board, employers' associations, philanthropic associations, or, in the EU, the European Table of Industrialists (Sapinski & Carroll 2018).

As the technology for quantitative analysis advances, other future avenues can emerge if and when SNA is combined with other methodologies, for example QCA analysis. Margaretic *et al.* (2023) have recently explored the impact of (de)globalization and macroeconomic configuration on IDs measures from different countries on the long term. The simulation, "They Rule", mentioned previously, has one weakness in that it is not a real-time representation of IDs. But future projects based on other countries could rely on information on real time, as the formation of company directories is constantly changing, and expanded to include simulations of the power networks of politicians, entrepreneurs or knowledge networks.

[16] See "Syndicate records of the Morgan financial firms, 1882-1933," https://www.themorgan.org/morgan-syndicate-books (November 30, 2022). Special thanks to Maria Molestina, Head of Reader Services, The Morgan Library and Museum.

Ultimately, as we have shown, SNA can be used to engage with the historical data and also test, rather than assume, that our questions or our units of analysis are relevant for the historical actors, times and places that we study. This is an insight that is worth remembering with or without the assistance of any quantitative tool or technology, but which SNA makes possible to see when we, as researchers, are open and willing to experiment to unlock the information that historical records already contain.

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Appendix

Image 1

Image 2

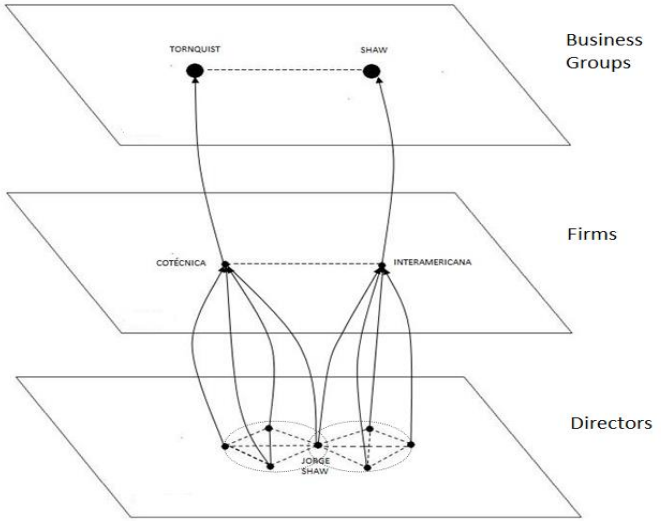


Image 3

RIVER PLATE DAIRY COMPANY.

Registered 1908. Directors: John R. Moss, President; Henry Reynolds (Vice-President); M. Leishman Runciman (Secretary); C. M. Rivero Haedo (Manager); J. Dodds Watson. Síndico: V. G. G. Scroggie.

12986. THE FIRST NATIONAL BANK OF BOSTON. Inscripto 14-4-1936 Banco San Martín 501. Casa Matriz, Estados Unidos. Balance 31-12-1970. Capital sucursal $ 2.191.354. Ganancia ejercicio $ 12.242.611. **Directorio:** James Edward Stebbins (V.P.), R. L. Crosbie (D.Gte.) CC. Luis F. Piaggio.

Image 4. Density (%) and isolated and marginal firms (%) amongst Italy's top 250 firms by total assets

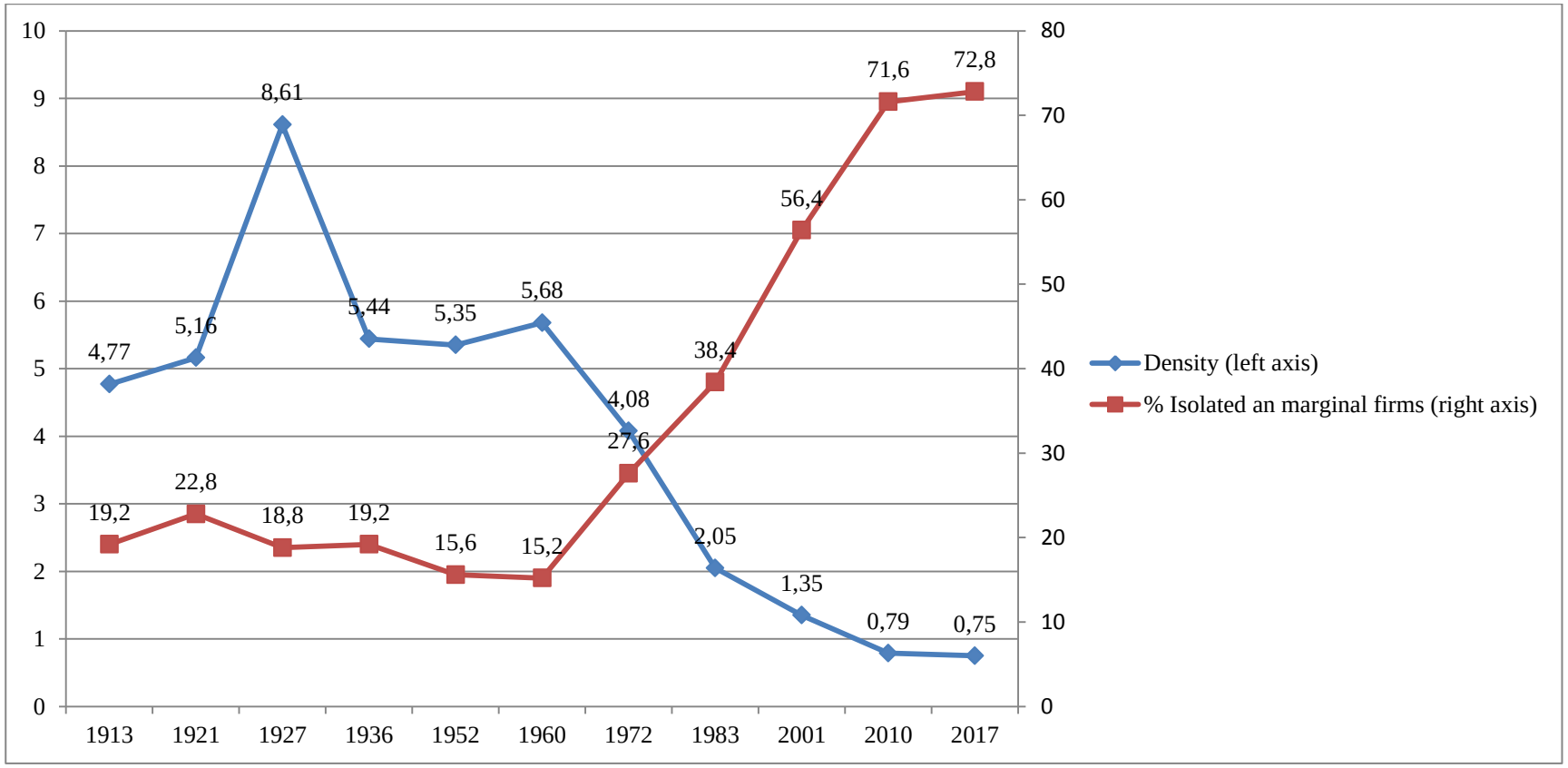
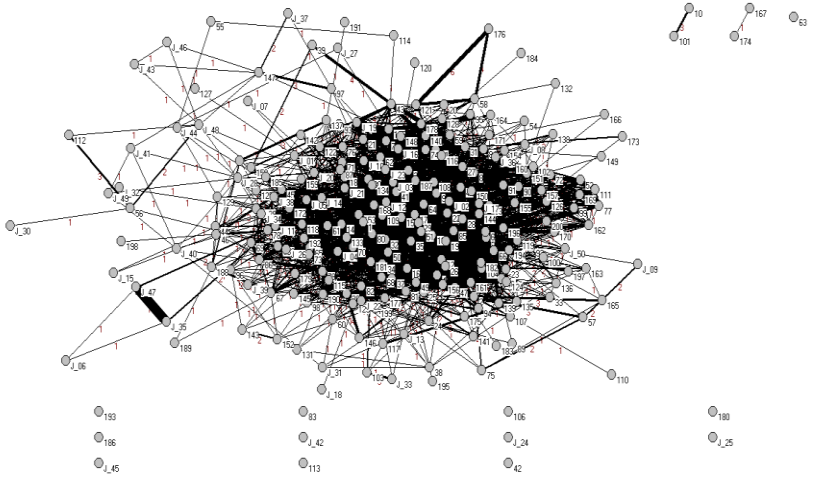
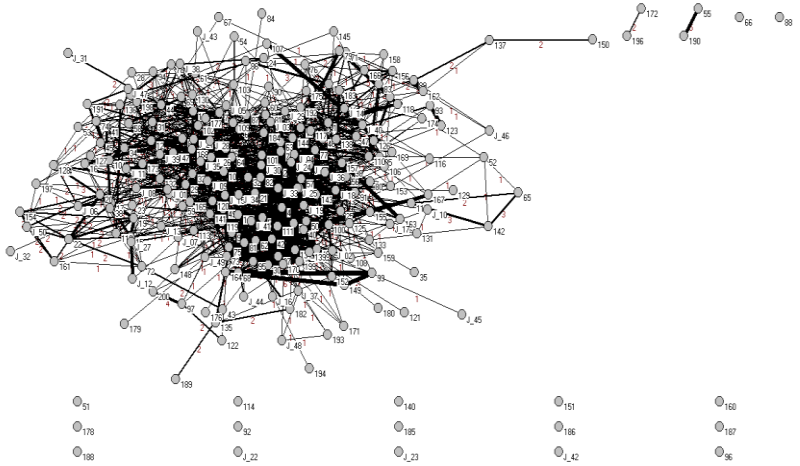


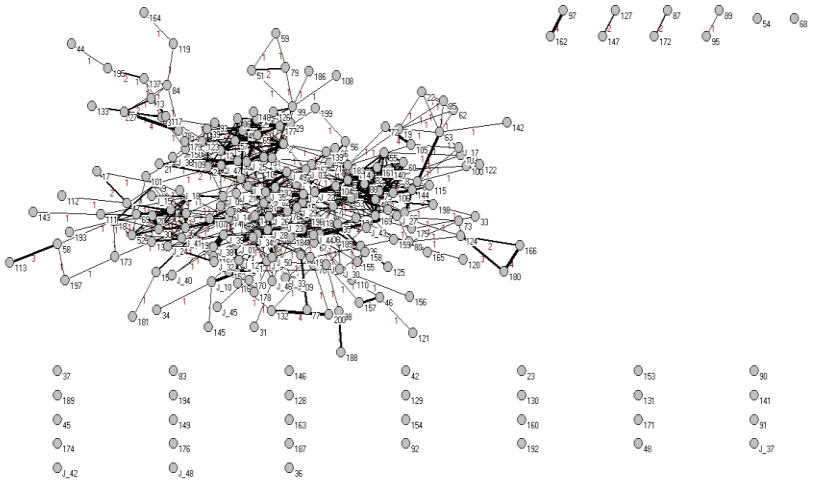
Image 5 – Network's structure of Italy's top 250 firms



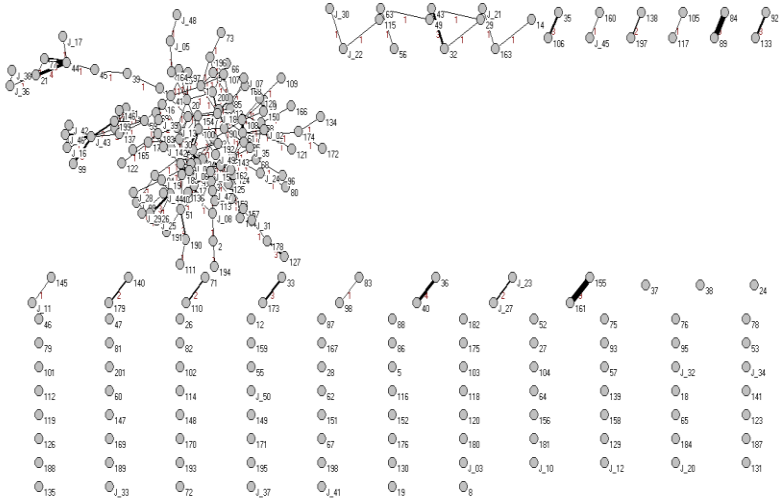
1927



1960



1983



2017

Image 3