

# Genesis of a research field: district, network, strategic network

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**Abstract** This article summarizes the changes since the beginning of the 1980s in the scholarly approach to organizational and economic research on Italian firms. Beginning with the study of industrial districts, which sparked a major reconsideration of the conventional wisdom, most scholars focused primarily on the significance of firm geographical proximity while marginalizing issues related to firm structure and strategy. Nevertheless, industrial district research eventually led to the question of firm networks, in particular how to manage relational capabilities and cooperation, both of which affect a firm's competitive position. This new analytical framework no longer dependent on either the single firm or an industrial sector has opened up new research perspectives that promise rich insights into socio-economic studies.

**Keywords** Network · Cluster · Interfirm connections · Relational capabilities

“Why it is that in every known capitalistic economy, firms do not conduct business as isolated units, but rather form cooperative relations with other firms, with legal and social boundaries of variable clarity around such relations” (Granovetter, 1994: 453)

## 1 The local laboratory

Late autumn in a professor's life signals an appropriate moment to retrace and reconsider those intellectual developments that have most significantly marked one's academic career. So rather than embarking on any new voyages I want to reconsider the long trajectory of research cast by students of Italian industrial

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districts over more than 30 years. Admitting my own preferences, I hope that I will be able to distill some new truths about the relationships between individual firms and the broader networks, clusters and economic sectors in which they operate. Since I began my own research in Prato in the late 1970s on the textile industry's changing, there has been a growing recognition that firm strategy explain economic evolution far better than studies limited to geographical location.

### 1.1 Discovery of the industrial district

Surprisingly for a very Italian debate emerging in the mid-1970s largely in response to the trade union movement's desire to stem the explosion of small firms where both strong unions and labor law enforcement were rare, over the next two decades economists, organizational scholars and political scientists from across Europe and North America recognized the industrial district as a rich laboratory to test key theoretical concepts central to their disciplines that extended from transaction costs to the nature of the firm and from trust in exchange relationships to the role occupied by networks in economic life. Such a turn was especially improbable since no scholars in the early research were such linkages suggested.

Among the first in Italy to provoke curiosity about Italy's densely nestled firm agglomerations was Becattini (1979), a economist teaching a stone's throw from the industrial city of Prato, renowned since medieval times for its wool yarn and textile production. Rejecting the dominant Anglo-Saxon framework that monochromatically viewed industrial organization success solely in terms of large, vertically integrated, managerially dominated organizations striving for manufacturing efficiencies through ever greater economies of scale and faster through-put speeds, Becattini dusted off some old tomes of Alfred Marshall, the neo-classical British economist. There, he discovered that many of Marshall's observations about Sheffield's highly geographically concentrated cutlery firms resonated with the quotidian rhythms of Prato's textile firms.

No longer a center of many large vertically integrated firms, Prato by the early 1970s was chock-full of very highly specialized independent small- and medium-sized firms performing just one or a few phases of the production process. But by relying on a complex chain of subcontracting they produced for final manufacturers who designed and sold the finished products but invested little or nothing in spinning wheels, looms or dyeing facilities. Instead of seeking internal economies of scale Prato's firms benefited from external economies of scale that provided deep and competitive markets in skilled labor, specialized machinery, and auxiliary services. According to Becattini this model both functioned and reproduced itself in large measure because of an allegedly powerful homogenous community political and social culture that simultaneously promoted competition while suppressing social conflict. Not only were entrepreneurs rewarded for their hard work and innovation, but so were workers who could easily become employers by opening their own small firms. At the same time, strong cooperative sentiments nourished by deeply ingrained leftwing culture and reinforced by local political and social institutions supposedly propelled firms to improve wages and working conditions but never at the cost of relentlessly innovating products and processes.

Contemporaneously to Becattini's perambulating around Prato's wool mills, Brusco (1975) was visiting many of the ubiquitous small engineering firms dotting the plains surrounding Bergamo, about an hour northeast of Milan. Notwithstanding a commission from the federation of mechanical workers (FLM), which viewed these mostly non-union small firms most warily, Brusco counter-intuitively discovered a manufacturing world boasting economies of scale equal to or even greater than those of large vertically integrated firms.

First, small firms frequently possessed machinery not unlike that of large firms, since large vertically integrated firms often were just an agglomeration of various individual workshops performing different work processes under a common legal authority. Second, in the mechanical-engineering industry numerous work tasks are neither integrated nor continuous so the input and output frequently does not flow smoothly from one workshop to the next, resulting in machinery and labor remaining idle from time to time. In contrast, small firms usually managed to better saturate their specialized plant and equipment by serving many different customers and thereby avoided similar bottlenecks and standstills. Third, the possibility to choose from among a large number of specialized producers permitted greater variations in both design and products. Fourth, multipurpose machinery and simpler organizational structures also created significant value from economies of time, which can be defined as both the capacity to react swiftly to changes in demand and minimizing the time a product or services takes to reach the marketplace. Furthermore, Brusco's investigation revealed that small firm success increasingly depended on producing and designing unique goods rather than fulfilling excess capacity orders for customers whose own machinery and plant were oversaturated.

Becattini's and Brusco's initial writings on the interrelationship between small firms and their communities reflected a broader movement among Italian academics searching for the peculiarities of economic life outside the industrial areas of Lombardy and Piedmont with their huge factories, assembly line workers and harsh social conflict. Bagnasco's *Third Italy* (1977) framing the regions of Tuscany, Umbria, Emilia-Romagna, Veneto and the Marches painted a land where craftsmanship, interclass solidarity, and industrial development had generated significant wealth but without dangerously eroding Italy's traditional life. Later these themes were developed by Anglo-Saxons like Sabel, who showed that artisanship was still alive and Putnam's (1993) path-breaking study connecting *Third Italy's* economic success to its deeply rooted micro-level democratic institutions.

Most iconoclastically, Piore and Sabel (1984) marshaled empirical and historical data not only from the *Third Italy* but also from the United States and Germany that heralded industrial districts and clusters as a radical rupture with the century-long tradition of Fordism and mass-production. Characterized by its assembly lines, heavily unionized work force and bureaucratized rules, Fordism came under attack by leftist economists who blamed it for having contributed to the economic stagnation that plagued the industrial democracies throughout the 1970s. Piore and Sabel proposed transforming this allegedly rigid technical and social model with small firms employing skilled workers and nested in collaborative political-economic communities, essentially modeled after Italian industrial districts.

Operating multipurpose machinery these firms could rapidly design and flexibly manufacture both customized and highly differentiated goods to satisfy the protean consumer tastes of ever more affluent and demanding customers and avoid the problem of massive unsold inventories of mass produced goods no longer in demand. However, valid Piore and Sabel's claims—and the passage of time has increasingly tarnished most of them—their work helped unleash a wide-ranging theoretical discussion about the nature and form of industrial organization at the end of the twentieth-century.

Approaching the industrial district debate from the very different vantage point of industrial strategy, Lorenzoni's (1979, 1983) study of Prato's textile industry in the late 1970s posed an alternative research agenda. Confirming Simon (1948) in his assertion that cooperation occurred neither spontaneously nor randomly, Lorenzoni detailed how the decentralized production of textiles was organized through firm constellations, which were simply groups of independent subcontractors completing orders for a leading firm. And much like even the most talented musicians in an orchestra need a conductor, each constellation was guided by a firm that had designed the goods, bought the raw materials and had contracted with customers to sell the finished product. Vertical control could now substitute for vertical integration to produce complex manufactured goods using a very fine division of labor without owning the tools of production or employing the workers who operated them. In Prato single firms with minimal or no manufacturing capabilities surpassed vertically integrated firms because of lower costs, production flexibility and superior innovation.

Intensive and complex transactions occurring in Prato and elsewhere among large numbers of buyers and sellers not only challenged the prevailing consensus upholding the superiority of vertical integration; it also posed difficult questions for Oliver Williamson's (1975, 1985) theory of transaction cost economics (hereinafter TCE). Noting how groups of Modena mechanical engineering firms revolved around larger businesses much like satellites revolving around larger bodies, Lazerson (1988) asked how was it possible that these firms collaboratively produced various kinds of customized goods relatively free of the vexatious problem of opportunism that Williamson said was especially prevalent in such situations.

Very briefly, Williamson's TCE theory holds that extensive and regular transactions between firms of asset specific goods and services—those non-standardized goods and services not readily available off the shelf—undermines firm competitiveness by forcing firms to pay higher than market prices. Higher prices arise from opportunism, which invariably occurs when firms exploit their control over asset specific goods and services by charging above market prices and engaging in hold-ups. Writing detailed legal contracts and extensive monitoring are responses to such problems but each imposes non-trivial costs further jeopardizing competitiveness. For Williamson the efficient market solution is for firms to crush opportunism by exercising their hierarchical power by acquiring or merging with their exchange partners to create vertically integrated organizations.

Studies over the last time have demonstrated that in this new project what is needed is to avoid viewing economic actors and action through the prism of the industrial district or some other geographic construct, a process that inevitably

blinds one to the remarkable entrepreneurial diversity that differentiates one firm from the next. Though some scholars may prefer it otherwise, running a business in an industrial district is not an enterprise guided by an invisible collective or communal hand.

## 2 A new organizational form

Following the triggering impact of early studies, some empirical analyses indicated the emersion of the network phenomenon.

In a network study in the mid of the eighties of a very large scrap metal recycling district located near Rimini on Italy's Adriatic Coast, it emerged that random exchange relationships hypothesized in a traditional market place with large numbers of buyers and sellers were absent (Fig. 1). Rather the five very medium sized firms and the dozens of smaller scrap metal firms traded repeatedly with only a limited subset of district firms despite all of these firms being proximate to each other. Much like observing a dense forest from a distance that initially appears harmonious, symmetrical and self-contained but later on is revealed to contain flora and fauna that is anything but, it can become manifest that firm proximity left much about firm behavior unexplained.

A similar organizational model is subsequently depicted by A. Markusen who set the "hub and spoke" model against the impossibility to determine the descriptions emerging from researchers in the district field. In particular, although the description of districts emphasizes a high level of homogeneity among actors, Markusen (1996) highlighted the diversity in terms of role that different actors hold.

An examination of the change in network structure since the 1970s makes it manifest why rapid and sudden shifts in a firm's network position are unlikely. When Lorenzoni and Ornati (1988) anticipated the concept of networks early on by using the model of constellations to map the variety of firm networks present in Italy, most firms were engaged in what is best described as providing similar goods and services to make a finished product for sale to either a final manufacturer, a

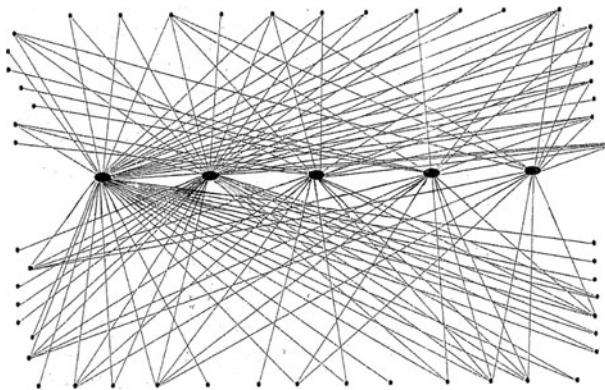


Fig. 1 The Gambettola cluster

wholesaler or retailer. For example in case of horizontal production it could be a gear producer subcontracting to other specialized firms to make a finished gear for sale to an automobile company. In case of vertical production it could be a textile manufacturer subcontracting to specialized firms to make finished cloth or yarn.

They mapped an evolving network form revealing a rapid shift away from the traditional contractor-subcontractor model of leading firm dominance where the manufacturing firm would simply coordinate separate and distinct one-way exchanges of goods and services with each subcontractor. Even then the network system exhibited increasingly complexity extending from mutual exchange to extensive cooperative interdependence. In such cases the leading firms moved away from simply receiving goods from subcontractors and were increasingly devolving authority to subsidiary members of the network who would then share responsibility to organize the exchange of semi-finished goods and services among themselves.

But since Lorenzoni and Ornati's first mapped constellations of leading firms engaged in essentially horizontal or vertical production, which were relatively homogenous in that all were engaged in manufacturing, there has been a qualitative change in the complexity of network structure (Fig. 2). Moreover, today leading firms are far more likely to have extended their reach into distribution and sales through both the acquisition and control of retail and franchise outlets.

Another kind of large scale network is one that brings together actors engaged in manufacturing goods with those involved in downstream activities who create value by selling the goods. Winter and Szulanski's (2001) work focused on how firms invest substantial resources to create models or templates for retail and distribution systems that can then be used to rapidly launch multiple logistic and retail outlets across both different kinds of markets and countries in very rapid succession.

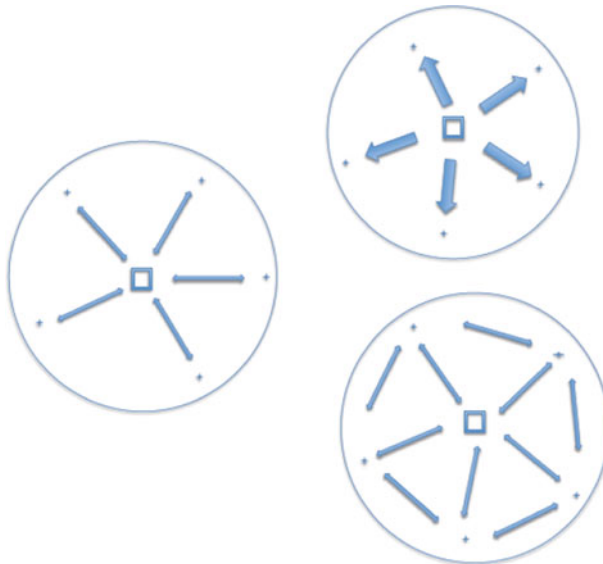


Fig. 2 The network forms' evolution (Lorenzoni and Ornati 1988)

Adapting these templates requires large investments to achieve a skillful reinterpretation of local know-how and practices into routine procedures that can be easily replicated across long distances and among a large number of actors possessing varying and uncertain absorptive capabilities (Szulanski 1996).

Firms that link their supplier networks to either franchises or directly owned retail outlets represent an instructive example of how a dual network integrates two asymmetrical sub-networks possessing internal mechanisms requiring distinctive capabilities. Success in doing so requires both a very broad spectrum of relational capacity with external actors and a strong coordinating capacity within the organization that orchestrates and manages the two networks.

The research field not only urges to reconsider the traditional units of analysis, but also to deal with heterogeneity among the actors involved, with increased capabilities to tackle with the underlying issue (Fig. 3).

In Italy a few relatively large firms engaged in mature sun-set industries—particularly the so-called fashion sector comprising textiles, machinery, furniture, shoes—have made the leap from selling to wholesalers and retailers to actually controlling extensive distribution and sales networks. Similar developments have been recorded as well in the advanced technology sector both at small firm level and at large firm level, engaged in living up various LEGO pieces and crafting a new viable organization structure (Berger 2006). Very large industrial organizations as well have undergone parallel developments in which networks are created to closely link planning and development, production and final sales in order to minimize “time to market”. Common to the constellation firms depicted by Lorenzoni and Ornati, large firms have organized their suppliers within various layered networks which decentralize responsibility and increase mutual reciprocity (Imai et al. 1985).

Social network analysis has attempted to make sense of how power relationships and interdependencies in these highly complex networks linking highly diverse actors spread over across great distances are both maintained and reproduced. Burt (1982) analysis gave priority to the importance of “structural holes” within organizations that provide key actors with the opportunity to gain strategic information and positional advantage by occupying such places. The limitation of such purely structural analyses is that it offers few practical insights into how organizations function (Pfeffer and Salancik 1978) and makes no allowance for differences in the social content of social ties. Uzzi’s criticism of Burt’s highly structural and asocial approach seems to ring true: “A network structure rich in structural holes is virtually all that is needed to induce information and resources to flow through the network like electric current through a circuit board” (Uzzi 1997).



Fig. 3 The dual network form

The priority Uzzi gives to real socially embedded relationships arises out of the work of Mark Granovetter's (1973, 1985), whose work has great relevance for those studying industrial districts and clusters, even if it is rarely cited. In contrast to the widespread presumption that culturally and socially homogenous social relationships are positively correlated with economic dynamism, Granovetter strongly suggested that economic actors benefited far more from contacts with casual friends and acquaintances with whom they interacted infrequently. Unlike close friends and relatives whose social contacts and channels of information frequently parallel one's own, casual friends serve as bridges to provide new social and economic contacts that would otherwise be inaccessible. Granovetter's findings lend support for the strength of extensive and distant networks that are based neither on homogeneity nor strong identity of interests.

Granovetter's counterintuitive insight about the superiority of weak ties over strong ties eventually led him to theorize how the character of economic activity is socially embedded. His theory of social embeddedness should also be a requisite for any discussion of the workings of industrial districts, social clusters or networks. Embeddedness assumes that economic action is framed by the history, character, and context of specific social relationships. According to Granovetter the existence of dominant social and cultural norms and values fails to explain how economic actors actually behave. So what is crucial here is the need to specifically examine the intricacies of specific forms of social and economic action instead of assuming that behavior follows any script drafted by those espousing the dominant community values.

Brian Uzzi's study of how social embeddedness affected economic action in New York City's geographically defined garment district should serve as a warning for those who automatically assume that the kinds of dense social relationships found in industrial clusters or districts invariably benefit economic exchange. Uzzi showed that clothing contractors who had developed a mix of both long-term and arms-length relationships with subcontractors but not exclusively so benefited from economies of time, better information and improving learning and innovation, advantages not accruing to those having mainly arms-length relationships with their subcontractors. On other hand, contractors who had exclusively strong ties with subcontractors were more likely to suffer because they were unable to impose sufficient market rationality.

In the same vein, taking from lighting industry, Capaldo (2007) claims that the ability to integrate a large setting of heterogeneous weak ties and a core of strong ties is a distinctive relational capability.

In a span of a decade a flow of different studies conveyed toward the acknowledgment of new organizational form. Walter Powell's (1990) definition of networks as a distinct organizational form represented a conceptual breakthrough that helped conceptualize the novelty of the intense transactional activity found among firms that fell outside of the traditional posts of markets and hierarchies. Much as Piore and Sabel's reference to Italian industrial districts served to expand the horizons of the debate about economic organizations, Powell's selection of small-firm business networks as a new emerging organizational form alerted of the need to analyze industrial districts in terms other than that of proximity and homogenous social communities.



In a business network members are selected on the basis of their different capacities rather than undifferentiated members of a neighborhood association coming together just because they share interests related to their propinquity. Network members are neither homogenous nor fungible and rather than developing spontaneously are intentional constructs. Using a network lens to observe how the industrial district actually operates rather than imaging it as a socio-economic community actually results in the identification of specific actors and outcomes rather than vague generalities that do little to remove many of the mystifications about the industrial district. A case in point is Best's (1990) intriguing idea of the presence of a "collective entrepreneur" in the industrial district encompassing public and private organizations as well as actual entrepreneurs in pushing district firms toward making product and process improvements. While such a theory may be attractive to those uncomfortable with the notion of an entrepreneurial capitalist, the empirical evidence for a "collective entrepreneur" is actually scant to non-existent. On the other hand, network research shows that leading firms have been crucial in both developing and spinning-off new ideas and technology.

### 3 What relational capability is (and is not)

The network form reveals how the inter-firm architecture evolves at the macro-level and therefore requires a micro-organizational level of analysis (Gavetti 2005). To better understand network mechanisms at their different stages of development one needs to examine their capabilities since new organizational forms require consistent idiosyncratic competencies.

The relational capabilities construct attempts to trace essential elements of network identity, focusing attention on both the different organizational ties and the individuals occupying boundary-spanning roles. As I explain later in greater detail, attention to relational capabilities not only extends beyond brokering and contracting of transactions but also encompasses boundary spanning and absorptive capacities both in the realm of economics and the wider society. Moreover, it embraces past history in the sense of accounting for previously constructed economic and social ties (Gulati 1995).

Once the unit of analysis is no longer a single transaction but multiple transactions cost accounting takes on a different form and the economics of interaction among companies changes. What this implies is that more importance must be placed on the process by which continuous exchange generates learning and therefore reduces coordination costs. In considering a firm's costs these elements should never be secondary to the question of transaction costs economic.

Analysis on interconnected firms contradicts the hypothesis that cluster networks are self-organizing units where networks depend on leadership and relational capabilities that are both planned and orchestrated. Research has shown the value of alliance units dedicated to managing multiple alliances (Kale et al. 2001; Winter and Szulanski 2001) and constructing relational capabilities to realize the intended objectives.

Early research on buyer–supplier relationships opened a new field examining the experiences of managing interconnected organizations. They suggest that the existence of hierarchical authority is unrelated to issues raised by TCE (Eccles 1981; Dyer 1997; Lorenzoni and Lippardini 1999). Instead a leading firm is required to coordinate a number of long-term, specialized suppliers engaged in iterative exchanges of products or services over extended periods of time. The suppliers are expected to both invest in specialized plant and equipment and maintain and extend their skills. It is not uncommon that one's own subcontractors also furnish goods and services to competitors of the leading firm. (Takeishi 2001). Dyer's (1997) study of Japanese automakers showed the following practices both reduced transaction costs and improved knowledge transfer and learning: repeating transactions with a selected group of suppliers, transacting with that small supplier group to achieve economies of scale and scope, sharing extensive inter-firm information to reduce asymmetries and relying on non-contractual, self-enforcing safeguards irrespective of contractual timelines.

Similarly, Lorenzoni and Lippardini's (1999) analysis of the packaging machinery industry revealed parallel developments in Italy to those observed in Japan among which were the key role of first tier suppliers who, while fewer in number improved product quality, enhanced their skills lowering production costs in making specialized components, strengthened relationships based on iterative transactions and ultimately jointly invested in specific assets.

Speaking more broadly, a relational capability exists when a set of resources is purposefully leveraged to achieve strategic objectives. From a resource-based view perspective (Barney 1991), relational capabilities relate to the exercise of deploying unique resources located across boundaries. Much like the case of resources, above normal returns are likely to be associated with uniqueness of a firm's capabilities but as Lavie (2006) suggests the nature of the relationship may matter even more. For this reason, a distinctive relational capability could help a company in rent generation and appropriation.

In the dynamic capability approach (Teece et al. 1997), a relational capability is both a legacy of previous experience and the product of the continuous reconfiguration of the resource base of an organization. Accordingly, relational capability is critical for evolutionary fitness, by which is meant how well a specific capability enables a company or an ego-network to make a living by designing, orchestrating, and reconfiguring its relational base (Helfat et al. 2007). For this reason, possessing a distinctive capability to set and continuously reconfigure boundaries may enable the network itself to prosper by avoiding those relational rigidities arising from routinization and exploring new domains.

A relational capability may definitively allows a company to avoid bottlenecks in operations or more importantly learning processes. This helps to strengthen one's reputation and trustworthiness because failures in accessing and combining resources can inhibit an organization from receiving the accessing of talented people and opportunities.

The quality and effectiveness of relational capabilities relates to the quality of the human capital of an organization. Like other capabilities, these capabilities incorporate the knowledge of individuals and teams in performing tasks (namely,

connecting to and shaping of relational capital). Much of this knowledge is “recalled by doing”. Thus, exercising the relational capability preserves the capability and the knowledge underpinning the capability.

Researchers began to question whether a relational capability in accessing and orienting resources to a desired end is related to a firm’s participation in ongoing networks composed of inter-organizational or interpersonal ties. According to them, it is the intense participation in social structures outside the firm’s boundaries that ultimately refine the ability to get the most out of valuable external resources, which permit the discovery of unforeseen new opportunities (Gulati 1999; McEvily and Marcus 2005).

It now should be clear what a relational capability is and is not. A relational capability is not only about the process of designing and structuring a portfolio of ties but also concerns deals with tasks to be performed at different levels: (1) identification of resources; (2) access to and involvement of such resources; (3) resource-pooling and leveraging (Helfat et al. 2010).

To perform these tasks relational capability counts on: (a) a certain amount of ongoing, resource-pooling competitive capabilities; (b) a set of organizing processes and principles used by a firm to increment the value of network resources (Helfat et al. 2010).

Furthermore, a broad set of preliminary and complementary capabilities is needed. First, it is essential to scan the competitive landscape in search of those resources and capabilities that best fit both the specific requirements of a project and the ongoing resource base of a company (Gulati 1999). This ability is critical for both exploration- and exploitation-oriented firms. Second, to gain access to a social structure comprising relationships requires the firm or network orchestrator to not only possess a distinctive capability involving tangible resources (often under condition of uniqueness and scarcity), but also an emotional involvement in the partnership (Lorenzoni and Lipparini 1999). This is the case of partner selection when common cultural identity is stronger than any rational analytic argument. Third, because resources are not acquired in isolation, their combination and subsequent leveraging is critical. This element of relational capability reinforced by past achievements is also a pre-requisite to the development of an effective resource-pooling capability (Ahuja 2000), along with combinative (Kogut and Zander 1992) and integrative capabilities (Grant 1996; Helfat and Raubitschek 2000). As to the integrative capabilities much evidence provides support for how organizational capabilities require integrating specialist knowledge based on individuals (Grant 1996).

#### 4 Strategic network

Emerging from the previous argument is that inter-firm relationships are strategic resources. Managerial practices therefore must become more deliberate in order to articulate and exploit underlying opportunities (Lorenzoni and Baden-Fuller 1995). As Gulati et al. (2000) wrote: “Strategic networks are composed of inter-organizational ties that are enduring, are of strategic significance for the firms

entering them and include strategic alliances, joint ventures, long term buyer–supplier partnerships and a host of similar ties” (p. 209). This means that network relationships in which companies are deeply embedded are shaped and managed to influence companies performances.

The spectrum of resources that companies control (Barney 1986) are enlarged, since most resources can be accessed through transactions. Moreover, strategic opportunity selections extend beyond the constraints imposed by the weakness of internal resources. Resources become tradable (Dierickx and Cool 1989) and the resource based view is not fully applicable unless it is extended to incorporate resources arising from networks of interconnected firms (Lavie 2006). The dynamic capability view fully encompasses both the strategic network role and the economics of internal resources (Teece et al. 1997).

Strategic networks offer a solution to the missing pieces of the puzzle by combining dispersed resources and realizing the bridging of different sources. Partners are playing different roles and filling different activities within the network and provide a distinct shape to the project, where a strategic center plays a triggering and coordinating role.

The traditional network analysis takes as given the structural form. But in its early stages it considers it emergent and then becoming more deliberate as managerial practices complement product marketing strategies. Organizing and strategizing become the two sides of the same coin since the network needs to be built simultaneously so that structured networks co-evolve with product market strategy.

In order to better appreciate the importance of strategic networks within the conversation of strategic management, researchers need to appreciate the contribution of some distinctive features in company behavior to the creation of sustainable strategic advantage. This contribution arises from the isolating mechanisms and casual ambiguities when compared to other firms or competing web of partners.

#### 4.1 The creation of a strategic center

As Lorenzoni and Baden-Fuller (1995) have argued the creation of a “strategic center” is needed to gain advantage when leveraging a web of partners. The strategic center is a rule setting structure that promotes the internal capabilities to manage partner relationships as well as developing partners competencies in order to add value. It also provides direction and assesses outcomes when working with partners so as to achieve behavioral consistency from them.

Similar conclusions were reached by Kale et al. (2001) while observing companies creating alliance management units to coordinate partnering. In doing so they achieved improved results. Winter and Szulanski (2001) discuss the “dynamic capabilities of the center” and offer some examples of these capabilities in constructing a template for both replicating models of retail branches and information packages to be distributed to the relevant peripheral network actors (Arrow Core).

While it is easy to declare the strategic intent (Prahalad and Hamel 2005) to be realized through a web of alliances it is hard create and sustain it. The intent

encapsulates the strategy, but it needs to capture the imagination of the employees and their partners. As Lorenzoni and Baden-Fuller (1995) wrote: “Common to all business ideas based on strategic networks, there is a notion of partnerships which includes the creation of a learning culture and the promotion of system experiments so as to outpace rivals in competing organizations. The strategic centers view their role as one of leading and orchestrating their systems. Their distinctive characteristics lie in their ability to perceive the full business idea and understand the role of different parties in many different locations across the whole value chain. The vision of the organization is not just in the minds of few managers, it is a feature that is shared throughout the organization” (p. 153).

#### 4.2 Open innovation

Strategic centers acknowledged early on the “market for ideas” construct (Arora et al. 2001) and practiced open innovation (Chesborough 2003) by licensing or acquiring ideas from others that are developed and exploited as a means of creating and mastering new technologies. Sensing and scouting become elements of the strategic center’s ability to locate opportunities beyond its boundaries.

This is a common practice in new companies where knowledge spillover from research institutions or corporations represents the birth of a new organization that essentially leverages knowledge generated outside and developed inside. For those large and long established organizations making obsolete or mature products open innovation represents a valuable option to accelerate the pace of innovation by exploring uncharted territory. The success of past experiences generated overconfidence in the existing internal core technologies while activities outside the firm’s boundary upset usual routines and represent a real challenge to conventional practices. This very much captures the proverbial “not invented here” syndrome of those involved in the development of new areas of knowledge. Therefore, open innovation gained momentum in the search for new opportunities.

#### 4.3 The perception of the competitive process

Firms usually adopt different strategies and different approaches to the market. The distinctive character of the strategic center is to allocate fewer internal resources while leveraging those of the external partners in new combinations to achieve improved outcomes. Managing partnerships and relationships requires an unusual ability to collaboratively define a project with both outsiders and also insiders. The concept of partnership demands creating a culture of learning and combining heterogeneous resources so as to surpass rival organizations. Strategic centers view their role as that of alliance orchestrators, which means being able to perceive the entire picture of strategic maneuvering and understand the role of all the different parties across the value generating system. Creating new strategic boundaries is not just an idea in the minds of a few managers; it is shared throughout the organization. It is not neither casual nor accidental but results from a long process of trial and error.

The strategic center functions as a triggering entity, designing each network and transferring the learning experiences and experiments that occur in the knowledge-based network to individual firms in the adaptive network (Doz et al. 2000).

By strengthening and implementing their partners' capabilities and competencies, strategic centers encourage the partners to take a holistic view of the network, seeing the collective as a unit that can achieve competitive advantage similar to a complex integrated firm that spans across markets.

Joint ventures, functional agreements and cross shareholdings are mechanisms used to both forge common ties and a shared perspective while uniting firms against others in the industry. Stemming from their greater levels of commitment and interchange, firms involved in alliances normally exchange ideas about strategy to look for new road maps and that point in new directions. Networks represents the essence of inter-firm collaboration where the lead firm seeks to go beyond merely influencing the actions of their partners but rather to form a reciprocal relationship with them in the sphere of ideas and information.

Most organizations view their partners as operating outside the boundaries of the firm and even alliances are usually not judged as an integral part of the organization. On the other hand, central firms and their participants communicate multilaterally across the entire value chains.

#### 4.4 The sustainability of the network advantage

Inter-firm networks can be a source of competitive advantage by allowing lead firms to combine different sources of external knowledge that are partially embedded in operations and partially embedded in social relationships across a large number of geographically dispersed firms (Uzzi 1997). The "social" side of a relationship is critical to strategic flexibility and continuous learning, in a strategy-making process aimed at exploiting network-specific advantages. Access to these external sources offers two advantages: maximizing fewer internal resources while expanding the spectrum of external resources and combining them in new ways in order to both enhance flexibility and speed of action. According to a CEO of a multinational firm: "When you do everything by yourself, in the short term you can get better margins, but you also lose tremendous flexibility to be able to change".

Network-specific advantages persist when competitors attempt to imitate a company's network strategy, mainly because of significant casual ambiguity and isolating mechanisms arising from inter-firm connections and the relational capabilities of the central firms. For a network to be efficient, external sources of knowledge need to be pooled and managed appropriately. Lead firm's relational capability is crucial in shaping network formation and development, and also provides a difficult to imitate structure-reinforcing competence. Strategic networks create isolating mechanisms that are difficult to both interpret and internalize. Because of path dependence they also require much time to assemble.

Reversing Chandler's (1977) formulation that structure follows strategy, the alliance intensive firm approach structure and strategy simultaneously. The others

sign agreements without significant matching changes to their organizational forms. Whenever each partner's resources and competencies are essential to the success of the enterprise new forms must be devised. To achieve this organizational design must come develop parallel to strategizing and require interaction among partners to create a platform offering both flexibility and knowledge sharing.

In a strategic network new ways of doing things evolve as knowledge and information is generated so the learning process rather than being programmed must be emergent. Both the structural design and the network generative rules must create a workable condition for information and knowledge generation (Kogut 2000). Dyer and Singh (1998) suggest that partners can combine both idiosyncratic and invisible resources to preserve relational rents. In this regard, Denrell et al. (2003) argue that unusual strategies represent a set of idiosyncratic resources, which if not valuable in themselves can be effectively used in combination with other resources. To be more specific, "By being the only firm with access to these components, the firm is thus much more likely to discover the value of this combination" (p. 986).

## 5 Conclusion

What sense should be made of the various and apparently unconnected arguments presented up to now? Research on firm strategy and organization and research on industry organization have traditionally been sharply divided in two different camps: for the former the unit of analysis has usually been the single firm while for the latter it has an entire industrial sector or a representative sample of such. But in this paper I am suggesting to turn to ego networks, industrial districts and clusters as relevant unit of analysis.

This multiple perspective employing both quantitative and qualitative methods promises to better capture the various and often contrasting economic, social and organizational phenomena that cover the research field with so many gray shadows and seemingly impenetrable black boxes.

Recalling the recent contributions of some scholars may also be useful. Eisenhardt and Martin (2000) argued that the antecedents for explaining dynamic capabilities "can be found at the individual, firm or network level" (p. 1107). Rothaermel and Hess (2007) suggest that firm innovation is highly influenced by the level of interconnectedness between individuals, firm and networks. Similarly, Capaldo (2007) found that lead firms' innovative capabilities can be found at the intersection of firm level, dyad level and network level of analysis. Felin and Foss (2005) claim that researchers assume that single levels of analyses are more or less independent of interaction of other level of analysis. At the same time, empirical research of inter-firm network suggests that outcomes are influenced by different loci and sources of capabilities to be combined.

Other scholars using non-conventional levels of analysis such as dyads (Larson 1992; Wang and Zajac 2007; Garnsey et al. 2008) and Stuart has referred to "small world networks" while Sydow speaks of "networks within clusters", which opens up some rich perspectives to develop various classifications.

Both in the strategic conversation and especially in strategic networks, scholars rely on various units of analysis and the interactions among them, which produce organizational heterogeneity and open new research horizons. The end result is that it allows a reconsideration of the various categorizations and interpretations used to explain organizational behavior and outcomes.

Here are a few examples. A well known pattern of alliance management is represented by the “learning race” view, where companies enter the alliance to capture knowledge delivered (and absorbed) from partners, and withdrawing shortly after internalizing knowledge and before the partners catch up (Hamel 1991; Doz and Hamel 1998). Moving from the single alliance (or dyad) as a unit of analysis to multiple partnerships platform within a tight network is more likely caused by a reduction in potential “stealing” since the network has sanctions (visible or implicit) that damage reputation (Zeng and Hennart 2002). In a similar vein Dyer and Sigh’s comparison of transaction cost and relational view points out how multiple transactions minimizes the importance of TCE explanation. Goshal and Moran (1996) use a similar argument that critiques transaction cost economics’ normative implications.

Ultimately, Zott and Amit (2007) introduce the business model as a contingency factor of the firms’ boundary spanning exchange. Inter-firm relationships becomes a factor influencing the product-market strategy and firm performance.

The magnitude of the inter-firm phenomenon demands a special focus on the architecture and the organization of strategic center transactions. The business environment shows an increasing surging of value chain reconfiguration, inter-firm connections and new organizational boundaries re-design. These tendencies are pervasive and will probably continue to nurture the inquisitiveness of scholars interested in the intersection of firms, networks and cluster.

In conclusion, greater attention to the unit of analysis’s selection used to explore the field of organizational resources and capabilities open new space to the exploration of new business strategies and new organizational forms.

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