

Embeddedness and decoupling in innovation activities

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The notion of embeddedness has been in common usage in economic sociology since the work of Mark Granovetter. Authors in this domain have used this notion to designate the dependence of economic activity on various aspects of social life beyond social networks (politics, institutions, culture, etc.).¹ “Heterodox” economists also use the term, especially to highlight the role of institutions (Hollingsworth and Robert Boyer (eds.) 1997). Management specialists have embarked on network studies to assess the links between firm performance and the characteristics of social networks.² Some sociologists are also involved in that area of research (Uzzi 1996).

Among the authors who pointed out the limits of embedding as defined by Granovetter is his own PhD advisor, Harrison White. White’s market theory considers them to be partial collective order that emerges from networks and gains autonomy from them (White, 2002). A market emerges from the repetition of exchanges and from the relative stability of the relationships between firms, then decouples and becomes a frame of reference for the companies that are part of it, whose transactions with external firms (suppliers and customers) are partly adjusted by the interface that the market provides. In this sense, firms are thus embedded in the market and relatively decoupled from their upstream and downstream relationships. The same process makes the market an aggregated identity, which establishes relationships with other markets and thus embeds into a network of markets.

For White, Granovetter’s conception of embedding does not sufficiently take into account these emergent effects of macro-level social realities: “Granovetter (1985) presents a convincing account of social extension and involvements as a gist of embedding. Yet this is, as it were, a two-dimensional portrayal, one that neglects any emergence of new levels

of actors emerging from embedding” (White 2002: 210). White believes that embedding is not just a fact, but also a process, just like its reciprocal, decoupling. Embeddedness is the dependence of an identity³ vis-à-vis the links that it has with others – in other words the constraint exerted on it by attempts at control on the part of other identities. Conversely, decoupling is the empowerment of identity, and therefore its affirmation as such – but this statement goes hand in hand with the creation of new links and therefore with the establishment of a new embeddedness, located at a different level. These processes of emergence and dissolution take on an ontological character: “Processes of decoupling and embedding supplant birth and death of particular actors as the focus” (White 2002: 215). White thus defines a kind of process ontology and transient states (which are transforming), which replace an ontology of beings (that exist or do not exist, live or die).

My co-author Marie-Pierre Bès and I have proposed to generalize the concepts of embedding and

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decoupling in order to analyze the processes of emergence or dissolution of social forms. Embedding is defined as a process of increasing the dependence of one level of action compared to another. For example, if a firm becomes more and more dependent on the personal relationships of its members, so much so that the breakup of one of these relationships or the departure of some members could endanger it or at least strongly influence its future, it is embedding into a social network. By extension, one can also use the term embeddedness, as Granovetter does, in a static sense to designate a more or less strong dependency situation. Decoupling is the reciprocal process of empowering one level with respect to another. When an organization puts procedures into place that protect it against the hazards of interpersonal relationships, it becomes decoupled from them. The more an organization dissociates itself from the relationships between its members, or even the individual characteristics of these, the more it becomes a social actor – this actor being itself embedded in a network of organizations or a larger set such as a market. The notions of embedding and decoupling can therefore be used at very different levels of action. They mainly make it possible to account for the changes in these levels of action.

We have also designed a method to account for the dynamics of embedding and decoupling. We first

did this by studying the relationships between research labs and companies; later I had the opportunity to generalize this method and use the analytical framework in part of a research project on business creation with Jean-François Barthe and Nathalie Chauvac. Later, other authors also took this approach.

In the following sections, I will first present the method of quantified narrations, developed to evaluate embedding effects. Then I will report on the results of the survey on collaborations between laboratories and companies, which shows that if embeddedness is important in the initial contacts and the design of projects, it is then in tension with decoupling processes that tend to partially restore the control of collaborations to formal organizations. Afterward, I will mention a survey of start-ups and the evolution of interpersonal relations in access to resources, which reveals a similar phenomenon of initial embedding followed by partial decoupling. I will conclude with some more general considerations on embedding and decoupling.

1. Quantified narrations: a mixed method for reconstructing relational chains and evaluating embedding effects

At the beginning of the 2000s, Marie-Pierre Bès and I sought to assess the embeddedness of relations between organizations in networks of interpersonal ties in the case of collaborations between public engineering research laboratories and companies (Grossetti and Bès, 2001). We were inspired by the method that Mark Granovetter used in the 1970s to study the labor market (Granovetter 1974). In this study, this author interviewed a set of white collar workers who had changed their cities of residence and employment between two censuses. This aspect is important: the studied population was not selected on the basis of static characteristics (age, sex, occupation, etc.), but on a dynamic criterion (having experienced a change in certain aspects of their careers). In the same way, it was not a question of studying these people by their characteristics or their ordinary activities, but of analyzing processes: in this case, those which resulted in obtaining a new job. Granovetter had reconstructed these processes, distinguishing cases where employment was obtained through “personal contacts” – i.e., chains of interpersonal relationships – from those where the protagonists had instead used advertisements, recruiting agencies, or direct applications. Other researchers have used this type of method. For

example, in the 1960s, Nancy Howell Lee (1969) reconstructed relational chains to explain how women could find a doctor to perform an abortion while it was still prohibited. This can be considered to be a social network approach, distinct from classical “personal” or “complete” network studies (Degenne and Forsé 1999) – an approach that focuses on “relational chains.”

Relational chains can sometimes be reconstructed from traces – for example, in online communications where we can sometimes know who spoke with whom. But such traces are not often available. One can also attempt to reconstruct relational chains by means of questionnaires, if the type of resource is simple and well defined and if the access processes are already known. In his study, Granovetter had, moreover, combined questionnaires and interviews. A face-to-face questionnaire is used to provide reminders that are necessary in most cases. A self-administered questionnaire makes the detection of relational chains more random, especially when they go beyond a single intermediary. In the case of the labor market, it appears that questionnaires tend to underestimate the mobilization of personal relationships (Chauvac 2011). They are difficult to use when one thinks that it is necessary to reconstruct complex contexts and solicit the memories of respondents through questions that depend on these contexts, or to obtain information about practices that people do not wish to make public. In the two studies for which we developed the quantified narrations method, we found that the questionnaires were inappropriate because of the variation and complexity of the stories and contexts. But we do not exclude the idea that some aspects of this research can be systematized by means of questionnaires.

In the study of collaborations between laboratories and companies, we undertook to reconstruct stories including the genesis of these collaborations – thus, the process of “meeting” between representatives of the organizations – by transposing the method of “relational chains,” but we soon realized that we could make some improvements by drawing, on the one hand, on a “life history” approach and on the other, on oral history. Life histories are most often obtained through biographical interviews with people considered to have comparable social positions in at least some of their aspects (Bertaux 1981) or, more rarely, through multiple interviews about the same family history (Bertaux and Delcroix 2000). Oral history usually involves collecting the testimonies of various participants in the same story and developing a synthesis from these accounts (Perks and Thomson, 1998). In the method that we have gradually developed, the unit of analysis is not an individual, a family or an organization, as is often the case in the social sciences, but a

process that can involve various actors, individuals, or collectives. For this reason, some interviews may shed light on several processes in which respondents were involved in one way or another. For example, in the study of collaborations between laboratories and companies, the researchers interviewed reported on an average of four collaborative experiences. Their testimonies therefore relate to several intertwined processes: their own careers, the history of their team (or others they've belonged to before), and their collaborative experiences with industry.

In another study, on start-ups (Grossetti, Barthe, and Chauvac 2011), where we used a similar method, some respondents (for example, managers of business start-up services, "business nurseries," or "incubators") were able to provide information and their points of view on several business creation stories. In addition, we realized that it is desirable to cross several testimonials in order to reconstruct a process.⁴ This limits a problem inherent in individual testimonials, which is the centering of the story on one person and her point of view. The information is also cross-checked with written sources (CNRS database concerning collaborations between laboratories and companies, administrative and legal files for start-ups). On the basis of the information and testimonies obtained, we wrote stories which we submitted to our interlocutors to enable them to propose modifications. These stories were then analyzed qualitatively and coded for statistical analysis.

2. The case of relations between laboratories and companies

During the study of collaborations between the laboratories and the companies (130 cases, of which 110 were usable for the study of the geneses of the cooperations), we grouped the contexts of the initial contact between organizations into three types. In the first type, contacts could be considered as resulting from personal relationships. For all the cases gathered in this category, we could reconstruct the relational chain that was actually activated by people in the contacting process and without which the contact would have been very improbable. In the second type, the contacts resulted from the action of a third organization – usually a governmental service, sometimes another company or an interprofessional organization – which voluntarily or involuntarily put representatives of the laboratory and the company in touch with one another. For example, in some of our stories, a ministerial service had appointed a group of researchers from a laboratory and a member of the firm from a small

group of experts, who subsequently decided to engage their respective organizations in cooperation. Finally, in the third type of case, at least one of the partners had used available public resources (scientific publications, conferences) to identify a partner and get in touch with him.

The first type (relational chains) was quite frequent (44 percent), so that we could support the idea of a rather strong embeddedness of laboratory-business relationships in personal relationships, at least in terms of the genesis of these relationships. But analysis of the progress of the cooperations showed that this initial situation had little effect on the contents or duration of the relationships between the organizations.⁵ It highlighted a series of decoupling processes that allowed organizations to "regain control" after the initial setup.

We categorized these decoupling processes quite easily indeed, because they fit with well-known social logics. We have called the first type "**collectivization**," referring to all the procedures that lead to the pooling of resources related to collaboration. For example, some organizations rotate their representatives at coordination meetings with the partner organization so as to prevent one person from having a monopoly on all the information. Others organize and systematize the sharing of information on the cooperative project. All these organizational routines have the effect of making collective what could otherwise remain a more personalized relationship between a researcher and an engineer, for example. They help to organize the substitutability of the members involved. The second type of process, which we call "**formalization**," is the drafting and signing of a classic contract, which provides a legal framework for cooperation. The contract is a partially public intermediate object within the organizations concerned and to which each can refer. Here, too, there is an enlargement to the community of agreements, which were limited to a few protagonists in the preliminary phase. The third type of decoupling process is what we have called "**materialization**," using a term previously proposed by Latour and Woolgar to characterize scientific statements taking the form of material elements. When we asked them to describe their work, our interlocutors often mentioned models, sometimes developed in parallel in the laboratory and in the company, or digital models that allowed them to coordinate but also to pass the baton to a new participant. Thanks to these artefacts, the progress of the project was materialized and became partially accessible to a new participant, beyond the only information that the former participants accept to communicate. Relaying is the type of operation that involves a certain degree of substitutability, and thus of decoupling.

In these three processes, organizations partially decouple themselves from the logic of individuals and their relationships in order to impose their identity and integrity. But these decoupling processes are in constant tension with embedding logics: appropriation of information by some members, models that are poorly documented and incomprehensible, etc. In many cases, the decoupling does not resist the departure of a key participant who “takes the relationship with him” to reactivate it in another context.

In the study, the relationships mobilized in the contact between organizations have different origins. Most (about four-fifths) come from teaching activities and industrial activities themselves, but few have been created directly as part of a laboratory-enterprise collaboration. These relationships therefore draw a wider sphere than that which only concerns cooperation, and which in the study includes the different actors who are interested in engineering activities: the laboratories of the “sciences for engineers” department of the CNRS, from which we started; the schools and training courses for engineers in electricity, mechanics, or process engineering; state agencies intervening in these fields; large industrial groups making use of technologies of the same type as those which are developed in laboratories; and small firms that are users of these technologies or are involved in their development. The contours of this set are fuzzy and shifting, and its degree of institutionalization is quite limited, but it frames the flow of exchanges in which are taken cooperation: recruitment of graduates, job changes, student internships, consultancy etc. If we had studied chemistry or laboratories in life sciences, we would obviously have delimited other kinds of spheres. Within the sphere of engineering, relationships are also concentrated in certain finer technological specialties (power electronics, electrical phenomena and components, porous media, etc.).

The same is true for coordination mechanisms: they are both more generic and more specialized than those that would be expected if the sphere of cooperation between laboratories and companies was a relevant level of action. There are few journals or associations dedicated generically to these cooperations. On the other hand, there are devices that are specialized by technological field or that belong to the wider engineering sector. Some of the specialized areas are highly institutionalized, with professional associations, journals, regular symposia, and stable relationships between laboratories and companies. Cooperations between laboratories and companies are therefore not autonomous entities. They are embedded towards the micro level into specialized spheres by technological field, and toward the macro level into all engineering activities and, more generally, technical innovation.

In a study concerning the Poitiers laboratories, Marie Ferru also observed the incorporation of laboratory-company relationships into networks of interpersonal relationships as well as decoupling phenomena (Ferru, 2010).

3. The case of start-ups

In the start-ups survey, we sought to detect embeddedness effects by encoding sequences of access from company founders to external resources. This includes traditional elements such as financing, customers, suppliers or partners, recruitment of employees, acquisition of material resources (premises, instruments), or advice (legal, commercial, or human resources), but also resources such as information or ideas, or work done by external persons for the benefit of the company (for example, a relative who designs a website for free). If for the “classical” resources we have tried to be fairly systematic, for others we have relied on spontaneous mention by the interlocutors and the importance they seemed to give them. It was always possible to change the typology of resources by returning to the stories to include a new category.

The sequences can be of variable duration (a few hours to a few months), but they always appear as bounded in time – at least in the end, by the transfer of a resource to the founders or the new company. For example, if one of the founders finds someone willing to enter the company’s capital, we code that the resource is financial in nature. If the shareholder is already known to the founder or presented by an intermediary person, we codify that the access was carried out by a relational chain (of length 1 or 2 in this example), as well as the characteristics (professional relationship, family, friendly, or other) and the context of creation of the first of the relations of the chain – that which starts from the founder. If the shareholder was found in an electronic forum, we code that the access was made on the basis of a coordination resource, and we also code the type of resource. In the current data set, which is the subject of a forthcoming book, we have 97 cases, 230 founders, and 3451 resource access sequences.

In the following table, we have distinguished four major types of resources. Upstream resources include all inputs with the exception of staff recruitment and financing – i.e., advice, premises, equipment, one-off assistance. Financing can take the form of investments giving access to a share of the capital, loans, subsidies, or personal help provided by relatives. Recruitment applies to all persons working in the company for remuneration, regardless of the legal form. Customers are economic actors buying products or

services produced by the company. In this case, we encountered a limit to our method. Indeed, for seven of the 97 companies, the markets are semi-massive markets where customers are numerous and are in contact with the company through resellers or websites. In this case, embedding in the interpersonal relational chains tends to be considerably reduced. Other companies have a limited number of customers, usually large contractors. If we exclude the seven companies with a lot of customers, the embedding rate would go back up to 50 percent.

Table 1. The share of interpersonal relationships in accessing resources of start-up founders

Period Type of resources	Before filing articles of association	First year	Second to fifth years	After the fifth year	Average
Upstream	59.6%	44.8%	50.9%	53.6%	52.6%
Recruitment	90.3%	64.2%	37.5%	39.5%	52.8%
Financing	61.5%	44.0%	31.2%	9.1%	48.7%
Customers	84.2%	30.9%	18.5%	1.4%	13.1%
Together	64.5%	47.0%	35.7%	10.1%	39.3%

Reading: In 13.1% of cases, customers were found by relationship, 30.9% in the first year.

This table shows that embeddedness is very high at the beginning of the process but then regresses to stabilize at a variable level depending on the types of resources, but remains relatively high, especially for upstream resources and recruitments.

This regression of relational embeddedness over time can be interpreted as a process of decoupling that gradually and partially substitutes access to resources made by the firm as such (through people acting impersonally) for those made by the founders relying on their personal networks. In the same way, the social relationships mobilized are increasingly professional relationships, related to the activity of the company, and decreasingly family or friendly links.

Jean-Philippe Berrou identified the same type of process in a study of enterprises in the informal sector in Bobo-Dioulasso, Burkina Faso, with a much higher overall embedding rate (more than 80 percent) (Berrou and Gondard-Delcroix 2017).

A dynamic perspective on embeddedness

Social activities are always involved in multiple processes of embedding and decoupling, and their effects maintain or change balances between social forms. Collectives emerge and reinforce themselves or dissolve in networks of interpersonal relationships. Initially established relationships in collectives become decoupled (professional relationships that become friendly, for example); spheres of activity decouple relative to others (a scientific specialty that differs from its mother discipline, for example). Economic activities are like any other, despite the efforts to decouple an economic sphere of social relations through multiple legal and material devices that were perceived by authors such as Karl Polanyi or Edward Thompson.

The dependence of these activities on interpersonal relations, which Mark Granovetter has highlighted and theorized, is a dependence on the one hand vis-à-vis the chains of relations that cross the borders of organizations, and on the other hand vis-à-vis the multiplexity of these relationships, which in some cases include relational contents that are not limited to the professional sphere. The analysis presented here shows that these dependencies are not constant and that they are in tension with decoupling processes that tend to give weight to hierarchies, formal organizations, and more generally, to impersonal coordination mechanisms. This tension can lead to varied balances, from the very high embeddedness of informal activities to the very impersonal transactions of large retailers and the intermediate situation of the technical innovation activities, which are the subject of the two surveys that I have presented in this text.

Endnotes

1 For example, Paul DiMaggio and Sharon Zukin, eds. 1990. Introduction to *Structures of Capital. The social organization of economy*. Cambridge University Press, 1–36; Richard W. Scott. 1995. *Institutions and Organizations*. Thousand Oaks, CA: Sage; Ronan Le Velly. 2002. “La notion d’encastrement : une sociologie des échanges marchands.” In: *Sociologie du travail*, Vol. 44, No. 1, 37–53; Beckert, Jens. 2002. *Beyond the Market. The Social Foundations of Economic Efficiency*. Princeton University Press; Beckert, Jens. 2010. “How Do Fields Change?

The Interrelations of Institutions, Networks, and Cognition in the Dynamics of Markets.” In: *Organization Studies*, No. 31, 605–627.

2 Aldrich, H., and C. Zimmer. 1986. “Entrepreneurship through social networks.” In: Sexton, D.L., and R.W. Smilor eds. *The Art and Science of Entrepreneurship*, 3–23; for a general perspective, see Ha Hoang and Bostjan Antoncic. 2003. “Network-based research in entrepreneurship. A critical review.” In: *Journal of Business Venturing*, 18, 165–187.

- 3 The notion of identity is complex. To put it in a very simplified way, it is a kind of generalization of the notion of an actor.
- 4 Most often we have limited ourselves to two interviews. We have done further interviews (five in the most extreme case) to elucidate certain aspects of history. We stopped at two when we had the feeling that the story was stabilized (absence or scarcity of contradictions, sufficient information accuracy).
- 5 But the initial situation had decisive effects on the choice of the partner and therefore its location, which was central for us in this study.

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