3. The School of Proximity, genesis and development of a scientific notion

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1. INTRODUCTION

The term proximity was not born at the same time as the research on this topic, which we will discuss here. However the great academic success of this concept is now largely associated with that of the School of Proximity and the reputation acquired by its main contributors.

Before the 1990s, the notion of proximity was polysemic. Previously scarcely used in economic or geographical analysis, it has become common in territorial development approaches, without its content ever being really specified (Bellet et al., 1992; Chapter 1 by Zimmermann et al. in this volume). Its innovative dimension was first and foremost driven by the group 'Proximity dynamics' (*Dynamiques de Proximité*), commonly referred to as the 'French School of Proximity', which wanted to build it as a theoretical and pragmatic tool for analysing the spatialised interaction processes. Indeed, its initiators, and then the members who would integrate the group, considered that the notion of proximity is interesting to study spatial or social coordinations. The ambition, from the beginning, was therefore to propose an original approach to the spatial dimension of economic phenomena (Bellet et al., 1993), but also of other processes, of a non-space nature, which are also related to proximity effects. The diversity of these issues, addressed by different social sciences disciplines, is thus an effective driver in the development of a theoretical framework capable of capturing the spatial and non-spatial dimensions of coordination between actors (Bellet et al., 1998; Pecqueur and Zimmermann, 2004). To this conceptualisation is added a desire for operationalisation, favourable to the consolidation of a group dynamic, in a rigorous and demanding dialogue between its members first, then with an ever-increasing number of other researchers.

The notion of proximity therefore became a tool for the study of local relations, of relations between 'here and elsewhere' and of the questions related to the spatial dimensions of coordination (Torre and Rallet, 2005). It is above all an exploration into the diversity of these relationships, of the objects or groups of actors on which proximity is used or relevant, as well as the logics at work, emphasising in particular the importance of non-market coordination in production processes. The research programme questions the endogenisation of space in order to identify the dynamics of the spatial, economic and social evolution of firms and, later, of the different components of society, and their causes (Bellet et al., 1993, 1998).

This chapter proposes an analysis of the evolution of the School of Proximity, its constitution and the different phases of its development. The methodology used is based on the creation of a database of the publications produced by the main contributors of

the School of Proximity and focusing on the notion of proximity. We study this evolution in particular through an analysis of co-authorship networks. The idea is to better understand how this school was formed (see Chapters 1 and 2 in this volume), to identify the key periods and the key factors of evolution of the group and the concepts it carried. This work also proposes another reading, that of the evolution of the School of Proximity which, by its ambition, its development and its originality, forms a Knowledge Community (KC), bringing together researchers working to produce a new concept in the field of social sciences, particularly regional sciences.

We first present our method of analysis and the material used (Section 2), before examining the evolution of the diffusion of the concept of proximity and the groups of researchers concerned (Section 3). We conclude with an analysis of the School of Proximity as a KC and its future (Section 4).

2.   THE BIBLIOMETRIC ANALYSIS METHOD OF SCIENTIFIC PRODUCTIONS

To carry out our study, we have set up an original database, called 'Proxim', to understand the dissemination of the work carried out around the notion of proximity, first in France and then internationally. The study material consists of a collection of references mobilising authors working on proximity and their publications. The way publications are processed is based on an iterative process that classifies researchers in '1st and 2nd circles' and organises their contributions.

2.1   The Identification of Authors Contributing to the School of Proximity

An 'expert' method was mobilised to validate aggregation process of all authors, referring to the creative core of the French School of Proximity and then to the group of authors belonging to it on the basis of the publications (Bellet et al., 1992, 1993). Different members of the group 'Proximity Dynamics' were asked to elaborate, complete and validate the composition of the core and the initial group, as attested by the first publications. These choices have therefore been the subject of several audits at different periods in the life of the school, in order to validate the relevance of the assignment in the circles of authors, changes in their scope and the addition or removal of bibliographic references in order to avoid duplication. Therefore, the exhaustive collection of references in terms of publications of this initial core, associated with keywords and research topics, has made it possible to build a robust database in order to build co-authorship networks of the School of Proximity.

Based on the identification of the original authors' productions, we added co-authors who were not members of the 'Proximity Dynamics' group, depending on their publications, and removed the reference to members who accompanied the group for a time but were not productive according to the criteria used to identify publications in the database. The process is thus dynamic, since, with this iterative method of selecting co-publications, authors of the initial nucleus were able to switch to the second circle, while new ones entered. This approach made it possible to base our study on a dynamic selection process for bibliographic references. This is a bias that we must mention as a

limit to the work of identifying the boundaries of the group. In total, the database brings together 24 authors who are members of the 'Proximity Dynamics' group, plus 56 co-authors who are not members of the group.

To start our data collection, we first associated the term 'proximity' used in different disciplines with the six authors of the founding nucleus of the School of Proximity. The other uses of the term proximity, in geography and sociology in particular, or in other contexts such as services of proximity to the person for example, have led us to privilege a collection of publications from those of the founding nucleus.

In a second phase, we discussed the polysemic use, and by several languages, of the term 'proxim' in the documentary databases, in order to broaden the collection of documents related to our study. This selection process allowed us to reconstruct the trajectories of publications dedicated to proximity, to obtain a robust and evolutionary selection of publishing members, as well as to determine a 1st and a 2nd circles of authors. It has to be noticed that the members of the 1st circle are not necessarily identical to those of the founding nucleus or the French School of Proximity. The first circle is indeed constituted by the authors who participated in the development of the notion throughout the process of diffusion of the concept, with variable implications. The second circle brings together the authors who contributed to the concept of proximity at various periods, via the development of specific themes. The treatments carried out from the 1990 data have validated that (1) the term proximity is not present before 1990 in the works of the founding members; (2) the authors who publish at the creation of the group can belong as well to the 1st as to the 2nd circle (see Appendix Table 3A.1).

2.2 The Selection of Data Resources with the 'Proxim' Item

The references selected for the study are the refereed articles, books and major book chapters. Other types of production, such as colloquium papers, official group meetings, or even PhDs on this topic, could have helped to enrich the perception of the evolution of the community. They were not retained because of a difficulty to build a sufficiently robust data collection.

We use the co-authorship data to trace the interactions between authors (Carpenter et al., 2014; Crossley et al., 2015). As part of the creative process, they are strong signals of community life. The database thus collates references to published works dedicated to the notion of proximity or using proximity as an analytical tool. However, in this second case, the use of the term proximity may not necessarily appear in the title or as a keyword. As a result, we have expanded our search for titles and keywords to include abstracts, or even the content of articles when necessary (i.e. when the text contained at least six occurrences of the term 'proxim'). The creation of a list of items or keywords led to the definition of categories allowing to list an article covering several topics, such as association proxim + innovation. The working method therefore underlines the interest of the iterative nature of the chosen process.

The interest of this method of collection was to abstain from disciplinary frameworks (economy versus sociology for example). It also made it possible to collect the relevant references, while overcoming the theoretical divisions (mainstream or not, even if the heterodox economists were more numerous to contribute to the process), the classical

categories (SMEs, innovation, etc.), the applied/theoretical research opposition or the use of a specific method of analysis.

Between 1990 and 2014, we were able to list more than 205 articles published in peer-reviewed journals and 142 chapters of books dedicated to proximity, written by at least one of the authors identified. It has to be noticed that this approach based on publications excludes other channels of dissemination of the notion and its debate, such as presentations at the Proximity Congresses opened to a wide audience of researchers, or during congresses such as those of the French Speaking section of the RSAI, as well as research projects that allowed the group to finance its studies and publish the results. Those sources of financing were strategic, insofar as the group did not have any of its own institutional financial resources, and made it possible to disseminate its ideas to public actors.

3.   SELECTION OF DATA RESOURCES WITH THE 'PROXIM' ITEM

A first reading of the birth, success and development of the School of Proximity is based on the use of social network analysis tools (Carrington et al., 2005; Liu et al., 2005). They contribute to identify, from the co-publications, the place and role of each of the authors, to characterise the functioning of the initial group and then of the community in creation, as well as the factors of change or permanence in its dynamics. The analysis of the collected data thus highlights the structuring of the interrelations between the participants of this story, as well as the existence of different periods of development.

3.1   Networks that Grow as Proximity Notion Spreads Across the Academic Community

The work carried out from the authors and their co-publications makes it possible to trace the influence of the term proximity and its hybridisations through the collaborations identified (Fleming et al., 2007; Carpenter et al., 2014). It allows the construction and visualisation of a network of co-authors, with the identification of central contributors, distinct connected components with cliques (subgraph in which all the links possible between authors are present) or quasi-cliques (cliques with some missing links – hereafter named clique), or authors having contributed to some degree to the work of the group. The results reveal the percolation of the notion of proximity, the places of production and the channels of transmission of the information, and allow establishing the emergence of the associated terms and the knowledge produced.

To retrace and understand how the group works, we used as global measures the density (i.e. number of actual links compared to the number of possible links) and the transitivity (i.e. number of closed triads – here joint collaborations of three authors in different publications – related to the number of possible triads). We also carried out individual measures of centrality of degree (i.e. number of links entering/leaving a node), betweenness (i.e. proportion of the number of shortest paths on which the node represents an obligatory passage between two other actors), and eigenvector (i.e. which takes into account the position of the alter actors to which ego is directly connected).

Table 3.1   Global metrics of networks

Period	Number of publications	Number of authors	Density	Transitivity
1990–1998	62	40	0.068	0.512
1999–2006	156	95	0.049	0.376
2007–2014	176	155	0.021	0.317

These indicators provide interesting insights, in particular on the existence of this informal group. It is open and moving driven by scientific events, contractual opportunities and other possibilities of collaboration, between French authors at the beginning and then more and more broadly with and by other researchers. The indicators are mobilised to identify the evolution of the group, including inflections and ruptures, and the dynamics of its activity. They also enable to identify the leading authors, as well as the individual contributions of each participant.

Data analysis reveals that the evolution of the French School of Proximity follows four major phases, associated with its international success. The study of the networks of publications allows us to quantify (see Table 3.1) and to visualise these evolutions (see Figures 3.1, 3.2 and 3.3).

We note that the authors of the 1st circle are present in all phases of development, with the exception of Boschma which appears only from the 2nd period. However, they are not positioned in the same way according to the periods considered, especially since they also evolve in other scientific groups.

3.2   Birth and Emergence (Phase 1: 1991–1998)

The 'Proximity Dynamics' group marked its birth, in the 1990s, by the elaboration of scientific productions that have made history, in particular collective books or special journals issues (Bellet et al., 1992, 1993, 1998; Rallet and Torre, 1995, 2007; Torre and Wallet, 2014).

Network analysis shows that this phase is characterised by a high density of interactions between participants (see Table 3.1), essentially French. Few authors work alone on the topic of proximity and the research is rather conducted collectively (this results in relatively high transitivity) (Figure 3.1). This phase presents a strong cohesion of the authors of fundamental works aimed at establishing the identity of the group 'Proximity Dynamics' around a common construction of the notion of proximity. That the founding members belong to a certain heterodoxy related to the 'mainstream economy', their common culture in industrial and spatial economics, a relative homogeneity in terms of age facilitating cultural exchanges, and a shared interest in career prospects were also sources of cohesion. The organisation was relatively simple since it was based on the core of founding authors, to which were gradually added a few members. It was marked by an abundance of exchanges between the participants. They were converging towards the project of positioning the notion of proximity as a common scientific object, and reduced their cognitive distances with a search for conceptualisation and operationalisation (Lung et al., 1997).
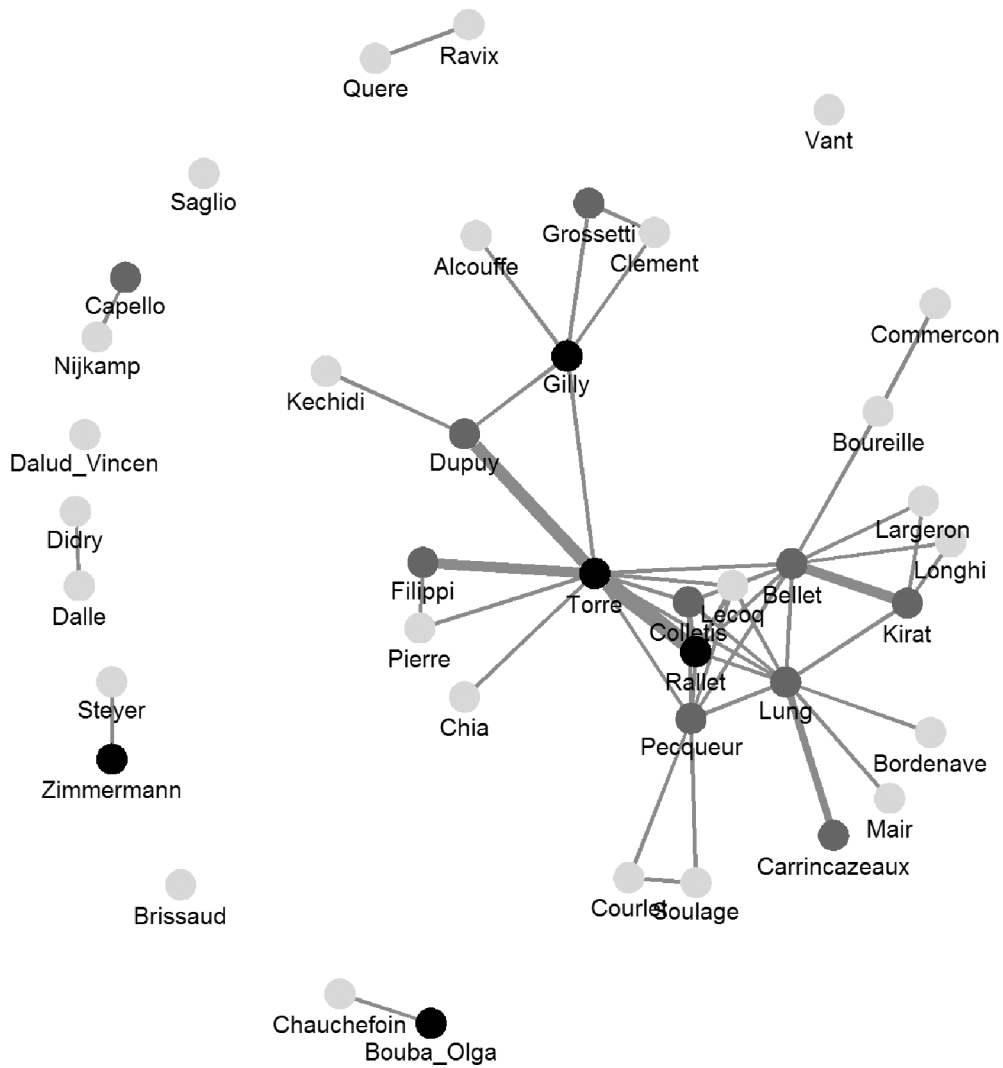
Note: The black summits represent the authors of the first circle, the grey ones of the second circle and the light-grey summits correspond to the co-authors not members of the School of Proximity. The size of the links is proportional to the number of co-publications.

Figure 3.1   Co-authorship networks from 1991 to 1998

The formation of the group 'Proximity Dynamics', with the setting of its operating rules, stabilises during the 1990s, with the desire to confront other scientific streams and collectives. Common responses to calls for tenders, and the organisation of Congresses every two years or so by the group, represent strong signals of the life of the community and give keys to understand its evolution. They are privileged moments of animation of the collective, either to attest to the dynamic or to consolidate the group by giving it a new
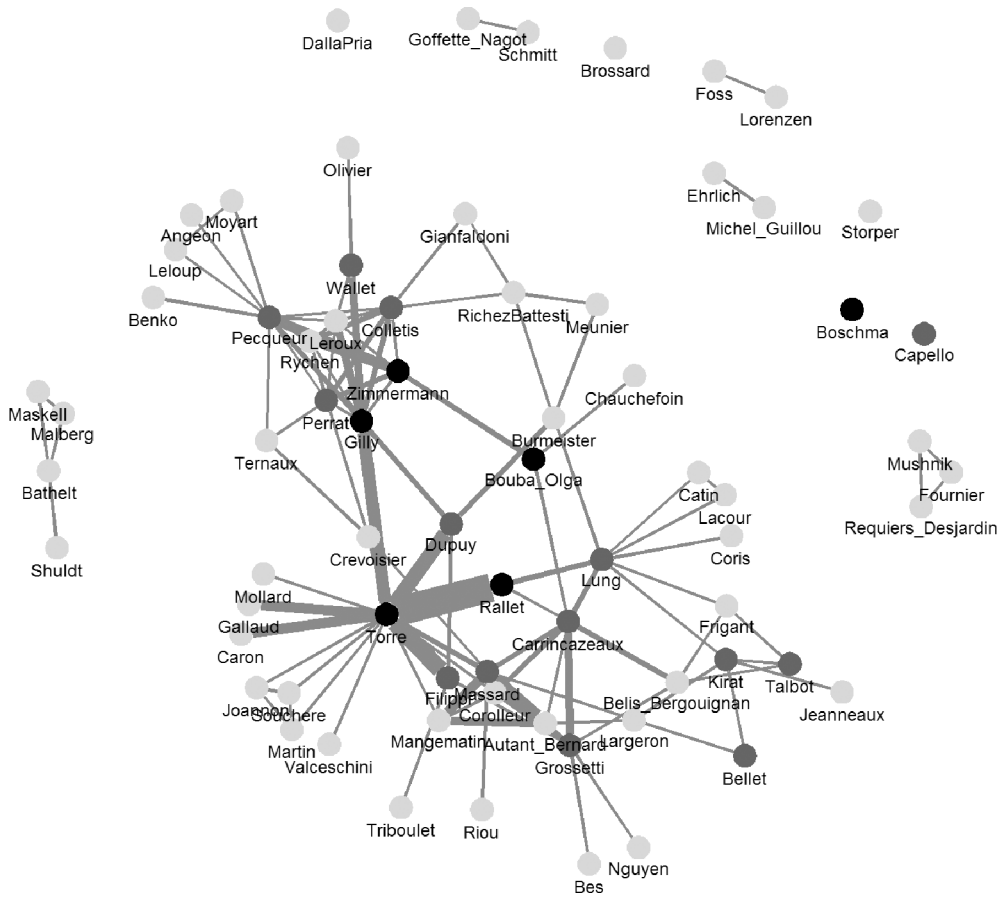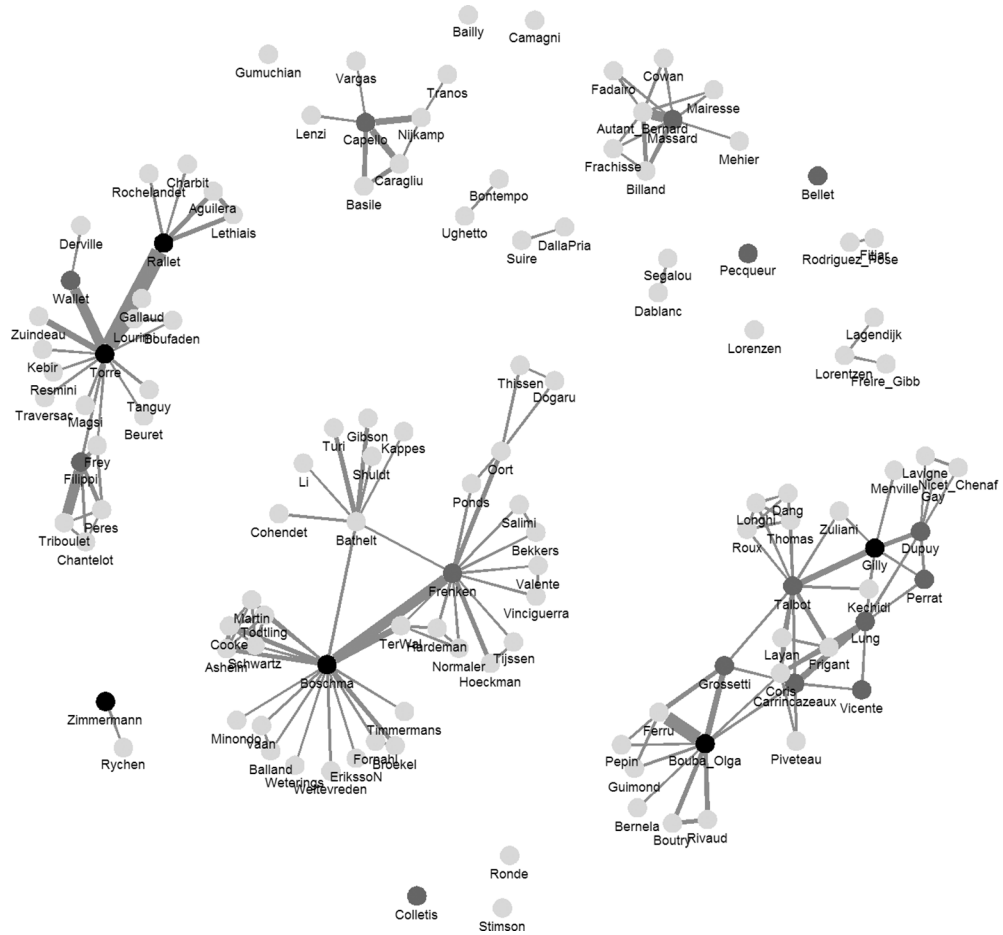
Note: The black summits represent the authors of the first circle, the grey ones of the second circle and the light-grey summits correspond to the co-authors not members of the School of Proximity. The size of the links is proportional to the number of co-publications.

Figure 3.2   *Co-authorship networks from 1999 to 2006*

impulse. They are also used to disseminate ideas, debate with different points of view and attract new members.

    After several publications in French, the collective issue of *L'Industria* (Gilly and Torre, 1998) is part of the desire to disseminate the work beyond the French-speaking world, like the Proximity Congress of Toulouse (1999), which opens up internationally with the presence of foreign researchers. The emergence of central authors carries the collective work. Everyone can express their creative potential while helping to clarify the objectives and internal cohesion of the group. This period marks the transition from collective intention to collective action.

Note: The black summits represent the authors of the first circle, the grey ones of the second circle and the light-grey summits correspond to the co-authors not members of the School of Proximity. The size of the links is proportional to the number of co-publications.

Figure 3.3   Co-authorship networks from 2007 to 2014

3.3   Statement (Phase 2: 1999–2006)

In Phase 2 the co-authorship network is growing, with an explosion of collaborations and productions (Table 3.1). This period is characterised by a transitivity of the network which remains high with the appearance of groups of authors that take the form of cliques. It shows the importance of not exclusively bilateral exchanges, although the overall density is low due to a large number of individual authors (i.e. who publish alone). The appearance of these cliques makes it possible to identify central authors, who issue many publications in common (collective works: Gilly and Torre, 2000; Dupuy and Burmeister, 2003; Pecqueur and Zimmermann 2004) (Figure 3.2). Nevertheless, a

new phenomenon is emerging, with the appearance of authors who are not part of the 'Proximity Dynamics' group but whose work influences the very definition of the notion of proximity. In doing so, these newcomers reach the core of proximity analysis and change it substantially. The most well-known definition of the five proximity categories, which is due to Boschma (2005), comes into play during this period.

The phase of affirmation and construction of the proximity notion is also marked by the continuation of the initial effort of conceptualisation but also by the strengthening of major study themes such as institutions, networks and informal relations, or the investigation of new themes, such as environment or conflicts. These new themes will lead to the emergence of more specialised cliques (or clusters of authors) that can occasionally integrate other authors from outside the group (Figure 3.2) and that are often formed according to specialised themes (example employment/work, innovation/network). Some authors hold a position as intermediaries like Rallet or Torre, the latter connecting an already dense set of collaborations between members and non-members. The co-authorship is also the result of more extensive collaborations with young researchers, many of whom have done their PhD dissertations under the direction of the founding members. These new collaborations contribute to the diffusion of the notion of proximity in another collective located outside the group 'Proximity Dynamics'. Hybridisation is a source of enrichment, through the will to confront the notion with other analytical frameworks or different methodologies.

3.4   Maturity and Dissemination (Phase 3: 2007–2014)

This new phase marks an important turning point in the dynamics of a maturity and an increasing autonomy of the members. While the increase in the number of articles mobilising the notion of proximity continues (Table 3.1), the density and transitivity of the network of the French School weaken. Many authors now publish alone and three main distinct connected components, including one of English-speaking authors, evolve in a small or unrelated way, based on privileged internal relationships (Figure 3.3). The overall consistency is thus less strong than in the previous periods, and opens the way to a weakening of the community. Within the 'Proximity Dynamics' group, some cliques will also organise themselves in a permanent way, around authors such as Bouba-Olga, Massard, or Dupuy and Filippi, with exchanges with non-members. Finally, some researchers occupy intermediate positions, such as Grossetti, or more individualised situations in connection with different contributors.

This phase of maturity is also reflected in success of the proximity notion beyond the borders of the initial group. The widespread use of the theoretical and methodological content previously developed, both at French level and by foreign researchers, is evidence of this success. The methodological choice of mobilising only the co-authorship network in our approach tends to minimise this effect. The bibliography reveals that the theoretical apparatus is largely taken up by researchers outside the 'Proximity Dynamics' group who, for the most part, do not have direct or personal relations with the members of the group. The international opening became the marker of this period, signing both the success of the notion and the breakup of the initial group (Ponds et al., 2007; Boschma, 2005). It has resulted in the emergence of separate connected components of foreign researchers, who will be regrouping around themes such

as 'innovation' for Boschma and Frenken (2010) or 'region' for Capello (2014) for example.

During this period we also see work taking a retrospective look at the evolution of the notion and the history of the group's work (Bouba-Olga et al., 2008, 2015). Then appears a certain decommitment of the group in terms of the control of research on proximity, with the external organisation of key events (in particular within the connected component structured around Boschma and Frenken). This is the signal of a certain loss of cohesion and collective value, while at the same time, the notion is gaining in notoriety within and beyond academic circles.

3.5   Unbound Spread (Phase 4: 2015–)

The analysis of the publications shows that the year 2015 marks a turning point in the life of the School of Proximity. The notion is trivialised outside its initial 'borders', whether national, disciplinary or societal. The choice was made of an enlargement, which involves an opening to other disciplines, including spatial planning, sociology and management sciences, as well as the desire to legitimise the notion of proximity among decision makers. The success of these two strategies has resulted in a proliferation that now exceeds both the 'Proximity Dynamics' group and its traditional spheres of influence.

The use of the notion of proximity has become widespread, with many papers published outside the initial disciplines and networks, so that external production tends to become more important than that of the members of the 'Proximity Dynamics' group. Proximity becomes a tool to help policy makers and entrepreneurs, while at the same time, it enters the toolbox of researchers, especially in regional sciences but not only there. This is evidenced by its inclusion in handbooks (Torre, 2013, 2019) or companion books (Rallet and Torre, 2017; Shearmur et al., 2016), signalling a certain institutionalisation of the concept. At the same time, a multiplication of adjectives appear attached to the notion of proximity, according to the disciplines and the objects of analysis addressed (food, distribution, environment, social economy, etc.), which signals both the success of the concept and a certain dilution of its meaning.

As a result, the group's researchers become more and more interested in joining networks dedicated to other research areas and engage in a dialogue on proximity with other approaches. The cohesion of the 'Proximity Dynamics' group weakens and the meetings are spaced or stop altogether, with a lack of common will to organise a collective work. In 2018, the anniversary issue edited by the *Revue d'Économie Régionale et Urbaine* (Torre and Talbot, 2018) is then presented as a review and a tribute to the work done by the French School of Proximity during 25 years of collective work, but also as the transition to a new phase. Now, the conceptualisation of proximity differs from the production of knowledge of the 'Proximity Dynamics' group. It is praised in various approaches or disciplines, to the detriment of the cohesion or even the existence of the eponymous group. This is the ransom of success in a way with the advent of a School of Proximity much broader and international, but which no longer conceives itself as an autonomous group, with its own modalities of existence and rules of operation.

4.   THE SCHOOL OF PROXIMITY, A READING IN TERMS OF KNOWLEDGE COMMUNITY

The analysis of co-authorship networks allows to describe the genesis and evolution of the School of Proximity and to understand how a group of authors was formed and evolved to co-develop the notion of proximity. Another reading is possible in terms of community, in order to understand the evolution of the knowledge dynamics, within and outside this group, in other words, to observe the social construction thus initiated by this community, which imposed itself academically on the international scene but also outside the purely scientific field. This study of the structure of the School of Proximity allows a dynamic reading of the processes of creation of knowledge, interpretable in terms of constitution and evolution of a Knowledge Community (KC) that has grown and popularised the notion of proximity beyond its borders, at the international level.

4.1   The Birth of a Community Using the Notion of Proximity

There are many definitions and variations of the term KC associated with scientific production. The community refers to a group of people interacting directly, frequently and in different ways (Bowles and Gintis, 2002). It is built by bringing together professionals willing to share and intentionally create knowledge (Brown and Duguid, 1991; Amin and Cohendet, 2004; Amin and Roberts, 2008). "Communities provide a safe environment for individuals to engage in learning through observation and interaction with experts and through discussion with colleagues" (Li et al., 2009, p. 3). Different variations of the term appear in the literature, such as knowledge community, knowing community, community of practices (CoPs) or epistemic community. The reference to communities in innovation and learning was popularised in the 1990s from the seminal work of Wenger (Lave and Wenger, 1991; Wenger, 1998), which put the importance of learning processes at the heart of their creation. As the creation of knowledge and how to combine it become central to the formation of the community, we favour the notion of KC (or Knowing Community; see Cohendet et al., 2010; Amin and Roberts, 2008). This informal group shares the following properties: (1) a voluntary commitment by members to share, exchange and build common cognitive resources for a shared purpose; (2) a common identity built from regular interaction, trust and reputation without a visible and explicit hierarchy in the control of the work carried out; (3) compliance with proper social norms, without any monetary or statutory incentive to engage.

We hypothesise that the School of Proximity, made up of French researchers of different disciplinary origins, has gradually evolved to form a KC (Filippi et al., 2018) around the development of the concept of proximity. Indeed, since its creation, the objective of the group 'Proximity Dynamics' is the production of new knowledge, made readable through various scientific productions such as articles, books, research contracts and conferences, and the diffusion of this knowledge for decision makers and the general public.

The French School has thus structured itself around the notion of proximity, through three building blocks: voluntary commitment, identity and respect for social norms. This knowledge-intensive community (Cowan and Jonard, 2001) was based on a voluntary commitment to belong to an informal group, an exchange of knowledge outside

institutional frameworks and based on a will to do it together, respect for social norms (in a 'benevolent reciprocal spirit'), as well as sharing a repertoire of common cognitive resources. As the reading in terms of co-authorship networks showed, the phases of emergence and affirmation explain how the group, constituting a community, became inseparable from the knowledge it developed around this notion.

The group has thus built a core of specialised skills and knowledge on the basis of a cooperative process. Co-publishing and co-responsibility of scientific productions built a system of reciprocity and interdependence among members (Hodgson, 2006; Cohendet et al., 2014). This collective construction favoured the institutional positioning of the members, whose effect was to reduce opportunistic behaviour by participating in a publishing group, to create a system of interdependencies, able to survive even after the departure of some members. The development and sharing of knowledge played an essential role in the engagement of the participants and in the evolution of the KC, whose borders were often shifting, with the entry, exit or temporary sleep of the members, thus facilitating their free involvement. The group's identity has been forged through the creation of new knowledge.

Different research themes have been associated, gradually leading to enrichment and segmentation of conceptual categories of proximity, such as proximity and innovation, proximity and industrial activities or proximity and governance, which organised the research carried out within the group. The production of scientific outputs was thus a way to stabilise this new knowledge, but also to consolidate the group.

4.2   The Blossoming: Affirmation and Decline of the Proximity Community

The training of KC can be judged by examining the process of knowledge building (Lave and Wenger, 1991) and how it is structured (Gaggioli et al., 2013). The phase of maturity and diffusion sheds light on the processes at work. In the case of the School of Proximity, the centrality of some authors reveals the dynamics of the collective. The arrival of new members took place on the basis of co-optation by the founding members, with a view to sharing a common vision (respect of internal social norms rather than belonging to a discipline, obtaining a doctorate to be proposed to the group being the only condition of eligibility). The desire to carry out a strategy aimed at enabling everyone to create and obtain an academic readability that ultimately conditions individual promotion was not absent from the motivations of the members. The gradual increase in the size of the group, with the need to distribute forces around distinct productions, such as the response to calls for tenders, has led to a change in collective management (Muller, 2006). Some members therefore took charge of the management of certain actions (management of journal issues, books, etc.).

When success came at the international level, next to the initial group was formed another set of researchers, interested in the notion without always adhering to the set of values or the rules of the group 'Proximity Dynamics'. The arrival in the discussion of external scholars, capable of creating clique-type interactions with certain members of the group, caused a shift. A divesture phase was gradually put in place. The density became much less important, while tensions appeared in the whole cohesion. In fact, the collective went through a phase of organisational turbulence, reflected by the number and the diversity of productions, by the breakup into more autonomous sub-groups than

in the past, as well as a growing difficulty in reiterating joint productions (Congresses, works and contracts).

A KC generates social rules to promote group cohesion. In the first two phases, collective projects contributed to federate members by reducing the knowledge differential but also by increasing interactions, trust and cooperation. The importance, on the one hand, of benevolent listening during the training sessions on research works under development, and on the other hand of conviviality outside sessions, are two strong characteristics here observed. The members voluntarily chose to create a protective environment to foster routines, sharing of knowledge and experiences, as well as collective creativity.

The appearance of cliques when deepening a particular dimension of a research question or to open a new thematic front explains the need to expand the group in order to enrich the skills and strengthen the structuring of the knowledge dynamics. During the integration of new members, the friendly dimension, in compliance with social rules, followed this motivation i.e. that of maintaining a 'good atmosphere' with the common sharing of a minimum of tacit rules of good conduct and mutual respect, in order to maintain cohesion.

The functioning of the French School of Proximity can thus be seen as a coordination mechanism allowing its members to improve their individual and collective skills, through the exchange and sharing of a repertoire of common cognitive resources that are developed at the same time as practice develops and the community is strengthened (Cohendet et al., 2014). Construction of common knowledge has been positively strengthened by the influence of a common interest or goal and the contribution of all participants.

The gradual expansion internationally, in the stages of maturity, and then the period of divestiture, certainly corresponds to the argument that the more a community of knowledge is based on a recognised concept, the less is its need for local social grouping. Indeed, the recognition of the analytical power of proximity has enabled many authors to free themselves from the production of the French School to disseminate the results, join other international scientific groups or turn to new questions. The success of the concept thus allowed, in return, a certain freedom from belonging to the initial community in favour of the emergence of a School of Proximity. Ironically but logically the increase in the awareness of the notion of proximity went hand in hand with the diminishing of the collective, which largely explains the disintegration of this community.

5.   CONCLUSION

This chapter proposed to study the development of the concept of proximity through the study of the birth, growth and success of the School of Proximity. We combined readings in terms of co-authorship networks and knowledge community to analyse the phases of emergence and functioning. The results show that the 'Proximity Dynamics' group developed according to three major periods of evolution: emergence, affirmation and maturity. They are made visible through the mobilisation of a bibliometric database of scientific productions and by using network analysis tools. Progressive conceptualisation

of the notion of proximity has met with great success beyond the French academic circle. It has gone far beyond the borders of regional science to disseminate to other disciplines, but also internationally and to the spheres of policy makers and other practitioners. This success is explained by the strong dynamic of the starting group, which seized the notion to develop its analytical characteristics. The French School of Proximity functioned as a knowledge community, based on a process of creation and hybridisation of knowledge. The success of the concept – and therefore also of the community that carried it – is to have demonstrated that proximity matters (and not always for the best). This concept has thus enabled understanding the dynamics of interactions (notably non-market ones) and to give an original interpretation to the territories-building processes and to development trajectories. In this way, the concept and the toolbox of proximity have established themselves in the landscape of regional sciences and even beyond, with pioneering authors remaining essential references. The flip side of this success, is that once the success was achieved, which resulted in an enlargement of the boundaries of the community, it led to a certain divestiture of the concept, in favour of an expanded exploration, most often led by authors who did not belong to the original group, and thus forming a School of Proximity with much wider contours.

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APPENDIX

Table 3A.1   List of authors composing 1st and 2nd circles

Authors '1st circle'	Authors '2nd circle'
Ron BOSCHMA (Université d'Utrecht, Pays-Bas)	Michel BELLET (Université de Saint-Étienne)
	Roberta CAPELLO (École Polytechnique de Milan, Italy)
Olivier BOUBA-OLGA (Université de Poitiers)	Christophe CARRINCAZEAUX (Université de Bordeaux IV)
Jean-Pierre GILLY (Université de Toulouse 1)	Gabriel COLLETIS* (Université de Toulouse 1)
	Claude DUPUY (Université de Bordeaux IV)
Alain RALLET (Université de Paris Sud)	Maryline FILIPPI (Bordeaux Sciences Agro)
	Koen FRENKEN (Université d'Utrecht, Pays-Bas)
André TORRE (INRA, Université Paris-Saclay)	Michel GROSSETTI (CNRS, Université Toulouse 2)
	Thierry KIRAT (CNRS, Université de Paris Dauphine)
Jean-Benoît ZIMMERMANN (CNRS, GREQAM Aix-Marseille)	Yannick LUNG (Université de Bordeaux IV)
	Nadine MASSARD (Université Grenoble Alpes)
	Bernard PECQUEUR (Université Grenoble Alpes)
	Jacques PERRAT (ADEES Rhône-Alpes)
	Damien TALBOT (Université de Clermont Auvergne)
	Jérôme VICENTE (Sciences Po Toulouse)
	Frédéric WALLET (INRA, Université Paris-Saclay)

Note: * Author '1st circle' transferred to list '2nd circle'.