
Local organisations and institutions. How can geographical proximity be activated by collective projects?

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Abstract: This paper deals critically with the concept of geographical proximity as a prerequisite for successful regional innovation processes. Using three case studies we show that regional development studies need to connect geographical proximity with organisational proximity achieved by actions to mobilise resources around a collective project or utilising common institutional routines and values.

Keywords: Geographical proximity; organisational proximity; networks; technology diffusion; collective projects; agricultural cooperatives; S&T strategies.

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1 Introduction

The success of the so-called 'Localised Systems of Production' approaches, and related productive systems at the level of local development policies (clusters, technopoles, districts, milieux...) generally rest on two ideas [1–6]. The first idea is that the co-location of firms or productive units can generate competitive advantages, at the expense of less organised or supported areas. The second idea, which is as fruitful as the first (so much so that it is used as a policy principle), is that geographical proximity is generally sufficient to ensure the success of these groups of firms, synergetic effects being rapidly generated by such systems. Thus, in economic literature and in many local public policy interventions [7,8], geographical proximity is often considered as a variable that is necessary for interactions between actors and therefore a key factor of the development of local systems, in particular because it is thought to be a prerequisite for the diffusion of knowledge and tacit knowledge between agents. However, applied works [9–15] reveal that geographical proximity plays an ambiguous part in the diffusion of knowledge and that the relation between knowledge diffusion and space is not always direct. Other dimensions might also have an influence, such as the organisation into networks of actors and the implementation of common or concerted actions that are conducive to local development.

The purpose of this article is to analyse the part played by geographical proximity in the functioning of local systems and to discuss how primordial it is in comparison with organisational proximity. If geographical proximity alone is sufficient to achieve synergy effects locally, then the massive localisation of firms or research laboratories close to one another should be encouraged. Impetus effects or spill-over effects should soon be generated and lead to processes of local development. However, if it is not sufficient per se for the implementation of synergies locally, shouldn't its potential be activated? if so, how? In this case, local technology policies must be based on other recommendations than just the co-location of firms in the same area. The question of the relation between geographic and organisational proximity is addressed, in this article, by using case studies. The nature of these cases enables us to illustrate the modes of coordination that contribute to the valorisation of knowledge and the diffusion of knowledge locally. In the first section, we show how the existence of geographical proximity is not sufficient for the implementation of interactions or synergies at local level, including the often-highlighted case of the transmission of knowledge (example of Networks of Technology diffusion). In the second section, we discuss how the implementation of network-type organisations at local level helps to activate geographical proximity in the framework of actions mobilising resources around a collective project (example of the cooperatives of the agro-food sector). The last section of the article is dedicated to analysis of the institutional dimensions of the implementation of mechanisms of knowledge transfer locally. The analysis reveals the importance of organisational proximity in the implementation of synergies at local level (example of the Hsinchu technopolis).

Organisational proximity: rests on two types of logic, a logic of similitude and a logic of belonging. According to the logic of belonging, actors are close when they belong to the same space of relations (firm, network...), i.e. actors between whom interactions of different natures take place. According to the logic of similitude, actors are close when they are alike, i.e. when they possess the same space of reference and share the same knowledge, so that the institutional dimension is also important. In the first case, it is on the effectiveness of coordination that the belonging to the same space depends; in the second case, proximity is linked to a relation of 'resemblance' of representations and modes of functioning.

Geographical proximity: from the perspective of the relations between agents, this is the counterpart of organisational proximity. In the case of geographical proximity, geographic separation and relations are dealt with in terms of distance. It refers to the notion of geonomic space, as described by Perroux. Referring to a great extent to the location of firms, it integrates the social dimension of economic mechanisms, or what is sometimes called functional distance. In other words, the reference to natural and physical constraints is an important aspect of geographical proximity but other aspects are equally important in its definition: the aspect of social structures such as transport infrastructures that facilitate accessibility, or the financial mechanisms that allow the use of certain communication technologies.

Source: Torre and Gilly [16]

2 The failure of the activation of geographical proximity and the weight of organisational proximity: the example of networks of technology diffusion

One of the domains of predilection of local development policies founded on the search for geographical proximity alone is the transmission of knowledge, which is thought to take place more easily at local level because of its tacit dimension. Unlike codified knowledge, which corresponds to messages that can be transferred between economic agents through non-human means, tacit knowledge, which has not been transcribed explicitly and is transmitted through contact and repeated learning between individuals, cannot easily be transferred. Thus, what could be better to transmit tacit knowledge than a face-to-face relation, i.e. the possibility of continuous meetings between actors involved in a relation of geographical proximity?

The case study dedicated to the implementation of Networks of Technology Diffusion (NTD, see, for more information [14,17]) locally shows that the co-localisation of firms cannot be a determining factor in the diffusion of knowledge and that geographical proximity alone is not sufficient for the implementation of local interactions that are often more complex than the ones described here. The failure of a public policy that aims to implement networks of local actors, and that believes that geographical proximity is sufficient for the diffusion of knowledge, thus reveals that synergetic effects are not only founded on co-location, even when they are encouraged by public incentives. To what extent are institutional networks (that consider geographical proximity as important

inasmuch as it facilitates the process of technological development), able to facilitate the effects of synergies locally?

Believing in the crucial role of geographical proximity, the Public Authorities have implemented NTDs in the different French regions in order to encourage the diffusion of technologies in Small and Medium Enterprises. Indeed, NTDs support a policy that aims to ensure, by means of different types of incentives, the primacy of synergies at a local level, presupposing that these synergies are conducive to development. Thus, the hypothesis put forward is that even constructed geographical proximity is conducive to the diffusion of knowledge locally.

The technology policies adopted by the public authorities generally consist of trying to coordinate spontaneous local networks and institutional networks in order to encourage local development. Where spontaneous local networks do not exist or are underdeveloped, the technology policies are designed to give them impetus or even to create them, through incentive or voluntarist policies. When they already exist, the objective is to help them develop, in particular by supporting cross-cooperation between partners belonging to different 'worlds' (industry, research, higher education, technical centres...). The interventions of NTDs, which group public and private agents around the regional agencies of the ANVAR (the national agency for the development and the promotion of research), are focused on the field of technological diffusion. Their objective is to help manage and solve innovation-related problems that firms are confronted with (essentially SMEs), whether their internal functioning or their relations with external partners (laboratories, universities, other firms, public organisations...) are concerned. The intervention levels of the different public partners were found to be overlapping, and so NTDs were designed as a tool to better coordinate public actions and make support to innovation more efficient.

Our study is based on a comparison of three regions with different configurations but with similar results as for the analysis of the public policies in terms of support to the diffusion of innovation: Rhone Alpes, second French region in terms of development, Corsica, a region suffering from a certain backwardness in terms of development, and Aquitaine, an intermediary region.

The *Corsican NTD* was created in order to enable local firms to have access to the available technological competencies and to use the mechanisms of support to innovation. Poorly structured, the spontaneous network of innovation is above all characterised by cooperation between local and external firms. The search for competencies constitutes the most important factor of inter-firm cooperation, and when the competencies do not exist, or are underdeveloped locally, they are looked for externally. The objective of the public authorities has been to encourage the diffusion of knowledge and technologies. In the *Aquitaine Region*, there is an old system of high and medium tech firms such as the pharmaceutical and the medical equipment industries; there are also solid scientific and technological competencies in the field of health and life sciences. But these competencies are not sufficiently valorised and not connected enough with the industry. The spontaneous network of *Rhones Alpes* holds a foremost position in the activities related to the health sector. Towards the end of the 1970s, the network was characterised by the presence of large pharmaceutical firms but also firms specialised in medical supplies, or medical engineering activities. The network has earned an international reputation for its hospitals and R&D activities. However, the cooperation between local actors is insufficient: the relations between firms, hospitals

and researchers are limited to traditional domains such as the pharmaceutical industry and the construction of interrelations appears to be indispensable in emerging sectors such as activities related to bio-medical technologies.

The study shows that policies do not always reach the objectives agreed on originally and that there is a gap between the original objectives and the networks actually implemented. Coordination between spontaneous and institutional networks remains partial, and more often than not, the original objectives of the public authorities have not been reached or are modified in the course of action.

Five years after its foundation, the *Corsican* NTD is essentially composed of regional public agents who intervene in the field of technology. It has succeeded mostly in improving the coordination between the practices and the research operations of these agents, whose image, skills and fields of intervention are more easily understood by the local economic system. In fact, the institutional network has only a slight connection with the networks of private agents because the latter are, in most cases, not localised in the region. Analysis of the cases of *Aquitaine* and *Rhone-Alpes* shows the difficulty of coordinating the different types of agents involved in the process of innovation and production of knowledge. In *Aquitaine*, the institutional networks suffer from an asymmetry between academic skills and insufficient industrial activities. The GBM appears to be poorly synchronised with spontaneous networks – when they exist – and at the same time it is continually seeking to establish itself more securely, which forces it to include all medical activities in its mission schedule, and to create relations with the leading institutional agents. Finally, in *Rhone-Alpes*, the existence of a highly developed industrial system gives the firms a decisive part to play, and the institutional networks are faced with two difficulties in defining their role and place. Firstly, the relations of firms extend far beyond the regional territory; and secondly, the industrial world is heterogeneous in terms of the size and activities of firms.

The NDT experience makes it possible to reach certain points of agreement in terms of public policies, in particular regarding the needs that must be met in order to achieve a diffusion of technologies locally. Thus, several needs are identified:

- *specialised competencies*: because of the specific character of the knowledge that must be mastered, the public authorities' interventions should support the development of partnerships that could go beyond the administrative boundaries of their field of intervention, in order to overcome the localist vision of the aid offered to innovating firms to encourage an opening towards external agents
- *fast and targeted financial help*: it is often considered that subsidies are late and are not adapted to the specific needs of the agents. The aid measures meant to help solve specific problems met by firms need to be implemented with less delay
- *organisational support to help create and develop partnerships*: finding the right partner necessitates time and means which firms do not always have. It also necessitates enough time to coordinate the demand expressed by the firm and the supply proposed by the partner, and financial help should be provided during this period of adaptation
- *trained staff and access to competencies*: the distance and the absence of local qualified workers are all obstacles to the development of innovation policies and must therefore be dealt with according to the specificities of the areas where the firms are located.

The failure of public policies and the fact that they have had to depart from their original objectives can be explained by the presence of two difficulties hindering the implementation of local innovation networks supported by public policies:

- *the differences of cognitive logic, or the importance of organisational proximity*

One of the difficulties facing local technology policies is to establish cross-cooperation between different types of local agents (business people, researchers, trainers...) whose work habits and cognitive reasoning are very different. For instance, the fact that medical doctors and business people are geographically close to each other, is not enough for them to work together and to establish a network, despite the efforts made by institutional agents. And tacit knowledge is easier to diffuse within one particular professional world (even at a distance) than between different worlds (even when they are located in the same area). Although they are supported by the voluntarist development of institutional networks, geographical proximity is not sufficient to break down this compartmentalisation.

- *the weight of the past*

Organisational proximity is not necessarily based on geographical proximity. For reasons pertaining to the manner in which these local systems were built, agents often cooperate with partners outside the region. They have been used to cooperating with the latter and this habit results in the mutual understanding of people and organisations, and in common work procedures which have proved to be efficient. Bringing agents that are physically close to each other into contact is not enough, if they have not already established relations of an organisational nature. By overlooking this, voluntarist technology policies often end up reproducing the very situations they had set out to solve. Thus, the example of the Corsican NTD shows that it is illusory to try and speed up technological development through interventionism, and even more so to encourage, in a voluntarist manner, local interactions, at the expense of external relations. This is why the current stage, that of the appropriation of new knowledge by the members of the institutional network, is essential to build skills that can be shared between these members who are already related. The development and realisation of projects initiate the second stage where past relations are re-established on the basis of coordination that has now been defined. The pre-existing relations prove to be the strongest, and a regional technology policy can only promote their development effectively if they involve both geographic and organisational proximity.

Thus, geographical proximity fails as a form of proximity that organises the activities of innovation. These results are all the more convincing as they are verified in the case of the diffusion of tacit knowledge (one of the strong hypotheses adopted by policies in terms of geographical proximity) and as they apply to the case of NTDs (institutional networks that fail to set up locally). They reveal how difficult it is to bring together local agents belonging to different worlds. Thus, the diffusion of knowledge and technology requires organisational proximity between agents, that is, pre-existing relations based on professional links, facilitated or not by geographical proximity. How is this organisational proximity set up? How can collective actions emerge and thus activate geographical proximity? We show in this article that the solution necessitates the local implementation of networks that mobilise local competencies in the context of collective projects.

3 Activating geographical proximity through collective projects: the organisational dimension

If geographical proximity cannot generate processes of interactions and synergies locally, it is necessary to try and find ways of activating it and revealing its potential. Collective actions, which mobilise competencies or valorise local know-how, can play this role when they are based on the notion of a collective project. The case of agricultural cooperatives, discussed below, shows that it is possible to activate geographical proximity through the development of interactions between agents organised into networks and grouped around one common project (see, for more on this research, [18]). Indeed, whilst the specific legal framework of these cooperatives – laws of agricultural orientation on the economic organisation of producers and law on the status of agricultural cooperation – imposes a territorial anchoring (the perimeter of action, defined by the localisation of the members), the competitive pressure has led them, first of all, to extract themselves from this localisation in order to privilege relations with external economic structures, at the expense of their members. However, the necessary introduction of food safety and traceability procedures has resulted in a revalorisation of relations with the members and of territorial anchoring because of the need to trace the product from its origin. This example shows how cooperatives, organised around organisational processes, succeed in valorising the potential of geographical proximity through collective actions involving the members locally.

By definition, cooperatives are the result of a collective project initiated by local producers, called members, who both supply products or raw materials and are clients of the structure they have created together. The cooperative structures, which are at the centre of this mechanism and coordinate activities between the different members, are composed of administrators (elected by the members) and paid employees. These structures result from the coming together of agricultural farms with a strong local dimension and their objective is to organise the implementation, collection and transformation of the members' production, and to ensure their reputation through collective actions. Therefore they must reconcile economic performance (marketing of the products) and their social requisite (serve the members).

Cooperatives can be defined by a certain number of legal characteristics:

- 1 the members are the suppliers and the clients of the cooperative
- 2 their contribution commitments are defined in contracts
- 3 the cooperative, a company with variable capital contributed in proportion to activity commitments, is owned by its members
- 4 the vote, characterising the involvement of the latter in the management of cooperatives (validation of moral and financial reports), is based on the one-person one vote principle.

The difference with private firms also has to do with the perimeter of action, fixed in accordance with the statutes according to the location of the members: indeed, agricultural cooperatives cannot legally collect products outside their location area, nor from non-members, whatever the profitability of this type of operation. The territorial anchoring of cooperatives is therefore linked to that of the members of the structures,

which might have been considered as a constraint in comparison with the statutes of private firms.

As a consequence of globalisation and the increase in competitive pressure on the markets, the cooperative sector has, in the last few years, experienced important evolutions that are made visible by the modifications of the legal framework of agricultural cooperatives. The public authorities have, in particular, implemented a policy encouraging them to take the form of subsidiaries in order to develop their transformation and marketing activities. Thus, the laws of 1991 and 1992 organise the modalities of their transformation into subsidiaries and the reinforcement of the equity capital of the cooperatives and enable the creation of cooperative groups to encourage the association of producers through the application of collective rules of production and marketing [19]. These laws have resulted, downstream of the agro-food sectors, in the formation of a large number of subsidiaries with private status, thus encouraging the emergence of cooperative groups whose functioning tends to become more similar to that of the private sector. Thus, in 1999, farmers controlled half of the industries of transformation of their products, through their cooperatives and subsidiaries [20].

But the emergence and reinforcement of large cooperative groups has caused tension between the economic and the social functions of the cooperatives. Indeed, like any commercial or private firm, they must reach an objective of profitability, which depends on processes of external and internal growth and on a commitment to reach specific standards of quality. The negotiation with the suppliers imposes the absolute respect of the specifications imposed by the latter, and a reinforcement of the vertical organisation of the sector. Because cooperative groups are forced to integrate economic networks located essentially outside their area of implantation, their strategies are greatly influenced by the clients and the consumers. The decision-making power, initially held by the members, now belongs to other agents. This process, which reflects a slackening of the bond to the territory, may prove to be antagonistic to the founding social objective of cooperatives, i.e. to serve the members.

The so-called movement of the 'distancing of the members from their structures', which corresponds to a loosening of territorial anchoring, follows the modification in the egalitarian treatment of the members. Indeed, the regulations concerning sanitary quality dictated by official standards (ISO type) or negotiated between the suppliers, certifying organisations and the cooperative, do not just codify the quality of the products, they also lead to the appearance of differentiated remuneration and introduce differences in treatment between members who were until then equitably remunerated. By adopting means of improving their economic performances, not only do cooperatives bring into question their social objectives but they tend also to lose their initial bond to their territory. Indeed the members who do not respect the specifications no longer benefit from impartial treatment because of the introduction of a system whereby their contributions are not remunerated equally. This is followed by an eviction, which rests on technical and economic criteria and no longer on cooperative solidarity, and constitutes one of the factors of the loss of members.

This phase of loosening of the territorial anchoring was followed by another stage, which translated into a reactivation of geographical proximity, under the influence of collective projects initiated by local actors. Indeed, since 1995, 'mad cow disease' has had a strong moral impact, and consumers and the public authorities now demand the new criteria in terms of sanitary or organoleptic quality of the products, of food safety

and of origin of agricultural products. Taking into account the principle of caution in terms of food has led not only to respect for the specifications of the supply, but also to respect for regulations concerning food safety and traceability of the product back from its origin and up to its finished state. Then, the reactivation of geographical proximity is imposed on the cooperative since these procedures, by monitoring the complete history of the products, necessitate the involvement of the members, anchored to their territory.

What is at stake for cooperatives, is to reconcile their initiatives to obtain a collective mark for their products – belonging to specific geographical areas – and the quality certifications – ISO standards or certificates specific to the cooperative sector and indicating the production from its origin within the cooperative sector – which requires the mastering of complex technical knowledge. Playing a strategic part in the monitoring of the stages of production and of the tools of quality control, cooperatives ensure the supply of a product that meets the demands of certification and food safety. But, considering the huge technical equipment and costs that are necessary for the coordination of the different certification procedures, it proves essential to involve the members in the implementation of this collective strategy. Thus the latter play a preponderant role again, which enhances the importance of the local level of production. Indeed, because of his/her mastering of heavy and complex technical procedures and his/her stability in time, the producer becomes an essential element for the cooperative to maintain its competitive advantage, at a time when production constraints are becoming increasingly tight. Furthermore, the pre-existence and maintenance of interpersonal relations between the leaders of the cooperatives and their members are an asset, because they make it possible to reinforce collective cohesion and respect for the rules and objectives of cooperative structures. The member is then at the heart of this newly implemented mechanism, which is going to mobilise either his/her own competencies in terms of production of food products or organisational know-how developed by the cooperative group as a whole (members, administrators, workers).

For the cooperative, members become essential elements, as losing one of them results in the loss of technical and organisational knowledge, which is harmful in respect of contractual commitments with the client. This strategy leads to new acceptance of the service that the cooperative must offer to its members. The mission of the cooperative is not only to market the products, and therefore to negotiate prices, but above all to develop strategies to improve the products. The cooperative provides economic, technical and strategic advice which takes into account the demands of all parties, and gets actively involved in the processes of ‘qualification’ of the territories, which reflect the renewal of their territorial anchoring.

This case study reveals an activation of geographical proximity by organisational proximity, and in particular by collective projects. To start with, the complexity of cooperative structures gave way, under competitive pressure, to an inter-agent coordination dominated by organisational-type proximities, and gave the impression of a loosening of the cooperatives’ ties to their territory. However, following the crisis of the ‘mad cow disease’ and thanks to their know-how and the management of the quality of agricultural productions, cooperatives managed to reactivate the local anchoring and reinforce the ties with their members, by focusing on the certification of the production, for which the origin and the relation to the territory are extremely important. The valorisation of these local productions can then be achieved by a mobilisation of the energies that are present within the cooperative structure around a collective project. The networking of the agents who use the resources of organisational proximity is based on

the mobilisation of local competencies and on the enhancement of the territory's resources. Thus, in the case of agricultural cooperatives, the activation of geographical proximity through collective actions is achieved through a project of valorisation of technical and organisational know-how. The member who has this knowledge, becomes an essential element for the implementation of strategies of certification.

The study of agricultural cooperatives reveals how geographical proximity can be activated through a concerted collective action, mobilising competencies and know-how for the purpose of a collective project. The benefits drawn from the activation of geographical proximity by organisational proximities are related to the organisational modalities of the sectors and actors. The analysis of the latter enables one to draw new conclusions regarding the policies that are likely to support an intervention of the public authorities in terms of local development:

- The public authorities can contribute to the activation of geographical proximity through their involvement in *collective projects carried out locally*. Reinforcing the image of territories through an effort of specification of the latter is conducive to the valorisation of local know-how (see the policies of territorial marketing implemented in technopoles). In the present case, public intervention can facilitate the association between the valorisation of the products of origin (with support to the producers), and the promotion of the territory concerned.
- The public authorities can help generate a regional dynamic connecting the different local productive projects. Respect for the specifications implies a *dialogue* involving not only cooperatives but also the agents who intervene in the rural world whether or not they are farmers. Indeed, with the increasing importance of environmental standards, it has become necessary to make sure that the different activities conducted in one individual area are compatible. The localisation of a polluting factory, for example, is not compatible with the development of organic production. It is therefore important to facilitate a dialogue that generates forms of participative local governance.

Thus, geographical proximity, which is consubstantial with the very existence of cooperative structures, is not sufficient for the efficient networking of local actors. The latter can only be achieved through the implementation of a collective action serving a common project. Only then will the potential of geographical proximity (in the present case the existence of products related to the origin and the activated network of local cooperatives) be valorised and facilitate a development policy. Here, however, the limits of an action that is only organisational can be seen. Indeed the mobilisation of the local agents can only occur within institutional dimensions, whether it be the signs of qualification of the products and productions implemented by the public authorities, or the legal framework imposed by the latter. In this context, it is necessary to define the part played by the institutional dynamics in the activation of geographical proximity. The case of the Hsinchu technopolis, a typical example of a combination of existing knowledge and new knowledge, will enable us to discuss the part played by the institutional dimension in the activation of geographical proximity.

4 Activating geographical proximity through collective projects: the institutional dimension

The organisational dimension, which is important to activate geographical proximity, is not always sufficient, in particular in the case of systems governed by strong public interventions. The example of technopoles, characteristic of public interventions in terms of transmission of knowledge, enables us to illustrate the institutional aspect of the activation of geographical proximity. After giving rise to several studies in the 1990s [3,21,22], the technopolitan experiences have since been relatively overlooked, despite the fact that experiences of this type still carry on throughout the world. The public actions carried out in Asia contrast with the more spontaneous nature of Silicon Valley or Route 128 in the USA [23] and can be compared to the technopolitan experiments in Japan (Tsukuba) or in France (Sophia-Antipolis), or even to industrial districts when they are governed by institutional structures [4]. Some form of institutional support is generally deemed necessary, at least to help these structures to start up.

The case of the Hsinchu technopolis (Taiwan, see for more on this research [24]), a localised institutional mechanism combining high-tech activities with public and private agents, is a counter example of certain failures observed in the context of the development of technopolitan areas. Although Hsinchu is the product of public intervention and not history, it is part of the socio-cultural context of a traditional and holistic Chinese society (see also [25] on this topic). This example of local anchoring of a system of high-tech activities raises the question of the role of formal institutions. It shows the possible modalities of coordination around one collective project, based on a totally artificial creation, and it reveals the part played by institutions in the activation of the potential of geographical proximity.

The objective of the science park of Hsinchu – founded in 1979 – has been to promote the development of the Taiwanese high tech industries. For this purpose, the park was conceived as a development pole founded on the technical impetus provided by a leading firm. In 20 years, it has evolved from a pole of development supported by public agents to a type of organisation more like an industrial district, and it is moving, nowadays, towards cooperative forms, which concern in particular a system of over 300 small and medium firms weaving together relations of competitiveness, complementarity, and cooperation. In spite of its bureaucratic origin, the technopolis has, since its creation, experienced fast and continuous economic expansion expressed in the creation, thanks to spin-off effects, of many ‘indigenous’ firms from local enterprises. Thus, between 1981 and 1997, the number of firms in the technopolis increased from 17 to 245. This economic dynamism certainly results from the Chinese entrepreneurial culture which conveys a state of mind very well illustrated by the proverb ‘better be the head of a chicken than the tail of an ox’; in other words, it is better to be the boss of a small firm than the lowest subordinate in a large company. Thus, just like industrial districts, the Hsinchu Park indicates a strong capacity of endogenous development of its productive system and its labour productivity is above the national average. But its dynamism also results to a great extent from the institutional conditions that surrounded its creation and development.

It must be noted however, that because it was not designed as an instrument of local development, but rather like a national governmental project meant to promote the ‘triangle of cooperation’ between public research institutes, universities and private high tech firms, the technopolis is administratively isolated and has practically no relations

with the town of Hsinchu. This administrative separation has led to conflicts between the park and the local authorities, in particular regarding tax collection. Therefore the technopolis cannot yet be considered as an industrial district, inasmuch as the region where the park is located does not seem to have benefited from spill-over effects of the technological centre on its local economic development.

If geographical proximity contributes to the reduction of uncertainty and facilitates the formation of more or less tacit conventions, the latter can only be implemented once sustainable relations have been created. In Taiwan, the Chinese traditional practice of networks of generalised mutual solidarity ('guanxiwang') has made it possible to induce a spontaneous sociability within the Hsinchu technopolis, reinforced by the presence of local organisations that created networks of personal relations ('guanxi'), such as the Institute of Research on Industrial Technology (IRIT) and the Universities of Chiao-Tung and Tsing-Hua. Indeed, most engineers study in these universities and maintain friendships with their fellow students even once they have started working for firms in the park or in the IRIT. Being members of a guanxiwang, they are linked by bilateral relations of moral indebtedness based on the logic of gift/counter gift. The giver keeps a moral right to the given object, and the exchange is not limited to the visible outline or the physical characteristics of the object. Therefore, it is never only objects that circulate between individuals, but a number of symbols combining the object, the force it conveys, the mark of the giver, the recognition of its social status, the expression of respect and not hostility towards the individual to whom one gives, etc.

Through the guanxiwang, engineers exchange regularly, in an informal but effective way, their views, knowledge and opinions that generate effects of informational transfer. Through these chains of personal relations, information circulates very quickly within the park. Geographical proximity facilitates the recurrence of meetings and sharing the park's infrastructures (transport, communications, schools, restaurants, services, equipment) facilitates the creation and maintenance of relations and exchange. Everyday life gives people the opportunity to maintain social relations by using the same leisure or education facilities (restaurants of the park, hotels, schools, gardens...) and through neighbourly relations. Thus, the 'cafeteria' effect, often praised in the implementation of a technopolitan system, plays a significant part.

In Hsinchu, the production process is divided into segments (each firm specialises in a segment of production and maintains relations downstream and upstream with other firms) and the park's prosperity depends on the existence of a few leading firms specialised in production activities, so that the vertical relations hold an important place in its dynamic of growth. However, the R&D effort still depends partly on the governmental institute IRIT and on the return to Taiwan of Chinese 'brains' who had emigrated to the USA. The IRIT has designed a project of technological development approved by scientists, many of whom come back and work in their country of origin and participate in the networking of competencies locally. Thus, we observe, besides implicit behavioural rules, cultural values, and shared collective representations of the future, the existence of collective learning processes. The latter depend on local networks of cooperation requiring the valorisation of local know-how, on the circulation of information concerning technologies and markets, and on the sharing of tacit knowledge. Thus, the Hsinchu technopolis is like a territory in transition, a development pole founded on the pre-eminence of vertical relations, but which seems to evolve towards a form of agglomeration similar to an industrial district, after only 20 years of existence.

This experience demonstrates that it is possible to create *ex nihilo* an industrial and high-tech complex in a region with no industrial tradition and far from any big agglomeration. The local government has indeed managed to create an industrial centre supported by research centres that are among some of the most advanced in Taiwan, with consolidated forms of coordination between public agents (ITRI/ERSO, the universities of Chiao-Tung and Tsing-Hua) and private agents and between the latter. However, the study shows that the technopolis has, above all, been successful thanks to institutional contributions. In particular:

- the presence of university and research infrastructures created by the government, which point to the pre-existence of local scientific infrastructures, necessary for the implementation and development of synergies at the level of the transmission of knowledge
- the Confucian conception of technology policy privileging the diffusion – rather than the appropriation – of technology and the development of interpersonal (rather than inter-organisational) networks of mutual solidarity.

More concretely, the central part played by the ITRI has consisted of creating a milieu that is conducive to the propagation of technical progress and to the circulation of knowledge. For this purpose, this local mechanism of coordination has tried to foster relations between researchers and business people through the traditional channels of technological diffusion (joint research and development contracts, publications, seminars and training, strategic alliances, systematic co-financing with the private sector), as well as through two other channels, which have proved to be the most efficient: the employment of young engineers educated in Taiwanese universities who are encouraged to create their own firms after a few years of experience, and the creation, thanks to the spin-off effects, of new firms that are supplied with the necessary technology. Thus, these forms of institutional interventions have activated the potential offered by geographical proximity prevailing within the park.

Thus, the example of Hsinchu validates the thesis according to which a strong ‘institutional capital’ accelerates the transition from a territorialised organisation created by public authorities to a socio-territorial entity marked by cooperative relations and specific creative abilities. The efforts of the public authorities, in terms of infrastructures and promotion of local interactions, have had positive results and have made it possible to implement local networks and to generate a local spirit of cooperation. Time, associated with strong incentives towards scientists trained in the universities, has contributed to completion of the work and to facilitating the implementation of synergies locally. Furthermore, this study of networks of generalised mutual solidarity reveals the importance of individual relations in the construction of local networks of firms and diffusion of knowledge. The latter constitutes for organisations, extremely valuable latent relations whose activation can occur in certain contexts and whose existence can generate the creation of relations between the firms to which individuals who maintain them belong. Thus, if we only took into account the analysis of inter-firm cooperation, we would conclude that the firms of Hsinchu do not cooperate directly, whereas, in reality, they are very closely related through a system of informal interpersonal relations (outside the market). As a consequence, a local system of innovation – all the more so if it is Chinese – may be considered as a system where two types of networks are linked: a network of individuals and a network of organisations.

Geographical proximity is not enough to generate cooperation between local agents and therefore a local economic development, but it is an indispensable foundation when it is activated by collective actions supporting collective projects. The projects mentioned here are supported by institutions who have anticipated the development of the park and shared their vision regarding to the creation of a local system articulated around local networks of actors. Geographical proximity is activated by a collective action and by the organisational and, above all, the institutional networking of actors.

5 Conclusion

The idea that the location of productive agents in the same area implies the coordination of their actions, and therefore the implementation of synergies conducive to local development, remains widespread. It leads to public local policies of a voluntarist nature that rely on incentives to encourage the joint location of firms or research laboratories, in the rather illusory hope that geographical proximity created or encouraged in this manner will generate fruitful and numerous interactions. Our work, which is based on three case studies, shows that reality is more complex and that, even if geographical proximity plays a significant part in the process of local development, it must be activated by another type of proximity, organisational proximity. It is the networking of actors locally that can generate these phenomena, but this networking cannot be decreed (see the example of NTD). It is only when it serves a collective project, seeking the mobilisation of local resources or the combination of the local knowledge with external knowledge, that success can be achieved, whether it be a purely organisational mobilisation, or a mobilisation supported by institutional incentives and interventions.

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