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Temporary geographical proximity for business and work coordination: when, how and where?

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Abstract

This paper explores the role played by temporary geographical proximity (TGP) in the coordination of
economic activities, depending on the means of coordination, the times when and places where it
occurs. First, it specifies the times when geographically distant actors need to meet physically in
order to coordinate their activities and why this happens. The authors argue that these moments are
related to particular stages in the coordination process, i.e. the trust building and conflict manage-
ment stages. Second, the paper examines the relation between TGP and ICT and how they are used to
facilitate coordination. It is argued that TGP and ICT call into question the traditional opposition
between "far" and "close" and between "presence" and "absence". Third, it is shown that temporary
interactions take place in three main types of places: places that host occasional but recurrent multi-
lateral meetings (trade fares, conferences, exhibitions), places where the members of a common
project temporarily meet in order to coordinate with one another (an airport for example), and "ordi-
nary places" of interaction or work. The conclusion emphasizes how a TGP-based approach offers a
less biased perspective on the role of space in the coordination of economic actors and argues that
organized proximity alone cannot ensure coordination; conversely, it must be used in conjunction
with the different types of geographical proximity.

Temporary Geographical Proximity for Business and Work Coordination: When, How and Where?

1   Introduction

In a recent paper (Torre and Rallet 2005), we sought to understand the role of geographical space in the coordination of individuals and organizations and for this purpose we used two proximity related concepts: geographical proximity and organized proximity. Geographical proximity, can under certain conditions, facilitate interactions and common actions between economic actors that are located in close proximity to one another. Organized proximity also facilitates interactions between actors, but does not always necessitate the colocation of the latter. Belonging to an organization (in the wide sense of the term) – with its set of common rules – enables the members to share the same representations and values, which facilitates their coordination, even when distance separates them.

Within this basic pattern we have found a variant of geographical proximity, which we have called temporary geographical proximity (or TGP). *It corresponds to the possibility of satisfying needs for face-to-face contact between actors, by travelling to different locations. This travelling generates opportunities for moments of geographical proximity, which vary in duration, but which are always limited in time.*

In the debate about whether or not individuals or organizations "need to be in close proximity to one another in order to perform common tasks", one often fails to take into account the fact that individuals can travel in order to coordinate with one another. So, fulfilling the need for face-to-face interaction does not necessarily require permanent co-location. Yet, literature often assimilates the former to the latter, either, in order to more easily attribute the agglomeration of individuals to their need to meet face-to-face to be able to coordinate with one another (this is the explanation of the nature of cities: Gaspar and Gleaser 1998; Duranton and Charlot 2006), or, reciprocally, in order to postulate that the needs for face-to-face interaction justify the existence of agglomerations (It is the tyranny of clusters, milieus or districts; see Porter 1990).

The confusion between the need for face-to-face interaction and permanent co-location has been reinforced by the debate on the impact of information and communication technologies (ICT) on the geography of activities. The naive theory of "the end of geography" (Cairncross 2001) has been criticized with the argument that individuals still need to interact face-to-face, and that therefore, activities and individuals need to be located in proximity to others. But, just because the participants of a project need to meet physically in order to coordinate with one another, does not necessarily mean that these partners are going to locate in the same area. And, reciprocally, activities are not necessarily located in the same area for coordination reasons only: Firms might concentrate in one area because they need access to the same physical infrastructures (access to fast transport), or cognitive infrastructures (institutions of education, of knowledge production, socio-economic or cultural institutions).

People who need to meet physically in order to coordinate with one another do not necessarily have to live in the same area. And reciprocally, the need to coordinate with each other is not the only reason why people live in the same area. In other words, agglomeration is not necessarily due to the need for coordination between work partners. The advantage of co-location is that it facilitates face-to-face meetings, but these meetings are not necessarily related to work; indeed there exists many types of social interactions. We believe that the geographical scale in which work-related coordination takes place is growing increasingly wide, even in cases

when the tasks necessitate geographical proximity and face-to-face interaction. There is an increasing disconnection between agglomeration factors and work related coordination needs. TGP is a central element in this disconnection because it enables individuals to fulfil their needs for face-to-face interactions without having to be permanently co-located in order to coordinate with one another (see Torre 2008).

This paper aims to explore the role played by TGP in the coordination of economic activities, depending on the *means* of coordination, the *times* when and *places* where it occurs. In doing so we intend to answer three central questions related to TGP when it is used in the context of work relations: When? How? Where?

In the first section, we present and analyse the *times* when TGP generally occurs, times which vary according to the stage in the coordination processes. It is important to specify the times when geographically distant actors need to meet physically in order to coordinate their activities, and to explain the reasons motivating these meetings. We argue that these moments are related to particular stages in the coordination process, i.e. the trust building and conflict management stages. In the second section, we examine the relation between TGP and ICT and how they are used to facilitate coordination. We believe that TGP and ICT call into question the traditional opposition between "far" and "close" and between "presence" and "absence". In the third section, we show that temporary interactions take place in three main types of places: places that host occasional but recurrent multilateral meetings (trade fares, conferences, exhibitions), places where the members of a common project temporarily meet in order to coordinate with one another (an airport for example), and finally, "ordinary places" of interaction or work. Our conclusion emphasizes how a TGP-based approach offers a less biased perspective on the role of space in the coordination of economic actors and helps us to show that organized proximity alone cannot ensure coordination and that it must be used in conjunction with the different types of geographical proximity.

2 The times when TGP occurs

One important characteristic of TGP meetings is their temporality. Indeed, TGP plays a more or less crucial role depending on the stage in the innovation or production process. The successive stages in the production and innovation processes[1] conducted by partners located far from each other correspond to different needs in terms of coordination and cooperation. Thus, some stages in the process require that the different actors be located in the same place, whereas other stages only necessitate the use of ICT (long distance interactions based on organized proximity), and at other times actors coordinate with one another by meeting in specific places that facilitate interaction.

This pattern is characteristic of technology transfer in the biotech sector, for example (Gallaud and Torre 2004). In this sector, the technological cooperations between firms consist of successive phases that condition their relation to space. The role played by geographical proximity diminishes with time. It is used in complementarity with organized proximity (distant relations) during the phase of co-production of fundamental, tacit and contextual knowledge. It diminishes subsequently during the phase of absorption of the knowledge produced during the scientific phase, which implies a re-contextualisation of the latter in order to test it in various situations. Finally, it is often replaced entirely by organized proximity in the stages dedicated to the design of prototypes and clinical trials or to the codification of research results. Coris (2008) finds similar results concerning the relocation processes of firms in the software industry.

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[1]/. We are not denying the relevance of the chain linked model such as it is described by Kline and Rosenberg (1986) and of the multiple interactions that take place during production and innovation processes (which cannot be seen as linear). We argue that certain types of interactions – with specific spatial configurations – are more or less important depending on the stage in the process.

TGP becomes necessary when, at certain stages of the process, individuals need to meet face-to-face in order to be able to coordinate with one another. According to Storper and Venables (2004) there are four reasons for the use of face-to-face interaction:

- It is an efficient communication technology

- It reduces incentive problems by generating trust

- It facilitates the screening of the partners

- It mobilizes the partners collectively and motivates effort.

To simplify matters, let's say that face-to-face interactions are necessary for two reasons: *interpersonal* reasons and *functional* reasons. The interpersonal reasons are related to the fact that activities of production or innovation are embedded in interpersonal relations (Polanyi 1944; Granovetter 1985). In order for individuals to work together on common tasks, they need to know and trust each other and they need to know how to solve tensions and conflict. The functional reasons are endogenous to the collective work process itself. In order to coordinate with one another, partners need to exchange information, share or co-produce knowledge. When exchanges are complex,[2] face-to-face contact is the most efficient communication technology because it is the one that allows for the richest interactions. Not only does it allow for the instantaneous exchange of messages between individuals, but it allows the latter to express themselves and therefore communicate with others in different ways (visual communication, body language, images, metaphors etc) and to express their emotions. These two dimensions are active in the context of work relations.

These reasons do not apply to all stages of the cooperation process. It is important to identify the times when geographically distant partners need to meet physically in order to coordinate with one another. These moments correspond to stages when mutual trust is being established or when conflicts are being addressed. The establishment of trust between the participants of a project enables the latter to work together from a distance, without having to be under permanent watch (which is the case in the context of co-location) (section 1.1). But one must also anticipate and solve the inevitable obstacles and possible conflicts (section 1.2.) resulting from the complexity of long distance coordination.

2.1   Trust and TGP

The participants of an innovation or production process act in such a way as to maintain their ties and facilitate their coordination and cooperation. This is true both within firms, and between geographically distant partners belonging to different organizations. Two types of measures are then taken. In some cases, TGP is used through meetings of varying durations and taking place in various places. In other cases, the physically and geographically distant partners manage to maintain contact through long distance communication – using ICT tools. In both cases, the main purpose of these exchanges is to forge, maintain or rebuild strong ties between the members of the project so as to ensure its success. In other words, the partners must develop and maintain trust-based relationships with one another to ensure that the collaboration runs smoothly and effectively, regardless of whether the different partners are located at a distance from or in proximity of each other.

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[2]/. To explain the need for face-to-face contact, we prefer to talk about the degree of complexity of the interactions rather than to refer to the generally used distinction between tacit and codified knowledge. We do not consider this distinction relevant here (Torre and Rallet 2005). See Balconi et al (2007) for a criticism of the use of this distinction.

In long distance cooperative work and in cooperative production or innovation processes, mutual trust develops in three main stages: the stage when the cooperation is initiated, the meetings scheduled in advance and the times during the course of the project when the partners work together from a distance.

2.1.1 The initial stage

This phase is particularly crucial in the development of cooperation and trust between the different participants of a project. This initial stage involves either individuals who belong to the same organization, or people who already know one another but belong to different organizations, or newly acquainted partners. But it is always characterised by a high level of uncertainty, related to the personality and work methods of the participants and to the characteristics of the common production or innovation project.

This is why, as soon as projects are launched, meetings of various lengths between the different partners are organized: platform teams, trade shows or meetings. The purpose of these meetings is to build a common knowledge base integrating the knowledge and experienced-based know-how of the different participants. Trade shows have the added interest of offering organizations opportunities to meet and acquaint themselves with potential partners: they are places where people can make new acquaintances, can get to know and test one another – both inside and outside the context of work – in order to lay the foundations of mutual trust.

During the initial stage of co-presence, the aim for the project participants is to get to know one another, adjust their points of view, prepare the technical and human aspects of the cooperation, plan the future stages of the project and negotiate agreements concerning the possible gains or losses resulting from the cooperation process. The duration of this initial stage depends on the complexity of the project and on the number of partners involved. Two forms of trust must develop during the course of the initial stage: the trust one places in a person or in his/her future intentions – a type of trust that is accompanied by uncertainty –, and one's confidence in entering into a trust relationship with a partner:

  – The initial trust is based on the reputation of the people with whom one wishes to cooperate (more often than not the potential partners know each other either personally or by reputation [Schuldt and Bathelt 2007], or met at a trade show for example, before signing a cooperation agreement) or on the existence of community ties (when the partners belong to the same firm or to the same industrial group). This trust can be broken in the subsequent stages of the cooperation, if the partners fail to fulfil their commitments or to do what was expected of them;

  – The commitment to collaborate – that is engaging in a relation of trust – depends on the degree of trust placed beforehand in those with whom one wishes to work but also on the perceived level of risk – risk related to the individuals and to the technical tasks involved. The decision to "take the jump" and to collaborate with partners depends on the ratio between the perceived level of risk and the level of trust one places in the potential partner (Mayer et al. 1995).

2.1.2 The meetings scheduled in advance

These meetings are scheduled in advance, either contractually or informally, when the participants launch the process. Their purpose is to reduce and to help make the perceived risk more manageable, whether the risk is related to the characteristics of the partners themselves or to those of the tasks that must be undertaken. These meetings generally take place once every two years and are aimed at verifying that the work is performed properly, at determining what has been achieved and at preparing the future stages of the collabora-

tion, and in some cases, at modifying the organization of the project so as to adapt to possible changes that might have occurred at one of the partners' since the previous meeting.

The scheduled meetings take place in a selected venue and are attended by all or some of the cooperation partners so as to review the progress of the joint projects and to validate the agreements reached previously concerning the future stages of the collaboration. The aim is to assess whether mistrust has arisen between the partners, and if necessary to re-establish the foundations for renewed trust. But these meetings also offer the different partners the opportunity to meet and interact outside the strictly professional context and to discuss things other than technical or economic questions; they can spend time together, talk in a more informal manner and thus consolidate or rebuild the mutual trust that binds them together.

2.1.3 Long distance cooperation

Trust constitutes a capital of crucial importance during periods when the partners have to work together from a distance. When the different teams are geographically separated, their relations rest on their initial trust of one another and this trust is validated, or invalidated by the partners' interactions and actions. Between two face-to-face meetings long distance relations are established so that the production process can be performed – at technical level – and also so that the partners can reinforce their cooperative relations. These long distance interactions enable the partners to acquire information about each other's integrity, about how they function and react to different situations and this information is then used as a basis for their judgement and is an asset that can be mobilized in the trust relationship.

Depending on how the partners interact with one another, virtuous or vicious circles of trust can set in. A virtuous circle sets in when interactions run smoothly, which leads to an increase in trust, a self reinforcing trust. This is what Kreps (1990) calls the construction of reputation. A vicious circle sets in when technical, economic, financial or human related problems and result in a deterioration of trust, and in turn generate distrust or mistrust. And when the partners' negative judgments are validated successively, tensions and even conflicts can emerge between the participants of the projects, forcing them to set up unscheduled meetings (see below).

2.1.4 Trust relations and spatial links

The trust relationships that develop in the context of cooperative work can be divided into two categories: community trust and interpersonal trust.

1) Community trust corresponds to a relation between individuals whose actions are embedded in a set of rules governing the family or community to which they belong. It is related to a community (religious community, group of friends, ethnic community, social group …) and precedes the relation between two individuals.

These communities are often locally based, as in the case of industrial districts or clusters. In this case, trust goes hand in hand with geographical proximity or co-location. This type of organization is fostered by a space-based solidarity between actors, as is the case of local systems of production. The existence of a trust relationship between the actors enables them to anticipate their common future more efficiently, by reinforcing their preference for the future and by facilitating their quest for relationships that will be mutually beneficial.

2) Interpersonal trust concerns relationships between individuals. It is acquired through mutual commitments, signs that one sends the other to justify his trust. Thus, this commodity that does not exist before the cooperative work relationship; nor is it a piece of information or a resource that has been stored and from which actors can draw.

This type of trust plays a central role in long distance interactions and in the development of TGP relations. Indeed, collaborations are established on the basis of a pre-defined protocol aiming to establish trust. This trust is then validated during successive long distance exchanges and meetings organized in order to ensure the effective functioning of this system of interactions or to revalidate it if necessary.[3] Based on the repetition of interactions and the development of the partners' reputation in each other's eyes, mutual trust enables the partners to do without daily face-to-face interactions and to establish a protocol for long distance communication, using ICT. But the partners must review and revalidate this trust at regular intervals by using face-to-face meetings (i.e. temporary geographical proximity). As Nooteboom emphasized (2002, 135), "....people do not have to stay in the same place on an ongoing basis, but may stay together for a while and then interact at a distance, and reconvene from time to time to update and maintain their shared underlying cognitive categories."

2.2   Conflicts and TGP

Difficulties can arise between the partners during the cooperation process and can affect their relationship. They may be problems related to the management of the human resources or to technical or relational aspects of the project; they generate misunderstanding between partners and can lead to conflicts. These conflicts can be addressed during pre-scheduled meetings, but being endogenous in nature, they generally necessitate the convening of ad hoc, unscheduled meetings, the purpose of which is to find solutions and safeguard the cooperation process. TGP proves necessary to conflict resolution.

2.2.1   Conflict, an expression of the obstacles to cooperation

A distinction must be made between conflicts and the tensions that arise during a process of cooperation, particularly those related to long distance communication. Indeed, misunderstandings can occur between the participants of a production process due to the geographical distance that separates the partners or due to the fact that the latter do not share the same work culture or values. These tensions can generally be solved by means of long distance communication or third party mediation. But there are times when differences between the partners are more important and lead to conflicts – which are stronger than tensions.

The difference between tensions and conflicts is clearer if we use the concept of commitment (Kirat and Torre 2007). The commitment of one or the other party takes the form of a credible threat (Schelling 1960) that marks the start of a declared conflict. The threat is made in order to: first of all show the determination of one of the protagonists to its partners, show them that the former will not tolerate its partners' behaviour, and secondly force the author of the threat to pursue this path by making it impossible for him/her to not act on his/her words.

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[3]/. We could refine this configuration by introducing the organizational trust dimensions – which help to better understand how long distance relationships and trust are established in this context (Dupuy and Torre 2006) but such a detailed analysis would not be relevant to the present discussion.

When tension arises between actors of cooperation, the latter can select one of three solutions: the *exit*, the *voice* and the *loyalty* solutions proposed by Hirschman (1970) concerning the management of productive and human relations. The *exit* solution consists of giving up the cooperation, retrenching part of the staff, discontinuing activities, changing activities or selling the firm. The *voice* option consists in engaging in the conflict. In the case of long distance collaboration, the dispute can take the form of verbal aggression, of remarks written by one or the other party concerning the conditions of the cooperation, of registered letters, of public denunciation, of legal action in a court of law. The *loyalty* position consists in seeking a solution acceptable to both parties. It requires that the different parties have confidence in the mechanisms of the cooperation process (Nooteboom 2002) and pay close attention to the components and expressions of the problems and to criticisms. In the context of long distance collaboration, it rests on the setting up of face-to-face meetings between the protagonists; in other words it necessitates temporary geographical proximity. It would be unrealistic to believe that continuing long distance interactions will lead to any substantial improvements if the relationship is already badly damaged.

2.2.2 The causes of conflicts

Our research studies, particularly those concerning innovation projects undertaken jointly by French biotech firms (Gallaud and Torre 2005), show that the tensions or conflicts that arise during cooperation processes are related to four categories of issues and that TGP is more or less necessary if solutions to these tensions are to be found. These categories of issues are, respectively:

— That of the distribution of the gains and losses of the collaboration and more particularly the question of property rights in the case of technology transfer. Problems arise from the high level of uncertainty concerning these processes and therefore from the fact that it is difficult to anticipate future evolutions, in particular because all the relevant knowledge has not been acquired before the contracts are signed. In these situations, TGP is mobilized to resolve these conflicts, the co-operators travelling (generally between 4 and 5 times) in order to solve conflicts;

— The objectives and/or technical characteristics of the product or the innovation; Misunderstandings can occur when the partners do not possess the same knowledge, when they have different cultural references or cognitive maps because they do not belong to the same "world" (for example Research vs. Industry). Temporary meetings play an important role because the insufficiencies in terms of organized proximity and the absence of common perceptions and values cannot be remedied by the trust that might, initially, have existed between the partners or by the meetings that took place at the beginning of the process. It is easier to reach an agreement on the technical characteristics of a project through face-to-face interactions than through ICT (e-mail or telephone), probably due to problems of translation between the different professional cultures;

— The organization of labour during the project. Conflicts of this type seem to be infrequent. TGP (i.e. travelling) is seldom used, with most conflicts being managed through telecommunications. This might be due to the fact that the organization of labour in innovation projects remains highly divided.

— Interpersonal disagreements between innovators. These conflicts seem to be the most frequently solved through telecommunication.

2.2.3 The objectives of temporary meetings

Ad hoc meetings are aimed at fostering organized proximity between the cooperation partners and at re-establishing the foundations of mutual trust. The purpose of these meetings is in most cases – as shown by the existing typologies of conflict resolution procedures (Dyer and Song 1999; Gobeli et al 1998) – to find a "give and take" solution, whereby the hierarchy or the heads of the entities in conflict propose a solution that is acceptable for all participants concerned, and concessions elaborated with the co-operators. TGP is then used extensively and generally more than one trip/meeting takes place when this method is adopted. Another option can consist of a concerted search for solutions involving all or most of the participants of the project. In this case the meetings involve more people and coordination is, as a result, more difficult.

TGP is also an important conflict management tool. It gives the partners the opportunity to alleviate their cognitive dissonance, to bring out and address interpersonal differences or to thoroughly discuss the problems that are related to the uncertainty that comes with any new innovation process. It also enables the partners to redefine or renegotiate certain aspects of the agreement if necessary. TGP enables the partners to interact face-to-face and therefore to communicate verbally as well as non-verbally, and to develop relationships that go beyond the purely professional. Furthermore, by mobilizing TGP the partners show their good will and desire to move past the conflict stage and resume the cooperation process. Finally, using the virtues of TGP is an effective means of preventing a conflict from escalating into a more acute stage that might result in the partners choosing the *voice* solution, a solution that might involve legal action or public denunciation. In this regard, TGP offers the partners another chance to make the process of long distance cooperation a successful one, by giving them the opportunity to reconcile their points of view, to partly modify the relational configuration or review the ways in which they cooperate.

3 TGP vs. ICT: new technologies in support of temporary meetings

We have shown that, in long distance production or innovation processes, the co-workers alternate periods of TGP with periods of long distance collaborative work, during which they interact using communication technologies. We are now going to show that these two forms of interaction, which are often viewed as competing with each other, actually complement each other in that they both contribute to the coordination of the activities performed by long distant co-workers. Far from being exclusive of TGP meetings, interactions through communication technologies tend, on the contrary, to promote them by enabling the individuals to remain in permanent contact with partners both inside and outside the firm.

We know of the naive suggestion that using the Internet enables people to do from a distance what they did before close to each other. There is no need to meet face-to-face to coordinate with one another; thus, it has been suggested that the Internet eliminates the need for, not only permanent co-location, but also for temporary geographical proximity. This thesis has promptly been criticized: Using ICT in coordination does not eliminate the need for face-to-face interactions. But, first of all, it remains powerful because it is rooted in the imaginary world of the Internet – the virtual world is seen as a substitute of the physical world – and it re-emerges periodically when new applications of the Internet are found (telework, e-commerce, e-learning, e-health ...). Second of all, it raises the question of the complementarity of ICT and face-to-face interaction in coordination and of its consequences in terms of individuals' mobility and therefore of TGP. This is what we shall examine in section 3.1. In section 3.2, we will analyse how the diffusion of mobile communication tools has changed the way in which individuals interact in space.

3.1 The complementarity of ICT and TGP

Does the use of ICT lessen the need for temporary meetings? To answer this question, we must analyse the impact of ICT on the relations between individuals, and particularly their role in face-to-face relations. The use of ICT can only partly replace face-to-face interaction. ICT's main contribution has been to facilitate long distance coordination. In doing so, they have actually caused an increase in face-to-face meeting because many adjustments and arrangements require face-to-face interaction. As the actors are geographically distant, they have to travel in order to meet. So in this respect, ICT use has increased TGP.

3.1.1 The impact of ICT on interpersonal relations

Using the Internet does not eliminate the need for individuals to meet face-to-face in order to establish interpersonal relations with one another, nor does it provide the socialization environment that TGP venues offer. And this is precisely why people will always need to travel, particularly at times when they have to build trust-based and cooperative relationships with distant partners.

However, the Internet plays an increasing role in enabling people to make new acquaintances without meeting them in person. This is the role played by informal communication tools such as instant electronic messaging, chat rooms, forums and now digital social networks. The development of these networks enables individuals to make contact with and get to know other people through socialization platforms (*Facebook, MySpace* ...), professional networking platforms (*Linkedln, Viadeo, Xing ...),* internal networks *(intranets)*. They create a social capital that can be used to develop professional relations, or, as Granovetter put it (1974) the "weak ties" through which individuals find opportunities for new careers, new technological partnerships, commercial relations ....[4] They are used extensively by job seekers to find employment (Fondeur and Lhermitte 2006).

One of the advantages of digital social networks is that they offer a wider pool of potential contacts than that offered by "real" social networks. However, the recommendation quality is lower and the filtering system not as effective. First of all, the personal profiles published online can be strongly biased (The member, who creates his/her own profile, is likely to overestimate his/her qualities), which is possible because of the relative anonymity of this communication medium. Second of all, it is difficult to criticize a member of the network without the criticism immediately becoming public, whereas in a "real" network the criticism can only become public through private channels (by word of mouth, corridor gossip ...). We all know that an e-mail sent by one individual to another and criticizing a third person can end up being read by every member of the community, with serious consequences on the community. Digital social networks amplify interpersonal differences and make them incontrollable. The social filtering function of digital networks is all the more ineffective as these networks are wide; and it is precisely because they are wide and allow easy contact with other people that they are sought for.

This is the reason why face-to-face interaction is a social filtering tool that remains indispensable to the establishment of interpersonal trust relations. Through face-to-face interactions, people, by performing intuitive tests, can better assess each other's qualities and can more easily select the desired relations, i.e. the "small world" (Milgram 1967) that bonds an individual to another. This is why a face-to-face meeting must precede or follow the connection made through the digital network. It precedes it because the digital network is often based on a pre-existing real network (network of old school friends, of friends, of a professional community...)

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[4]/. For more about the relations between social networks and the Internet, see the study conducted by Boase. J, Horrigan J.B. and Wellman B. (2006) about the United States.

that serves as a "guarantee" of the virtual network. If the latter is too wide and too disconnected from the physical network, the filter must operate ex-post. The relationships developed through the digital network will later on be validated by a face-to-face meeting.

Thus, ICT do play a role in the establishment of interpersonal relations (face-to-face interaction no longer has a monopoly in this respect) but they have not eliminated the need for physical, face-to-face meetings, particularly when mutual trust need to develop between individuals. Digital social networks offer more contact opportunities and facilitate connections between people, but they are not efficient enough social filters to serve as sufficient foundations for interpersonal relations. Digital networks seldom remain purely virtual. Digital interactions eventually need to be validated by face-to-face interaction.

3.1.2 The impact of ICT on functional relations

The same observations, in the case of functional relations, lead to the same conclusion: the complementarity of ICT and of travelling. The complexity of interactions requires moments of face-to-face, the advantages of which cannot be completely reproduced through digital communication.

The possibility of replacing in-person meetings by videoconferencing is a question that is raised recurrently with each oil or CO_2 emission crisis, but the effects of substitution remain limited (Denstadli 2004). Videoconferencing used to be relatively underdeveloped for technical and economic reasons. The equipment was cumbersome, required dedicated rooms and therefore forced people to commute to the conference rooms. It was expensive to install and operate and had a low level of interoperability. Little by little, these limitations are being overcome, thanks to the development of Internet solutions, of more affordable and user-friendly specialized equipment, such as PC-to-PC communication technology.

But videoconferencing presents other limitations. A face-to-face, in-person meeting is not easily substituted by a long distance meeting.

- Firstly, exchanges are much less rich (lesser interactivity, more difficult multilateral exchanges, slower synchronization of interactions, abstract spatial context ...). It is therefore more difficult to make decisions, to negotiate or solve conflicts when complex issues are involved;

- Secondly, the increasing use of long distance interaction implies the invention of new social codes of communication linked to new technologies, but the implementation and adoption of these codes are very slow.

- Thirdly, the development of videoconferencing faces the problem of market takeoff induced by network externalities: There is no point in starting using videoconferencing technology if the others have not also adopted these technologies and agreed to learn how to use them.

The third reason will disappear with time but the first two reasons (the fact that exchanges are less rich, that other codes of communication have to be adopted) will remain. And for these reasons long distance interactions have complemented and will always complement face-to-face meetings, but can never be a perfect substitute for the latter. Videoconferencing technology is, currently, used in two cases: when interactions are simple (long distance professional training, meetings about technical questions) and when the distance between the different parties is great making travelling too expensive (Lorentzon 2003).

3.1.3   The complementarity of ICT and people's mobility

From the above discussion, we deduce that ICT and TGP are complementary coordination tools, in both inter-personal and functional relations. Let us add that this is true whatever the distance separating the protagonists and that people also use ICT while travelling.

Telecommunications are often mistakenly presented as "long distance" communication technologies. Yet, local calls account for 75% of the telephone traffic. Communication networks are used intensively for proximity communication (between the different offices or buildings of one company, between firms located on the same site, or in the same town). This is one of the explanations for the positive correlation between the intensity with which the employees of industrial firms use ICT to coordinate with one another and the size of the towns where their firms are located (Charlot and Duranton 2006). The higher the urban density, the more frequent face-to-face meetings and the more employees use ICT as complementary tools of coordination. The other explanation is the high percentage, in large cities, of firms that have strong connections with partners located in other cities. Thus they accumulate the advantages of being located in proximity to other local organizations and those of connectivity with other distant organizations (Bathelt et al. 2004).

Other studies show that the relations of complementarity between face-to-face and ICT depend on the nature of the technology. Indeed, a distinction should be made between the traditional communication technologies (telephone, postal mail, fax) and the new technologies (e-mail, videoconferencing, computer supported cooperative work tools) (Aguilera and Lethiais 2008). Using data on firms, Aguilera and Lethiais assess the influence of certain variables (part of tacit knowledge, geographical distance between the partners, ICT use, ICT adoption...) on the frequency of face-to-face meetings (their weight in relation to other modes of communication) in the context of a cooperative relation. The fact that the partners are located in the same region has a positive effect on the relative frequency of face-to-face meetings, but the nature of the knowledge exchanged does not. The partners meet whatever the complexity of the interactions. Furthermore, they mostly use traditional technologies to coordinate with each other. There is a complementarity between physical mobility and the use of traditional telecommunication technologies. On the other hand, the fact that two partners are located in different regions has no significant effect on physical mobility, which means that the partners use other modes of communication to coordinate with each other, and that they only travel to meet each other when interactions are complex. They then tend to use new communication technologies more intensively and have a higher degree of ICT adoption. Thus, in the case of geographically distant partners, there appears to be a substitution effect between physical mobility and new ICT.

These results can be interpreted in terms of costs. When the cost of going from one location to another is low, mobility is a prevalent mode of coordination; traditional communication technologies are used in combination with face-to-face meetings and the use of new technologies is less intensive. When the cost of travelling from one place to another is high, we observe a substitution effect between the use of new technologies and business travel, which is correlated with the time it takes to learn how to use the technologies. Thus, it is not the implementation of new communication technologies that reduces mobility, but the cost of distance. This means that ICT do not have intrinsic effects on physical mobility (they neither decrease nor increase it). But as we shall see now, ICT are used in combination with mobility and change its nature.

3.2   The role of ICT in TGP: an accelerator of mobility through new forms of co-presence

Far from having a negative effect on mobility, ICT combine with the latter and change its content. Travels become moments of maintained co-presence, in the context of IT-supported mobility. Thus, travelling enables

cooperation partners or members of one same organization to be momentarily co-located while being able to stay in contact with other people (colleagues, other partners, etc).

3.2.1 IT-supported mobility

This transformation has been possible thanks to the rapid diffusion of mobile communication tools (mobile phones, laptop computers, PDAs, mobile data storage devices such as USB sticks, external hard drives …) and to the wireless connectivity of these devices. This equipped mobility or "pervasive computing" can be defined as the integration of computer technologies into a large number of objects that can be connected, through wireless technology, to other objects, and which causes important changes in man's relation to space and time. One of the main consequences of this is that individuals can communicate with other people and objects at any time and from anywhere, particularly while travelling. Mobility is changing because it is now IT-supported.

Some authors conceptualise this transformation and call it the "new social paradigm" (Urry 2000, 2002; Sheller and Urry 2006) or "the mobile communication and social revolution" (Katz 2006; 2008). They emphasize that researchers in sociology have paid little attention to the theme of mobility and that addressing it is becoming all the more inevitable as the different forms of mobility play an increasing role in society. Without going as far as calling this phenomenon a revolution in social relations, one can raise the question of the impact of this transformation on the relations between economic and social actors. What is the impact of pervasive computing and of wireless connectivity on the needs for geographical proximity and mobility, i.e. on co-location and face-to-face interactions, which are necessary to coordinate individuals?

3.2.2 The innovative characteristics of IT supported mobility

Businessmen and researchers have always worked on trains, planes, in coffee shops or hotel rooms. But IT supported mobility has introduced two major changes. On the one hand, the possibilities of working while travelling have been multiplied by the portability of computing devices (mobile processing and data storage equipment). On the other, connectivity with working partners is maintained.

Being able to work more autonomously, thanks to the portability of computing devices, and to remain permanently connected with one's colleagues plays a fundamental role in long distance coordination. Indeed, it is now possible to travel while being permanently contactable and in contact with one's colleagues at work. This opportunity allows for new forms of co-presence in time and space and contributes to the success and multiplication of TGP meetings.

IT-supported mobility rests on three main characteristics:

– Individualization of terminals (phone, computer, mail box…), made possible by the portability of computer technology. This characteristic increases the efficiency of coordination by increasing the possibility of contacting the very person one wishes to contact.

– Communication is no longer interrupted when travelling; it can be established or prolonged at any time. It progresses technologically (convergence between fixed and mobile communication, extension of wi-fi, wi-max networks …) and would be perfect if connection continuity became completely indifferent to the support network and if the geographical coverage of the service was total.

– The ubiquity of individuals, who can be "present" in different places at the same time. Fixed communication tools made this possible but to a lesser degree. Mobile communication tools have made this increasingly possible because communication no longer depends on the presence of the individual in one specific place. Co-presence becomes indifferent to location.

3.2.3 The impact of IT-supported mobility on geographical mobility and TGP

IT-supported mobility has three positive effects on physical mobility:

– It increases its efficiency by facilitating navigation when individuals travel from on point to another (GPS, geo-localisation services), by facilitating micro coordination between individuals (adjustments to meeting arrangements) and by transforming what used to be a time of communication interruption (while travelling) into a time of non stop interconnection. This efficiency reinforces the complementarity between ICT and the trips carried out in order to achieve TGP. The number of mobile workers does not necessarily increase but reducing the number of business trips and their duration has become less vital because these trips are now managed more efficiently.

– It transforms downtime into potentially productive time. In the context of TGP, the meeting is the goal and the trip is the way of achieving this goal. The trip is only valuable in that it makes the meeting possible; the shorter the trip is, the easier the meeting. The trip is a cost that needs to be reduced. Thanks to IT-supported mobility, a trip becomes valuable in itself. Travelling is still necessary to attend a meeting but it no longer represents an unproductive time. It becomes an active time during which value can be produced (communicate decisions, exchange information, transmit documents …). By "travelling" or "trip" we mean the time of transport from one point to another and the time an individual spends in fixed places (hotel rooms, railway stations, airports, meeting venues …), outside his/her home or usual workplace.[5]

– It creates forms of *remote co-presence*, or *connected presence* (Licoppe 2004).[6] Permanent connectivity, ubiquity, contactability and the individualization of terminals have generated a degree of co-presence even if the latter is less rich than physical co-presence. It shares a characteristic with physical co-presence: enabling an individual to repeatedly communicate with a specific person whenever he/she wishes to. The development of remote co-presence also has negative externalities (overabundance of communication, constant interruptions, counter productive stress …) because there are no longer any places or times where contact is not possible. This causes individuals to try and develop disconnection strategies (Bonneville and Jauréguiberry 2007).

Thus, the binary opposition between "close" (presence) and "far" (absence), which structures the notion of space, tends, through the extension of ICT use, to give way to a spatial-temporal continuum of relationships between individuals. Thus, mobility is a double resource: It makes in-person encounters possible (TGP), it transforms itself into co-presence. But this co-presence only has meaning in relation to the physical contacts it prepares or prolongs. It nevertheless represents a new means of coordination in space which, as Urry under-

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[5]/. Mobility, in a wider sense, is the combination of the transport time and time of immobility. In the jargon of mobile communication, a distinction is made between a situation of mobility (when an individual is physically on the move) from a situation of nomadism (when an individual is outside home or outside his workplace but is immobile).

[6]/. Licoppe (2004) refers to the frequency with which "close" individuals send short SMS messages to each other so as to achieve a relation of co-presence when they are physically distant from each other.

lined (2004), results from the convergence of transports (mobility) and telecommunications (connection) in what he has called "inhabiting machines".

4   Places of TGP

But where do those mobile individuals, with their pocket terminals, actually meet? In other words, what are the most common TGP places? Taking into account relations of temporary geographical proximity necessitates an examination of the spatial context in which this type of encounters occurs. It is not the permanent location of actors that is in question here, but that of the places in which exchanges and interactions take place, interactions during which individuals and their working partners aim to set up, plan or modify the modalities of the production and innovation processes.

We refer here to places that Foucault (1984, 1967) defined as heterotopias: interface sites that enable productive and social actors to interact in real or virtual spaces. These spaces are not necessarily permanent in nature and they express principles that have replaced the old principles of permanent location that characterized the modern and pre-modern eras. As Foucault (1984) showed "the heterotopia are capable of juxtaposing in a single real place several spaces, several sites that are in themselves incompatible".

This definition of interface sites indicates the different forms that TGP can take. Indeed, several applied studies conducted on the subject show that TGP interactions can be divided into three main categories. There are, first of all, transitory places such as trade shows, conferences or exhibitions; second of all places specifically dedicated to facilitating interactions, such as "platform teams" or "project teams", and thirdly, more common places to which representatives of different cooperating organizations can travel in order to meet, or used by individuals who need to travel to locations away from their usual workplace. Each type of site has precise functions that we shall examine now. The duration of the meeting also depends on the type of place in which the individuals meet.

4.1   Trade shows, conferences and exhibitions

In this case, coordination takes place in specific sites, away from the place of residence of the individuals who are meeting. They meet there at regular intervals, for a limited period of time, generally a few days. In some cases all meetings are held in the same place, while in other cases, the meeting place changes all the time.

These places have always existed. They have always played a fundamental role in the exchange of goods, information and knowledge and in the organization of professional communities (see, for example, the historic role of the Champagne trade shows; Braudel 1986). Recent studies (Bathelt and Schuldt 2008; Maskell, Bathelt and Malmberg 2006; Ramirez-Pasillas 2008; Rinallo and Golfetto 2006) indicate that fairs and trade shows are experiencing growth and that their average size is increasing. People attending these events travel to the sites where they take place and remain there for varying lengths of time in order to make contact with various numbers of people but also in order to observe their competitors' products and manufacturing processes (Entwistle and Rocamora 2006). By meeting in these particular places, individuals fulfil their needs for socialization and contact with other human beings within a productive context. These needs have already been discussed by sociologists (Kyle and Garry 2004). Indeed, the latter have shown the importance of family reunions held during concerts or other events; this enables family members to combine the advantage of spending time with one another with that of attending special events. The role played by large cities in this process proves essential, not only because large cities have the necessary infrastructure to host such events, but they also offer many advantages in terms of recreational, cultural or human interaction opportunities (Sassen 2001).

Attending trade shows enables entrepreneurs or researchers to fulfil a number of needs related to the processes of production, research or innovation such as the collection of information (sharing experiences, speculations about a certain type of production …) (Maskell, Bathelt and Malmberg 2006). Naturally, by enabling individuals from different horizons to meet in the same place (the "hub" formula), these events allow for savings in transport costs. But above all, they fulfil the need for face-to-face relations, relations motivated by two fundamental reasons, both related to the wish to reduce the costs of transactions between the participants (Boggs 2005; Norcliffe and Rendace 2003; North 1991).

The first reason has to do with the possibility to meet economic actors belonging to the same field of production or innovation, so as to get better acquainted with them and possibly plan common projects. These potential partners are not perfect strangers. In most cases, they were previously identified through other commercial relations or through the Internet. But it is necessary to actually talk to them, test them, get better acquainted with them and build social, as well as professional bonds (and that constitute the first brick in the foundation of trust). This is the reason why these events are always characterized by a degree of festivity, so that the participants leave the event with the feeling that they have had "a good time" (Schuldt and Bathelt 2007). These are places that make the first contact with someone easier, because the participants are disembedded, so to speak, from their daily relations and routines, which makes them much more available and open. Furthermore, and for the same reasons, the participants are relatively relaxed and open to interactions. Finally, the time devoted to interaction is important, and naturally, meeting opportunities are far more abundant than in the daily professional environment.

The second reason for needing face-to-face relations is probably the most important: participants to common projects of production or innovation take advantage of these events to review the progress of the collaboration or discuss certain problems related to the common project. It is a phenomenon also observed in the case of workshops organized by groups of researchers, and held within large scientific congresses. Communities of practice, of researchers, engineers, participants of innovation or production projects, members of consortiums, members of technological alliances meet during these events. These people already know one another, either as colleagues, as collaborators, or even as friends. They share the same values or have common projects and use the opportunity provided by the event to discuss and exchange information and thoughts. Several types of interactions take place during these events, ranging from exchanges between producers and users, between contractors and subcontractors, or exchanges of technical information, to discussions aimed at solving technical or coordination-related problems affecting the collaboration processes (see Ramirez-Pasillas 2008).

To the list of reasons related to the need for interactions, we can add a third reason that mostly has to do with the possibility of observing, studying the actions, products and processes of competitors. Indeed, examining competitors' products using their websites (common practice among producers) is not enough to gain enough information concerning the products. Visiting a website does not enable the visitor to correctly appreciate the volumes, colours, or to smell or touch the products. In other words, acquiring tacit knowledge of a product requires the use of senses and cognitive capacities other than 2D or 3D vision. Furthermore, observing or using a product can help better understand the technical aspects of its construction, and therefore to uncover some of the production secrets. Finally, attending exhibitions or shows organized by firms, and therefore being able to observe the crowd of visitors attending them helps to get a clearer idea of their impact and of the demand's reaction to the products, and therefore to gain deeper knowledge of market conditions. Thus, visiting these events offers the opportunity to not only acquire technical knowledge about competitors' products and monitor the competitors' progress (state of the art), but also to find new ideas, set up processes of imitation or re-creation of the products and production processes they have observed.

4.2   The common "platforms" of project teams

During trade shows and congresses, economic actors make new acquaintances and establish contact with people, in order to possibly develop relationships and undertake projects in common with them; and they do so even though their production or R&D organizations are located in different areas. The implementation of common projects requires occasional face-to-face meetings between all or some members of the projects – members who are normally geographically distant. It is necessary to make them work together for a period that may last several months, in the framework of a project team. This also applies to projects involving individuals located and working in different units of the same corporation or organization.

This is a way of making up for the limitations of long distance interactions in collaboration projects jointly conducted by different firms, or different production or R&D units belonging to the same corporation but located in different areas (Talbot 2007). Thus, the goal is to develop a common project but it is impossible to do so using ICT only. The partners must 1) get acquainted, get to know each other and understand how each other operates; 2) be able to reach an agreement concerning the technical aspects of the collaborative project; 3) harmonize their cognitive maps and how they perceive the on-going process; 4) be able to trust each other so that they can pursue long distance relations in future; 5) agree on a schedule of activities to be undertaken, goals to be reached, stages to be completed; 6) possibly, reach an agreement concerning the distribution of the benefits and losses of the operation.

This case was examined by Aggeri and Segrestin (2001) in their study of the development of a new car model at Renault's in the 1990s. As Kechidi and Talbot (2009) have shown, it was the same reasons that motivated the implementation of platform teams at Airbus, whose employees were located on different production sites throughout Europe. In order to find solutions to the difficulties related to the development of a new aircraft model (here the A340-500/600) which was going to be designed, developed and built on different sites, the company decided to move all the technicians involved in this project into the same place (the Toulouse centre) and to put them in charge of the common design project. This arrangement was subsequently applied to the development of the A380, with the construction of a platform comprising one thousand people ranging from technicians and designers to first rank subcontractors, who for a few months worked together in the same place. Thus, these individuals worked together, and in the same place, during the stages of design and development of the aircraft, so as to implement the technical solutions selected. The platform was subsequently dissolved and all employees moved back to their usual workplace.

This arrangement makes it possible to combine together the skills of actors who are normally physically distant and to achieve knowledge transfer, by making use of the virtues of face-to-face interactions and of the possibility of multiple and instantaneous interactions. The latter facilitate technical recombinations and knowledge transfer. However, let us note that the operations described here were possible because all the actors involved belonged to the same managerial structure. Thus, the internal hierarchical organization of the group makes it possible to transfer researchers and technicians to one same location and once there to cooperate for a limited period of time, and thus reduce the risks of opportunism. As the subsequent events in the development of the A380 aircraft have shown, not all problems were addressed and solved at the time; indeed the question of software was not solved, which later on had serious consequences and led to delays in production.

4.3   "Ordinary" TGP places

Trade fairs, conferences, exhibitions, on the one hand, platforms of project teams on the other, are *occasional* places of TGP. Fairs, conferences and exhibitions are recurrent but spaced in time; the project teams are only

co-located during the initial phases of the common project. But in the normal context of cooperation between geographically distant economic actors, there is a need for more frequent meetings between those involved – a need which occasional fairs cannot satisfy and which is not limited to the initial stage of a project. These needs recur on a regular basis during the coordination process. Their frequency and regularity are the cause of most business trips.

Face-to-face interactions do not, in this case, occur in places exclusively dedicated to meetings, but in "ordinary" places, i.e. in the actors' usual workplaces, except in cases when the meetings take place in transit areas (airports, railway stations), which offer meeting facilities and thus save the traveller unnecessary travelling.[7] Bars and restaurants are also places in which professional meetings are commonly held. But, in most cases, the coordination takes place in the workplace of one of the protagonists. There are two main reasons for these frequent business trips: the meetings aim at reaching a common decision or determining the characteristics of the cooperation; or an activity can only be performed in a place other than the individual's usual workplace.

4.3.1 The meetings aimed at reaching a common decision or determining the characteristics of the cooperation

The business trips undertaken in order to reach a common decision or agree on the details of the coordination are necessary because of the limitations of long-distance interaction, through the Internet, chats, forums, fax or phone, or even intranet in the case of large industrial groups. Even when solid agreements are reached from the start, for example in the framework of team platforms, it is necessary to validate them and ensure that they are complied with, and it is necessary to solve certain technical problems or unexpected difficulties that may have emerged.

Part of these difficulties are solved by using ICT, but the latter cannot satisfy the need for face-to-face interaction between the members of a common project (see 3.1). Physical co-presence alone enables individuals to reach compromises, reconcile contradicting views, alleviate difficulties or more simply to reconfirm the agreements and scheduled stages of the project.

Interactions that occur in this context concern:

- Transactions between producers and users of specialized (as opposed to standard) products (von Hippel 1998) who travel and meet one another in order to define and ensure the conformity of the products and their exact characteristics;

- Exchange of technical information between the participants of a project, update of information on different processes, specific software as well as on software used by all the participants, on the designs or on the definition of standardisation procedures;

- Monitoring the progress of the cooperation process, particularly the advances made in terms of production, research and development. These meetings generally take place at regular intervals, are part of the protocol of cooperation and involve the people in charge of the different modules of the projects;

- The resolution of technical difficulties experienced by one of the parties, during the cooperation process; these difficulties may be related to processes, software or to the marketing process. These

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[7]/. This is probably why few studies have been conducted on the subject. However, see Gallie and Guichard (2005).

meetings, which are not always scheduled, generally involve the people in charge of the module in question and their assistants;

— The resolution of problems resulting from cooperation; these can be technical difficulties or may be relational problems between individuals. These meetings, which are not scheduled in advance, are undoubtedly set up in order to find solutions to ongoing conflicts, conflicts between two organizations or between people who represent these organizations. These conflicts may be related to the technical aspects of the project, to hierarchical responsibilities, to labour organization, interpersonal relations or the distribution of the gains and losses of the cooperation.

4.3.2 Performing a productive task outside one's usual workplace

TGP can in some cases occur daily. The person then travels in order to perform an activity away from his/her normal workplace and at the partners' premises. We are indeed dealing with temporary geographical proximity here but it involves a longer period of coordination in proximity to one's partners.

It is the case of:

— Services such as training, maintenance, consulting, commercial visits ... In order for service providers to be able to interact with their clients, they need to travel to the latter; they do so because they need to perform maintenance work on the client's equipment, or because the service has to be performed where it is consumed.

— Researchers, technicians or engineers who must go and spend varying lengths of time in another firm or laboratory. It is also the case of PhD postgraduates belonging to laboratories of research organizations, who, at certain times, perform part of their work in the premises of another organization, in the framework of a co-financed project or cooperation. It is the case, in France, of PhD students who benefit from the CIFRE research grants – jointly funded by a firm and a research organization – and who serve as interface between both types of organization, while facilitating exchanges of knowledge between two worlds that do not know each other very well (Levy 2005).

TGP corresponds in this case to the non-permanent presence of workers in one or several other work places. The number of people working in different places is increasing. According to a survey on transport in France, in 1993, one economically active individual out of four performed his/her professional activity in various places during an ordinary working day (compared to one out of six in 1981) (Crague 2003). This phenomenon is remarkable and makes the lack of data concerning the number of workplaces per individual regrettable. The address of the employer is the implicit workplace of the worker. Population census surveys sometimes ask individuals where their actual workplace is and if the latter is different from the employer's address, but they do not record the possible plurality of these workplaces.

5   Conclusion

This article has aimed to examine the characteristics of and conditions in which interactions of temporary geographical proximity occur, and to compare them with the other way of coordinating long distant professional partners, that is the use of Information and Communication Technologies. In the first section, we have described the times when TGP occurs in the context of cooperation between geographically distant partners, and we have placed emphasis on the fact that these moments of face-to-face interaction are above all de-

pendent on two particular stages in the coordination process: the development of mutual trust and the management of conflicts that may arise between geographically distant professional partners. In the second section, we analysed the complex relations between TGP and ICT as tools of long distance coordination. Thus we have shown that both techniques complement each other and that the development of ICT, far from causing a decrease in mobility, actually combines with the latter and makes moments of TGP easier and more productive by enabling the travelling partner to remain in permanent contact with his workplace. Finally, in the third section of the paper, we raised the question of where temporary meetings take place, and found that there exist three main types of places: places that host occasional but recurrent multilateral gatherings (trade fares, conferences, and exhibitions), places where the members of a common project temporarily meet to cooperate, and finally, "ordinary places" of interaction or work.

The conclusion of our study is that organized proximity is always essential to the process of coordination between the geographically distant partners of production, research or development projects. Indeed, it facilitates the interactions and exchanges between human beings by enabling the latter to share the same representations and values. But this organized proximity combines with different forms of spatial proximity relations, such as permanent geographical proximity, which leads to the co-location of partners, for example within localized systems of production – which are often characterized by community trust relations. Temporary geographical proximity is also essential and has been the main topic of this article; TGP requires the physical mobility of the actors involved in a process of long distance cooperation so that they can meet face-to-face in heterotopic sites. Finally, ICT can, in an ever-increasing number of situations, compensate for the lack of co-presence but also combine with and facilitates mobility (i.e. short or long business trips).

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