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**Temporary Clusters and Knowledge Creation:  
The Effects of International Trade Fairs, Conventions  
and Other Professional Gatherings**

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## **Temporary Clusters and Knowledge Creation: The Effects of International Trade Fairs, Conventions and Other Professional Gatherings**

**Abstract.** Business people and professionals regularly come together at conventions, congresses, conferences, trade fairs and exhibitions. Here, their latest and most advanced findings, inventions and products are revealed and evaluated by peers and competitors, as well as by customers and suppliers. Organising or participating in such events are means to identify the current market frontier, take stock of relative competitive positions and form future plans. These events exhibit many of the characteristics ascribed to permanent clusters, albeit in a temporary, periodic and intensified form. The temporary clusters are hotspots of intense knowledge exchange, network building and idea generation.

In investigating the extent and nature of these phenomena, the present paper explores a number of issues. First, it shows that international trade fairs and other professional gatherings are events which enable firms to compare their own products with others which are available to the world market. Comparisons to and interactions with other firms stimulate processes of knowledge creation. Second, it demonstrates how trade fairs are important for firms when selecting partners with whom to develop global pipelines, enabling access to distant markets and technologies. Third, it compares such temporary clusters with permanent territorial hubs within their respective sector or industry. If regular participation in temporary clusters could satisfy a firm's need to learn through interaction with suppliers, customers, peers and rivals, why is the phenomenon of permanent clustering so pervasive?

The answer, it is claimed, lies in the restrictions imposed on economic activity when knowledge and ideas are transformed into valuable products and services. The paper sheds new light on how interaction among firms in current clusters coincides with the configuration of knowledge-intensive pipelines out of the cluster. It examines the procedures selected by firms in developing ideas or gaining access to new knowledge and compares these organisational forms to those chosen when using knowledge for commercial purposes.

**Keywords:** economic geography, knowledge creation, clusters, temporary clusters, trade fairs, conventions, pipelines

**JEL-codes:** D83, L22, O17, O18, R12

*“...it is a fact that after more than 100 years of the dominance of the neo-classical economics orthodoxy, we know less about how industries actually work today than Marshall must have known when describing the industrial districts of his own day.” (Matthews, 2004)*

## 1. Introduction

Cluster theories are usually based on the assumption that clusters are reasonably permanent entities.<sup>1</sup> It is the continuous repeated interactions within the cluster that are usually the focus, rather than temporarily limited inter-firm encounters. Theoretical accounts of temporary hotspots of co-located knowledge exchange are few and far apart, if at all existing.<sup>2</sup> Yet, business managers, technical engineers, lawyers, doctors, auditors and other professional people regularly attend conventions, congresses, conferences and exhibitions. At such events, their latest and most advanced findings, inventions or products are shown, examined and evaluated by their peers and competitors, as well as by customers and suppliers. Large sums and intensive efforts are committed when participating at such professional gatherings in order to identify the current market frontier, take stock of relative competitive positions and form future plans. Such investments to support horizontal or vertical knowledge exchange within the value chain make these events resemble permanent clusters, albeit in a temporary, periodic and intensified form.

The temporary clusters<sup>3</sup> are hotspots of intensive and dedicated exchange of knowledge, network building and generation of new ideas. In this paper, the phenomenon of global

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<sup>1</sup>/. In this paper, we view clusters as non-random (Ellison and Glaeser 1994) geographically localised agglomerations of firms with similar or highly complementary capabilities (Richardson 1972, 2002). The term ‘cluster’ is used in a generic sense including related concepts such as geographical agglomeration, industrial district and the like.

<sup>2</sup>/. This observation also applies to organisational studies beyond the cluster literature (e.g. Lundin and Söderholm 1995). It also holds even when attempts are made to highlight renewal processes within different kinds of clusters (e.g. Staber 1998). Exceptions do, however, exist, especially when attempting to place clusters in some stage-theoretical setting (e.g. Phelps and Ozawa 2003).

<sup>3</sup>/. Of course, we are aware that trade fairs, conventions and other professional gatherings do not involve a great deal of real economic transactions and material flows. The term ‘temporary clusters’ was chosen with some reluctance. We decided to adopt the term, however, as we are primarily interested in the knowledge creation effects of agglomerate behaviour. The argument here is that the structure of information and knowledge flows at these events is somewhat similar to those of permanent clusters, albeit in a temporary form. From a different analytical perspective trade fairs and conventions could also be viewed as ‘periodic

professional gatherings is taken as the starting point for exploring some of the unsettled issues that have generated debate in contemporary economic geography and related fields.

In particular, we strive to understand how firms within and outside of clusters cope with the challenges of globalisation. Here, one camp has been arguing that spatial proximity enhances the competitiveness of firms by facilitating the types of interrelations and interactions that keep firms and organisations in place and foster processes of learning and innovation by means of face-to-face contacts and 'local buzz'.<sup>4</sup> In this line of thinking, proximity acts as a basic governance mechanism in that it reduces transaction and communication costs by establishing helpful local codes and a common language (Ghemawat 2001, Antonelli and Quéré 2002). Thus, the specific geographical configuration of economic activity is seen as playing a crucial role in determining the future prospects of nations or regions (see, especially, Porter 1990, 1998).<sup>5</sup>

There exists, however, a counter-movement that pursues a radically different line of thinking. According to this view, proximity need not, and should not, be defined primarily in spatial terms. With respect to knowledge clusters, "[t]he 'stickiness' of knowledge in these sites ... stems from the unique interactions and combinations of bodies, minds, speech, technologies, and objects that can be found there ... It has little to do with 'native' practices or locally confined assets" (Amin and Cohendet 2004: 102). Relational proximity can exist between actors located in different parts of the world, thanks to modern technological and institutional developments that make easier both the transfer of information and the travelling of people across space.

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clusters', 'temporary nodal networks' or, more generally, as a an organisational context for learning and interaction. Similar to the work of Nonaka, Toyama and Nagata (2000), this could be conceptualised as 'emerging ba' which allows information to be interpreted in a meaningful way and supports the generation of knowledge. Temporary clusters, as defined here, should not be confused with the concept of 'temporal clusters', used by Lundequist and Power (2002).

<sup>4</sup>/. However, no final and generally accepted conclusion has yet emerged from the many attempts to answer the crucial question of Baptista and Swann (1998): "Do firms in clusters innovate more?"

<sup>5</sup>/. Additional recent references include Malmberg and Maskell (1997, 2002), Cooke and Morgan (1998), Maskell and Malmberg (1999), Gordon and McCann (2000), Maskell (2001), Bathelt (2002, 2003), Bathelt and Taylor (2002), Pinch, Henry, Jenkins and Tallman (2003), Clark and Tracey (2004).

Geography is treated somewhat as a historical relict in such analyses, where communities of practice and epistemic communities are preferred concepts.<sup>6</sup> This line of thinking is, perhaps, strengthened by recent empirical findings showing that the locational choices of new firms appear to play a role in de-agglomeration processes (Dumais et al. 2002) and that knowledge may be replicated across space without being transferred directly (Zander 1999, Baden-Fuller and Volberda 2002).

Face-to-face interaction is widely held to be a necessary condition for establishing trustful relations and communicating sensitive, not well-established knowledge and information. It is sometimes overseen, however, that while such interaction presupposes direct contact between individuals, such meetings need not necessarily be local. We will focus on the global face-to-face interaction which takes place at international professional gatherings such as trade fairs, conventions, conferences and the like.

### **Aim and structure of paper**

There are a number of aspects of global gatherings that merit attention. We will particularly deal with four of them in this paper. First, the global gathering business does, in itself, make up an industry of growing economic importance. This is not the main reason why we address this topic. It should nevertheless be noted that the increased activity in the convention industry has been paralleled by a growth in research interest in neighbouring academic disciplines. Thus, in the following section, we will take a brief look at this 'industry' and its overall economic impact globally, as well as that in the countries and cities which are specialised in hosting these kinds of events.

Next, we will discuss (in section three) whether international professional gatherings can be seen as a specific form of inter-firm organisation, a temporary cluster, which differs from or complements other organisational forms, such as networks, projects and permanent clusters. The main interests in our analysis of these events are the supplier-producer-customer or producer-producer interfaces and the respective communication and interaction patterns that take place at these intersections. This differs from the traditional focus of analysing trade fairs as opportunities to present and market products, acquire new customers and intensify relations with existing customers. Subsequently, we will focus on the question of

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<sup>6</sup>/. The term was initially introduced by Knorr Cetina (1981) and Lave and Wenger (1991). Other important contributions include Brown and Duguid (1991), Wenger (1998), Knorr Cetina (1999) and Amin and Cohendet (2004).

how firms use international trade fairs and conventions to identify and select partners that provide access to distant markets and knowledge pools (section four).

In the concluding section, we will discuss in detail the relation between the professional gathering, seen as a temporary cluster, and the existence of permanent clusters. We approach this issue by asking a simple question: If regular participation in temporary clusters could satisfy a firm's need to learn through interaction with suppliers, customers, peers and rivals, why is the phenomenon of permanent clustering so pervasive? We argue that temporary clusters are a decisive medium to integrate local and global communication flows and connect distant pockets of knowledge in different parts of the world. As such, they might be crucial drivers of the global knowledge economy. They do not replace, however, the stable and continuous forms of knowledge creation in permanent clusters.

## **2. The phenomenon of international professional gatherings**

In spite of fear of international terrorism and the risk of highly infectious diseases like SARS, the number of international participants in the Singapore convention of independent Herbalife<sup>7</sup> distributors in October 2003 exceeded 12,000 persons – an all time high. A total of 17,000 real estate agents, investment consultants and international property analysts and dealers attended the 15th annual meeting of MIPIM<sup>8</sup> in March 2004 in Cannes, France, representing more than 6,000 firms and 60 countries. Such events even seem fairly insignificant when compared to the Hong Kong Electronic Fair in October 2003, which drew 1,950 exhibitors and over 48,000 visitors from more than 140 countries.<sup>9</sup> Other major international fairs and conventions attracted similarly impressive crowds of business people and professionals to the few cities around the globe able to accommodate them. At the other end of the scale, we find the small regional gathering of farmers comparing products and machinery or the annual assembly of the twelve members of an association of shoe lace producers to be held in a single hotel suite.<sup>10</sup>

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<sup>7</sup>/. Founded in 1980, Herbalife International is a premier wellness company dedicated to simplifying the path to healthy living (<http://www.herbalife.com>, retrieved March 3, 2004).

<sup>8</sup>/. See <http://www.mipim.com/> (retrieved March 3, 2004).

<sup>9</sup>/. See <http://www.hkelectronicsfair.com/glance/glance.htm> (retrieved March 3, 2004).

<sup>10</sup>/. Included in the intermediary size group are events organised by professional societies such as the Academy of Management (<http://www.aomonline.org>, retrieved March 3, 2004) and the Association of American Geographers (<http://www.aag.org>, retrieved March 3, 2004) that typically will list 3,500-6,000 participants. For technical professions and, especially, the life sciences (dentists, veterinarians, medical



The diversity of the MCE industry (Meetings, Conventions and Exhibitions)<sup>11</sup> impedes any attempt to estimate the total number of events and participants or their economic impact.<sup>12</sup> Yet, evidence suggests that producers now spend almost as much on participating in professional trade fairs and conventions as on the marketing of products aimed at the general public (Weber and Chon 2002). This does, of course, vary between industries and sectors. Another problem of showing data on the size and importance of the MCE industry is related to the fact that there are no consistent statistical reports on trade fairs, not even for North America or the European Union. Table 1 presents data for those countries for which trade fair statistics were reviewed positively by AUMA – the Association of the German Trade Fair Industry (Kresse 2003). It clearly exemplifies the international importance of the MCE industry (e.g. Meffert 1997). In 2002, those Western European countries which were selected hosted about 2,000 trade fairs and exhibitions, with 500,000 exhibitors renting 25 million m<sup>2</sup> of exhibition space and having over 60 million visitors/buyers. As the leading country, Germany hosted more than 300 such events, with 220,000 exhibitors and more than 16 million visitors.

For the hospitality industry (including hotels, restaurants, catering services, entertainment, etc.) and the travel sector (airlines, travel agencies, etc.), trade fairs and conventions are of major importance and the local spill-over effects are so significant that countries, regions and cities compete intensively to host these events (e.g. Bode and Burdack 1997).

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professionals, etc.), such annual meetings have developed into very important meeting points for related industries, selling and branding pharmaceutical compounds, medical hardware or curative services.

<sup>11</sup>/. Sometimes 'Incentives' are included in this acronym, i.e. MICE. We refer to it as the MCE industry, however, as we do not consider incentive travels in this paper.

<sup>12</sup>/. International organisations such as The Union of International Associations (UIA) have published annual reports for the last 54 years of the number and location of meetings of a well defined set of international organisations and meetings brought to their attention which lasted at least three days and had at a minimum of 300 participants (minimum 40 % foreigners), with at least five different nationalities. In 2002, they registered 9,124 such meetings in 180 countries (<http://www.uia.org/statistics/press/press03.pdf>, retrieved March 3, 2004). Ranked according to volume of exhibition space, the ten most important cities hosting such events are Hanover, Paris, Milan, Frankfurt, Cologne, Düsseldorf, Chicago, Birmingham, Las Vegas and Valencia (AUMA 2003). Other important international organisations in the MCE industry include UFI – The Global Association of the Exhibition Industry (<http://www.ufinet.org/>, retrieved March 3, 2004); IFES – The International Federation of Exhibitions Services (<http://www.ifesnet.com/>, retrieved March 3, 2004); and EMECA – European Major Exhibition Centres Association (<http://www.emeca.com/>, retrieved March 3, 2004). Some private companies have also become major organisers of international fairs and conventions (e.g. The Blenheim Group PLC, The Reed Exhibition Companies, the Andrew Montgomery Network).

**Table 1: Number of trade fairs and exhibitions, exhibitors and visitors and rented exhibition space in selected countries, 2002 (Sources: Kresse 2003, AUMA 2003, 2004; Notes: <sup>1)</sup> number not available, <sup>2)</sup> IUEF = International Union of Fairs and Exhibitions of Russia, including Belarus, Kazakhstan, Lithuania, Moldavia, Russia and Ukraine)**

Country	Types of trade fairs included	Trade fairs (number)	Exhibitors (number)	Visitors (number)	Rented space (m <sup>2</sup> )
Germany	(a) International fairs	145	165,859	9,218,276	6,639,204
	(b) Regional fairs/ exhibitions	179	56,381	7,189,495	1,645,844
France	(a) Audited international/ national fairs	174	64,716	7,020,000	2,282.263
	(b) (Regional) multi-sectoral fairs	70	28,594	6,279,000	1,370,133
Great Britain	Fairs/ exhibitions (at least 2000 m <sup>2</sup> exhibition space)	855	- <sup>1)</sup>	10,300,000	3,400,000
	Audited fairs/ exhibitions	419	64,664	15,380,000	3,950,000
Italy	Audited international fairs/ exhibitions	157	93,199	7,230,000	3,750,000
Hungary	Fairs of association members	- <sup>1)</sup>	16,500	1,500,000	350,000
Members of the IUEF <sup>2)</sup>	Fairs of association members	1,154	129,509	- <sup>1)</sup>	1,695,585
USA	200 largest fairs/ exhibitions	200	194,686	4,200,000	6,000,000

It has been estimated, for instance, that these gatherings have production effects of Euro 25 billion per year and create some 250,000 jobs, in Germany alone (AUMA 2003). Certain localities have an established reputation by regularly hosting conventions and fairs in a particular industry or line of business: Cannes for the top-end film industry, Nuremberg for toys, Bordeaux for wine, Frankfurt for books and automobiles (Fischer 1992). Cities deemed attractive by convention organisers become appealing to investors, thus, adding to the benefits.

At the most basic level, these phenomena are far from new (Rodekamp 2003). Trade fairs, conventions and similarly arranged, short-lived, often periodical events for the exchange of commodities, information and ideas and the initiation and maintenance of contacts have probably existed in some form or another throughout the history of humankind. Typically located at points with easy access or on common arteries of travel (e.g. intersecting caravan tracks, pilgrimage routes, etc.), fairs have played an important role in solving early problems of distribution by concentrating supply and demand in certain places at certain times.<sup>13</sup> In Europe, the Roman Empire established a legal and institutional framework of fairs to encourage trade in their conquered provinces. As Europe further developed through the middle ages, trade fair rules eventually became the basis of European business law.

The modern trade fair, as we know it today, was introduced in 1895 when Leipzig<sup>14</sup>, Germany introduced its *Mustermesse* (Fischer 1992, Gormsen 1996); a trade fair where only samples (sample = *Muster*) were discussed with clients and products later on shipped to their home base. Sometimes production did not start until detailed orders were made. This, of course, allowed for individual adjustments to be made to meet customers' wishes. It took about twenty years until other cities followed Leipzig's example (Backhaus and Zydorek 1997).<sup>15</sup> The modern convention industry emerged in the early 20th century in the US and gradually spread to Europe, yet trade fairs never received the same importance in the former as in the latter (Table 1, Fischer 1992). The extent and scope of business fairs and conventions have

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<sup>13</sup>/. The largest of the fairs became quite important. For a brief account see Encyclopædia Britannica Online (<http://80-search.eb.com.esc-proxy.lib.cbs.dk/eb/article?eu=34167>, retrieved March 3, 2004).

<sup>14</sup>/. The Easter trade fair in Leipzig had developed into a major event attracting buyers and exhibitors from all over Europe. In 1802, the trade fair had almost 6,600 buyers, with several hundred coming from Poland, Greece, France, Russia, Italy, Hungary, England and Turkey (Fischer 1992).

<sup>15</sup>/. Already earlier in medieval times, however, trade fairs were much more than just market places. For instance, the Italian 'impannatori' used such gatherings in different parts of Europe to acquire information about shifts in fashion markets and changing consumer preferences. They would bring this back into their home base and share this information with producers in the local industrial district by ordering particular designs (e.g. Piore and Sabel 1984).

steadily grown since World War II and rocketed in recent times as the dual result of falling transport prices and growing demand (Rogers 2003). This, in turn, reflects the increase in the global division of labour and the necessity for all producers and professionals to be up-to-date on the technical and other progress of their particular field, regardless of their location.

At a conceptual level, business fairs have been perceived by mainstream economists as one of several ways by which the business community of sellers and buyers may interact to reveal sets of information on quality and price. Consumer advocates and the general public would usually agree that the resulting increase in market transparency has positive welfare implications (e.g. Scherer and Ross 1990, Strothmann and Busche 1992, Meffert 1993, Träger and Penzkofer 2003). However, business fairs and conventions are sometimes also viewed in a more sinister light as being an event constructed for business managers to conspire against the general public by forming secret price cartels and agreements on how to best maximise profits at the expense of the consumers (Stigler 1968, Tirole 1988, Carlton and Perloff 1994, Møllgard and Overgaard 2001).

In the realm of applied research, a great deal of literature on hospitality, marketing and purchasing exists which offers advice on how to organise business fairs and conventions and how firms can develop methods for selecting which events to participate in. This stream of literature includes advice on how a firm may best align decisions regarding convention participation with its overall branding and marketing efforts and with its present strategies of supply-base development and technological capability enhancement (e.g. Clausen and Schreiber 2000, McCabe et al. 2000, Weber and Chon 2002).

In the same vein, the literature in urban and regional economics investigates the spatial economic and social effects of business fairs and conventions, while suggesting ways in which cities, regions and countries may enhance their take by improving on various framework conditions that organisers appreciate (Florida 2002a, 2002b). Research in economic geography has thus far focused on the estimation of the multiplier effects of such events by using regionalised input-output models or other quantitative methods (e.g. Sternberg and Kramer 1991, Schätzl et al. 1993, Bode and Burdack 1997, Diez and Kramer 2000, Kaiser 2002).

Still, there is hardly any in-depth discussion of trade fairs and conventions in the context of knowledge creation and dissemination at a global scale, aside from general acknowledgements that such effects exist.<sup>16</sup> This latter aspect of professional gatherings is

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<sup>16</sup>/. Exceptions are, among others, the studies of Prüser (1997) and Weber and Chon (2002).

our primary concern here. In the remainder of this paper, we will explore whether an analysis of this phenomenon can enrich our understanding of the workings and spatiality of the modern, knowledge-based economy.

### 3. Organisational configurations of inter-firm interaction

In light of the expansion of non-traditional sectors like creative industries and various types of knowledge-intensive professional services, observers of today's economy often express uneasiness over the fact that the *modus operandi* of these industries seems to challenge some of the core conceptual foundations of economic-geographical analysis. In particular, one line of literature argues that economic interaction, communication and knowledge creation is no longer bound to particular local and regional settings but can be replaced by relational proximity between actors located in different parts of the world (Amin and Cohendet 1999, Oinas 1999, Lee 2001). The rise of new technological possibilities and institutional structures are quoted as reasons for this supposed development. According to Thrift (2000) and Amin and Cohendet (2004), the global travels and communication of business people have given rise to new geographies of circulation which impact the spatiality of knowledge creation.

It is now, of course, well-known that ICT breakthroughs and new infrastructure investments have opened up new opportunities for meetings over larger distances and that business travel activities have generally increased. More specifically, a common accord has emerged regarding the increasing significance of:

- (i) executive travellers who meet repeatedly for several hours or a couple of days in neutral places around the world, such as airport hotels, for intensive face-to-face interaction;
- (ii) internet 'thinking studios' which enable virtual communication around the globe;
- (iii) mobile, transnational epistemic communities<sup>17</sup>, consisting of people who can act as boundary spanners in an inter-cultural context due to their potential to communicate between the people involved and provide an understanding of heterogeneous habits and attitudes (e.g. Coe and Bunnell 2003, Depner and Bathelt 2003).

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<sup>17</sup>/. Examples for this include the Taiwanese community in Silicon Valley (Hsu and Saxenian 2000, Saxenian and Hsu 2001) and Otavalan enclaves – from Ecuador – in important metropolitan areas world-wide (Kyle 2001).

Given the extent of such developments, a reinvestigation of the organisational and spatial foundations of current positions on knowledge creation is warranted. Our goal is to draw a connection between temporary and permanent forms of economic communication, instead of condemning durable spatial hubs of production as continuous important sources of knowledge creation.<sup>18</sup> To develop our argument, we will present a simple classification of alternative organisational forms that differentiates between configurations of knowledge creation in an economic context according to their focus and time horizon (Table 2).

This allows us to distinguish professional gatherings and events as one of four configurations, along with other forms of inter-firm knowledge creation, i.e. networks, projects and clusters. It should be noted that this classification does not intend to include all possible forms of organisation of production. It simply serves as a starting point for our discussion of durable (or permanent) versus temporary (periodic) clusters.

**Table 2:** *Organisational configurations of knowledge creation by time horizon and focus*

		TIME HORIZON FOR KNOWLEDGE CREATION	
		Quasi-permanent	Temporary
FOCUS OF KNOWLEDGE CREATION	Strong focus (goal-oriented)	Inter-firm networks	Inter-firm projects
	Broad/diffuse focus (vision-oriented)	Clusters	Trade fairs, conventions, professional gatherings

<sup>18</sup>/. Our point of departure is thus rather similar to that of Morgan (2004), who warned against accepting views regarding the supposed death of geography, as learning and knowledge creation still depend on localised interaction to a large extent.

### 3.1 Networks

Firms which interact in markets realise through conjecture or experimentation over time that their external transactions become less costly<sup>19</sup> or have greater value-added if structured. One approach, commonly selected by firms, is to invest in relationships with upstream or downstream partners – especially when the set of customers, suppliers and products is reasonably stable. The first step in this process is usually the establishment of dyadic relations (Demsetz 1968). If initially successful, both parties in such relations have an incentive to strengthen these links and broaden their scope to involve several or all layers of the two organisations (Ford 2002, De Propriis 2002). Continuous interaction and relation-specific investments in facilitating exchanges of artefacts or intangibles abate any initial cognitive distance between the partners (Egidi 1995a, 1995b, Cowan et al. 2000, Lissoni 2001). Over time, the repeated interactions can also give rise to incremental learning of considerable significance for the overall competitiveness of the firms involved (Granovetter 1985, Lundvall 1985, Helper et al. 2000), at least up to a certain level where further embeddedness may obstruct economic performance (Uzzi 1997, Soda and Usai 1999, Bathelt and Glückler 2003).

Once relation-specific sunk costs<sup>20</sup> are large enough, a qualitative change often takes place as the scope for opportunistic behaviour (Williamson 1975) becomes negligible and firms start acting as if they trust each other (e.g. Ben-Porath 1980, Lorenz 1999, Lindenberg 2000). One important consequence of high levels of relation-specific sunk costs is that the flow of knowledge between two business partners does not have to be strictly reciprocal or take place at precisely the same time. The overall exchange of knowledge is intensified and deepened when business partners believe that some piece of knowledge offered free of charge today will be repaid later on in some way or another (von Hippel 1987).

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<sup>19</sup>/. These costs emerge when the ownership of bundles of commodities or services are transferred from one firm to another whether regulated by a contract or not. There are costs involved when identifying a partner to trade with who is similarly inclined, to negotiate prices and conditions, to make the detailed specifications of what is to be transferred, to control that all specifications are met after the transfer, to secure the payment, etc.

<sup>20</sup>/. Relation-specific sunk costs are investments that cannot be recaptured even if the investing firm decides to end the relation (Baumol and Willig 1981, Baumol et al. 1982). High exit costs limit opportunistic behaviour and act as safeguards for exchange, even though this mechanism is not usually acknowledged by network theorists (Foss and Koch 1996).

Networks may expand from dyads to encompass a growing number of partners. By utilising investments in already existing relationships as channels to new partners ('your-friend-is-my-friend' philosophy), firms successfully minimise their search costs as well as other transaction costs when expanding their business network (Håkansson and Snehota 1989). With the risk of severing carefully built bonds to intimate business associates in the case of misbehaviour, the participants in an expanding network are placed in a situation where any infringement of trust is so severely penalised that in effect, malfeasance becomes no option (Roscher 1989, Casson 1991). The collective awareness of this mechanism makes it possible to keep transaction costs down while maintaining efficiency and knowledge exchange to an extent no outsider can aspire to achieve (von Hippel 1987).

Networks operate according to clearly defined goals which have been explicitly or tacitly agreed upon by the firms involved. These goals pre-structure the future course of action and provide a basis for ongoing communication and problem solving. Through social practices, these goals are constantly being checked, revised and adjusted according to joint experiences. Many advantages of inter-firm networks are based on seemingly perpetual social relations that may help the partners achieve effective co-ordination and learn extensively, but which may concurrently also reduce diversity in visions and strategies.

The literature on networks does not provide much guidance as to which spatial configuration we should expect an inter-firm network to display. On the one hand, one could argue that network formation and maintenance would be simpler, and thus more common, among partners who are spatially proximate to one another. Empirical work, on the other hand, does not indicate that this is the case. Most firms seem fully capable developing and handling spatially extended network relations. Given that such network relations normally follow the value chain of an industry, and given that value chains are becoming increasingly global in most industries, this is indeed not surprising.

### **3.2 Permanent clusters**

Although the exchange of goods and knowledge across regional, national and cultural boundaries is becoming noticeably easier thanks to modern technologies, we are faced with the paradox that global economic success still seems to depend on the creation and utilisation of local and/or regional resources to a large extent (Maskell et al. 1998, Molina-Morales and Martinez-Fernandez 2003).

Much of the contemporary debate about the organisation of production concentrates on the analysis of spatial clusters of interrelated economic activity and on the benefits arising from just 'being there' (Gertler 1995, 2003). In particular, firms with a volatile set of



business partners seem to find it advantageous to be located in a cluster of similar or related economic activities (Maskell and Lorenzen 2003). The abundance and durability of existing clusters demonstrates that firms performing similar and complementary economic activities may accrue rents by pursuing co-location strategies (Enright 1998). Such rents may partially originate from improvements made in resource utilisation when firms iron out the ups and downs associated with fulfilling contracts by obtaining, as well as giving, help to other firms.

Other rents may emerge from the learning and knowledge creation taking place along the vertical or the horizontal dimension of the cluster (Storper 1997, Maskell 2001, Malmberg and Maskell 2002, Bathelt 2002). Firms with similar capabilities that operate under the same production conditions and with similar cost structures find it easy to compare the effect of different approaches and solutions on their performance. Such detailed information on conduct-performance relationships available to competing firms in the cluster can prove to be highly valuable, as a driving force for continuous improvement (Porter 1998).

In earlier work, we have suggested that firms generally benefit from being located in a cluster because it allows them to participate in the 'local buzz' (Bathelt et al. 2004, see, also, Storper and Venables 2004). This buzz encompasses specific information flows and continuous updates of this information, opportunities for learning in organised and spontaneous meetings and the development of an understanding of new information and technologies based on local technical traditions and views of specialists in the area. Through their shared history of relationships, firms learn how to interpret the local buzz and make good use of it. Participation in this buzz does not require specific investments. The firms in the cluster do not need to actively solicit information, since they are surrounded by a tight web of gossip, opinions, recommendations, judgements and interpretations (Grabher 2002a). This buzz may even help develop a valuable common understanding of the current challenges and a shared vision of the opportunities facing the cluster (Maillat 1998, Storper and Venables 2004).

Similar to what is found in networks, sunk costs will also prevent clusters from deviating from the selected trajectory (Baumol and Willig 1981). Large non-recoverable investments made over time in building institutions, including common language, shared code-books and certain visions about the future, will usually create high exit costs that can impede larger changes. Investments made to develop specialised skills or competencies or in the local infrastructure also stimulate a cluster's stability (Clark 1994, Clark and Wrigley 1997). As long as the final demand for its output is not discontinued by some major rupture in technology or consumer behaviour, clusters are bound to change incrementally, while being

revitalised by the regular spin-offs that create new generations of localised firms (Klepper 2002).

As compared with networks, clusters are less goal-oriented and focused. At the same time, they are, by definition, spatially agglomerated and driven by various forms of daily face-to-face interactions and processes like the dynamics of local labour markets for specialised skills on a longer-term basis.

### **3.3 Projects as temporary networks**

In contrast to networks and clusters, inter-firm projects are only temporary in character. They are regularly formed within creative industries around processes such as producing a film, designing an advertising campaign or producing and releasing a music CD (Caves 2000, Grabher 2002b, 2002c). Inter-firm projects are also the customary way of structuring market exchange within the construction industry when building a house or constructing a highway (Gann and Salter 1998). During the course of action, the project partners closely co-operate with each other. When the pre-determined target is reached or the task completed, the project organisation is dissolved and the participating partners may never interact again (Lundin 1995, Bogenrieder and Nootboom 2001, Maskell and Lorenzen 2003).<sup>21</sup>

Inter-firm projects are based on a deep social division of labour. Like networks, they are characterised by strong interdependencies between the agents involved. Since such projects combine and integrate the activities of many individuals from different firms, and often also from different departments within these firms, a contractor takes on most responsibilities in terms of the co-ordination and control of individual tasks.

The contractor is the key actor and reference point for all project members. The contractor negotiates work standards, deadlines, the division of labour and/or the distribution of revenues. Deadlines divide projects into several consecutive stages. They are mandatory milestones whose requirements have to be met by all project members. They are set up to prevent opportunist behaviour (Grabher 2002a, Lorenzen and Frederiksen 2003).

As opposed to networks, the course of an inter-firm project is usually not based on a specific infrastructure (DeFillippi and Arthur 1998). The spatiality of projects is also more fluid in that they take place in different places and form temporary localities of interaction and exchange (Lee 2001). Sometimes the members of a project get together to work at a

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<sup>21</sup>/. In many settings however, the limited number of firms holding distinct capabilities increases the likelihood of meeting old project partners again in some new combination.

particular site throughout the entire course of the project. In other cases, the project members work in different places by themselves but get together on a regular basis to exchange results and adjust their work accordingly. In both cases, we could say that temporary nodes of interaction are being formed which are designed to enable task-oriented co-operation. These spatial configurations are quite different, however, from the temporary clusters to be discussed in the next section.

### **3.4 Temporary clusters: trade fairs, conventions and other professional gatherings**

There is an emerging imbalance between the cluster literature and that on market organisational forms which suggests how temporary forms of economic interaction, such as projects and similar temporary coalitions, have gained substantial importance in the knowledge-based economy over the past twenty years (Lundin 1995, Taylor 1999, Asheim 2002, Grabher 2002b). So far, clusters have been treated as durable or permanent entities only, i.e. as groups of similar and related specialised organisations and rent-seeking firms that are located and embedded in the institutional and built structures of a particular place.

Of course, clusters are not permanent by definition. They can only exist for as long as their internal workings can satisfy the final demand for the cluster's output in a competitive way. Since there are temporary networks, i.e. projects, the question arises as to whether we can also expect temporary forms of clusters to exist? If so, which purposes do these temporary clusters serve and how do they function?

We argue that international trade fairs, conventions and other professional gatherings have characteristics somewhat similar to those of permanent clusters, albeit in a temporary and periodic form. They can thus be conceptualised as temporary clusters and characterised along several dimensions. Trade fairs and conventions serve to systematically acquire information about competitors, suppliers and customers and their technological and strategic choices.<sup>22</sup> Through regular attendance in such events, firms learn and are able to acquire important information, find suitable partners to complement their needs, establish trust with distant partners and, sometimes, even initiate durable inter-firm collaboration in research, production and/or marketing.

Like permanent clusters, trade fairs and conventions are characterised by distinct vertical and horizontal cluster dimensions, although real transactions may not take place (Malmberg and Maskell 2002, Bathelt 2002). Vertical interaction with suppliers and customers consists

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<sup>22</sup>/. Aside from their importance in business-to-business information exchange and interaction, such trade fairs are also viewed as a holiday to a certain extent by those employees who are allowed to attend.

of information exchange about recent trends, experiences and requirements for future products and services. Firms set up meetings with their established suppliers located in different regions and nations to discuss technological changes in product specifications, developments in markets and conditions in the future. At the same time, they also identify new suppliers which exhibit interesting modifications of products and indicate opportunities for new applications. This provides a rich arena for learning processes. Especially when technical personnel from different firms who are specialised in the same area meet regularly during such events, a basis for interactive learning and problem solving develops. Some of this may take place in scheduled meetings during convention hours. Other meetings are spontaneous and occur in combination with social events such as joint dinners. In trade fairs, members of existing communities of practice come together (Brown and Duguid 1991, Wenger 1998) and develop further through knowledge exchange and interaction. In addition, extended communities are being formed and reproduced and common interpretative schemes developed as technologies shift towards new directions.

Systematic customer contact is another decisive component of the vertical interaction during trade fairs. As pointed out in the literature on trade fairs, firms intensify social relations with their customers and try to contact new customers to market their products, display new developments and discuss potential contracts (e.g. Ziegler 1992, Meffert 1993). There is, however, another component in producer-user interaction which has increasingly been emphasised in the literature on innovation in recent years (Lundvall 1988, Lawson and Lorenz 1999), and which also applies to trade fairs and conventions (e.g. Prüser 1997). Scheduled meetings between producers and their customers taking place during a trade fair often provide a vital source of information for further product improvements and innovations. Overall, producer-customer interaction in trade fairs can significantly help improve a firm's longer-term competencies and competitiveness and is not just a source of short-term sales.

Trade fairs also bring competing firms together which would normally not interact. Professional gatherings provide multiple opportunities for firms to observe and compare their products and strategies with those of their competitors. They systematically look at the exhibits of their competitors, make note of product designs, modifications, innovations and new fields of application. Depending on the industry, firms may also compare the customers' reactions to the displays of their competitors in order to identify market trends and future preferences. They collect and consider available information that can reveal new products or changes in strategies that competitors may be planning.

It is sometimes even possible for representatives of competing firms to discuss general technological problems or industry trends during trade fairs. Similar to permanent clusters,

the corridors, cafés, bars and similar meeting points are sometimes the most important places for information exchange in temporary clusters.

Parts of this screening and observation process are, however, less systematic, as firms try to get an overview of what is going on in their business and which technological as well as other trends may exist. This information is of great importance because it enables the firms to determine whether or not they are on the right track or in danger of being left behind. This, in turn, helps firms to make decisions about their technological focus and future investments and serves to stimulate reflexive practices.

In sum, we argue that international trade fairs and conventions bring together leading-edge firms from different parts of the world where they establish distinct, yet temporary clusters. These meetings generate rich information flows that can be characterised as 'global buzz'. They help reduce information asymmetries and uncertainties in extra-local interaction. World-class trade fairs and conventions also enable firms to select suitable partners for innovation and knowledge creation, as will be discussed in more detail below.

#### **4. Temporary clusters and the establishment of trans-local pipelines**

In this section, we assert that temporary and periodic forms of clusters are important for firms to access markets and knowledge pools in different parts of the world. International professional gatherings form an important selection environment for identifying and choosing potential partners. Temporary clusters also create an environment that makes it easy to establish initial contact with potential partners. We believe that trade fairs offer a wealth of opportunities to make such connections. Further, additional costs are not involved in systematically gathering information about potential partners during such events. As such, we suggest that international trade fairs can be viewed as a significant vehicle for the establishment of trans-local business relations in common situations of incomplete knowledge and uncertainty.

Case studies of permanent clusters have shown that critical knowledge transfers often do not result from local interaction but from strategic partnerships with outsiders (Grabher 2002b, Scott 2002, Powell et al. 2002, Owen-Smith and Powell 2004). The assertion that the majority of corporate transactions take place *within* clusters has little supporting empirical evidence (Prosch 1998, Malecki and Oinas 1999, Amin and Cohendet 1999, 2004, Malmberg and Power 2003, Gertler 2003, Bathelt 2004, Clark and Tracey 2004). It appears that firms deliberately establish trans-local relationships to obtain information about new or different technologies and organisational forms. In a previous paper, we have used the

metaphor of 'global pipelines' to refer to such trans-local linkages (Bathelt et al. 2004, see, also, Owen-Smith and Powell 2004).

Compared to the local buzz, access to trans-local pipelines entails considerable uncertainties and high investments. It is no simple task to establish a trans-local relationship, as the cultural and institutional contexts in which firms operate can be rather different (e.g. Schoenberger 1997, Gertler 2001, Morgan 2004). But distant contexts may offer novel ideas and expert insights that can also be useful for innovation processes through knowledge recombination, as shown, for instance, in recent patent analyses (e.g. Rosenkopf and Almeida 2001).

A cluster's long-term growth potential is, in fact, dependent on access to external markets and interaction with complementary knowledge owners – often the global technology leaders (Scott 1998, Maillat 1998, Bresnahan et al. 2001). Therefore, firms in clusters develop trans-local or global pipelines with other firms to benefit from outside knowledge inputs and growth impulses. In earlier work, we have suggested that local buzz and global pipelines are mutually reinforcing (Bathelt et al. 2004). The more the actors in a cluster are involved in establishing and maintaining trans-local partnerships, the more information about new markets and technologies is pumped into the local networks of this cluster and the richer its buzz. Local buzz, in turn, enables firms to rapidly filter those elements that are particularly important to develop promising technologies and business ideas from the mass of external information and to discard those with little prospects for success.

Thus far, however, it still remains somewhat opaque as to how firms actually establish pipelines with others. Yet, three well established lines of investigation are one way or another concerned with this problem. First, and foremost, the literature within the field of international business studies, which is abundant with case studies, stylised facts and evidence on how firms penetrate distant markets by establishing an affiliate (branch plant, local office) or by acquiring an existing local unit to tap into local (knowledge) resources and utilise local competencies. International expansion may also take place by firms linking up with an appropriate local independent partner (e.g. Dunning 1988, 1998, Dunning and Kogut 1990, Pitelis and Sugden 1991). Second, the literature within the rapidly expanding operations management subfield on global supply chain management is concerned with how to best maintain pipelines once established. Occasionally, analyses have also included investigations on the process of selecting partners for the supply chain (e.g. Schary and Skjøtt-Larsen 2001). Lastly, pedestrian processes involved in building relations and networks have been a topic of interest in the marketing literature (Young et al. 1989, Axelsson and Easton 1992, Ford 2002).

Common to the vast combined literature in these streams of research is the basic acceptance of the fact that identifying, selecting, approaching and interacting with new partners is a tricky and costly process that should not to be taken lightly. To successfully build a pipeline, internal resources, which would otherwise have potential alternative uses, must be committed. Rent-seeking firms therefore tend to prefer procedures that economise on such valuable resources. Among the procedures available to firms is the use of international trade fairs and conventions in selecting potential pipeline partners.<sup>23</sup>

During such events, participants are surrounded by a thick web of specialised information from which they can hardly escape. These information flows can be characterised as temporary 'global buzz'.<sup>24</sup> This buzz helps to identify interesting firms, acquire information about them and make initial contacts with potential partners. Through consecutive trade fairs and conventions, potential partners get to know one another better over time and trust can develop. Initial interaction is thus low risk and is gradually intensified, in a stepwise manner.<sup>25</sup> The process of building relationships is supported by the multiplex nature of social relations (Uzzi 1997) between the people who attend trade fairs and interact with one another as competitors, or as colleagues or experts of the same community during the day or in evening festivities.

Sometimes, a few meetings within a couple of days may be sufficient for decisions to be made regarding informal collaboration. In other cases, firms need to gather more information by contacting, for instance, close suppliers and customers after the trade fair, before entering further negotiations. Even if a certain degree of commonality is identified in two firms, not much may come out of the discussions during the trade fair. These

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<sup>23</sup>/. Of course, trade fairs can also be useful to strengthen already existing international networks. To systematically schedule meetings during these events helps to form closer ties, allows production to be adjusted and ensures coherence within the network (e.g. Prüser 1997, 2003). Such meetings also have much in common with academic conferences, where professionals get together to establish international research networks and develop them further.

<sup>24</sup>/. One could argue that the importance of trade fairs could decrease over time if internet applications become more widespread and replace these events. This is, however, unlikely to happen because aspects of face-to-face interaction, direct product inspection and presentation and multiple opportunities to screen competitors cannot be replaced by virtual meetings (Backhaus and Zydorek 1997).

<sup>25</sup>/. In a situation where markets are highly concentrated, characterised by a lot of shared information about competitors, suppliers and customers, the selection of potential partners is, of course, much easier. We may assume, however, that such a situation at least partly reflects the consequences of the experience gathered in past trade fairs and conventions. Thus, the processes of pipeline formation described in this section would also apply.

commonalities lead to the formation of latent networks which do not have any immediate economic value. Such structures can become quite important, however, at a later point in time (Grabher 2001, 2002a). Latent structures can be mobilised without much effort and thus serve to increase a firm's flexibility and responsiveness towards unexpected changes in markets and technology. Over time, the same people might meet repeatedly during consecutive trade fairs and discuss common interests further. This may give rise to follow-up meetings between the firms where details of co-operation are discussed, giving rise to some initial agreement. Incrementally, small collaboration experiments may be extended through a set of procedural rules (Lorenz 1999). If not terminated by some disappointment or better alternative emerging along the way, the weak initial contacts might gradually develop into a strong and durable network-type partnership.

## **5. Conclusions: temporary and permanent clusters – substitutes or complements?**

In this paper, we have argued that international trade fairs and conventions provide numerous advantages and opportunities for participating firms, aside from the effects of marketing and selling products to customers. Due to the fact that these events are characterised by a multidimensional structure similar to that of permanent clusters, they function as temporary hubs that stimulate processes of knowledge creation and dissemination. In particular, they enable firms to compare their products, and investigate competing innovation trajectories, while monitoring customer reactions. This creates, in itself, a powerful knowledge set that, if properly handled, may assist managers when making decisions regarding future investments and strategies. Further, international professional gatherings provide a wealth of opportunities to make contact with firms from all over the world. This provides an important basis for the establishment of trans-local pipelines which supply access to new knowledge pools and markets.

Given these deliberations one could argue in line with Amin and Cohendet (2004: 93) that "there is no compelling reason to assume that 'community' implies spatially contiguous community, or that local ties are stronger than ties at a distance." Is it thus possible that relational proximity in global epistemic communities and communities of practice can make the need for permanent spatial proximity redundant? Before answering this, we will briefly summarise some important similarities and differences between temporary and permanent clusters.

To begin with, both temporary and permanent clusters provide advantages to firms. One might conclude that it would be more advantageous for a firm to have access to both



temporary and permanent clusters and not just one or the other. The discussion in the preceding section supports such an interpretation, at least in terms of the mutually reinforcing power of buzz and pipelines: the value of knowledge gained in temporary clusters will multiply when inserted into the buzz of a permanent cluster. The continuous scrutiny, selection and application of new ideas which takes place in a permanent cluster gives rise to a number of production paths beyond that which could be achieved in a temporary setting. The permanent cluster will provide a broader range of concurrent solutions that local firms may monitor without major cost, allowing them to be combined with ideas of their own. Today's economic success and progress depend largely on the constant testing of new combinations and solutions and increases in the number of approaches available to be recombined and used by local firms.

When striving to obtain similar advantages, the absorptive capacity of both temporary and permanent clusters is also limited in similar ways. In both cases, firms need to convert knowledge from the outside into a form that will make it applicable for problem solving and development purposes within the firms. Knowledge that is not already part of their repertoire needs to be shaped to account for the firms' organisational and cognitive peculiarities.

It is an established fact that knowledge may easily be ignored if too novel or unique and, in particular, if it is produced by outsiders, referred to as the 'not-invented-here' phenomenon (Tushman and Katz 1980, Cohen and Levinthal 1990, Durham 1991, 1992). It is an increasing challenge for all firms, whether clustered or not, to find ways for creating new mental maps that may encompass novel knowledge emerging from outside the firm. Few firms are able to cope with knowledge that cannot easily be broken down to be processed by their present organisational hierarchy. This is no surprise as each firm is structured to handle only certain types of knowledge. There is no such thing as a competitive 'jack-of-all-trades'. For this very reason, new foreign knowledge tends to fall through the cracks in the organisational structure if it does not fit the current hierarchy.

Categorically, new knowledge that is received by the firm through its pipelines or which is forwarded by its representatives at some trade fair or convention therefore often requires that the firm's organisational structure be reconfigured. New internal connections, interpretative schemes and symbolic representations must be in place before the firm can make real use of radically new ideas. Precisely because of the risks and costs associated with such change, managers will be rather hesitant to use or apply it before its advantages are clear. Much novel knowledge produced outside the firm will, consequently, be ignored allowing it to be picked up by entrepreneurs when starting new firms.

In most cases, however, the knowledge picked up at trade fairs and conventions is in kin with the incremental improvements that local rivals display in the cluster. The mundane nature of such new knowledge rarely necessitates any organisational adjustments. The managerial problem consists of selecting among competing pieces of knowledge and implementing the ones chosen within the organisation. Basically, the challenge is similar for co-located firms wanting to copy some improvement developed by their neighbour and for solitary firms when engaged in frequent participation in trade fairs and conventions or when utilising some other distant knowledge source. The solution, however, might differ a great deal. And so may the costs. The reasons for these differences originate from the difficulties of communicating the relevant details for copying even the simplest of solutions from another firm across space. Tiny elements may easily be missed when the solution is implemented. This is usually not a problem if the initial knowledge source is close by. But if the source is far away, or stems from someone met at an event long passed, its recovery may be a major venture.

Compared to solitarily located competitors, firms in clusters are also at an advantage regarding the interpretation of incomplete knowledge coming down the pipeline because competing firms in the cluster will simultaneously struggle to puzzle together the missing pieces. When one is ultimately successful, the result will sooner or later leak out to its nearby competitors (Mansfield 1985, Owen-Smith and Powell 2004).

Furthermore, co-located firms will benefit from the fact that more people are involved in collecting and assembling knowledge from the many nearby knowledge sources available in the cluster. Most employees will, after all, be 'at home' most of the time, and only a tiny fragment of the employees who contribute to the economic performance of a firm (or region) will be in the global trade fair circuit – and often also only for a fragment of this time (Malmberg 2003). Without diminishing their possible importance as gatekeepers and pipeline builders, it would be a mistake to assume that the firm's frequent travellers or official knowledge brokers are the only ones who make for innovation, competitiveness and growth. In other words, we should not forget the 'gray mass' of people who live their lives in a local setting, following a similar daily trajectory which takes them from home via the children's school to work, to a supermarket and back home. Over time, they acquire a sense of the 'localised capabilities' (Maskell and Malmberg 1999) and the area's 'untraded interdependencies' (Storper 1997) that make them better equipped to interpret incremental improvements if originating within the community.

So, even if we accept that much knowledge is replicated across space with or without direct transfer and acknowledge that many well-managed new firms start and thrive outside clusters, there are still commercially interesting advantages to be found when co-location

with peers, customers and suppliers that are not easily undermined by the ICT revolution or the other globalisation processes.

The bottom line, however, is that temporary and permanent clusters are a bit like 'close cousins'. They may be equipped with many dissimilar qualities, but their basic similarities cannot be denied: both are in the same knowledge game and both have become important players. And, *nota bene*, both show that 'geography matters'. In the absence of personal meetings and face-to-face contact, which strongly support knowledge exchange, presumably neither permanent nor temporary clusters would exist.

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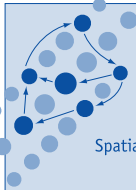
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