Title: The development of the Paris region multimedia cluster

Author: Bruno LUSSO, PhD, School of Geography and Planning, University of Lille 1 - France

Introduction

Multimedia industry is an activity that products use a combination of different content forms. The term is used in contrast to media which use only rudimentary computer display such as text-only, or traditional forms of printed or hand-produced material. Multimedia includes a combination of text, audio, images, animation, video or interactivity content forms. Multimedia is usually recorded and played, displayed or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia also describes electronic media devices used to store and experience multimedia content. Multimedia is distinguished from mixed media in fine art; by including audio, for example, it has a broader scope. The multimedia industry groups together cinema, audiovisual, cartoon movie, advertising, video games and software publishing activities.

Following the rediscovery of Alfred Marshall’s academic publications during the eighties, a widening number of research papers - mainly draft in Europe and United-States - concentrate on explaining the ins and outs of the spatial and relational proximities. The unsettled notion of cluster has been popularized from 1990 by Michael Porter which considers cluster as “geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition” (Porter, 1998). “The geographic scope of a cluster can range from a single city or state to a country or even a group of neighboring countries” (Porter, 2000). But the notion of cluster had a coronation within the academic community, instead of the substantial conceptual limits underline by various schools of thought.

In France, the Paris region is the traditional centre for decision-making and creative functions. Unsurprisingly, it respectively concentrates 75% and 90% of audiovisual producers and technicians, and 52% of video games employees (IAURIF, 2010). The aim of this paper is to analyse if the Parisian media sector has developed a clustering dynamics, thanks to the public authorities voluntarism. From this observation, this paper will be divided in two parts:

- A short analysis about clusters and innovative clusters theories;
- The presentation of the Paris region multimedia cluster.
1. Culture, creative industries and innovative clusters

Following the rediscovery of Alfred Marshall’s academic publications during the eighties, a widening number of research papers - mainly draft in Europe and United-States - concentrate on explaining the ins and outs of the spatial and relational proximities.

1.1 Clusters classical approach

In 1990, M. Porter published The Competitive Advantage of Nations. Although the main theme of his book is based on the correlation between international competitiveness and firms competitiveness, he however refers several explanatory factors. According to him, clusters - term already used by J. Schumpeter (1911) - would be one of the main factors of competitiveness. Porter defines cluster as a geographical concentration of interconnected companies (specialized suppliers, services providers, related industries firms) and institutions (universities, development agencies or professional organizations) in a particular field (Porter, 1990). If Porter’s theory has similarities with concepts previously developed by other researchers, it is undeniable that he contributed to popularize the cluster notion.

In 1998, he specifies cluster’s definition and underlines that combination of competitive and cooperative relationships between co-localized firms entails a better learning, a greater diffusion of innovation and therefore a more important competitiveness of firms located in a cluster. In 2000, Porter completes its approach: cluster is a territorially integrated value chain supported by the public authorities, social networks (sometimes informal) and relationships between producers, contractors and clients. Specialization of the qualified workforce market determines innovation capacity of cluster. Porter also notes importance of actor’s proximity in the cluster emergence, first step before gestation phase and networks formation, i.e. a systemic form of cooperation that promotes knowledge. This simple and at first sight convincing an approach was largely admitted by the scientific community (Scott, 1997; Storper, 1998; Asheim, 2000; Cooke, 2001).

However several researchers highlight limits of Porter’s cluster theories, as notes an article of A. Hamdouch (2008) which underlines four uncertainties as:

- The identification of the relevant borders of the geographical space defining a cluster.
- The interindustrial feature of the cluster: vertical industrial complementarities or horizontally different but co-localized industries?
- The type of relationships between firms and institutions (universities, research laboratories, public authorities).
- The activity field of cluster: low tech or high tech?

According to E. J. Feser (1998), neither the definition of what is a cluster, nor the delimitation of space boundaries and its contents, nor even the identification of its emergence conditions and its evolution, are really determined. The study of the clusters and innovation networks specificities is still embryonic. Nevertheless, three meanings of the cluster notion are recognized by the scientific community:

- The first, an economic signification, focuses on the sectorial dimension and defines a cluster as a grouping of firms linked to customer-supplier relationships, similar technologies, labour market area or common distribution networks.
- The second, a relational meaning, is interested in actors networking and variableness of geographic proximity.
- The third, more territorial, regard cluster as a place, a pole that has a critical mass of actors (human or technological skills, production capacities) thanks to a high collaboration between firms, schools, research centres, public authorities, State in a particular field and a geographic area, and the presence of a venture capital. The territorial foothold of actors cluster is very strong.

In spite of these difficulties, is it possible to propose a synthetic and operational cluster approach?

1.2 Innovative clusters

The matter of clusters and innovation networks specificities has been the object of many empirical researches in the high technology industries (Saxenian, 1994 ; Swann et Prevezer, 1996 ; Feldman, 2003 ; Depret et Hamdouch, 2006). They have developed a more precise and operational approach. The innovation cluster or innovative cluster notion has gradually emerged thanks to these researches (Pressl and Solimene, 2003 ; Ernst, 2006 ; Depret and Hamdouch, 2006).

Innovative cluster features

Source: B. Lusso, 2012, TVES, Lille 1, from Leducq and Lusso (2011)
In accordance with the traditional approaches, quality of local environment (infrastructures and living environment) and presence of talents allow the emergence of an innovative cluster. The innovative cluster is defined as a strong cooperation between the Triple Helix actors involved in economic development: firms, schools, private and public research institutes and public authorities (Etzkowitz and Leydersdorf, 1997). These four categories of actors grouped in associations must get agreement around a coherent development strategy and trajectory that has been defined collectively (Maillat and Kebir, 1999) at regional scale (Enright, Dodwell and Scott, 1996). The aim of Triple Helix actors is to strengthen the innovation cluster resilience against external accidents. Nevertheless, the innovative cluster must open up exogenous actors in order to take over convergent technologies from concurrent clusters. Thus, innovative cluster can continue to offer innovative products and to cater closely to the needs of the market (Coe, 2001). That requires substantial financial inputs in the R&D field to meet its customers’ expectations. The innovative cluster hasn’t an immediately market vocation (Glon, 2007) and suppose an evolutionary dynamics (Camagni, 1991 ; Crevoisier, 2001). According to R. Boschma (2004), five categories of proximity emerge - institutional, organizational, geographic, social and cognitive proximities - necessary for the sustainability of the innovative cluster.

1.3 Creative and cultural clusters

The clusters, an apparently purely economic notion, have also known applications in the cultural fields thanks to the precursor researches of A. J. Scott (1997) on the geographical concentration of cultural industries – in particular film industry - in Los Angeles. In a sector dominated by SMEs (Scott, 1997), which production is primarily based on the creative capacity of their workforce, spatial proximity promotes emulation and improves the sharing of common resources outside the firms (Storper and Scott, 1995). Thus, a vertical integration expands thanks to complementary relationships which are built through associations and formalized guilds or federations. These associations maintain close collaborations with public institutions, because cultural economy is an economic sector which is heavily subsidized by the public authorities. Capital access, equipments sharing, skills mobilization, ideas traffic and exchange and skilled workforce contribute to strengthen the competitive advantage of these specialized areas. There is a link between a concentrated spatial organization (clusters) (Porter, 2000) and the production type of these cultural industries (creative environment) (Camagni and Salone, 1993 ; Camagni, 2002). This "milieu" or social environment is the basis for an exchange which is enriching individual and collective creativity of the cultural cluster members.

These clusters suppose an artistic thickness - this fragile "ecology of interpersonal relationships" (Shorthouse, 2004) – which is built in a defined place, thanks to the aggregation capacity of artistic and cultural actors, and the establishment of social networks between these different actors. In this context, the incremental cultural cluster notion characterizes the construction process of an agglomeration which requires the presence of a predetermined and spontaneous cultural identity (Ambrosino, 2007). This identity isn’t only built on voluntarist public policies, as is often the case. In a context of strengthened competitiveness, spatial concentration in the field of culture and cultural industries make effective an object or a production related to the territory identity (Santagata, 2002). However, there are different names, "cultural district" and "cultural cluster", which highlight the distinction between activity and cultural production. In structures organized around a cultural activity, the aim is to organize a network of highly specialized and integrated activities through a strategy of endogenous resources uniting (Valentino, 2002). The spatial dynamics leans on craft
traditions and a common cultural heritage which allows the constitution of a spontaneous organization based on a spatial concentration and a cultural atmosphere. The cultural district notion is therefore more commonly used by these researchers, by analogy with the marshallian industrial district which is largely based on the idea of industrial atmosphere. Thus, the cultural district would largely lose its productive vocation to become a consumption territory which concentrates cultural equipments, specialized shops and artistic events.

2. The Paris region, an emergent multimedia cluster?

The Ile-de-France is the first French region for the multimedia content production. Is there a regional cluster dynamics?

2.1 A sufficient critical mass

In the Ile-de-France, the multimedia industry counts 9 341 firms and 158 670 employees in 2009, as is shown the following table:

<table>
<thead>
<tr>
<th>Multimedia activity</th>
<th>Firms</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinema and audiovisual</td>
<td>2 224</td>
<td>36 699</td>
</tr>
<tr>
<td>Software and video games</td>
<td>3 219</td>
<td>67 651</td>
</tr>
<tr>
<td>Advertising</td>
<td>3 898</td>
<td>54 320</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9 341</strong></td>
<td><strong>158 670</strong></td>
</tr>
</tbody>
</table>

*Source: IAURIF (2010)*

This concentration of creators in the Paris region is explained by several factors. Paris multimedia industry has a full system of convergent activities. More than 250,000 people work in the cultural and creative industries (IAURIF, 2010). Moreover, The Ile-de-France region concentrates half of French companies in the digital industries, with 426 350 employees.

<table>
<thead>
<tr>
<th>Multimedia activity</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content industries (image, internet, multimedia)</td>
<td>138 100</td>
</tr>
<tr>
<td>Technical images</td>
<td>35 600</td>
</tr>
<tr>
<td>Communication agencies</td>
<td>42 550</td>
</tr>
<tr>
<td>Printing and publishing</td>
<td>27 900</td>
</tr>
<tr>
<td>Telephony</td>
<td>20 000</td>
</tr>
<tr>
<td>IT services industries</td>
<td>162 200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>426 350</strong></td>
</tr>
</tbody>
</table>


The Ile-de-France is the second region in this industry in Europe, thanks to the setting up of large groups, as Alcatel, a world leader in the telephony sector of telephony, but also to the presence of very good telecommunications infrastructures. Indeed, nearly 700,000 kilometres of optical fibre has been created by France Telecom in the Ile-de-France region. The Paris region has excellent infrastructures and a very high qualified workforce thanks to 50
multimedia trainings in arts (ENS Louis Lumière, School of Gobelins) and image technologies (ENS Image and Sound FÉMIS, University of Paris 12 specialized in the technical and medical imaging field). A lot of public and private research laboratories are specialized in the image and multimedia activities, as the National Research Institute in Computer Science. These favorable factors allowed implementation of 100 large national or foreign groups, specialized in film production (Gaumont, Paramount), animation (Disney), audiovisual (TF1, Canal Satellite), publishing (Hachette Filipacchi), multimedia (Macromedia, Softimage), computing (Microsoft, IBM) or telecommunications (Alcatel).

**Geographical distribution of the multimedia firms in the Ile-de-France region**

- The city of Paris and its suburb, the international centre of cultural and creative industries development.
- The north/north-west of Paris specialized in publishing and computer graphics industries.
- The Cergy-Pontoise agglomeration around the digital industry.
- In the south-west of Paris region, the area delimited by Saint-Quentin-en-Yvelines-Massy-Marcoussis, concentrates a lot of audiovisual, electronic and computer industries.
- From the National Library of France to Marne-la-Vallée, there is an emergence of audiovisual and postproduction SME.
- The Essonne department with microelectronics and telecommunications industries.

If the Ile-de-France has a critical mass in the multimedia industries, is there a cluster dynamics?

**2.2 The initial weakness of networks**

Initially, collaborations between different firms of the Ile-de-France region were generally low or nonexistent before the launching of the clusters policies. If partnerships existed in the
audiovisual field between producers and technical teams, it was mostly casual and limited to an 18-month project on average. Finally, the video game industry is dominated by several large publishers, who entrust to their subsidiaries (mainly development studios) the creation and production of finished products and assign to smaller subcontractors the assembling of the game. The sector is therefore organised as a lobbying system, with the parent company retaining the design functions and entrusting less skilled tasks to its subsidiaries. Companies in the multimedia sector are mainly SMEs who have neither the means nor the culture of international development. They think that international development is reserved for the largest companies. Collaborations are very recent, rarely include a cross-media approach and hesitate to develop partnerships with research units.

Audiovisual industry hasn’t initially developed a very important innovative research. The only innovation that has transformed the sector is the introduction of digital technologies. Furthermore, this sector is characterised by the heavy weight of associations and professional unions. Although they have certainly facilitated the development of networking between the different actors of the sector around mainly technical aspects, this is not the case in the field of innovation. Nevertheless, the Ile-de-France region has developed several innovations, as the Kaema, la Prophétie film, the first European cartoon movie entirely shot in 3D.

As for video games, the weakness of collaborations in the field of research lies more in the particular relation that firms have with R&D research units. When a development studio (there are many in the Rhône-Alpes region) does R&D, it is generally not dissociated from the production of a specific film. It applies directly to this film and ends when the production is over. Indeed, the relatively small size of companies does not allow them to develop an autonomous research activity, while larger companies develop their own research programmes. Innovations are rather exogenous and appear as a technological constraint imposed by the upstream actors of the “hardware”. It seems essential in this context that content producers make a significant effort to organize R&D internally, so as to offset the exogenous innovation constraint by building on the skills of engineers, designers and creators. In the Ile-de France, the situation is better because the National Research Institute in Computer Science has established several partnerships with companies located in the region such as Thomson, Thales, Alcatel, Nortel or Siemens. In addition, 4,000 companies specialized in the image and multimedia industries have developed their own internal research activities. But, it is insufficient to develop a real cluster dynamic.

2.3 A real cluster dynamics since the Cap Digital competitiveness cluster creation

Seeing the relative weakness of networks between the multimedia firms within the Ile-de-France territory, public authorities, and specifically the Ile-de-France Regional Council, Departmental Councils, urban communities and cities have wanted to structure this industry. Thus, in 2006, the professional association Cap Digital, has labeled competitiveness cluster by the Interministerial Delegation for the Development and Competitiveness of Territories, that action scale is regional. Cap Digital enables multimedia and digital content industry actors to increase firms creativity in the Ile-de-France region and anticipate technological evolution. The aim of this professional association is to create networks between firms and institutions and promote innovations. Thus, 9 sectors have been defined within the multimedia industry:

- Video games ;
- Digital design ;
- Culture, publishing and media ;
- Image and sound ;
- Robotics and connecting objects;
- Education and digital training;
- Services and uses;
- Knowledge engineering;
- Free software, coopération and new models.

These main types of actors are grouped in three thematic committees (services, content, knowledge) that imagine a development strategy proposed in the strategic governance actors: chair, board of directors and executive board. Strategic governance organism is the result of a balance between the Triple Helix actors (firms, schools, research laboratories and public authorities) and nine media industry sectors. A task team is responsible for the strategy application and the multimedia industry leadership (operational governance). It’s a good example of a collective governance. In order to develop a regional innovative cluster dynamics, Cap Digital competitiveness cluster have launched concrete operations into the multimedia sector, such as:

- Organisation of professional events and meetings,
- Call for projects, which associate firms and research centres,
- Support for Innovation,
- Commercial development,
- International development,
- Training and employment programs.

The Cap Digital animation actions are very effective. In 2012, the competitiveness cluster brings together more than 770 members and all Triple Helix actors: 630 SME, 20 large enterprises and 50 schools and universities comprising 70 research laboratories and public authorities (Regional and Department Councils, urban communities, cities...), that have a consultative and financial role. 40% of professional association members are located in Paris city and 60% in the rest of the Ile-de-France, essentially in the north-east of the region. This attraction is explained by the dynamism of the actions developed by the professional association. Indeed, Cap Digital has put on more than 1,500 research projects, of which 700 have been labeled and 400 have been financed 440. Cap Digital has supported € 935 billion of research and development activities since its creation, thanks to € 380 billion of public financing.

The success of the Cap Digital services is undeniable. In 2011, more than 250 SMEs have participated in the Think Tank activities through 6 working groups and 11 workshops. 110 SMEs employees have participated in workshops related to commercial and development actions. 95 new companies use Digitalents site in order to broadcast their job offers. 5 international missions have been conducted and 110 firms have launched an international development. 16 SMEs have benefited from Digital Diag and Digital Invest programs to develop relationships with big companies or groups. A guide of the competitiveness cluster services has been published to facilitate the offer clarity. The competitiveness cluster is able to forge strong links with all investment funds: business angels, venture capital... Founded in 2011, the investors college is also evidence of these new collaborations.

More than 30 firms have asked a patent for these innovations. In Paris region, multimedia industry knows a real innovative cluster dynamics. But, R&D collaborative projects are mostly based on a firm to firm basis. “Practices have evolved, as other stakeholders such as public agencies have been increasingly involved, especially as funding partners. Publics subsides for innovation-based projects tend to follow a Call For Projects procedure.
Accessing available funding for R&D and innovative projects (from the multiple public agencies such as Agence Nationale de la Recherche, Fonds de Compétitivité des Entreprises, Fonds d'Aide à l'Édition Multimédia, Oséo or Oséo Agence de l’Innovation Industrielle) therefore requires to respect the eligibility and selection criterias” (Halbert, 2009). The role of public authorities in the innovative cluster development is very important.

**Conclusion**

Following the rediscovery of Alfred Marshall’s academic publications during the eighties, a widening number of research papers - mainly draft in Europe and United-States - concentrates on explaining the ins and outs of the spatial and relational proximities. The unsettled notion of cluster popularized from 1990 by Michael Porter had a coronation within the academic community, instead of the substantial conceptual limits underline by various schools of thought. Consequently, the concept of innovation cluster blows in the communications of the spatial economists achieving scientific works on high-tech sector. Unlike the classical approach, innovative clusters assert at least three new features: the regional scale, the collaborative process of governance and then the non-immediately-marketable aspect of the relationships undertook within the cluster.

The Paris region concentrates 10,000 multimedia firms, that sometimes have established networks with some multinational media groups. However, the relations are extremely limited with the regional schools and research laboratories. The economic situation of SME remains very fragile. That’s explain the launching in 2006 by the Ile-de-France Regional Council of a cross-media professional association, Cap Digital, labeled competitiveness cluster. On the regional scale, this association gathers more 770 members with a balance between schools, research centres, public authorities and firms in audiovisual, video games, software, Internet and telecommunications industries. Since 2006, a very dynamic multimedia cluster has emerged. According to J.C. Daumas (2007), clusters are characterized by several phases: emergence, growth, decline and rebirth. We can consider that the Parisian multimedia cluster as a growth and structuring cluster.

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