Policies for Creative Clusters: A Comparison between the Video Game Industries in Melbourne and Montreal

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Policies for Creative Clusters: A Comparison between the Video Game Industries in Melbourne and Montreal

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ABSTRACT   *This paper analyses whether the video game industries in the main video game hubs in Australia and Canada have the attributes of creative clusters. Three components are analysed: (1) The significance of cross-fertilization with other creative fields in the emergence and growth of the cluster; (2) The benefits of clustering; (3) The role of policies in the maturation of those clusters. The case studies included are the most notable video game clusters in Canada and Australia: Montreal and Melbourne. The research methods applied are semi-directed interviews with policy advisors and game developers in each context. As an outcome of this research, its findings reveal that the video game industry in Melbourne cannot yet be qualified as a creative cluster but is rather still very much embedded in a technology culture. In Montreal, the cluster is more mature and presents the attributes of a creative cluster, as there are interrelations between the various actors of the cluster, and with other creative activities. In both contexts the impact of policies on the maturation of the cluster is limited; rather, attaining a critical mass of video game companies is necessary for cross-fertilization to occur.*

Introduction

This paper focuses on the creative cluster as a form of economic organization. We analyse the video game industry in Australia and Canada through the two main video game clusters in each country: Melbourne and Montreal. Our aim is to determine whether these agglomerations of video game companies are creative clusters or not. To analyse this, two components are considered: the level of cross-fertilization with other creative fields and the benefits of clustering.

The research is based on interviews with policy advisors, game developers and representatives of relevant institutions, each of whom witnessed the emergence of the cluster

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and was active in the development of the policy framework. Semi-directed interviews were conducted, as well as an analysis of the main policy documents and press articles on the gaming sector. Our main research question is twofold and as follows:

Can the video game industries in Melbourne and Montreal be considered as creative clusters? What are the role and the implications in terms of policies?

This article had the objective of determining whether the:

- cross-fertilization with other creative fields is significant during the emergence and growth of the cluster;
- video industry benefits from spatial clustering in each context;
- type of policies is most appropriate considering the level of maturation of the cluster.

The Creative Cluster as a Form of Economic Organization

Early thinkers in this field (Florida, 2002; Howkins, 2001) noted that the "creative economy" operates differently from the traditional economy, and hence requires specific policies to support these sectors. Further, as stated by Kong (2009, pp. 61–62): "The nature of clustering does differ depending on the specific activities under consideration". In this way Kong (2009) contends that creative clusters differ from business and industrial clusters—as further elaborated by Michael Porter (1998, 2000) and Alfred Marshall (1890)—however they are often treated as a subset of business clusters, and subjected to the same economic analysis and policy responses as other industries.

Creative clusters as a form of economic organization are *weakly* theorized and have not been the object of as much attention as industrial clusters. Research has insisted on the need for creative industries to cluster for the development of tacit knowledge, but the distinction between the concept of industrial and creative clusters is still not well defined.

Clustering and Access to Resources (Tacit Knowledge, Skilled Labour, Relational Capital, etc.)

The cluster model of economic organization has been studied extensively; it is defined as "a distinct form of economic organization that confers economic advantages in unpredictable and changing environments" (Smith *et al*., 2004, p. 196). Porter (1998, p. 78) initially defined clusters as "geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions in a particular field that compete but also cooperate". According to Bathelt *et al*. (2004, pp. 32–33):

> spatial clusters of similar economic activity provide opportunities for the transmission of tacit knowledge between firms . . . successful clusters are the ones that are able to maintain a variety of channels for low-cost exchange of knowledge with relevant hot-spots around the globe.

Lazzerati *et al*. (2008) identified creative Local Production Systems (Creative LPS) in Spain and Italy, "*creative industries show an urban nature*" as they tend to cluster in the largest urban LPSs. De Propris *et al*. (2009) found that creative industries tend to

locate near each other depending on their technological complementarities. According to O'Connor (2004, p. 4), tacit knowledge—as opposed to codified knowledge—is tied to place, and cultural industries rely very much on learning-by-doing practices and on skills diffused through specific related networks. Can these assumptions be verified for the video game industry? Previous research on the new media and the video game industry has presented some elements on this sector but has not confirmed all these points. Hutton (2008, p. 263) highlights that creative and new economy firms cluster in inner-city locations. Some examples include Yaletown in Vancouver, Mile End and Plateau in Montreal (cf. Tremblay & Rousseau, 2006), which are considered as "creative milieu" due to the possibility of exchange of tacit knowledge among the amenity sites provided in this type of inner-city urban environment. In the case of Toronto's multimedia cluster, Brail and Gertler (1999) also describe the clustering of the multimedia industry in old inner-city industrial areas. This location is favourable as multimedia firms need easy access to supplier industries, freelancers, and potential employees, and this type of location also facilitates networking with clients. The specific role of cross-fertilization between creative fields in the emergence and growth of creative clusters and the benefits of clustering in the development of tacit knowledge have not been researched thoroughly.

The first component to investigate for the video game industry is as follows: do video game companies cluster to benefit from knowledge sharing, trust and relational capital, and pools of skilled labour to help them gain from external economies?

Process of Cross-Fertilization between Creative Fields

As stated by Lorenzen *et al*. (2008): the geography of the new cultural economy is characterized by a tendency to agglomerate in specific places where inter-sector knowledge spillovers are likely to occur. In Japan, Aoyama and Izushi (2003, p. 426) explain that the emergence of the video game industry can be explained by:

> . . . the availability of skilled engineers emerging from Japan's consumer electronics industry. The presence of competitive consumer electronics industry in Japan created a foundation of necessary technical labor pool, and social legitimacy drawn from pre-existing comic and animation industry has served as a foundation for game creators and designers.

This point illustrates that the emergence of the video game industry cannot be explained solely by cross-fertilization with another creative field (e.g. cartoons).

According to DePropis and Hypponen (2008), a creative cluster is a place that is defined by four elements: It is a community of creative people; it is a catalysing place where people, relationships, ideas and talents can spark each other; it is an environment that offers diversity, stimuli and freedom of expression; and it is an ever-changing network of interpersonal exchanges that nurture the uniqueness and identity of individuals. Rantisi (2002) attributes the success of the fashion industry in New York to its status as an international centre of high art, opera and theatre; research on creative clusters suggests that there is a spill-over effect from one creative sector to another at the origin of a creative cluster of any kind. The creative cluster model is based on the notion that local space can be a catalyst for creativity. Within this framework, creativity is considered a collective

process based on a high level of interactions between creative enterprises (Drake, 2003, p. 522).

The Video Game Industry as a Creative Economy Sector

Cultural and creative enterprises are often considered synonymous terms, although they are in fact quite different. Cultural enterprises are associated with more traditional sectors, such as publishing, music, performing and visual arts (Towse, 2003), while creative enterprises also comprise the new sectors linked to the digital economy, such as software and computer services (Lazzerati *et al*., 2008). Aoyama and Izushi (2003) affirm that through the introduction of multimedia technologies, technology-intensive industries such as the video game industry have become part of creative industries. In Québec, the video game industry is linked with the North American film industry, but also with the animation studios developed in Montreal, as the site of the National Film Board (NFB) of Canada (Britton *et al*., 2009).

Creative industries are defined as much by the creative acts of specific individuals as by the project team or firm. The latter are also characterized by the continuous development of intellectual property (IP), and usually product decisions tend to become more market-driven as the firms mature (Caves, 2000). Tschang (2007, p. 1003) relates creativity to the action of creative individuals who "are responsible for bringing about radical innovation, which result in new game genres". The creative aspect of producing video games mainly occurs during the pre-production process, during which the Game Design Document (GDD) is written (Callele *et al*., 2005).

As explained by Deprato *et al*. (2010, p. 33): "The product from its creation to its consumption goes through a series of necessary intermediaries to allow for its commercialisation".

Figure 1 shows that the value chain includes the following: content creation and development, content publication, content distribution and content retail.

The production of a video game requires collaboration by a diversity of creative specialists: writers, game designers, graphic artists, and sound engineers. As described by Cohendet and Simon (2007, p. 588), communities of experts are the source of creative ideas; "these communities are repositories of accumulated knowledge and cooperative frameworks within which new practices and routines emerge".

Research Question and Methods

As stated earlier, there is no clear consensus on the role of public policy in creative cluster development. Based on the literature review, the aim of the paper is to determine if the video game industry in each context is a creative cluster. We then discuss the role of policies.

Figure 1. Video games' traditional value chain.
Source: DePrato *et al*. (2010, p. 33).

To respond to the research question mentioned in the introduction, semi-directed interviews with policy advisors and game developers are the primary method of data collection in this research. The interview guidelines are organized around three main themes: (1) The impact of cross-fertilization on the emergence and growth of the cluster; (2) The benefits of clustering; (3) The role of policies. In total, we conducted ten semi-directed interviews in 2012 and 2013 for the Melbourne case study. For the Montreal case study we conducted eleven interviews with relevant institutions and policy advisors at the City and Provincial levels between 2006 and 2012, and also conducted interviews with over 20 firms in the multimedia and gaming sector over the same period. The location of video game industries was also mapped in each context to determine if the companies are clustering in specific locations of the city.

The main policy documents analysed for the Melbourne case study date from 2002 until 2013, and for the Montreal case study, from 1998 to 2013.

Further, because the two clusters are at different levels of maturation they provide an interesting and complementary perspective in order to respond to our research question. While the two case studies differ in certain ways, they are also comparable as they represent the main video game cluster in each country.

A thematic analysis was employed for this research, with three key themes emerging as most applicable to the research question. The themes are the following: (1) The impact of cross-fertilization between creative fields on the emergence and growth of the video game industry; (2) The benefits for clustering; (3) The role of policies.

Video Game Industry in Australia and Canada

Internationally, the Australian video game industry is considered a "niche player", and is therefore considered a contender to compete with countries like France and Korea, as well as Scandinavian countries. In general, "video game hubs" at the top of the list are mainly regions that have been active in the industry for over 15 years. In addition, these regions—such as Quebec, British Columbia, California and Washington State—have achieved significant size, as they host at least 3000 game development jobs (Secor Consulting, 2008, p. 18). In 2007, there were 45 games development businesses employing 1 431 workers in Australia, mainly concentrated in the regions of Victoria, Queensland and New South Wales (CCI *et al*., 2011). Queensland (Brisbane) and Victoria (Melbourne) are the main regional hubs in Australia for the video game industry, as Queensland alone holds a concentration of 48.6% of all industry workers in Australia (CCI *et al*., 2011). The digital game development businesses generated an income of $136.9 million in 2006/2007, with Queensland and Victoria combining 73.7% of the total income in Australia (CCI *et al*., 2011).

Video game developers are now increasingly locating in Sydney as shown in Table 1. Initially, Melbourne and Brisbane were the first cities to host a significant concentration of video game developers.

Despite a somewhat extended period of development of approximately 30 years, the sector in Australia is still relatively small (based on number of workers) and slow to grow. It creates fewer IPs[1] than some of the more developed industry clusters and Australia has never produced a Triple-A IP.[2] Further, products developed in Australia are largely licence-based, meaning the industry is dependent on outside publishers for distribution (CCI *et al*., 2011). Also in comparison to other countries, Australia has a relatively low

Table 1.   Video game developers in Australia

Cities	Commercial game studios	Independent game studios	Total
Melbourne	12	61	73
Brisbane	7	22	29
Sydney	8	20	28
Adelaide	0	17	17
Perth	4	10	14
Canberra	3	2	5

Source: Tsumea (2012): www.tsumea.com

score regarding innovation due to the low proficiency for creating new IPs. With regard to state funding, there is a certain level of assistance in Victoria and Queensland, but the total funding from the State is comparatively low when contrasted to the level of assistance experienced by game developers in Canada, for example. The Quebec Provincial Government in Canada subsidizes 37.5% of the cost of production for game developers (Miller, 2011). In relation to growth, Australia has a reasonable rate of graduates in computer programming; however the salary for video game developers is low when evaluated against countries like Canada, the US, France and the UK (CCI *et al*., 2011). Australia is also experiencing a high level of developer mortality, a result of talent flight overseas to regions where the industry is more sustainable, including California and Washington State in the US; as well as British Columbia and Quebec in Canada.

As mentioned above, it is important to note that the video game industry in Australia is heavily reliant on fee-for-services from international publishers, due to the licence-based product development structure. As an issue brought forward in our interviews, the effect has been to weaken industry development in the country, demonstrated by the resultant closure of several studios in the three main cities of Brisbane, Melbourne and Sydney between 2005 and 2011 (Miller, 2011). The fee-for-service system could also be seen as one explanation for the low performance of innovation, as innovation can be measured (as is the case in this study) by the creation of new IPs, and the reliance on fees-for-service(s) from international publishers has undermined the capacity to innovate in this regard. By examining the interactive entertainment industry of Australia in 2006/2007, the total income for the industry was A\$136.9 m, with A\$116.9 m (85% of income) coming from the provision of services to other businesses. Of this service income, 93% came from overseas sources. In comparison, the film and television industry in Australia relies less on fee-for-service work (Screen Australia, 2011). Overall this has made the video game industry highly vulnerable to the global financial market, as made clear during the Global Finance Crisis (GFC). The composition of the industry has changed significantly since 2006/2007, with the closure of several development studios (focused on console games), along with the emergence of many smaller independent development studios, specializing in on-line games, as well as mobile phones and tablet games. As a positive outcome, the emergent studios are self-publishing, therefore this shift in the industry has demonstrated that self-publishing is a viable business model, demonstrating that independent developers can now bypass traditional international publishers. This emergence of new publishing platforms has also drastically lowered the cost of game development, as these independent enterprises also generate their own IPs (Screen Australia, 2011).

In comparison, the video game industry in Canada is significantly more mature and also operates at a much larger scale. This is confirmed in Table 2 where Canada ranks second behind the US on overall competitiveness. The video game industry in Canada acts as a strong support for Canada's position in the global economy; it contributed $ 1.7 billion in economic activity in 2011. The main drivers for Canada's success in the industry sector are as follows (SECOR Consulting, 2011, p. 3):

- Rich ecosystems of video game development (publishers have the ability to build and test all components of a new product locally);
- Well-trained talent (from local universities and colleges);
- Attractive economics (government policies, good exchange rate);
- Desirable places for talent (Montreal, Toronto, Vancouver);
- Geographic location between the export markets of Asia and Europe, close to the US;
- Multicultural society (language and cultural overlaps with the US, Europe and Asia);
- Good financial support from interactive/digital industry associations;
- Attention from Canadian media.

Montreal is the main video game cluster in Canada. Over half of the industry jobs are concentrated there, and a quarter of Canada's video game companies are in the Province of Quebec. The average number of employees per company is 95, which is twice the industry average in Canada. This reflects the predominance of large companies in the province (SECOR Consulting, 2011, p. 10).

As shown in Table 3, the size of the industry in Quebec has been larger than the two other provinces; however a convergence is possible in the future, depending on growth rates.

Generally in Canada, film and television production has had an important impact on the video game industry, as has the production of commercials, logos, publicity, and other forms of commercial activity. Success in Canadian markets also has acted as a lead into Hollywood, particularly in the case of Toronto and Montreal (Britton *et al.*, 2009). In Montreal, recent developments in the industry have often been connected to the use of a licence related to a Hollywood production (Pilon & Tremblay, 2012, 2013)

Table 2. Country performance ratings for the game industry (out of 10)

	Maturity	Innovation	Funding access	Growth potential	Overall competitiveness
US	10	8	9	7	8.5
Canada	7	8	8	8	7.75
UK	9	9	6	6	7.5
South Korea	6	6	6	5	5.75
France	6	6	6	4	5.5
Australia	4	3	5	5	4.25
Singapore	2	2	7	2	3.25

Source: CCI *et al.* (2011).

Table 3.   Distribution of the industry between Quebec, Ontario and British Columbia in 2011

	Quebec	Ontario	British Columbia
Total employees	8236	2600	3882
Number of companies	86	96	83
Average number of employees/companies	95	27	47
Historical growth	13(%)	20(%)	0(%)
Expected growth	16(%)	21(%)	10(%)

Source: SECOR Consulting (2011).

Melbourne Case Study

Melbourne is both currently, and historically the most important video game hub in Australia.

Impact of Cross-Fertilization with Other Creative Fields

The origin of the industry in Melbourne begins with Melbourne House, which is considered as a catalyst company for the video game industry in the city (our interviews). Melbourne House was established in 1978 as a book publishing company, yet in 1981 the company created Beam Software and developed The Hobbit, one of the first games produced in Australia (ACMI, 2012). Melbourne House went on to develop more than 150 game titles (ACMI, 2012). In the 1990s, several individual game developers began their careers at Melbourne House, and then moved on to create their own companies like Taurus, Blue Tongue or Tantalus. Individuals chose to start their own company as they wanted to be in control of their own destiny (our interviews). These start-ups also generally hired staff from Melbourne House. As was also the case in Brisbane, small independent studios were at the origin of the video game hub in Melbourne. As a catalyst company, Melbourne House generated the emergence of independent video game studios (spin-off effect); the concentration of talent in the industry then became an attractive factor for international publishers who settled in Australia to lower their cost of production (our interviews). At that time, small studios were bought by International publishers (e.g. Blue Tongue Entertainment founded in 1995 bought by HQ in November 2004), and did fee-for-service work for other international publishers. However, this put them in a difficult position as they did not own the IP for the product (our interviews). According to our interviews, the Melbourne cluster is embedded in a technology culture: most video games pioneers in Melbourne were computer programmers and not creative workers. In the case of Melbourne, the video game industry work was very much in silos and there has been limited cross-fertilization with other creative sectors like the film industry.

Benefits of Clustering

Our research for Melbourne does not show many benefits for video game companies from clustering in a specific location of the city. The exchange of knowledge in the video game community does not rely very much on geographic proximity but happens through gathering at conferences and through the use of social media. However, Melbourne benefits from a local "buzz" effect because it has established companies and a policy framework that

support the industry. The video game industry is also highly dependent on expertise and knowledge coming from outside when a global player is "coming to town". If the industry has switched to mobile phone games and Facebook games, game developers usually keep working on the same type of games so they do not rely necessarily on the knowledge of other companies to develop their games. Discussion around new ideas and creativity is happening at a low level for artsy types of products, but this is still a marginal phenomenon; the video game industry in Melbourne is embedded in a technology culture rather than a creative culture. As a critical mass has not been reached, cross-overs with other creative industries are only emerging. According to some developers the video game industry in Melbourne is in a phase of transition towards a creative industry model. In this model, knowledge exchange between creative industries would be more crucial to the growth of the cluster. Our research shows that video game companies do not need to cluster or be in proximity to other creative industries to thrive. However, they gain benefits for being located in Melbourne.

Figure 2 indicates small clusters in the central business district (CBD), and most video companies are located within 5 km of the CBD. Our interviews reveal that the reasons for clustering are related to the accessibility of public transport and the proximity to the major institutions supporting the video game industry (our interviews).

Policy Framework: Technology Cluster Approach

The State of Victoria is the most advanced in Australia regarding support for the Information and Communication Technology (ICT) industry. The video game cluster is part of the clusters of excellence for the ICT industry among thirteen other clusters in Victoria (Invest Victoria, 2012). Melbourne is promoted as a hub for ICT innovation in Australia (Invest Victoria). However, prior to the creation of the Game Developers' Association of Australia (GDAA) in 1999, the policy framework for the video game industry remained very fragmented (our interviews).

According to the Creative Industries Manager for Melbourne, a cluster is defined as an industry sector or a group of companies representing a sector of capability within the IT sector.

Within the ICT sector in Melbourne, the game industry cluster is a priority. The State of Victoria has been the first State in Australia to support the video game industry through specific economic development policies. In 2000, it released "Game Plan" (2000) and then "Game Plan: The next level" (2001) and "Game Plan: Game on" (2002) (ACMI, 2012). The political support for the industry sector has been a clear determinant to propel the video game industry in Melbourne (Our interviews). One institution that has also played an important role is Film Victoria (FV), and through a partnership with Multimedia Victoria (State of Victoria, ICT sector) has proven to be very efficient. With their digital media fund, Film Victoria as an institution has played a key role in developing and sustaining the video game industry in Melbourne. This support for the digital industry has been in place in Victoria since 1995 (our interviews).

Overall through the GDAA—which was initially funded by the Australian government—Melbourne has a set of institutions that create a rather solid policy framework to facilitate the emergence of new IPs (Our interviews). More so, recently Film Victoria has also proposed funding opportunities to help game developers release and market their products (Film Victoria, 2012).
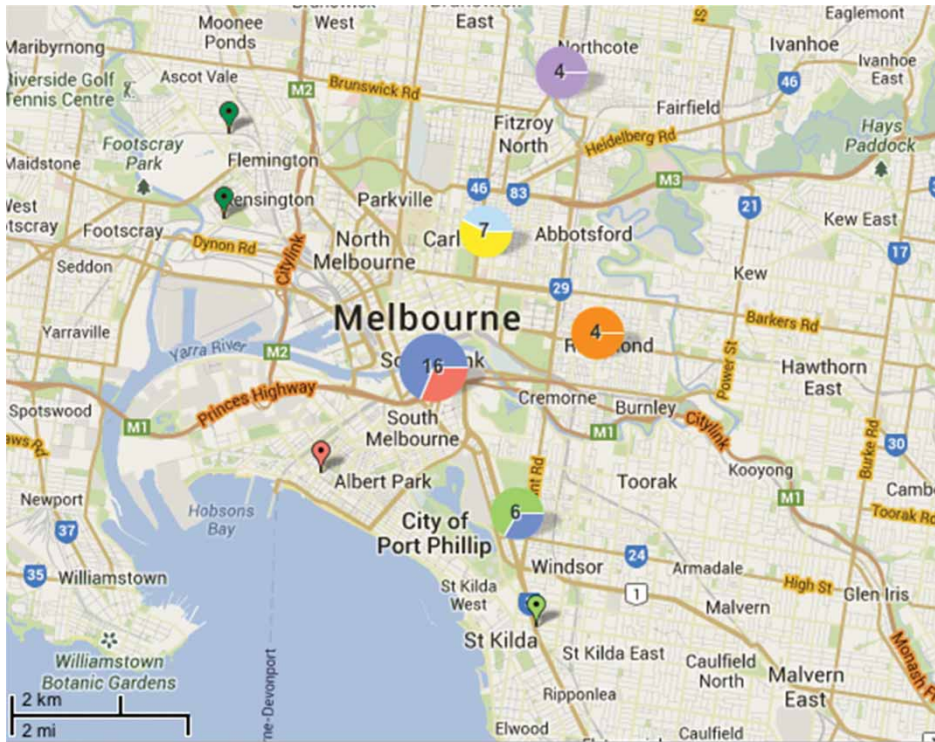
Legend

- North-West Melbourne (Flemington/Kensington) (2 Studios)
- Melbourne CBD (13 Studios)
- Prahran/Windsor/St Kilda (5 Studios)
- South Melbourne/South Bank (6 Studios)
- Richmond (4 Studios)
- Fitzroy/Collingwood (4 Studios)
- Carlton (3 Studios)
- North Melbourne (Northcote/Brunswick East) (4 Studios)

Figure 2. Localization of video game companies in Melbourne.
Source: Our research. Map data: © Google 2013.

This research reveals that the current objective in terms of public policy is to develop a sustainable environment for the video game industry in Victoria. In order to achieve this, the strategy is twofold. The first is to attract international developers, which enables local studios to be exposed to change and innovation. The second strategy is to support local developers and the development of IPs (Our interviews). There are, however, challenges to accomplishing these objectives. One example is the availability of skilled labour in order to attract international studios. On this point, the GDAA is requesting an education accreditation process, in order to ensure that the workforce acquire the right skills when attending university programmes in Australia (Our interviews). The strategy at the State level is to develop mechanisms to attract talent through immigration; the liveability of Melbourne is a key strength (Our interviews).

Table 4. SWOT analysis of the video game industry (Melbourne)

Melbourne			
Strengths	Weaknesses	Opportunities	Threats
Matured policy framework ensuring growth of the independent game studios	Still low capacity to attract major studios at the international scale (no production of "AAA" title yet)/ skilled workforce not at the level of Canada's hubs	As industry is evolving towards use of other types of consoles, policies should evolve in that direction	Flight of skilled workforce/talents to Canada/US
Tradition of policy support for the ICT sector in Victoria has a spill-over effect on the video game industry	Tyranny of distance from Europe and North America will remain a major weakness	Geographic proximity to Asian markets (China, Japan) but low level of business partnerships to date	Stagnation or decline of the cluster could make it less a priority within ICT industries in Victoria
Melbourne's quality of life/leading in ICT makes it the most attractive place in Australia for the video game industry	Skilled workforce coming from University programmes does not match demand from the industry in regard to skills		

Source: Our research.
Note: SWOT, Strengths Weaknesses, Opportunities, Threats.

Table 4 summarizes the strengths, weaknesses, opportunities and threats that the industry foresees for the coming years.

Montreal Case Study

As a parallel to Melbourne, Montreal is also currently and historically the most important video game hub in Canada. This section presents the emergence of the cluster and also demonstrates the importance of the Québec provincial government's financial support for the sector, in developing what is frequently branded as the "low-cost high creativity" production in Montreal.

Emergence and Evolution of the Cluster: Impact of Cross-Fertilization[3]

In Montreal, the videogames cluster has evolved from approximately 400 employees in 1996,[4] to 1000 in 2003, to 5500 in 2009, and finally over 8000 employees in 2012. Eighty per cent of the video game industry in the province of Quebec is concentrated in Montreal, with a small portion in Québec city and a few firms scattered elsewhere.

Several important factors, such as the "position" of Montreal as a geo-cultural bridge between Europe and North America, as well as the strong digital animation culture (from the NFB studios to Softimage and the Multimedia City—see Britton *et al.*,

2009; Pilon & Tremblay, 2013; Scott, 2005; Tremblay & Cecilli, 2009) have contributed significantly to the industry success. Montreal is seen as a city where production costs—such as wages and rent—are low, yet creativity is high. Also, within an increasingly American and Hollywood-based entertainment culture throughout North America, Montreal managed to attract projects to the video game cluster based on connections within the film industry. Public support has also added to industry success, and this aspect is described further in the next section. Over the years, there have been several American acquisitions of local computer graphic and video game firms, as well as the establishment in Quebec of several foreign video game firms, with ownership from France, the UK and the US.[5] In the late 1990s, with the growing popularity of video games based on Hollywood movies and other foreign licenses, many local firms took this "Hollywood road". Firms such as Hexacto, Kutoka, A2M (which became Behaviour Interactive), Airborne, and Beenox (from Quebec City) thus attained the fastest and the highest growth among local firms (Pilon, 2007; Pilon & Tremblay, 2013).

As for cross-fertilization, it seems this was less frequent in the first years of clustering. Indeed the City of multimedia program actually was aimed at bringing firms from the gaming sector to establish themselves in this specific territory and to work or exchange information with firms from the sector. While many firms, especially the largest (Ubisoft, Electronic Arts) located outside the City of multimedia, it appears that intra-sectoral exchanges were not particularly important in the City of multimedia. As is the case for Melbourne, our research and interviews show that the flows of knowledge in the video game sector do not happen between firms or at the studio level but much more through gathering at conferences and through the use of social media.

Cross-fertilization has actually increased over the years though, as the firms have become acquainted with the city and the actors, and have started to meet with actors from other sectors (film, animation, TV) and develop some knowledge flows. It thus seems that knowledge exchanges increase over time, partly through international conferences happening in Montreal or North America and partly through the sharing of local spaces or districts, which can bring networks to cross each other and people from film or animation to mingle with the gaming community.

As mentioned in the introduction, we need to point out that for Montreal as well, the emergence of the video game industry cannot be explained only by cross-fertilization with other creative fields (be it film or animation). Innovation in the gaming industry did not rely solely on creative type of knowledge; on the contrary, it initially relied on more technical sectors, as the initial firms actually came from a Mathematics research centre in the University of Montreal, as mentioned by our interviewees. It is only over the years, with gaming becoming more important than multimedia in general, that the relations with other creative sectors developed. This is also observed in the fashion design industry, which also looks to other creative sectors for its cluster and creative development. Intermediary organizations play an important role in this opening up of the sectors and in fostering cross-pollination (Tremblay et al., 2012)

Benefits of Clustering

While the city of Montreal wanted to concentrate the industry in the Multimedia City, this project was only partly a success. Many firms chose to locate outside the MM city, and

thus districts like downtown Montreal (Ste-Catherine street with Electronic Arts in the Place Ville Marie) or the Mile End (with Ubisoft) have become as important as the City of multimedia per se.

This leads to questioning the idea of clustering, but mainly to questioning the exact level at which clustering must take place: the district, the city, the region? While the Metropolitan region may be appropriate in sectors such as Aeronautics or IT, the city or central city level may be the most appropriate for the gaming industry. Thus, while firms and studios did not establish themselves in the MM City, they nevertheless are clearly collocated or clustered in the central part of Montreal, mainly in the Mile End, Central downtown, as well as MM City. This gives a sort of T-shaped establishment localization as shown in Figure 3.

Montreal has been called a "small big city" (Rantisi) and it is clear that it is easy to meet when people are working in studios in these different zones which are relatively close to each other. Also, it seems that exchanges rely much more on relational proximity than on physical or geographical proximity, so cultural and sectoral events can represent important meeting places. In Montreal, Alliance Numéricq organizes an annual event where most firms are present, not only the Québec firms, but also many international firms. This is where many information exchanges occur, between Québec firms as well as with international firms. Also the Société des arts technologiques organizes events where many "geeks" meet. Again, as is the case for Melbourne, and actually even more so, Montreal clearly benefits from an important local "buzz" effect because it has not only established companies and a policy framework that support the industry, but also "cool" districts in which to work, such as the Mile-End, where Ubisoft is established.

From this point of view we can thus say that the clustering is at the city level, concentrated in a few central districts, where workers from the various studios can meet at lunchtime or in various cultural or sectoral events.

We can thus consider that Montreal's gaming industry has definitely become a creative cluster inasmuch as it is defined by the four elements put forward by DePropis and Hypponen (2008): (1) It is a community of creative people; (2) It is a catalysing place where people, relationships, ideas and talents can spark each other; (3) It is an environment that offers diversity, stimuli and freedom of expression; and 4. It is an ever-changing network of interpersonal exchanges that nurture individuals' uniqueness and identity. Our interviewees clearly agree on this and therefore we should conclude that Montreal has become a creative cluster, while in 2000 or so, we considered it was more of a collocation (Tremblay & Rousseau, 2006), as knowledge exchanges and cross-fertilization had not necessarily burgeoned and it may not have been mature enough at that point.

Policy Support

Two main initiatives have played a dominant role in the development of the video game industry in Montreal. First, the public support to the film and animation industry through Canada's NFB, and second, the City of Multimedia funded by the Quebec government.

Historically, the head office of the NFB—an institution financed by the federal government to ensure Canadian production—is located in Montreal and acts as an extremely important incubator of creative talents and of artistic and technology experimentation in traditional and animated films. The presence of the NFB in Montreal was essential to the development of the gaming industry in Montreal, just as the strong presence of national
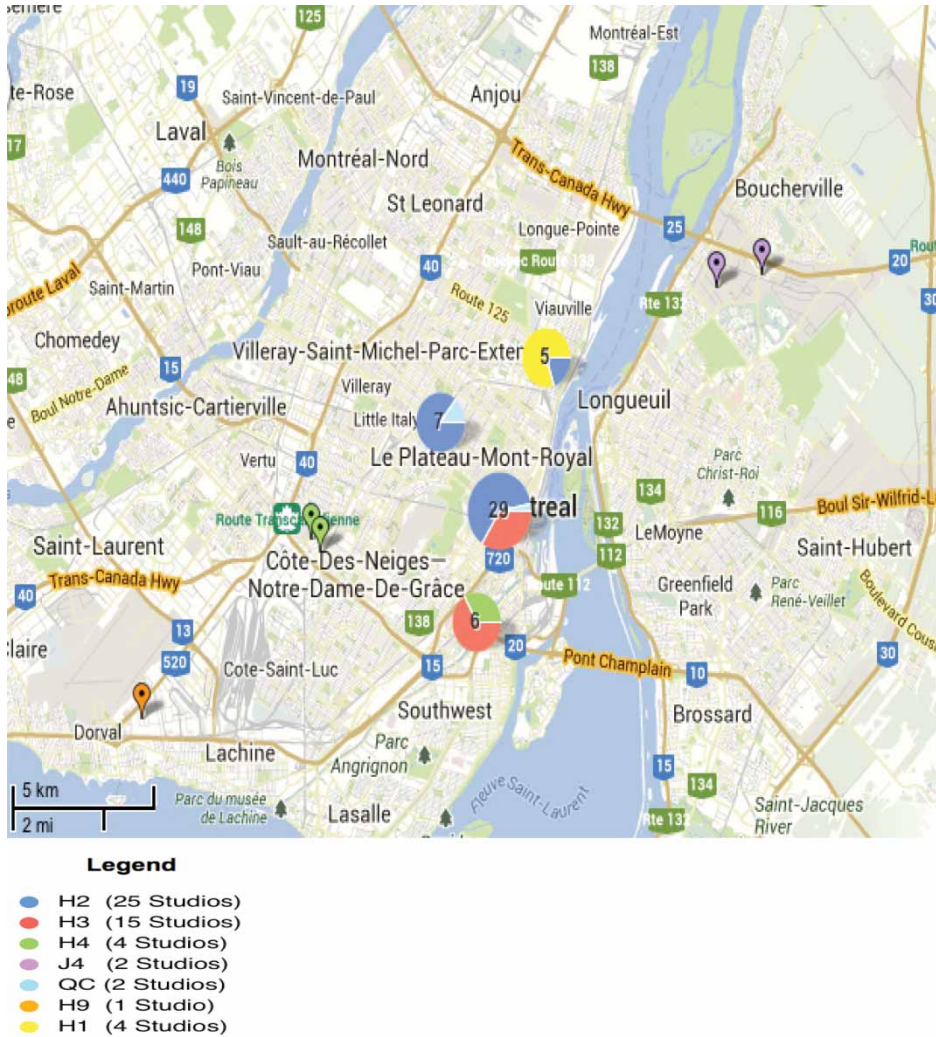
Figure 3. Localization of video game companies in Montreal.
Source: Our research. Map data: © Google 2013.

television media was a determining factor for the multimedia industry in Toronto (Britton *et al.*, 2009). In the 1960s, the NFB created an autonomous French production division and an animation studio, which enabled a great number of artists, such as Norman McLaren, René Jodoin, and Daniel Langlois, to push forward creative experimentation of new techniques in the development of digital animation films.

In 1986, Softimage was founded by Daniel Langlois, and became the first animation software firm. The 3D software developed by Softimage became a technical standard among Hollywood movie studios, as well as in other creative applications, such as video games. Softimage became the first incubator firm in computer graphics from which many local firms emerged, including Discreet in 1992, and Kaydara in 1993. The

NFB thus played a hugely important role in building a digital animation culture, which became the foundation of the video games cluster through spillover effects (Pilon & Tremblay, 2012). The arrival of the French anchor firm Ubisoft in 1997 was also an important event. The founders of Ubisoft decided to establish a video games studio in Montreal to benefit from the strong digital animation culture, the pool of creative talent, French cultural communities, and Montreal as a geo-cultural bridge between Europe and the Americas (Pilon, 2007; Tremblay & Rousseau, 2005, 2006).

The attraction of Ubisoft is also related to another hugely significant event in the development of the industry; in 1998 the Quebec government instituted a policy that contributed to the wage bill of firms who established themselves in the "Multimedia City". More specifically, the provincial government contributed 25% of the wage bill for jobs created in the zone defined as the "Multimedia City", close to the centre of Montreal. This acted as a significant catalyst for development in the multimedia sector, and the video game industry has benefitted substantially from this public investment. The policy decision took advantage of an opportunity to capitalize on the local digital animation culture, in order to expand this culture into the new multimedia and video games sector. This also contributed to stimulating local entrepreneurship, as well as to attracting foreign firms. Although some firms did not establish themselves in the Multimedia City—some considered the rents too expensive, for example Electronic Arts and Ubisoft are in other zones of Montreal—the program clearly had an impact in "branding" the city as an important player in the multimedia sector, and particularly in the gaming industry (Britton *et al.*, 2009; Tremblay & Rousseau, 2005). This branding effect is recognized as a major factor in the attraction of firms and the continuous development of the sector over the past fifteen years.

Still, the sector meets with difficulty periodically, most significantly through the impact of economic challenges, which appear to set in every ten years or so. The 2000 IT bubble explosion and the 2008–2013 financial crisis have both impacted the Montreal industry, which also finds itself confronted with increasing international competition (from the US and Asia), yet also with less public financial support. Most industry actors feel the industry is mature and well established enough to do without public support; however, they recognize the substantial role of policy in developing a name for Montreal within the video game industry.

Table 5 summarizes the strengths, weaknesses, opportunities and threats that the industry foresees for the coming years.

Analysis

This section offers a comparison of the two case studies, specifically regarding the themes that emerged from the thematic analysis.

Impact of Cross-Fertilization

In the case of Montreal, there was clearly a strong foundation for the emergence of a video game cluster. This was based on the policy framework surrounding the film industry as well as the proximity of Hollywood studios, but foremost, through the support provided to establish firms in the City of Multimedia through provincial policy. But cross-fertilization with

Table 5.   SWOT analysis of the video game industry (Montreal)

Montreal			
Strengths	Weaknesses	Opportunities	Threats
Strong capacity to attract major studios as has been observed (Ubisoft, Electronic Arts, etc.)	End of the financial support from the State (25% of wage bill) for firms coming to the City of Multimedia	North American location, and cultural identity, between the US and Europe can be taken advantage of to attract firms and workers from France, US and possibly other European countries (Spain, Italy . . .)	Flight of skilled workforce/talents to the US (silicon valley, etc.)
Locational advantage with easy airline connexions to US and Europe	Mature policy framework which has created a branding effect but may have less impact now with all the international competition	Geographic proximity to the large US market, still interesting with the film-game connexion	Stagnation or decline of the cluster with the 2000 and 2008–2012 crises has translated into some job losses and this could impact the development of the cluster
Bilingualism as a language advantage, to attract French and US studios	Some skills mismatch in some specialties, firms sometimes having difficulty to find skilled programmers		
Skilled and low-cost labour force educated in various College and university programs			
Quality of life in Montreal makes it relatively easy to attract creative workers when the jobs are there			

Source: Our research.

other creative fields has increased as the cluster reached a critical mass of video game companies.

Contrastingly, in Australia such a policy framework did not exist when the first video game companies emerged in the 1990s. At the same time, support for the video game industry has developed rapidly in the 2000s, specifically in Melbourne as compared with other Australian cities such as Brisbane and Sydney. Another major factor common to both case studies is that both the clusters in Montreal and in Melbourne have benefited from low cost of production during this same period, as compared with the US. Cross-fertilization with the film industry is only nascent in Melbourne and our research shows that the video game industry in Melbourne is rather embedded in a technology culture. In both cases the background of the pioneers was in sciences and technology rather than in creative industries.

Benefits of Clustering

In both contexts, video game companies are located close to the CBD. But the exchange of tacit knowledge is not the main reason for clustering. Knowledge exchange is increasingly happening through social media and in events organized by the video game community in each city. But the companies benefit from being located in Melbourne and Montreal so there is a clustering effect at the scale of the city. The strong policy framework in Melbourne compared with other Australian cities has consolidated the reputation of Melbourne as the main video game hub in Australia.

In the case of Montreal, the clustering effect is more obvious in the central city neighborhoods (e.g. Mile End) but the example of the City of Multimedia shows that video game companies do not need to cluster in to be successful. However, they benefit from being located in Montreal. In that regard, provincial policy had an influence in developing a "branding" for the city in the multimedia and gaming industries, and with the support of training programs, and the access to affordable and "cool" districts such as Mile End and central downtown, the addition of all these factors supported the creation and development of an important creative cluster in Montreal.

Role of Policies and Limitations

In Montreal, as mentioned above, policy had an important role, but can be considered as necessary but not sufficient to foster a creative cluster. The city characteristics, bilingualism, low-cost rent, and "cool" districts played a role, but the policy is nevertheless important, as without the huge "branding" impact of the City of multimedia program, we probably would not have seen the developments observed over the recent decades.

Now that the cluster and industry are mature, some might think that support may not be necessary, but the number of firms that have closed in recent years (in Lyon France very recently, for example) lead us to think that policy support is still necessary. Indeed, the Québec government has indicated in 2013 that it will continue to support the industry and has even extended the personnel categories for which financial support can be offered.

From this point of view, policy does appear extremely important, although not sufficient, as mentioned previously.

In Melbourne, the existing collaboration between Film Victoria, the GDAA, and the State Government of Victoria is a strength that has enabled the video game industry as

an ecosystem to be less exposed to the financial crisis, in comparison to the video game industry in other cities like Brisbane. However, the evolution of the cluster is highly dependent on the introduction of new technologies. Local policies in Melbourne have supported more artsy types of game products than in Brisbane for example, but it would be an exaggeration to affirm that local policies alone have a significant impact on the maturation of the cluster. As we have shown, despite strong policy support in Melbourne—if we compare to other Australian cities—the cluster in Melbourne has not yet reached a critical mass, and neither has it matured to a creative cluster.

Policies are not isolated factors that can explain the growth of a video game cluster. Montreal and Melbourne are characterized by several attributes that make them successful video game clusters nationally. For Montreal: government support, quality of the workforce, the low cost of creative labour (compared with the US), geographic position close to the US, the low cost of living, and quality of life attributes. Melbourne holds several attributes that contribute to its position as the most successful video game cluster in Australia: its reputation as the main cultural city in Australia, strong level of policy support, strength in the ICT sector, high ranking in quality of life index internationally. However, at the international scale, the geographic position of Australia is a weakness in a context where the large markets are in North America and Europe and business connections with Asia remain relatively low.

In the case of Montreal, the policies applied are very similar to the creative cluster policy model. The video game industry was considered as a creative industry, and not simply as a conventional business cluster, as was the case in Melbourne. This has led to an innovative initiative by the Quebec Government, in developing the City of Multimedia. For the Melbourne case study, this research demonstrates that policy advisors consider the video game industry as a conventional business cluster; the industry has been a very siloed industry with limited cross-fertilization with other creative fields.

Conclusion

Returning to the original research question: *Can the video game industries in Melbourne and Montreal be considered as creative clusters? What are the role and implications in terms of policies?*

On the question of creative cluster, the case of Melbourne illustrates that the video game industry in this city is not a creative cluster: cross-fertilization with other creative fields has been and remains very limited, even though Melbourne in Australia is where the most experimental video game projects are being developed (artsy products involving other creative fields) due to better policy support to this type of product in Victoria. There is no real clustering effect in the case of Melbourne: exchange of knowledge is happening through the use of social media as it has been shown, training of local labour is also happening with the arrival of new global players. Our conclusion is that there are benefits for video game companies from locating in Melbourne: policy framework in place, creative affordance of the city, local "buzz". Our research in Melbourne does not demonstrate any significant benefits for clustering in specific suburbs of Melbourne, as in Montreal the companies cluster to some extent in the CBD, though these clusters are small. The reasons for locating there are related to the proximity of public transport and the proximity of supporting institutions located in the CBD but not related on the idea of being close to other

creative companies. There has never been a critical mass of video game developers for those spill-overs with other creative fields to happen.

Is the video game company in Montreal a creative cluster? Here the answer appears to be positive. The exchanges have become more important over the years between various creative activities, including fashion, film, animation and gaming, although some have closer connections with some others, and all do not participate in knowledge flows.

Local policy has clearly has been effective in fostering the development of video game clusters, especially in the case of Montreal, however in both cases the growth of the cluster can also be explained by various other factors. The geographic position and linkages within the global economy are also very influential. Montreal has had the capacity to attract international players due to aggressive tax breaks (local policy). At the same time, Quebec is a strategic location for the video game industry internationally, based on affordable creative labour, low cost of living, low cost of production of games compared to the US as well as easy plane connections to the US and Europe. Montreal combines a unique set of attributes, such as quality of life, but also boasts a bilingual culture that attracts top French and American studios (Pilon & Tremblay, 2013). In this regard, Melbourne, with equivalent policies, would not have experienced the same magnet effect as Montreal, based on the distant geographical location, lack of skilled labour, as well as the increasing exchange rate of the Australian dollar.

In conclusion, the maturation towards a creative cluster such as in Montreal is highly dependent on international linkages. This confirms the point made by Bathelt *et al.* (2004) about industry clusters. A specific set of attributes has led to a critical mass of video game companies in Montreal. This has led to much more cross-fertilization with other creative fields (film or animation) than in Melbourne. The video game cluster in Montreal was initially embedded in a technology culture—the same is true for Melbourne's—but matured to a creative cluster. In this process, maturation policies have had limited impact but have participated in the development of a "local buzz" at the city scale; the same is true for the Melbourne case to a lesser extent.

Notes

1. IP allows people to own the products of their creativity, ensuring to exercise both economic and moral rights over these products (Galloway & Dunlop, 2007, pp. 18–19).
2. "AAA" IP refers to the highest production value and cost.
3. This section is based on research done by Serge Rousseau, as a doctoral student, and by Sylvianne Pilon as a post-doctoral student. See Pilon and Tremblay (2012).
4. Before Ubisoft settled in 1997, and the public funds policy implemented in 1998.
5. Such as, Gameloft, Microïds, Bug Tracker, Electronic Arts, Eidos, DC Studios, Babel Media, Javaground, Cyanide.

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