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EXPLAINING THE SPATIAL ORGANIZATION OF CREATIVE INDUSTRIES: THE CASE OF THE U.S. VIDEOGAMES INDUSTRY

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Abstract:
The paper presents a picture of the spatial location of the U.S. videogames industry as a broad range of clusters of different sizes, none of them dominant, then uses a variety of qualitative evidence (including interview and ethnographic) to illustrate a theory of how these variegated clusters have emerged and continue to persist, each in their own right. In effect, our main findings are that videogame clusters do not operate as other creative industry clusters, as described by the recent theories of buzz applied to other creative industries, nor by conventional linkage arguments (either to suppliers or financier-distributors). Rather, the in-house nature of the work, coupled with means of distantiated work, have allowed studios in clusters or outside of clusters to continue to work at a distance from their preferred publishers, and vice versa. In the end, this might be ascribed to the need to deal with lead creative human capital wherever it emerges and persists. The findings point out the importance of maintaining a heterogeneous view of creative industries and their construction: both organizationally, and spatially as clusters.

Explaining the Spatial Organization of Creative Industries:
The Case of the US Videogames Industry

1. Introduction

Many regions across countries have displayed an increased interest in creative industries as a possible engine of continued economic growth, enhanced welfare, 'industrial' revitalization and reduced inequality. Regions in countries from Japan and the United Kingdom to New Zealand and countries like Singapore are seeking to exploit or build their competitive advantages in these industries. In Scandinavia, it is suggested that the creative industries are conducive to job creation in ethnic communities. Creative industries consist of those sectors that serve consumer demands for amusement, ornamentation, social display, info-tainment, and so forth (Scott 1999, Caves 2000).[1] The industries include the production of theater, newspapers, film, music, toys and games, and similar industries (Caves 2000, Scott 2000, 1999, Pratt 2004a). Creative industries seem to have become a significant determinant in new formulas for regional development. The creative industries have proven to be instrumental for regional development in certain regions in the developed world. Studies estimate that those working in the creative industries constitute between 5-10% of the work force in the developed world (Pratt 2004b). In certain regions the creative industries provide a much higher share of the employment. According to Scott:

> "Cultural products of all sorts constitute a constantly increasing share of the output of modern capitalism, and cultural-products sectors represent some of the most dynamic growth industries in the world at the present time". (Scott 2000).
> The feature film industry in Hollywood and the computer games industry in California, are but two of the important examples that can be mentioned.

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[1] Thus we apply a definition close to that resembling cultural industries; that is a more narrow definition than one finds in Florida inspired work. We do not suggest that creative despite the name is necessary creative but in lack of better we maintain this concept. Cultural industries carry connotations of a strong cultural component which one does not necessarily find in all creative industries.

Yet, as shown by others there are good reasons to be critical of the developmental power associated with the creative industries, particularly those affected by the power of conglomerates (Christopherson, 2006). In New York the film industry has been declining for years and the salaries or income for 'creative' employees and free agents are lower than that of comparative groups.

The perceived importance of the creative industries has triggered extensive research in economic geography on the spatial organization of creative industries (Storper and Venables 2004, Florida 2000; Pratt 2002a, 2004a, Scott 2000, Graber 2002, 2004). This academic field has itself been "creative", buzzing with ideas and activities. While there is some uncertainty as to the explanatory power of this stream of research – that is, whether the cases studied should be seen as merely a collection of cases or building blocks in a larger theory - certain emerging patterns can be detected in large parts of the studies (for a discussion of the production and value chain-oriented studies, see Vang and Lucas, 2006; Pratt 2004b). The bulk of studies suggests that creative industries tend to cluster in the largest metropolitan areas. This location bias, it is argued, allows for face-to-face and other tacit interactions, and a resulting buzz about new industry trends (Gibson and Kong 2005). Urban clusters provide access to traded and untraded localized assets; otherwise known as economic externalities. The locational choice reflects how creative industries have been organized around inter- or intra-firm collaborative projects (Graber 2004, Scott 2004, Pratt 2002a, 2002b). Projects, it is argued, are an inter-organizational form that allow the flexible sourcing and deployment of the competencies needed for making creative products, and further, to do this under requirements that differ from project to project due to new trends, fashions or simply the need for experimenting. Projects are embedded in local clusters or "project ecologies". Similar conclusions are reached by Scott with a transaction costs approach, by scholars drawing on the knowledge-based view of clusters (see for example Barthelt), and by the "Jacobs-inspired" research of Florida and other urban studies scholars. As argued by Gibbon

and Kong (2006) and Scott, the literature essentially understands creative industries by framing and emphasizing clustering processes in urban contexts.

Yet, critical voices increasingly suggest that these 'urban cluster´ approaches needs to be complemented with theories or approaches that more broadly explain the spatial organization of creative industries *per se* (Vang 2007), and that focus on the developmental powers of creative industries; and not just the clustering part of their spatial organization. This perspective suggests that the 'urban cluster' approach may only provide a partial explanation. In this paper we seek to contribute to this 'new' stream of research theoretically, by illustrating the explanatory gaps, and empirically, by a grounded study of the spatial organization of the US video games, which suggests how the gaps can be filled in. We aim at explaining not just the clustering processes but the spatial organization of the industry *per se*, where spatial organization refers to the distribution of firms across space (in this case within a nation) and their interaction.[2] The study suggests that the spatial organization of some creative industries involves firms' use of specific governance modes not accounted for in the literature (i.e. in-house capabilities [also known as 'hierarchy' in some literatures] and distance networking), which allows them to function without being in dominant clusters. Their specific locational patterns across regions (i.e. spatial organization) reflects, our study suggests, as much particular entrepreneurial traits, proximities to universities and spin-off effects as the factors traditionally are emphasized in the literature.

Our approach requires a more detailed unpacking of the production processes within the firm as well as understanding of its distant network; much more detailed than is normally the case in comparable studies (see consequences for methods below). This is needed to understand the nature of the project work. Our finding complements the dominant explanation based on cluster approaches and thus suggests a way of expanding the scope of research on the spatial organization of creative industries to appreciate their heterogeneity and the idiosyncracies of

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[2] For data reasons we have had to delimit the study to the spatial organization within the US. Tschangs studies on outsourcing of videogames to the Philippines documents how the US firms mainly outsource the non-creative parts of the production process.

each industry. It also demonstrates how grounded insights can be used as heuristic devices for generating new and relevant research questions for other creative industries.

The remainder of the paper is structured in the following way. We begin in the second section by reviewing agglomeration approaches and suggesting the gaps in research. The third section which outlines our research methodology, partly influenced by a grounded theory-building approach based on interview, archival and ethnographic data[3]. In the fourth section, we lay out the empirical part of the paper. This section is opened by an introduction to the context – the US videogames industry. Then we present the stylized facts of the spatial organization of the industry. This is followed by an analysis of what constitutes these patterns. The paper is rounded off with a concluding section that discusses the research findings and implications for studies of the spatial organization of the creative industries.

2 Approaches to studying creative clusters: a review

This section introduces the dominant approaches and findings on the spatial organization of creative industries. The section does not aim to provide a full account of the debate, and focuses solely on the clustering aspects and literature; thus it does not include other approaches that relate to the spatial organizational of the production chain (see Pratt 2002b, 2004a, Power and Hallencreutz 2005). We argue that the dominant explanation *de facto* refers to cluster(ing) studies and therefore is insufficient for explaining the spatial organization of creative industries *per se*.

2.1 A metropolitan view of industries

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[3] Hence, contrary to deductive research we do not 'close' the theoretical section with devising a theoretical alternative as this runs against the central notions of grounded research.

The sheer diversity of literature explaining the clustering of creative industries appears to make it challenging to provide a comprehensive review of it. Having said that, one can argue that this literature can be said to rest on variants of traditional Marshallian agglomeration factors and the so-called Jacob's factors (i.e. urbanization factors). The importance of the Jacobs factors is found in the observation that creative industries tend to locate in large – or rather the largest - metropolitan areas. Scott (2001) emphasizes this urban turn when he explains that he attempts to provide ' … a theoretical outline of how and why cities like these [Paris, New York, L.A, Tokyo, Paris and Milan] come to operate as major poles of the cultural economy' (p.13). Hence, the analytical focus is mainly on why creative industries such as film and advertising tend to cluster in large metropolitan areas, and not so much on why some others do not. Grabher for example only analyses the Soho-based firms; not the advertising firms outside Soho. Scott (2002, 2004) looks mainly on Hollywood's and Paris's film production, with some attention to the runaway film productions (i.e., ones who have moved) to Canada (Pratt (2005) does pay attention to rural areas in filmmaking, Johns and Coe looks at 'provincial' film making in England). In fashion Scott focuses on Los Angeles' industry while Rantisi (2002) examines New York's. In the multi-media industries Pratt (2002a) pays attention to 'Silicon Gulch' in San Francisco.

In line with the Marshallian oriented studies of industrial districts and clusters, these studies link the locational choices to the knowledge externalities (i.e. collective learning, interactive learning) in a broad sense; this being specialized or diversified labor markets, institutional specialization and recently a more efficient buzz (Amin 1999; Beccatini 1990; Brusco 1990). Scott reaches almost the same conclusions by way of a transaction costs approach (1999, 2000, 2001, 2002, 2004) where he pays more attention to the costs of transactions as opposed to understanding learning trajectories. Scott sees clustering as a function of the vertical disintegration of larger firms and an associated growth in external transactions, thus clustering is a way of economizing on this growing number of external transactions. These studies tend to differ from more traditional cluster or industrial districts studies on one significant dimension: by

stressing the heterogeneous features of cities (Scott 2001, Asheim and Vang 2004, 2005, Asheim, Hansen and Vang 2005). (This is in opposition to the locating of activity in non-urban industrial districts (i.e. clusters outside the largest cities such as Prato in Toscany) or clusters based on a high degree of homogeneity in terms of shared values, visions, etc.)

2.2 Face-to-face and buzz

It is reasoned that we often find creative industries located in the biggest of cities because of the latter's high frequency of *buzz* and high degree of competency-heterogeneity (or diversified labor markets, as opposed to specialized labor markets, as stressed in the Marshallian literature). *Buzz* refers to the unplanned and haphazard aspect of face-to-face contacts (see Storper and Venables 2004, and also Maskell et al 2004, Bathelt et al 2004, Malmberg 2003). Buzz is supposed to be a superadditive form of information circulation, generating increasing returns for people who are in the buzz, and for the agglomerations in which they work (Storper and Venables 2004). Buzz is also supposed to be important as it allows for the fast circulation of information (i.e. who is available, who is starting to collaborate etc. - which is sometimes referred to as the 'matching problem') and to some extent also knowledge (i.e. outcomes of experiments with collaboration techniques). Grabher (2001) has provided some of the richest descriptions of buzz in his studies of the advertising industry. Barthelt (2005) argues that the lack of buzz is behind the Leipzig's media cluster's lack of success. Pratt (2002a) illustrates the importance of buzz to the multimedia industries. Scott (2004) alludes to in his most recent book on Hollywood's film industry and Asheim et al (2006) notes of its importance to the Danish film industry. Florida (2002) - the least Marshallian of the authors – can be read as identifying the conditions that allows for such a 'buzzing' area to develop; this is admittedly a creative reading as he is more concerned with the consumptive practices of creative people. Based on his indexes for openness (the cool index, the

bohemian index and the gay index), Florida found a significant positive correlation between these variables and the cities ability to attract talents (those that can buzz together). [4]

> "It is talent that orients the location decisions of firms and which underpins the formation and evolution of industrial clusters. … places certainly matter in the economic geography of talent and in the attraction of high human capital individuals on which growth depends. Places provide the infrastructure required to generate, attract, and retain talent. The findings suggest that these place-based advantages stem in turn from two underlying economic factors: low entry barriers to human capital and efficiencies in the delivery of consumer services. Taken together, I suggest, these two characteristics increase the attractiveness of places to high human capital, talented individuals. In other words, it is not simply observed characteristics such as diversity or amenities that matter in the economic geography of talent. These observed characteristics reflect real economic advantages in the location of talent. Simply put, there is an economic rationale behind what may be perceived as "nice" places to live" (Florida 2002: 32-33).

2.3 Project organization as dominant organizational form in creative industries

Graber (2001, 2002a, 2002b, 2002c, 2004, see also Ekinsmyth 2002 for a different perspective) links the need for buzz – "noise" in his vocabulary - to the 'nature' of these industries and to the one-off project (see Lorensen and Frederiksen 2004 for documentation of this claim). The one-off projects are relying on clustering in urban areas. The creative industries – as with several other industries – tend to rely increasingly on the project form of work organization, since the

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[4] Florida views creative industries in a broader sense than we do.

projects tend to facilitate a combination of innovation and fast adaptation to current trends or fashions. The projects are often one-off activities and, hence, they do not need to carry the burden of previous staff, conflicts and conventions; they allow the sourcing of the competencies needed for the particular project and allow for selection from a vast possible combination of competencies (Grabher is not always clear on whether projects are mainly inter-or intra-firm but the sourcing argument suggests the inter-firm dimension). This provides a fluid organizational form adapted to innovations and flexibility. Thus the story goes. In other words, the Marshallian focus on long lasting relations is replaced by a focus on ephemeral types of collaboration. Furthermore, as the projects are one-off, the creative workers tend to prefer to work and live in locations where they can jump to the next project when one project is terminated. This jumping is made possible by a) a large geographically concentrated demand for their skills and b) their geographically concentrated network of weak and strong ties (Graber 2002a, 2002b, 2002c). However, while the project constitutes a solution to coping with the demand for being innovative and flexible, it causes problems with respect to cumulative learning (Acha et al 2005, Vang and Zellner 2005). Projects are dissolved, and experience gained is forgotten, or at least not stored in the firms involved in the project; unless they locate in urban clusters. These urban clusters constitute arenas – or *ecology* in Graber's words - which are tied together by dense networks that provide a more "permanent" dimension to the ephemeral dimensions of projects. In other words, it facilitates cumulative learning despite the fact that such learning is not automatically built into one-off projects. Storper and Christopherson's seminal papers and Scott's follow up on the film industry illustrate these mechanisms clearly. Grabher's studies on the advertising industry follow in similar fashion. Despite it being widely ignored in contemporary cluster studies, Beccattini's (1990, 1997) seminal papers on fashion in Prato also highlights the importance of projects (albeit in a different vocabulary).

The ephemeral nature of creative industries is however exaggerated in this approach as the attention is almost only on the projects; not paying sufficient attention to the importance of

in-house organization and the trade-offs between relying on knowledge externalities and internal mechanisms as capability and competences. In other words it reproduces the Marshallian focus on the external dimensions (i.e. collective and interactive learning etc.) and tends to ignore the importance of in-house mechanisms for understanding the spatial organization of creative industries.

2.4 Summing up and suggesting research gaps

The need for firms in creative industries to source for diverse sets of different competencies on a regular basis (in a way that allows for cumulative learning) and the creative industries' demand for 'project-workers' leads to the clustering of the creative industries in large cities (Kong 2005, Gibson and Kong 2005). Clustering in large urban areas, Florida claims, occurs as these areas provide an environment of openness and tolerance favored by the creative workers. This story contributes to Marshall's seminal work while also staying true to Jacob's stressing of the knowledge externalities that contribute to collaborations. Further, this is opposed to the long lasting types of collaborations typically found in industrial districts and clusters. [5] This interpretation is supported by Whitley (2005) who uses the literature to develop a particular theory on project-based industries and Gibson and Kong's (2005) survey of the field. While this explanation is reasonable to segments of the creative industries, there is now an emerging literature coming up with alternative explanations, and which ultimately suggests a heterogeity within creative industries that is dependent on their nature of production. In a study on the organization of the comic book industry's production, Norcliffe and Rendace (2003) conclude:

> "As this study of the comic book industry has shown, other less agglomerated
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> spatial configurations of cultural production are also discernable. The study

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[5] This explanation can be read from the cases despite their lack of clarity on their explanatory power and intentions.

discussed the case of an industry that was formerly concentrated in metropolitan

centers but more recently has decentralized substantially while leaving an

important element – the head of office and editorial function – in major cities"

(p. 260).

Other challenges can be found in Izushi and Aoyama's comparative work on the video

game industry's evolution in Japan, US and UK (Izushi and Aoyama, 2006). Power and

Hallencreutz's (2002) studies on the music industry and Pratt's (2004a, 2004b) production chain

model or production of culture-model. In other words there is an emerging literature with

alternative empirical findings. What most of these authors share is the emerging realization that

the existing research provides a more narrow insight. Hence, a significant research gap is

concerned with what determines or conditions the spatial organization of the creative industries.

The reminder of the paper sets out to conduct a grounded analysis of the spatial organization of

the US videogames industry.

3. Methods

The approach taken in this study was to begin to construct a multi-level view of a creative

industry. This began with interviews of industry participants, specifically, developers, in 2003 and

following through to 2005. These initial interviews were initially conducted with designers and

studio heads from 17 videogame companies (these were augmented in later stages during the

ethnographic data collection stage through interviews with other designers and developers met in

the studios and in developer conferences). In between, secondary information on the industry's

production processes was acquired from secondary and other sources, including the industry's

periodical, *Game Developer*. This latter included more than 65 project postmortems highlighting

various factors that inhibited or aided individual projects' development[6]. Finally, detailed case ethnographic studies were conducted on four studios (one being in the startup phase during our last visit), consisting of multiple visits of a week or more to each studio over the course of three years.

Following from conventional qualitative research methods, we iterated on theories and even specific research questions, and focused later stages of data gathering on refining the observations or confirming them. The overall research question was initially focused on understanding the broad outlines of how this creative industry worked, and how individual creativity functioned within an industrial context. Eventually, the study turned to the study of group collaborative work, and where a richer understanding of the game development process – especially its creative and rational aspects - was developed. At the same time, through interviews and interactions with industry participants, we found out where they came from (i.e., starting location and industry) and why they came to particular locations and studios, and conditions under which their studios formed. This helped to support our emerging view of industry location. Our current view of "clusters" was thus formed by our discussion of how individual firms operate.

4 The spatial organization of the US videogames industry

This section constitutes the empirical part of the paper. We start with a brief historical overview of the industry and introduction to the structure of the industry – which form the context for the study. This is followed by the presentation on the stylized facts about the location of the US videogame studios in the US. Subsequently, we turn to unpacking the production process and analyzing how the specificities of the production process. This requires governance modes

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[6] Published in *Game Developer*. While this paper is based on the first 65 postmortems, more were added to the sample at a later stage.

associated with in-house capabilities and distant networking than normally assumed in the literature, and as a consequence, less on traded and untraded externalities[7].

4.1. A Brief Un-illustrated History of Videogames: Introducing the context

The US videogames industry has only been around in its commercial form for just over three decades, with the first "computer games" dating back to early pioneers such as physicist Willy Higginbotham's computer game – a kind of forerunner to Atari's *Pong* videogame - at the Brookhaven National Laboratories as an equipment demonstration exercise, and to a group of MIT students who developed *Spacewar* as a "fun demonstration" for a new mini-computer at MIT in 1961. Since then, a variety of different dedicated television gaming consoles have supported the growth of the videogames industry by requiring their own accompanying format-specific suites of videogame titles.

With the growth of household personal computers in the 1980s and 1990s, computer games have flourished and provided some stability to the market for videogames, primarily by way of providing an installed base of machines that could play those games, and that were constantly being upgraded (e.g. through new microprocessors, and more recently, graphic cards). The 1980s through the early 1990s were characterized as an era of innovation; however, the 1990s were when several genres matured (DeMaria and Wilson 2002), although some observers also noted that less innovation occurred. As newer consoles have greatly lowered hardware prices and increased performance, the computer games share of the market have come down considerably.[8] The advances in videogame technology can be seen in terms of what technology makes possible on the screen. At the "dawn" of videogames, with titles like *Pac Man*, the "character" was basically a blob with no "personality" or face, moving around on the screen.

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[7] Obviously, externalities related to the available skill sets are central in all explanations.
[8] However, given that the PC's input device – the keyboard – allows more forms of text and symbolic input, PCs provide users with a greater range of user interactivity.

With the first 8-bit color graphics technology, well-known characters like Nintendo's *Mario* appeared with the beginnings of identity, but no personality and limited movement set and animations. With the first 3-dimensional graphics cards, Naughty Dog's *Crash Bandicoot* mascot for Sony's Playstation had 500 polygons that had some personality, complex movement repertoires and good animation. Currently, the 3-D technology is so advanced that characters have over 3000 polygons, a "full" personality (i.e., more expressiveness and a wider range of emotional reactions), limitless movement and excellent animation.[9]

4.2 Structure of the Industry: extending the context

The videogames industry at present consists of two types of actors: the studio, which develops the videogames, and the publisher, which funds the studios' development of the videogames, and acts as a bridge to the broader market of retailers and consumers by marketing and distributing the videogames. (It is important to recognize that when we refer to firms, we are usually referring to the stand alone studio responsible for the creative work, and not the intermediary such as the publisher). In financial terms, the publisher acts plays a role similar to that of venture capitalists in the technology industries by funding the early through final stages of a videogame's development, and by funding multiple titles, including both mainstays, and occasionally, more innovative projects with higher risks but potentially higher returns (Tschang 2007). Publishers also evaluate videogames in progress, and may stop funding the product altogether if something goes awry, or if the publisher's strategy changes course. In this regard, the publisher is critical to the survival of individual development studios. Publishers may come from different types of backgrounds. Some like Take Two Interactive, Sierra Entertainment and Electronic Arts (EA) are pure videogame publishers, while others are allied with computer and

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[9] Jason Rubin, "Great Game Graphics…Who Cares?", Game Developer Conference, San Jose, 2003.

media conglomerates, e.g. Sony and Microsoft, and others are part of multi-industry conglomerates, e.g. Vivendi's former holdings.

By one count, in 2004, there were at least 430 studios, including internal studios owned by publishers. [10] [11] In addition to this, there were 1073 independent contractors who do outsourced work for other game studios or publishers on audio, design, production, programming, testing/quality assurance, video production and visual arts. There were about 116 publishers in the US, but the world's largest 20 publishers (including nine from Japan, three from Europe and eight from the US) accounted for $15.5 billion in total revenue worldwide, which was highly significant as it is larger than the total videogames market in the US of about $6.9 billion,[12] and represents a dominant share of the worldwide revenue, estimated at $20.7 billion.[13] These top 20 publishers published 687 titles worldwide, at an average cost of a couple to a few million dollars per title. Out of the US market of $6.9 billion in 2002, console videogames constituted $5.5 billion whereas computer games constituted $1.4 billion (IDSA 2003).

It is helpful to think of videogames as having three main interwoven aspects: design, technology and art, developed by designers, programmers and artists respectively. Artistic content consists of the objects and backgrounds developed by artists; dialogue, text and speech written by writers; and the sound effects and musical scores made by sound developers or musicians. Videogame design essentially involves creating game play, or the set of logical rules and other manners by which the player interacts with the videogame. The technology consists of the programming or code written by programmers. This code essentially allows the objects in the videogame (represented by the artistic content) to move around and to interact with each other in the game as well as with players (in ways determined by the game play and the logical rules set up by designers). Due to the highly interactive nature of these components, each of these three

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[10] This is the number that has registered on the industry association's website. While there could be more studios than this, and while many studios may be entering and leaving the industry, we will use this number as a roughly representative number for the purposes of showing the spread of studios and clusters across the U.S.
[11] The top 20 publishers worldwide owned 65 such "internal studios".
[12] 2002 U.S. Entertainment Software Sales, Entertainment Software Association.
[13] 2002 DFC Intelligence News Report

types of creative workers needs to work closely with the others. For instance, the programmers' development of code is primarily determined by the designers' design for how the videogame should play. Similarly, art and programming are interrelated, e.g. artists often work in consultation with designers and programmers, who help determine what can feasibly (within technological constraints) be represented onscreen; and design is related to artistic work.

4.3 The spatial organization of the US videogames industry

As Figure 1 shows, the US videogame industry is fairly well dispersed across the US in a number of large concentrations (or clusters), as well as in many smaller concentrations and solitary studios. Concentrations of more than eight studios are few in number, namely, New York with 16 studios, Austin with 14 studios, LA with 19 studios (including seven in Santa Monica), and Seattle with 10 studios.

Insert Figure 1

There are also some other secondary concentrations that do not show in the map, such as the smaller concentrations in the vicinity of the San Francisco Bay Area, including seven studios in San Raphael just north of the Golden Gate Bridge, five in Redwood City and four in San Jose. Another potentially interesting phenomenon is that smaller concentrations can be found all across the country. Concentrations of four or more studios can be found all over the country in cities like Redmond, Kirtland and Bellevue (all in Washington state), to Las Vegas, Atlanta, Chicago, San Diego, Portland (Oregon), Eugene (Oregon), and Houston. In this respect, the studios' locating behavior shows that at least some creative industries like videogames are not wholly concentrated in one or two cities. Thus it resists being conceptualized in the cluster vocabulary; it is too dispersed across regions. This is not a unique pattern – or an outliner in

creative industries - as it is similar to the simultaneously concentrated and dispersed pattern observed in Cornford and Naylor (2001) on their study of videogames in the UK, Norcliff and Rendall in their study of comics books production and Vang (2007) in his study of the news media industries.

In addition, as the four regional maps show, even firms within a particular city area can actually be quite dispersed. Given the secrecy and lack of communication between studios, this is quite understandable. The San Francisco (SF) and Los Angeles areas are two of the larger concentrations, but videogame studios are highly dispersed within them. In the San Francisco area, there are a few studios south of SF in the San Jose area, a few in the Redwood City area, and a number north of SF in Marin County. Since most of these operate independently of each other (judging from our site visits to four firms), there are none of the traditional spillover-types of agglomerative factors at work.

In many cases, their close proximity is more likely an issue of spin-offs situating themselves not too far from the mother company. Within the Marin county area, one interviewee estimated that about half the firms, including his own, were started by ex-Lucas Arts employees. Lucas Arts, an at one time huge multifaceted videogame development studio in the Marin County area, has 300 or more developers and is co-located with the Lucas Film movie studio. Indeed, Lucas Film was itself located in Marin County because George Lucas decided that he preferred the location for its environment. This spin-off explanation is also consistent with the existence of concentrations in cities like Dallas and Austin. Firms that located in those areas, like Ensemble Studios in Dallas and Ion Storm-Austin (both also formed of developers who left Boston's Looking Glass) also benefit from migrating talent as well as the local talent. The Austin cluster started partly because of the density of students and student related activities. Like Looking Glass, id Software, developer of the famed video game *Doom*, was another example of a firm that spun off many other companies. id had its origins in a group in Baton Rouge which moved, first to Madison, then to Dallas (Kushner 2003).

The stylized facts we observed on the spatial organization thus challenge the dominant cluster explanations in the following ways:

- There is not much correlation between the size of a cluster and "industrial performance" as measured by the renown of its firms (e.g. despite New York's size, there are no significant studios in the cluster), hence this does not support the literature's view of simple correlation between urban clustering and performance in creative industries.

- There are good examples of well-performing stand alone studios. That is, firms not embedded in clusters at all. The firms function by reliance on in-house capabilities and distant networks (as we will return to below).

- Clustered firms are not relying on traded and untraded interdependencies or other regularly emphasized externalities – apart from the available skills sets – or other types of interaction. Firms in the clusters simply do not work much together or have interactions. As such, any observed clustering is often a function of spin offs.

We will now turn to explaining: in section 4.4, how the spatial organization of the industry can *persist*, in section 4.5, what the industry case has to say about other conventional factors, and in section 4.6, how the industry *arrived* at a spatial organization distributed across the US (i.e. differing from the dominant theories). In presenting the case this way, we also highlight the value and need to look at clusters from a more comprehensive view: that is, an evolutionary one that understands the factors that create a cluster as being potentially different from the factors that sustain a cluster.

4.4 Persistence in the spatial organization of the US videogames industry

4.4.1 Why in-house capabilities and not externalities: The Product Development Process

In order to assess why externalities are less important than argued by the cluster-literature the reasons for reliance on 'hierarchy' or in-house capabilities needs to be identified; this is done by unpacking the product development process. (We note that the use of the term *hierarchy* here connotates internal organization more than it does a significant number of levels of management or a top-down nature to project coordination, although as we will later show, in actual practice, the need to exercise creative control does require a significant amount of control over creativity).

Videogame product development can be seen in terms of both individual work and team-based processes (with the latter being more production-oriented). Both creative and technical forms of work factor into these activities. The typical videogame development process consists of multiple stages (Aoyama and Izushi 2003, Baba and Tschang 2001). First, at the conceptualization stage, some inspiration or market need causes the creation of the first high level concept of vision for the videogame. This is usually done by one or a few individual designers or other concept developers who map the game's basic concept and game play in a page or so of text (this will later be expanded to a detailed proposal that can be dozens of pages long). Next, at the preproduction stage, some of these initial designers or visionaries will sit down with a core team (consisting of artists and programmers) to flesh out the design and to prototype sections in progressively greater detail. Usually, these "demo" sections are used to attract a publisher to fund the production stage. At the production stage, a larger team is brought on board for one to two more years to fully complete the videogame, including the development of the multiple "levels" of play that a player experiences going through the game. Extensive testing takes place near the end of production, and is followed by the videogames' release and "patching" (i.e., corrections or improvements to the code, which are made available to the game's purchasers). The lead conceptual designer may also lead the team from conceptualization through to the project's completion, or alternatively, another designer or creative director will act as a "keeper of the vision" by managing the implementation of the design.

These processes are organized as projects, but with fairly different characteristics than identified in studies of other creative industries (hence, a different reliance on externalities). First, videogame projects have a longer project time. For example, in advertising, while the accounts themselves can last for longer terms of two to three years (Grabher 2002b), the discrete advertising projects within each account tend to be much shorter. In contrast, videogames require a longer sustained period (for 1.5 to 4 years) of constant interaction amongst team members on a single project. This time difference alone signifies a potentially different mode of work from "short-term" projects in which the "co-location of project partners" becomes important (Grabher 2002b). The various forces, involving intense onsite collaboration in the development of interactive products and the need for hierarchical control over creativity, can cause videogame development to become a "closed system" of production – unlike that seen in technology firms and movie production. All this tends to favor long-term onsite development rather than a network of dispersed developers that are temporarily called in to work[14]. A second aspect of the production process is the need for secrecy. New projects are hardly ever discussed outside of the studio, unless it is with publishers, or unless the publishers deem it necessary to provide the market with some news of upcoming titles. Literally everyone working in the industry is bound by a non-disclosure agreement – in part because of publishers' concerns – which forbids developers from discussing anything to do with the specific product or development processes. The mode of work (and secrecy involved) as seen in our four ethnographic case studies suggests that there is little or no need for interaction amongst different studios.

One consequence of the longer term of project and the need for secrecy is that "hanging out" or "idea sharing" (as seen in the studies that find a "buzz" in the region) is not promoted. Thus, while the (external) network's "interactivity" can be a potential source of innovation in

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[14] There is however a phenomena of people temporarily called in at certain points in the project to help 'start' or 'finish' it, e.g. the testers that are added at late stages to fully test the product.

sectors such as the new media (Heydebrand and Miron 2002), in videogames, it is the internal production processes (i.e., group work of co-located individuals) that are the basis for innovation. Thus, while videogames share some aspects in common with other types of project-based organizations (e.g. Ekinsmyth 2002, Grabher 2000a), there are also significant differences.

One longer-term strategy for studios is to grow into a fully fledged studio capable of taking on multiple projects simultaneously. Because of this, studios would much rather keep their experienced employees than disband them and accrue additional search costs in finding new employees for the next project (as happens with the advertising or movie industry). A second but less common strategy is for the studio to become a publisher in its own right with ownership and control over its own IP. Blizzard and Rock Star Games are examples of studios that became successful publishers in their own right. Both studios became successful because of their own titles (i.e. IP), were then able to begin acting as publishers, and finally, contracted with other studios to produce new titles (sometimes based on the original "story universe" that they had created). This can however be at odds with the publishers' own desire to control and extract the rents from IP (Tschang, 2007). Studios can improve their bargaining position by seeking out multiple publishers in order to secure the best deal, or sometimes, if they do not have the reputation, by subsuming themselves to the publisher, and producing only what publishers want (i.e., effectively to provide outsourcing services).

In summary, the specificities associated with the product development processes favors an in-house capabilities or hierarchy-based governance mode and thus provide a significant brick in explaining why firms in the videogames industry do not rely on externalities to the extent suggested in the literature on clustering of creative industries. This opens the degrees of freedom in locational choices and thus helps explaining why the firms dispersed across regions and not concentrated in one or two regions. This insight supports the call for more attention to the theoretical aspects of the firm in economic geography as has been suggested several times (see for example Taylor and Asheim 2001).

In addition, the degrees of freedom is enlarged by the fact that that videogames are a virtual product based on ideas constructed from different influences in the popular culture, and given that source material or references can be found in books and on the Internet, most of the creative development can be done independently of the studio's location (own interviews).

4.4.2 The importance of lead talent and control over creativity favor hierarchy (i.e., in-house capabilities)

Oftentimes, studios are set up by creator-entrepreneurs with the panache to handle both the creative work (often in the design role) as well as the business side – at least while the studio is small. Another issue is that project work is defined by both coordinated group work as well as the creative work of individuals. The need to have a singular creative vision, and to encourage creativity across the whole group, can cause tensions, and therefore, create a need to control this creativity (Tschang, 2007). Said another way, this also creates a reliance on governance modes associated with in-house capabilities. The literature's treatment of this tension is still somewhat simplistic, as it suggests that either projects have to be actively managed (Heyderbrand and Miron 2002), or conceived as self-organized (Jeffcutt and Pratt 2002), but it does not directly address the tensions inherent in the combination of the two principles and the derived implications for the spatial organization of an industry (i.e. the reliance on externalities). In the videogames industry, our observations show that creativity clearly occurs at both the top and bottom of the project team. Creativity is the motive force behind the industry's growth, and the lead creators are respected and highly prized in the industry. Through our interviews with designers, it was clear that in many projects, particularly innovative ones, there tends to be a dominant designer or creator (i.e., the lead 'creative') who has the ultimate creative influence over all the content, design and code developed. This tendency acts in opposition to the need to empower creativity "at the bottom", especially since all developers, from programmers to artists

and designers, are considered essential creative contributors. The daily work of each employee involves coming up with creative ideas that help to define a product, or the creative implementation of those ideas. This tension between creativity at the top and bottom levels is often resolved by the top exercising some sort of hierarchical control. The creator or his designated lead designer is usually seen to be "controlling" the project by ensuring that the initial design or vision was fully carried out, that changes made in later stages of the project are consistent with that vision, and that all members of the team are on board with this vision at all steps of the process. As with Grabher's (2002a) notion of "contractors" (i.e., account managers and other "integrators"), these lead designers ensure that the initial concept of the game is fully implemented, and that the resources are brought into production.

In sum, the need for solving the tension between creativity and control (in the context of long lasting projects) tend to favor an in-house arrangement of work and thus less reliance on location in clusters.

4.4.3 The distant network dimension: the link to the publisher

The publisher is a critical actor in the whole system, given its control over critical resources. As shown later, the data bears out how much publishers rely on external studios, and seeks to deal with the most capable, if not the best, of them. The reliance on the in-house organization of product development is complemented by a reliance on a distanced network tie with a publisher.[15] The central external relationship in the videogames industry which all independent studios are preoccupied with is the relationship with their publisher. A studio's financial stability, and therefore, its success or failure, depends on whether it accomplishes what the publishers want, including the meeting of deadlines. One source of tension between publishers and studios

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[15] We will not dwell on issues of density, structure, importance of position in the network and configuration but on the distanciation dimension only due to the focus of the paper.

is that both sides want to own, control and extract the rents from IP for their own purposes of growth. This was observed in Tschang (2007), as well as by Cornford and Naylor (2001) who note of the "geographical expression of the continually contested relationship between developers and publishers that lies at the heart of the industry". This creates an unusual decision for publishers. On the one hand, the publisher has a strong need for control, since one of the biggest factors that affects a particular title's success is the uncertainty in the videogame production process (and especially in individual studios' processes), and the receptivity of users to all aspects of a videogame. Uncertainty and risk appears to be a common aspect of modern creative industries (Girard and Stark 2002). Thus, in a hits-driven industry, the need to be successful can create enormous pressures on publishers to control IP and its production. This suggests that publishers have good reasons for locating close to their game developers (or to pick game developing firms located in close proximity)[16] yet this is rarely the case. This brings up the issue of whether and how publishers deal with significant numbers of studios at a distance. In our estimation, most of the studios that we studied, and certainly all four that we studied ethnographically, were located at a long distance from their publishers. Table 1 shows that while the major publishers happen to be located in or near concentrations of external studios, many publishers are also scattered across the country. The 8 largest publishers, which earn a total of about US $6.5 billion in revenue, are scattered across different cities for the most part. Thus, these largest publishers appear to be scouring for the best internal studios to work with or to acquire, regardless of where the studios are located. This observation is supported by evidence of the geographical separation between publishers and their internal studios. Many of the internal studios owned or acquired by the major publishers are not co-located with the publisher's main offices, and many are not even in the major concentrations. Of the top eight US publishers, only 17 of their 44 internal studios are in the same state as the headquarters. (In fact, the results are

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[16] Insourcing game production is another leg in the publishers strategy which we will not comment on here as it is relevant for strategies but not assessing the importance of distanciated networks.

skewed by EA and Activision which have 5 of 8 and 6 of 7 in state.) Three other major publishers (Microsoft, Vivendi and Take Two) have none in the same state. Some large publishers have tended to acquire studios (for their internal operations) that were operating in locations all over the world. For example, Take-Two Interactive, has studios and cities in the US, including Boston, St. Louis, the outskirts of Baltimore, and all the subsidiary studios of Rock Star Games (publisher of the Grand Theft Auto series), including ones in Leeds, London Edinburgh, Vienna, Toronto and San Diego.

[INSERT TABLE 1 HERE]

This pattern is visible in part because publishers simply have to work with the best (lead_creative) talent wherever they are at. In the case of Electronics Arts, they have to support their well-known lead creator Will Wright and his studio at the location of his preference.

The "how" of this pattern of distance work is the familiar story of studios coordinating their work with publishers through electronic means and face-to-face meetings. The virtual nature of the product also allows studios to email or mail their prototypes to publishers in different locations. Other activities such as discussions on testing and production meetings are done through conference calls and electronic communications as well. All three of the studios that we studied in-depth facilitated their relationships with publishers with these means. During our field study to one studio, developers were regularly seen to be in discussion with their publisher's visiting producers or in conference calls over the phone nearly every couple of days for a period of the weeks that we were in residence. For example, one studio we interviewed at, Oddworld, was initially located in San Luis Obispo, California, about two to three hours drive from Los Angeles, but their publishers also flew in from out-of-state to keep check on their

progress.[17] Thus, while publishers do tend to be located in or near concentrations of videogame studios, the presence of strong studios outside of those concentrations can be explained by these means of maintaining production relations at distances. In this sense, the spatial organization of the videogames industry is closer to the music or comics industry than to the Silicon Valley/Hollywood models, in that videogames publishers have to contend with the dispersed nature of the development studios. In the music industry, global financier-distributors also develop relationships with dispersed groups of musicians by way of locally situated offices, as well as by managing from a distance (Power and Hallencreutz 2002).

4.5 Do the traditional clustering processes play an important role?

We next examine two central aspects of traditional cluster explanations – the local suppliers and the labor market (i.e. availability of skill sets). This helps us to determine how these other clustering factors affect spatial organization.

4.5.1 The importance of the local suppliers

A traditionally important factor underpinning clustering is that of technology suppliers. The new media clusters are also said to benefit from localized suppliers because the clusters are network-based (Grabher, 2002a). While the videogame industry does not tend to have strong supplier networks, our interviews as well as the postmortem data suggest that the use of commercial tools and proven "middleware" or engine technology is becoming more commonplace. While tools are sourced from the few software companies that make them, wherever they may be, engine

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[17] Its founder, a former Hollywood art director, found the city, a scenic rural coastal location, personally to his liking. Oddworld has since relocated to the Oakland, San Francisco Bay Area, with its desire to go upstream in the conceptualization of intellectual property, and to move away from game production. Through such interviews, we also confirmed that publishers such as Microsoft, EA and Blizzard will regularly fly their producers around the country for face-to-face meetings with studios, in order to evaluate their progress.

suppliers are another matter. The sourcing is not well-confined to the spatial boundaries of the cluster. Given the wide variety of game play and fairly customized way in which a particular engine fits a particular type of game play, many studio licensees will have to use the best fitting engine regardless of where its developer (studio) is located.

Of the seven companies in our data (i.e. interviews and postmortem data) that discussed licensing engines, four used engines developed by other studios located in the same city. A few well known engines such as the Dallas-based studio id's Quake engine are used by many other studios, both in the Dallas area as well as from other states. On the surface these cases resembles the traditional cluster explanation as the local sourcing appeared to succeed because a certain degree of familiarity and trust were present, i.e., the owners in the engine licensee studios had either spun off themselves from the licensor studio, or had some pre-established friendship or acquaintance with the licensor studio's head. However, in these cases, our interviews suggested that the availability of local technology was more of an "after the fact (of location)" event which did not influence the locating behavior of the licensee studios. Hence, trust and familiarity was not a function of localized interaction. Furthermore, other studios license whatever engine they find to be best fitting to their needs, regardless of the licensors' location.

Increased product complexity and the increasing costs of technology development are also leading to the development of an industry structure where some firms, such as Mad Doc software in Rockport, Massachusetts, and Vicarious Visions in Troy, New York, now act as specialized contractors which do programming or even whole titles (which were usually sequels). Increasingly, established studios such as Irrational Games will also work on sequels for publishers, so the line between a 'contractor' and an 'established studio' can blur somewhat. It is notable that such contractor studios (and technology suppliers in general) are often not co-located with their clients.

Finally, one type of issue that is more unique to media, including constructivist media like videogames, is that of the intellectual property (IP). While videogames are sharing more and

more links with the movie industry, the same issue of whether studios need to co-locate with IP-generating industries applies. While many IP agreements or licenses are awarded to studios that are not co-located with the IP-holder (which may be a traditional media company), there can be possible benefits if the videogame has to be developed in lock-step with the production of the original media's product (e.g., a movie). Costs can come down considerably if videogames and movies are made simultaneously or in lock-step with the story and content (e.g. if the movie director wishes to "direct" parts of the game , or if the videogame developers have to obtain content such as images or action sequences during the movie's production). At least one two studio heads actually moved their offices closer to centers of IP creation (e.g. Hollywood in one case) in order to develop IP in cooperation with movie studios.

4.5.2 Local Labor Markets

Studies of clusters also claims that labor supply is a critical factor attracting the firms to the cluster (Angel 2000; Christopherson 2002). Studies of project-based media firms have also observed that they can benefit when their networks can tap into surrounding labor pools (Grabher, 2002b, Ekinsmyth 2002). Our interviews show that videogame studio heads consider both local and national labor markets to be important, but that the bulk of positions are often filled from the local labor markets. Many studio heads or recruiters still use local networks to filter for and to ensure the quality of potential employees, often from other videogame companies and other local industries. However, while labor markets are a factor, they are not necessarily the factor that causes firms to locate where they do. A study of the UK's Guilford and Surrey regions showed that the significant local labor supply was one of the multiple factors that benefited firms in the cluster (Kaplinsky and Grantham 2003). Studies of the Tokyo videogame cluster also suggested that many studios located around the "Yamanote line"- the main commuter train loop that circles Tokyo, in part because of the universities in the area (Baba and Shibuya 2000).

In addition to the traditional labor market explanations in the cluster-literature, the labor market can also be a factor for larger firms, such as publishers, in deciding where to locate their internal studios. On the dismantling of the Las Vegas-based Westwood studios and EA's rationale for consolidating part of that talent into EA's larger Los Angeles (in-house) studios, EA's director of corporate communications said "LA is a terrific place to hire talent. There's tremendous potential to recruit talents from other game companies, other entertainment companies, the defense industry and academics." However, even as EA located its regional offices in areas rich with talent such as San Francisco and Los Angeles, it still needed to advertise for additional talent in other parts of California and elsewhere.

The different scale of production makes the videogame industry's requirements for human capital different from industries such as the movie industry. Since videogame studios have far fewer people per project than movie studios (with an estimated 20 to 30 employees per studio across both our samples and the postmortem samples), it is possible to set up a studio in locations without an existing local videogame industry. Well known studios such as PopTop, Oddworld, Vicarious Visions and Raven Software are examples of studios that are not located in any concentration. In these cases, other local industries than videogames, and the national videogame industry labor market, can be vital to filling local studios' needs.

In summary, while a videogame development studio can benefit from a local labor market, it can also fill its ranks from non-local sources, or from other industries. Universities in particular have a role, as talented developers and entrepreneurs can come straight out of college. This then appears to be a qualitatively different situation from that of other project-based industries.

4.6 On dispersion, or how multiple clusters came about

Thus far we have illustrated why the firms rely less on externalities and hence have greater degrees of freedom in choosing the location where to locate their firm. Yet, this cannot fully explain the spatial organization of the videogames industry as multiple clusters (i.e. dispersion) – particularly with no strong observable relation between the size of the cluster and the capability of its firms. We will now address three additional factors that help us to more fully identify this dispersed locational pattern. To summarize, the map of US videogame development studios' locations shows that videogame studios are located in many parts of the U.S., in variously-sized concentrations ranging from isolated studios, to medium- and large-sized concentrations. Since most of the processes emphasized in the cluster-literature (save for labor supply) do not appear to influence many studios' locating decisions, there is a strong possibility that a confluence of various "non-clustering" factors could influence the spatial organization of the videogames industry (i.e. its distribution across regions). We have identified three factors that need to be included in a framework explaining the spatial organization of the videogames industry.

4.6.1 Entrepreneurial Efforts

Entrepreneurial effort can easily explain the phenomenon of lone or smaller numbers of companies locating in cities that seemingly have fewer videogame studios (from which a larger set could be spun off from), or the labor pool to sustain a concentration. Many cities have just one or two studios, and at least a few such studios are sufficiently well-established to make their existence interesting. The "lead creative as studio founder" phenomenon is quite strong in our data, as studios are often located for reasons often having to do with the city being the founder's hometown or current place or residence, or desire to live somewhere in particular. One survey noted that "New studios are starting up everywhere, and so jobs are cropping up all over the country… Terrific programmers, sometimes whole teams, get disillusioned with the companies where they work and strike out to do it on their own."   Furthermore, another powerful impetus

for studio founders to simply locate where they are currently; it occurs, for example, when developers who "want to buy a house or raise a family are looking for jobs at videogame companies where the cost of living is lower and the pace is slower". These perspectives are reinforced in our interviews: Poptop Software was run by the founder in Saint Louis, Missouri - the city of his origin.[18] It is a smaller studio with a number of titles to its credit, but still sustains itself without attachments to the major concentrations. Similarly, Tilted Mill is located where its original developers came from, on the outskirts of Boston. Most of its developers come from the surrounding region, but they tend to stay outside of the city, and do not go to Boston on a regular basis. The same holds true for Nihilistic software, a spin-off from Lucas Arts located in San Rafael, just north of San Francisco's Golden Gate Bridge.

4.6.2 Spin-offs: Locally comfortable but also footloose

This brings us to the question of how clusters arise. As was observed by Klepper in several studies of the automobile, laser and other industries, spin offs from successful firms in the videogames case account for an important share of the clustering. That is, a cluster can form from a single or a few early firms. Paradoxically, this can underpin explanations of a spatially dispersed industrial organization. Successful spin offs are usually either a function of learning based on earlier employment in successful firms or successful firms' ability to attract the best employees who later spin off a company of their own. In an industry such as the videogames industry, the low benefits from clustering allows spin offs a higher degree of freedom to choose where to locate – often in the same region but not necessarily near the parent firm. Often they will choose to locate closer to the parent firm for pragmatic reasons, e.g. the employees already living near there, etc. The closure of a well-known studio in Boston - Looking Glass - led to the

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[18] Poptop was eventually merged with another studio, Firaxis Games in Hunt Valley, Maryland, and then acquired by Take-Two Interactive. Take-Two has recently been a takeover target of EA, but Take-Two's executives have also been the focus of many lawsuits.

talent dispersing into several companies in the Boston area as well as to other states. A large proportion ended up in two local startups that we interviewed - Irrational Games and Harmonics. A similar situation happened with Boston-based Impressions, a Sierra internal studio, when a group of ex-developers founded Tilted Mill (also in Boston), and other ex-developers seeded other studios around Boston, including Turbine Entertainment (this based on our interviews at Tilted Mill).

At the same time, the same data suggests a more footloose outcome, with key Looking Glass developers setting up studios or dispersing to studios as far away as San Franciso, Austin and Canberra, Australia. Historical cases of well known studios like id software and other cases from our data also support this relocation model, with founders of studios we interviewed migrating to Los Angeles, San Luis Obispo (California), and Boston, amongst other places, from elsewhere.

4.6.3 Universities as Incubators?

While the core team of new studios is usually comprised of experienced talent from existing studios (as was the case with all of the companies we interviewed at and visited for our ethnographic research), occasionally, local universities and other educational institutions also play a role as "incubating" grounds for talent or entrepreneurs, with companies such as Raven and Vicarious Visions being founded by former students from the local high school and university respectively. In strong universities, engineering and scientific students tend to have a strong interest in playing and making videogames. The Boston area was not known as a videogame studio concentration, but a concentration formed in part because of the large pool of university students. One of the most well known companies – Looking Glass – was formed by several former MIT students who knew each other.

5 Conclusions

We have proposed a framework for understanding creative industry cluster formation and persistence that provides the logic for the observation that while there are multiple clusters of firms (i.e., studios) in the video game industry, the biggest clusters are not necessarily dominant, and firms in clusters of small or moderate size can persist and do well. The above findings suggest that one dominant explanation in economic geography's treatment of creative industry – that of agglomeration-induced buzz, may not be sufficient for describing all creative industries. Our story has also relied on our observations of the (creative) capabilities of the firm, and other industry-specific characteristics (i.e. long project durations, lack of reason to connection to neighboring firms, and smaller firm sizes), to help explain how it is that firms and clusters can persist. Further, cluster growth can be explained to some degree by conventional factors. Ultimately, we can also argue that a more fundamental reason for the observed situation is that creativity is in short supply everywhere. In certain industries, lead creatives are wherever they are located (or move to), and they do not grow up and thrive in the buzz-like atmosphere of super concentrations of creative industry. In other words, traditional agglomerative factors simply do not operate in a winner-takes-all fashion to benefit the firms located in the larger clusters.

This finding has potentially important policy implications for cities that are trying to grow "clusters" of creative industry, as well as a theoretical implication for to guide future studies of creative industry down a path of inquiry that at least allows for richer, more heterogeneous clustering phenomena.

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Table 1. Cities with the Largest Number of Game Development Studios and Major
Publishers

City, State	No. of Studios	Top 20 publishers (Worldwide) with headquarters or regional headquarters in the city
New York, NY	16	Vivendi Universal, Take-Two
Austin, TX	14	
Los Angeles, CA	12	
Seattle, WA	10	
San Francisco, CA	9	
San Rafael, CA	7	
Santa Monica, CA	7	Activision
Chicago, IL	6	Midway Games
Eugene, OR	6	
Redmond, WA	6	Microsoft Game Studios
Redwood City, CA	5	Electronic Arts
San Diego, CA	5	
Atlanta, GA	5	
Bellevue, WA	5	
Irvine, CA	4	
San Jose, CA	4	
Las Vegas, NV	4	
Portland, OR	4	
Houston, TX	4	
Kirkland, WA	4	

Figure 1. Location of Videogame Development Studios in the Continental US and the Four
Largest Concentrations

National map: For purposes of illustrating the concentrations on the national map more
clearly, those studios that are located within a 50 mile radius of the largest metropolitan
nearby area are added into that metropolitan area's total number of studios.
Regional maps: The four regional maps plot each studio in the region by its exact latitude
and longitude.