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What drives the geographies of creative industries? From literature review to research agenda

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1 Introduction

Creative industries (hereafter CIs) are among the newest contributors to the increasing scale and variety of economic activities dependent on the creative class and digital technologies. According to the UNCTAD (2013), the total export revenues for global creative goods reached $473,791 million in 2012, and the annual average growth rate of creative goods exports was 8.68% from 2003 to 2012. The creative economy is not merely one of the most rapidly growing sectors of the world economy, but also a highly transformative one in terms of income generation, job creation and export earnings (UNDP /UNCTAD 2013). Nowadays, the capability for each country to compete in the global arena goes far beyond trade in goods and services and flows of FDI. Instead, it increasingly turns on the ability of nations to attract, maintain and develop the so-called "creative class" (Florida, 2002), which plays a crucial role in the location decision of creative firms.

CIs have been defined in various ways (e.g., DCMS, 2001; Caves, 2000; Potts et al., 2008). However, it is beyond the purpose of this paper to analyze the strengths and the weaknesses of these definitions. Since the passion for the academic and political discussions on CIs was encouraged by the *Department for Culture, Media & Sport (DCMS)*, UK, the definition developed by DCMS (2001) is adopted here as what we consider as CIs. CIs are "those activities which have their origin in individual creativity, skill and which have the potential for wealth and job creation through the

generation and exploitation of intellectual property… [They] broadly consist of sectors such as advertising, architecture, arts and antique markets, computer and video games, crafts, design, designer fashion, film and video, music, performing arts, publishing, software, television and radio" (DCMS, 2001, 4). CIs depart from generic economic and industrial models in the ways they operate and are organized (UNDP/UNCTAD 2013). On the one hand, dense local networks of the creative class and creative firms create a dynamic atmosphere that spurs innovation, attracts investment and generates growth through a self-reinforcing process; on the other hand, global demand for creative products is expanding as a result of rising incomes and falling trade barriers (Florida, 2002; Turok, 2003).

In economic geography, a large body of research has explored the geographies of CIs. In this literature as well as in our paper, "geographies" do not simply refer to the spatial distribution patterns of CIs, but also to the formation, development, growth, and even the decline of creative clusters, i.e., the spatial dynamics of CIs. Three complementary but not necessarily exclusive drivers and promoters of the geographies of CIs have been suggested by the literature: *agglomeration economies* (e.g. Florida, 2002; Lorenzen and Frederiksen, 2008), *routine replication* (e.g. Wenting, 2008a; Heebels and Boschma, 2011; De Vaan et al., 2013), and *institutional environment* (e.g. Turok, 2003; Foord, 2009; Darchen, 2015). While these studies enrich our understanding of the characteristics of the spatial distribution of CIs, there is a lack of literature reflecting on what insights have been achieved so far on

the basis of empirical research, and what requires much more work in analyzing the drivers of the geographies of CIs. Although there have been some generic reviews on the literature of CI studies (e.g., Flew and Cunningham, 2010; O'Connor, 2010), these contributions lacked a geographical perspective, and few of them have explored the spatial patterns of CIs. While Berg and Hassink's (2014) work had a geographical perspective, they narrowly focused on the notions deriving from evolutionary economic geography and explored how these concepts might potentially give new insights to the research on the spatial dynamics of CIs. Recently, Branzanti (2015) systematically analyzed the extensive literature on the spatial concentration of CIs from a district economy's perspective (localization externalities). However, localization externalities are just one of the many factors contributing to the clustering of CIs.

Instead of focusing on one paradigm of economic geography, or one driver that contributes to the spatial patterns of CIs, this paper intends to position the research on the drivers of the geographical patterns of CIs within the different paradigms of economic geography, and find out the most important drivers. The objective of this review is therefore twofold: First, to synthesize the theoretical and empirical insights that have been achieved in the literature on the geographies of CIs; and secondly, to reflect upon and identify a promising research agenda on the drivers of the geographical patterns of CIs. This paper reviews literature that explicitly explores the drivers of the geographical industrial patterns of CIs. The methodological approach

consisted in a keyword search on Google Scholar and the Web of Science, and most papers were identified by examining reference lists of already known papers or cited papers in some of the key contributions within the field.

The remainder of this paper is structured as follows. In the following Section 2 we will shortly embed our paper into broader paradigmatic discourses in economic geography. A critical review of the theoretical explanations as well as empirical evidence on the spatial concentration of CIs is presented in sections 3-5, in which the role of agglomeration economies, routine replication, and institutional environment for the geographies of CIs is elaborated. Section 6 concludes and suggests promising avenues for future research.

2 Embedding CIs studies in economic geography

Recently, a plethora of different paradigms have been developed in economic geography analysing and explaining geographical industrial patterns. In a recent review paper, Hassink et al. (2014) identified four paradigms: evolutionary economic geography, institutional economic geography, relational economic geography and geographical political economy. In our view, the former three provide relevant theoretical notions, such as routines, path dependence, power geometry etc. for analysing and explaining the geographies of CIs.

Evolutionary economic geography is currently the most influential paradigm in economic geography. It aims at explaining the emergence and changes in economic landscapes by the underlying industrial dynamics of firms at the micro-level, and of sectors and regions at the meso-level (Boschma and Frenken, 2006). Key theoretical notions are path dependence, lock-ins, related variety, selection and organizational routines. The emergence and rapid theoretical development of evolutionary economic geography has introduced new notions to the spatial dynamics of CIs such as spinoff formation or routine replication (Berg and Hassink, 2014).

The somewhat older paradigm of institutional economic geography focuses more on formal and informal institutions at several spatial scales (Martin, 2000). Moreover, Gertler (2010) highlighted a stronger emphasis on geographical variation, namely through a better understanding of how formal and informal institutions at different scales interact to produce a specific outcome. Enlightened by this paradigm, some scholars started to combine the research on geographies of CIs with institutional factors (e.g. Coe, 2000; Turok, 2003; Bathelt, 2004; Chapain and Comunian, 2010), and increasing attention has been paid to the importance of different spatial levels of institutions for spatial patterns of CIs.

Relational economic geography "focuses on a relational understanding of economic action which is analysed in spatial perspective" (Bathelt and Glückler, 2011, 6). Similar to institutional economic geography, it puts strong emphasis on

comprehensively theorizing formal and informal institutions. Moreover, it also stresses networks, power, social agency, socio-cultural embeddedness of actors in multiple networks, and the interrelatedness between scales. To explain the success of firms and regions, there is a stronger focus on actors' networks and interrelations at individual level, rather than on firm-centred organisational routines. Relational economic geography contains both structural (economic action is embedded in context) and evolutionary (economic action is path dependent) components. Although the relational paradigm is not explicitly mentioned in the CIs literature, it increasingly focuses on the role of networks, socio-cultural embeddedness of actors, as well as the interrelations at various scales (e.g., Dranke, 2003; Bathelt and Graf, 2008; Burger-Helmchen and Cohendet, 2011). The idea of emphasizing the co-relations of different actors in this paradigm has influenced the way of studying the geographies of CIs.

These paradigms and their related theoretical notions are useful to position the three drivers of the geographies of CIs (Fig. 1), in the theoretical and empirical literature. They will be presented in detail in the following sections.

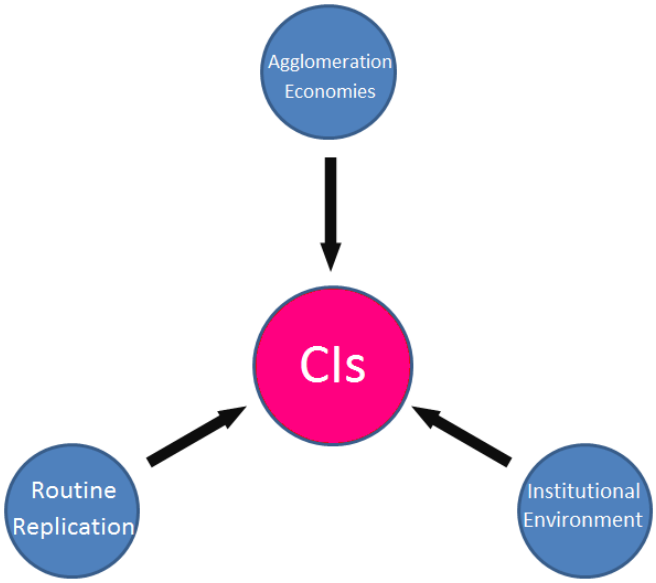

Figure1: Main drivers of the geographies of CIs.

3 Agglomeration economies and creative clusters

CIs are not evenly distributed across space but are spatially concentrated (Scott, 2005). The spatial concentration of CIs has attracted great research interest (e.g. Caves, 2000; De Vaan et al., 2013; Berg and Hassink, 2014; Alfken et al., 2015; Wedemeier, 2015). CIs are affected by agglomeration economies (see Table 1), which basically act as centripetal forces, fostering the incubation and attraction of CIs in places with specific characteristics (localization economies, Section 3.1), or in large cities and metropolises (urban economies, Section 3.2) (Lorenzen and Frederiksen, 2008; Chapain and De Propris, 2009).

Table 1: Insights into the role of agglomeration economies in the geographical patterns of CIs.

Drivers	elements	Authors	Main ideas
Agglomeration economies	Localization economies	Bathelt (2004); O'Connor (2004); Scott (2005, 2006a,2006b); Martin-Brelot et al. (2008); Lazzeretti et al. (2008); Lorenzen and Frederiksen (2008); Chapain and Comunian (2010); Chapain and De Propris (2009); Wenting et al. (2011); Heebels and Boschma (2011); De Vaan et al. (2013); Lazzeretti et al. (2012); Pilon and Tremblay (2013); Alfken et al. (2015); Branzanti (2015) ; and Wedemeier (2015)	1) concentration of production in a particular location generates external benefits for co-located creative firms; 2) local access to specialized suppliers and buyers, a large and specialized labor pool and local knowledge spillovers are the benefits that these firms can enjoy
	Urbanization economies	Glaeser et al. (2001); Florida (2002, 2005); Bathelt (2004); Yusuf and Nabeshima (2005); Martin-Brelot et al. (2008); Lorenzen and Frederiksen (2008); Lazzeretti et al. (2008); De Propris et al. (2009); Chapain and De Propris (2009); Wenting et al. (2011); and Comunian et al. (2010); Lazzeretti et al. (2012); Alfken et al. (2015); and Wedemeier (2015)	1) CIs tend to concentrate in cities; 2) large cities or metropolises show much attractiveness to creative individuals, since they provide urban amenities that other places cannot provide 3) the "quality-of-place", instead of the "access-to-place", has become the pivot point for the attraction of the creative class

3.1 Localization economies and clustering of CIs

Primarily based on the spatial agglomeration of manufacturing sectors, the localization economies have been applied to the study of creative clusters, as well. The central idea of these studies is that the concentration of production from the same industry in a particular location generates external benefits for creative firms located in the specific location. Building on Capello's (2007) conceptualization of the main drivers of district economies — reduction of production and transaction costs, increased efficiency of factors of production, and increased dynamic efficiency – Branzanti (2015) provides a systematic literature review on the role of localization economies in creative clusters. According to her, the notion 'reduction of production costs' is scarcely supported by the existing literature on creative clusters. However, other notions such as the reduction of transaction costs, the increased efficiency of factors of production, the increased dynamic efficiency are vital factors contributing to the clustering of CIs. Closely related to localization externalities is the notion of 'untraded interdependencies' introduced by Storper (1995). Regions that constitute a "nexus of untraded interdependencies" can enjoy place-specific conventions, rules, norms, and practices which support the knowledge-seeking aspects of CIs. In a similar vein O'Connor (2004) argued that creative clusters succeed because of the development of tacit knowledge, opposed to codified knowledge. Scott (2006a, 2006b) attributed the exceptional pattern of clustering in CIs to the disproportionate advantages that creative firms experience from co-location, transforming the cluster

into a “creative field”. According to Scott (2006a, 1), a creative field is the “locationally-differentiated web of production activities and associated social relationships that shapes patterns of entrepreneurship and innovation in the new economy.” Similar in meaning, Lazzeretti et al. (2008) named those specific places where CIs tend to cluster as “Creative Local Production Systems”, which are socio-territorial entities, characterized by specific features (local external economies, the rules, conventions, local institutions) that nourish and facilitate the concentration of CIs. While most research on localization economies highlights the positive aspects of local conditions, De Vaan et al. (2013) found that the spatial concentration of CIs can lead to negative externalities, as well. In the case of project-based industries, while negative externalities increase linearly with the number of fellow competitors in the same location, the positive localization economies increase more than proportionally with the number of co-located suppliers and customers. As a result, the net effect of clustering becomes positive after a cluster reaches a critical size.

3.2 Urbanization economies and creative clusters in cities

CIs tend to concentrate mainly in and around large cities (Florida, 2002; De Propris et al., 2009; Lazzeretti et al., 2012). An alternative explanation of spatial clustering of CIs is based on Florida (2002)’s work who argues that spatial clustering of CIs is primarily the result of urban amenities as well as the location decision of the creative

class. Although critiques on the fuzziness of the creative class concept and indicators, the context-lessness of creative class research, as well as the ambiguity of the relation between creativity and cities have never stopped since the concept was proposed (for an overview of these critiques see Asheim and Hansen, 2009), his work is still quite valuable for the studying of creative clusters in cities. Studies of such urbanization economies indicate that large cities show much more attractiveness to creative individuals as they provide urban amenities that other places cannot provide (Florida, 2002; Lorenzen and Frederiksen, 2008). In this regard, the "quality-of-place", instead of the "access-to-place", has become the pivot point of competitive advantage in cities (Florida, 2005).

Examples of urbanization externalities include the presence of various services and consumer goods, an aesthetic and physical setting, good public service and a high efficiency of city life (Glaeser et al., 2001); tolerance, talent, and technologies (Florida, 2002, 2005); and ICT, high-quality housing and recreational amenities (Yusuf and Nabeshima, 2005), just to name a few. Although these amenities might not directly lead to the agglomeration of CIs in cities, they seem to be very attractive to the creative class. This creative class, "spanning science and technology, arts, media, and culture, traditional knowledge workers, and the professions" (Florida, 2014, vii), has particular preferences for both its work and private life: it prefers to work and live in cities with particularly high levels of cultural services, open-mindedness,

diversity of ethnicity and thought, and tolerance towards non-mainstream lifestyles (Florida, 2005).

As consumption is becoming a very important part of city life, the future of cities increasingly depends on their attractiveness for consumers (Glaeser et al., 2001). Yusuf and Nabeshima (2005) confirmed this idea by manifesting that one of the advantages that cities might have for creative firms is the large size of markets. Based on a broader perspective, Comunian et al. (2010) even regarded markets as one of the drivers of the location patterns of CIs. Markets at different levels are important in reference to the link between CIs and other related aspects of consumption, such as tourism and the image of the city.

Urbanization economies do not only explain why specific CIs spatially cluster, but also why they typically cluster in large cities (Wenting et al., 2011). In addition to localization economies, these studies help to understand the clustering phenomenon of CIs in cities. However, they mainly focus on the attraction of creative individuals (or the creative class in the labor force) in cities (Florida, 2002, 2005; Chapain and De Propris, 2009), which is only part of the success story of creative clusters.

To sum up, theories of agglomeration economies enhance the knowledge on the clustering of CIs. However, this strand of literature has hardly mentioned other complementary factors, such as routine replication (e.g. Aoyama and Izushi, 2004;

Wenting, 2008a; Heebels and Boschma, 2011) and the institutional environment (e.g. Turok, 2003; Foord, 2009; Wenting and Frenken, 2011; Darchen, 2015). In the next two sections, these parallel explanations of the geographies of CIs will be elaborated.

4 Routine replication and the spatial concentration of CIs

With the popularity of the "creative economy" notion, the way how knowledge or routines of successful firms are distributed spatially aroused strong academic interest. Organizational routines have been defined as "recurrent action patterns at the firm level, to the extent that they are communal and processual in nature" (Wenting, 2008b, 15). The basic starting point of this strand of research is that firm behavior is guided by organizational routines. The key question then becomes how these routines diffuse in space when a new industry emerges and grows (Boschma and Frenken, 2006).

The emergence and rapid theoretical development of evolutionary economic geography has introduced new explanations for the spatial dynamics of CIs (Berg and Hassink, 2014). Klepper (2006, 2010) highlighted the importance of successful routine reproduction through spinoff firms for the success of clusters. Here, "spinoffs" are new firms founded by employees who previously worked for an incumbent firm within the same or related industries (De Vaan et al., 2013). Inspired

by Klepper's seminal work, many scholars testified such spinoff mechanism in CIs (see Table 2).

Table 2: Research on the role of routine replication for the geographies of CIs.

Drivers	elements	Authors	Main ideas
Routine replication	Spinoff creation	Wenting (2008a); Aoyama and Izushi (2004); Heebels and Boschma (2011); De Vaan et al. (2013);	1) firms are heterogeneous in their routines and capabilities 2) spinoff firms tend to outperform those startups without any experience in the area 3) spinoffs tend to agglomerate in space, thus forming creative clusters 4) there is no need for agglomeration economies to make cluster happen

By exploring the spatial formation of the global fashion design industry, Wenting (2008a) found that those spinoff firms inheriting parent success tend to outperform other firms without any experience in the industry. Based on a genealogical perspective, he concluded that the local replication of routines through spinoffs caused the clustering of fashion design in a few cities around the world. Focusing on the video game industry, Aoyama and Izushi (2004) asserted that creative knowledge and technologies in cartoons and animated films, as well as cross-industry links to

consumer electronics, have functioned as important foundations for the emergence and development of the video game industry in Japan.

Moreover, recently some research tries to find out the relative significance of agglomeration economies and spinoff dynamics for the formation of creative clusters. For instance, studies of De Vaan et al. (2013) and Heebels and Boschma (2011) came to opposite results concerning the relative importance of agglomeration economies and spinoff process in the clustering of CIs: while the former research demonstrated that besides the importance of spinoff process, localization externalities were still very vital factors contributing to the clustering of the video game industry; the latter found that the agglomeration economies did not increase the survival of Amsterdam's book publishing firms in general, but instead, the successful routine reproduction of spinoff firms had a positive effect on the spatial pattern of the publishing industry. Here, industrial specificity turns out to be a very crucial element for the different spinoff processes in CIs. In fact, differences between CIs also affect the geographies of creative firms, as we will elaborate upon in Section 6.

Of course, spinoff formation is not the only mechanism through which routine replication happens. Wenting (2008b) for example, found out that the inter-firm labor mobility, and inter-firm cooperation networks are two other mechanisms through which organizational routines are transferred and diffused. Besides these

dimensions of routine replication, the notion of “communities of practices” also contributes to the diffusion of routines in space. A community of practice is a collection of people who engage in a process of collective learning in a shared domain of human endeavor (Wenger, 1999). This kind of community emerges out of common interest or position, and plays an important role in the diffusion of organizational routines. Recently, the fast development of ICTs even made such communities of practice an important mechanism for routine replication for firms that are geographically far away (Brinks, 2016). However, in the literature of CIs, little work has been found in exploring the role of these kinds of routine replication for the geographical distribution patterns of CIs.

The routine replication explanation, which emphasizes the importance of knowledge transfer among creative firms in clusters, provides new insights in the geographies of CIs. Theoretically, it can explain the spatial clustering of CIs without referring to location-specific features. However, routine replication alone cannot fully explain the geographical patterns of CIs. Other factors such as formal and informal institutions at different levels, which will be examined in the next section, play a very important part in the location patterns of CIs.

5 Institutional environments and spatial pattern of CIs

Economic geography has undergone an “institutional turn” in the 1990s (Martin,

2000; Boschma and Frenken, 2006). Enlightened by this institutional paradigmatic discourse, some scholars started to pay attention to the importance of different levels of institutions for the spatial distribution of CIs (see Table 3). Institutions are crucial to the formation and development of creative clusters, because they help firms to solve complex coordination problems with other economic actors in the market (Boschma and Capone, 2015). At all political scales, from the national to the regional and local levels, formal and informal institutions are very important factors for the spatial distribution of CIs.

Table 3: Institutional environments and their role for the geographies of CIs.

Drivers	elements	Authors	Main ideas
Institutional contexts	Formal institutions	Turok (2003); Bathelt (2004); Yushf and Nabeshima (2005); Foord (2009); Wenting and Frenken (2011); Harvey et al. (2012); Pilon and Tremblay (2013); and Clifton et al. (2013);	1) creative clusters require private and public institutions to function properly 2) the institutional framework at the national level affects the pattern of economic and technological specialization 3) regional / local institutional thickness contributes to the flourishing as well as the decline of many creative clusters
	Informal institutions	Coe (2000); Chapain and Comunian (2010); Haefliger et al. (2010) ; Burger-Helmchen and Cohendet (2011); and Darchen (2015	1) the social environment is very important for the geographies of CIs 2) the development of ICT, and the emergence of communities of interests/ users, lead to the dispersed distribution patterns of CIs in space. 3) the spatial pattern of creative firms might not necessarily function as a true cluster. Instead, concepts such as "communities of practices" or "communities of interests" become increasingly important.

5.1 Formal institutions and the spatial distribution of CIs

As Scott (2000) notes, the survival and growth of creative clusters often relies upon a mixture of institutional support, public and private partnerships and training organizations. Harvey et al. (2012)'s research on the small rural based creative cluster — Krowji, West Cornwall, UK, manifested that the cluster is very responsive, and even vulnerable to policy formulation and funding decisions because most of its funding comes from public sources. Besides that, many public agencies also contributed greatly to the emergence and the development of a creative cluster where practitioners from different creative sectors agglomerate in a rural area. Based on the film and television industries in Scotland, Turok (2003) claimed that national and transnational organizations and governmental regulation are important in influencing the scale and durability of the selected industries. Research of Clifton et al. (2013) tried to reconcile the "space-less" varieties-of-capitalism (VoC) approach with the "context-less" creative class study by conducting a comparative analysis of the location dynamics of the creative class in the UK (as a liberal market economy, LME) and Sweden (as a coordinated market economy, CME). The results confirm that the creative class is more evenly distributed in Sweden than in the UK and this is indicative of the effects of CME institutions relative to LME institutions in flattening the geographical patterns of the CIs.

Besides the transnational and national scales of institutions, regional and local

policies also provide a dense network of institutional support (such as special training programs, institutions of higher education, incubator organizations, etc) to CIs. Because of the support of such distinct institutional thickness, some creative clusters flourish, whereas other clusters, with a less favorable institutional environment, decline. Bathelt (2004), for instance, studied the evolution of Leipzig's new media industry in Germany. The most important factor for the development of this cluster was the local political decision to locate the MDR (Mitteldeutscher Rundfunk - Central German Broadcasting) head office and production facilities to Leipzig. Parallel to this development, local policy initiatives were also designed to provide start-up consulting, refine training programs and create new incubator facilities for entrepreneurial activities. Yusuf and Nabeshima (2005) explored the shifting of manufacturing industries to CIs in leading cities in East Asia, and suggested that political actions taken up by both central government and sub-national governments promoted the agglomeration of CIs. At country level, ease of entry into a country, rules governing work permits for foreigners in various skill categories, and immigration laws can influence the number of visitors, and their spatial distributions; at municipal level, city governments determine the urban transport policies and zoning regulations that profoundly affect the "mobility environment" and ease of doing business in cities (Yusuf and Nabeshima 2005). By carrying out an international survey of public policies and strategic plans to promote the development of CIs at city-regional level, Foord (2009) demonstrated that public sectors play different roles at different stages of the development of creative

clusters. In the dependent development stage, creative enterprises mainly developed as a direct result of public sector intervention through infrastructure development and finance and business support for micro creative enterprises. At the aspirational stage, high levels of public and institutional promotional activities are encouraged by governments to develop local markets and consumption infrastructure. In the emergent stage, the number and scale of creative enterprises with investment from the public sector became quite large, and the local and regional markets for creative products emerged gradually. Finally, at the mature stage, creative enterprises became increasingly independent; as a result, the development of creative clusters only requires arms-length public intervention.

Recently, some scholars also try to find the institutional explanations for the decline of certain CIs in specific locations. For example, Wenting and Frenken (2011) attributed the decline of Paris as a center for fashion design in the post-war period to the "institutional lock-in", which prevented a ready-to-wear cluster to emerge despite the presence of the haute couture cluster. In the case of Paris' fashion design industry, although formal institutions, such as laws protecting the haute couture, and a special committee reviewing haute couture houses each year, were the main factors hindering the development of a ready-to-wear cluster, informal institutions also played a unignorable role in this "institutional lock-in". Instead of welcoming the "commercialization" and "popularization" of fashion design, Parisian designers stuck to the opinion that fashion should be artistic, exclusive and tailor-made. Therefore,

many designers in Paris felt reluctant to react to the growing demand for ready-to-wear fashion, resulting in the declining position of Paris as a center of the global fashion design. In line with this, previous studies have also proved that informal institutions play a very important role in the geographical industrial patterns of other CIs. The next subsection will describe the way how informal institutions affect the location of CIs.

5.2 Informal institutions and spatial patterns of CIs

As stated by Coe (2000, p 394): “Creative industries are embedded in networks and institutions that are socially constructed and culturally-defined.” Therefore, the social environment is very important for the location patterns of CIs. Although not explicitly mentioned in the literature, these phenomena can be closely linked to the paradigm of relational economic geography (Bathelt and Glückler, 2011).

Based on video game companies in Brisbane and Melbourne, Australia, Darchen (2015) found that the success of the video game companies cannot simply be attributed to the positive externalities associated with co-location. Instead, he proposed the notion of “networked communities”, which values the significant social networks developed by those successful firms at varying scales (local, national and international) for the development of the specific creative industry in the specific locations.

While most of the prior research assumes that CIs are spatially concentrated, some recent contributions manifested that the spatial pattern of creative firms might not necessarily function as a real cluster. Particularly, as ICT and virtual communities developed quickly within the last decades, studies on the role of so-called "communities of practices" or "communities of interests" on the spatial patterns of CIs (particular project-based CIs) have become increasingly popular (e.g. Haefliger et al., 2010; Burger-Helmchen and Cohendet, 2011). These communities can be regarded as informal institutions in which norms and values are shared among its members. Focusing on a nascent group of firms founded by video gamers who entered the animation industry by producing a new film genre, Haefliger et al. (2010), for example, explained how a community of users is of great importance for the creative entrepreneurs moving from one industry to another. According to them, user entrepreneurs face low opportunity costs and exhibit a high willingness to experiment and high potential to explore commercial opportunities by entering a market or creating new ones. Similarly, a study of Burger-Helmchen and Cohendet (2011) claimed that for the ICT-based CIs, we could even witness the emergence of firms that based the value of their products on the interaction between users. Since communities of users do not necessarily co-locate (because users can communicate online), it is not necessary that these newly-established creative firms will concentrate in space.

Although the institutional environment is very crucial for the clustering of CIs, there are hardly any studies relating it to the other two factors (i.e. agglomeration economies and routine replication) while explaining the spatial pattern of CIs. Moreover, as countries vary in terms of their political-institutional environment, there has been little comparative research so far exploring the effects of different institutions at country level on the spatial pattern of CIs.

6 Research deficiencies and promising avenues for future research

This paper examined the extensive literature on the geographies of CIs which is embedded in the broader domain of economic geography. By embedding the research on the geographical patterns of CIs in current paradigmatic discourses of economic geography, we found that they introduce new perspectives, concepts, contents, as well as modes for the study of the spatial patterns of CIs: evolutionary economic geography introduces notions such as routine replication, spinoff formation, lock-ins, for the explanation of the location patterns of different CIs; institutional economic geography highlights the role of formal and informal institutions in the spatial distributions of CIs. Particularly, with the development of ICT and digital economies, informal institutional factors tend to be more powerful in analyzing the spatial patterns of ICT-based CIs; relational economic geography has been mentioned less often in the literature on the geographies of CIs, but could be potentially linked to the role of informal institutions highlighting the actor networks,

or the interrelations at various scales. By systematically and critically reviewing the literature on the drivers of the geography of CIs, however, several deficiencies are identified.

First of all, while broad in perspective, prior studies are mainly based on different sectors (for example, video games, fashion design, advertising, publishing, etc). As CIs differ greatly in terms of their inputs and outputs, production and consumption, etc. (for example, fashion design and films differ throughout the way they are produced, marketed, sold, and consumed), it remains unclear whether findings from one industry can be generalized directly to other CIs. Another shortcoming concerning the industrial specificity of CIs is that the role of public and not-for-profit CIs has almost been overlooked in the literature. Most research tends to focus on key economic sectors such as film, games, fashion design, etc., whereas museums and performing arts, which in many ways are subsidized and public organizations, are ignored. Public CIs, however, also have a key role in developing the supply chain as well as the markets for creative products.

Secondly, studies focusing on one specific perspective usually tend to overemphasize one factor while overlooking the importance of other factors. Florida (2002) for instance, mainly focused on urbanization, while Wenting (2008a) mainly highlighted spinoff process and Haefliger et al. (2010) and Darchen (2015) valued informal institutions. Even though there is some work trying to combine two or more

different approaches (e.g. De Vaan et al., 2013; Heebels and Boschma, 2011; Alfken et al., 2015; Wedemeier, 2015; Lazzeretti et al., 2008, 2012), these studies have just dealt with two or more drivers in an additive way, without exploring the interconnections between the different drivers.

Thirdly, the majority of the reviewed literature by economic geographers on CIs is empirically conducted in localized centers of production, which according to Johns (2006, 152), "runs the risk of over-privileging the importance of local institutional and organizational network relations". As globalization is changing the way how products are produced in space, we could expect that the global partners will play an increasing role in the spatial patterns of CIs.

Finally, while places vary in terms of local conditions, entrepreneurship, institutions, external networks, etc., it is quite surprising that only a few comparative studies have been conducted so far (e.g., Lazaretti et al., 2008; Clifton et al., 2013).

In order to explain the geographies of CIs, we need to go beyond the relatively simple drivers identified in the literature (as illustrated in Figure 1). On the basis of the deficiencies identified in the current literature, a much more comprehensive framework to study the geographies of CIs, as well as promising avenues for future research are suggested in Figure 2.

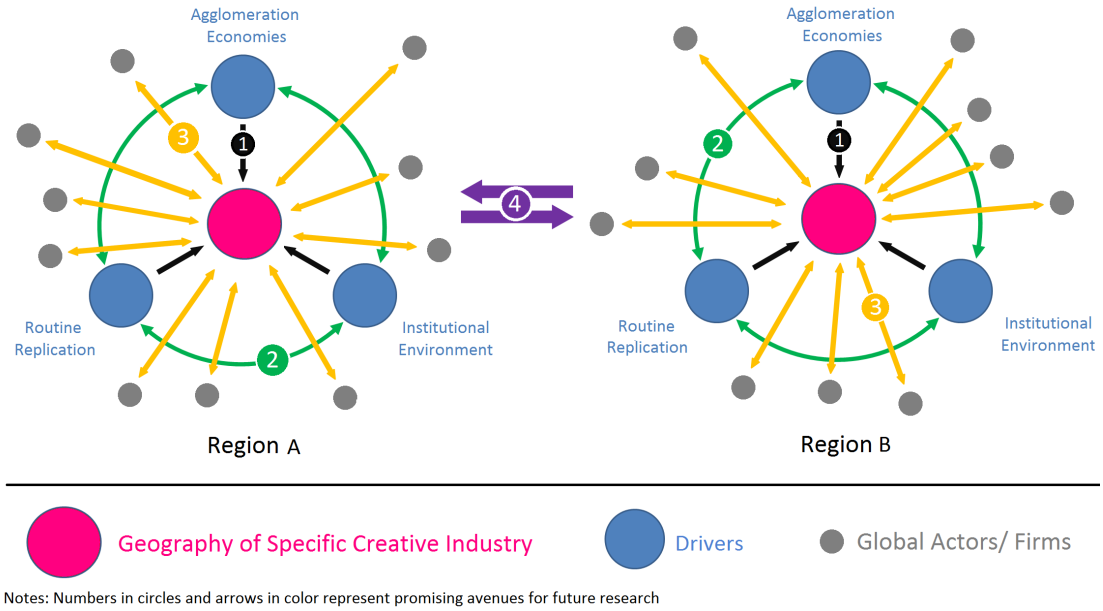

Figure 2: Comprehensive framework for analyzing the geographies of CIs.

First, referring to number 1 and the black arrows in Figure 2, more work is needed to explore the spatial distribution of each specific creative industry. To examine whether agglomeration economies, routine replication, and institutional conditions really play a role in the spatial distribution of different CIs, specific CIs should be distinguished from one another. Industry specificity, therefore, should be highlighted, and more work is needed to explore the spatial distribution of each specific creative industry. Comparisons between different CIs are encouraged as these will contribute to the understanding of how industrial specificity affects the geographical patterns of CIs. Moreover, given that public CIs are an indispensable part of CIs, and they also play a role in developing markets for creative products, factors contributing to the geographies of these not-for-profit CIs should be explored as well.

Of course, in some cases, creative clusters connect to more than one sector, particularly in large cities (for example, 'creative hubs' in London). In these cases the spatial patterns of some creative sectors might be difficult to separate. But at least, we should scrutinize the location preferences of these different CIs in the analyses of the formation of such creative hubs.

Secondly, referring to the green arrows in Figure 2, more explorations on the interconnection between different factors should be highlighted. Research on manufacturing industries shows the potential influence these interconnections might have on each driver's performance in determining the spatial patterns of CIs:

a) In general, agglomeration economies and the local institutional environment have great impact on each other at the initial stage of cluster development in manufacturing industries. As soon as a new industry reaches a critical mass and enjoys agglomeration economies somewhere, self-reinforcing mechanisms will come into being, and the local environment (of which local institutions are a vital part) will become a supportive one. On the other way around, specific formal policies, laws, regulations, rules, as well as informal conventions, norms, and values also affect agglomeration economies. This general interconnection between agglomeration economies and local institutional environment might well apply to CIs, since these two drivers also play an important role in explaining the geographies of CIs (see Section 3 and 5).

b) Agglomeration economies and routine replication affect each other's

performance through the way in which firms interact with the local environment. With regard to many manufacturing industries, Klepper (2006) claimed that due to the successful routine replication of spinoff firms, theoretically we can expect spatial clustering of manufacturing despite the absence of agglomeration economies. However, he also admits that in practice, agglomeration economies still play a very important role in the entry and survival of spinoffs in clusters (Klepper, 2006; Boschma, 2015). Successful spinoffs improve the local environment through their interactions with other firms in the cluster. As most of the spinoffs tend to co-locate with their parent firms, local buzz, infrastructure, networks between different actors become more favorable, thus contribute to the improvement of the local conditions. Potentially, these interconnections between agglomeration economies and routine replication also suit well to CIs (Wenting, 2008b).

c) Routine replication and the institutional environment might also affect each other's performance in clusters. Previous work found evidence that different institutional systems have different effects on the entry and survival patterns of spinoff firms (Menzel and Kammer, 2012). Basically, local institutions are very helpful for the spinoff activities in manufacturing sectors (Klepper, 2010). However, too much institutional thickness might, on the contrary, lead to a "political lock-in" (Hassink, 2010), thus preventing successful routine replications. Routine replication, on the other way around, is also important for the development of the institutional environment. As successful spinoff firms usually tend to attract the attention of policymakers as well as citizens, the establishment of both formal and informal

institutions favorable to routine replication might be encouraged. In a similar vein like the study by Wenting and Frenken (2011) on the fashion industry in Paris, we see potential in doing research on the interrelations between routine replication and the institutional environment in the CIs.

Thirdly, to avoid the problem of overemphasizing local conditions, more research in the future should focus on the external partners of creative firms in specific locations (golden arrows in Figure 2). Studies exploring the production of cultural and creative products and services through the lens of global production network (GPN) (see, e.g., Coe and Johns, 2004; Johns, 2006; Bathelt and Graf, 2008; Coe, 2015) provide us new insights on how external linkages of firms as well as the distribution of the GPN of CIs affect the production of creativity globally. Given that global labor divisions as well as the positions of different regions in the GPN indeed influence the spatial distribution of certain CIs (particularly technology-based CIs such as video games, animation, cartoon, film, etc), we need a much broader spatial perspective than local agglomerations of CIs. Therefore, the third avenue for future research calls for more work on the interactions and connections between local conditions and external global firms. Although data on a global level is a big challenge in carrying out such research, at least more attention should be paid to the external actors outside the clusters.

Last but not least, in order to explore these local varieties, more comparative studies

between different locations on the same CI should be carried out (purple arrows in Figure 2). In the case of CIs, the main purpose of studying spatial patterns is not merely to explore what drives the geographies of CIs, but also how such patterns differ from place to place. Therefore, more comparisons are needed between different locations for the same creative industry for a better understanding of the commonalities and differences of the specific creative industry in different contexts.

Overall, based on an extensive review of the literature on the geographies of CIs embedded in modern paradigms of economic geography, we identified several deficiencies from which we derived promising avenues for future research. In particular, we developed a comprehensive framework that goes beyond the analysis of individual drivers of the geographies of CIs. Instead it stresses the industrial specificity, interconnections between different drivers, external linkages of creative firms, and comparisons between different locations.

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