



Fostering connectivity: a social network analysis of entrepreneurs in creative industries

Minha Lee

To cite this article: Minha Lee (2015) Fostering connectivity: a social network analysis of entrepreneurs in creative industries, *International Journal of Cultural Policy*, 21:2, 139-152, DOI: [10.1080/10286632.2014.891021](https://doi.org/10.1080/10286632.2014.891021)

To link to this article: <http://dx.doi.org/10.1080/10286632.2014.891021>



Published online: 28 Feb 2014.



Submit your article to this journal [↗](#)



Article views: 781



View related articles [↗](#)



View Crossmark data [↗](#)

Fostering connectivity: a social network analysis of entrepreneurs in creative industries

Minha Lee*

Department of Art Theory, Korea National University of Arts, 146-37, Hwarangro 32-gil, Seongbuk-gu, Seoul 136-716, Republic of Korea

(Received 19 July 2013; accepted 31 January 2014)

A growing number of theoretical and empirical studies have raised issues about the role of creative industries in urban development and relevant policy actions to enhance their positive effects. Central to this is to develop a network-friendly environment which stimulates knowledge transfer and interactive learning in creative industries. In line with these studies, this article attempts to develop a framework to analyse networks in creative industries with regard to knowledge transfer and learning. Based on this framework, this article examines the structure and knowledge flow of an entrepreneurs' network in creative industries by using social network analysis.

Keywords: cultural policy; creative industries; urban development; social network analysis

Introduction

This article originates from an interest in the relationship between arts and culture, and cities. Recently, arts and culture have received greater prominence in policy discussions as a growth engine for urban development (Hall 2000, Turok 2003, Wyszomirski 2004, Bryson 2007, Banks and O'Connor 2009, Heebels and van Aalst 2010, Rosenfeld and Hornych 2010). There are two strands of research that currently pursue this subject. The first strand focuses on place promotion using arts and culture. This line of research investigates city makeover projects, especially large-scale brick-and-mortar projects such as building iconic architectural pieces, developing cultural districts, and installing public artworks. Recent empirical work has demonstrated that these projects have changed a city's image dramatically, and eventually generated economic growth by attracting tourists and investment (Strom 1999, 2002, 2003, Brooks and Kushner 2001, Plaza 2006, McNeill 2009, Sklair 2010).

The second strand targets creative industry development, with particular focus on enhancing the capacity of creative industries. This line of research focuses on identifying the factors that promote knowledge transfer and learning, that are widely accepted as a key for gaining competitive advantage in today's innovation-driven economy (Benner 2003, Schoales 2006, Gülümser *et al.* 2010). The extent research has suggested that networks of actors in creative industries can play an

*Email: mojito@karts.ac.kr

important role in fostering knowledge-seeking activities. A considerable amount of empirical research has been done on knowledge exchange and collective learning in creative industries that are operated through networks in various contexts (Scott 1988, Pratt 2000, 2002, Rantisi 2002, Lehner and Dowling 2003, Currid 2007, Lorenzen and Täube 2008, Cummins-Russell and Rantisi 2012).

Consistent with the second strand of research, this article aims to extend the scope of research by providing a framework that enables to analyse networking activities of actors in creative industries. Based on social network analysis approach, this framework enables to examine the extent to which actors in creative industries interact to exchange knowledge and information. In this article, empirical evidence has been obtained from entrepreneurs in creative industries in Seoul, South Korea, with particular focus on the participants of the Youth Start-Up 1000 Project. This project has been planned and administered by the Seoul Metropolitan Government (SMG) to support young entrepreneurs. By zooming in the structure and knowledge flow of the participants of the 1000 Project, this article examines whether city-level efforts to develop a network-friendly environment offer actors in creative industries access to knowledge and learning.

From brick-and-mortar to creative industry development

As cities begin to consider arts and culture as essential features for attracting so called 'creative class' (Florida 2002), situating arts and culture alongside urban economic development strategies has become a worldwide phenomenon (Bianchini 1993, Kong 2000, Brooks and Kushner 2001, Caust 2003, Evans 2003, Grodach 2010, Markusen and Gadwa 2010). Specifically, the development of large-scale brick-and-mortar projects is one of the most visible trends in recent decades. These projects aim to physically transform cities through arts and culture with the expectation that new cultural facilities will increase the city's marketability and generate positive economic outcome (Bianchini 1993, Strom 1999, 2002, 2003, Landry and Wood 2003, Plaza 2006, McNeill 2009, Sklair 2010).

This phenomenon has supported a new breakthrough not only for cities striving to compete in the global market, but also for the cultural sector which aims to legitimise public investment in arts and culture. Kong (2000) argues that incorporating arts and cultural projects into a city's developmental efforts is currently a global trend, and these efforts had shown a positive impacts with regard to luring tourists, business headquarters, and talented professionals to cities. García (2004) asserts that huge arts and cultural projects can be used as effective marketing tools to successfully expand media attention and increase the number of external visitors to a city. Particularly, for cities without unique assets, new cultural facilities can change a city's image within a short time period. Strom's case studies examining new cultural facilities in old downtown areas show that these attempts are an 'appealing package' (Strom 2003, p. 253) that plays an 'explicit part of a city's economic revitalization' (Strom 2002, p. 5).

It is clear that recent brick-and-mortar projects increase a city's competitiveness as these projects have successfully contributed to removing old and negative images of a city. In addition to their appeal to tourists and businesses, the original and long-time missions of cultural facilities to enrich cultural environments and to foster social cohesion, which cannot be measured with financial metrics, allow cultural facilities to be powerful elements within a city. Nevertheless, whether brick-and-mortar projects provide a reliable foundation for the development of arts

and culture in a long-term vision is an open question. The biggest issue with regard to the brick-and-mortar framework is that arts and culture are treated as a tool for instant public attention, rather than as a significant sector for urban economy with development potential (Grodach 2010). As policies put emphasis on economic pursuits first, attempts to enhance creativity or artistic innovation appear to have been lacking (Caust 2003). Thus, with a few exceptions, most brick-and-mortar projects seem to have not accomplished their intended purpose. They have repeatedly reproduced the same single image everywhere and result in 'placelessness' (Evans 2003, p. 421). For example, García's (2004) examination of major cultural events in Europe in the late 1990s indicated that, while these events provided an opportunity for urban regeneration at 'a symbolic and a physical level', they failed to 'act as a platform for representing local cultures' (p. 108). The Guggenheim Museum in Bilbao, Spain is another example. Established in 1997, the Guggenheim Bilbao has been spotlighted as an icon of economic success; however, the museum has been criticized for 'McGuggenisation', which refers to relinquishing its real regional authenticity and blindly adopting the franchise strategy of a global museum for the sake of economic success (McNeill 2000, p. 474). In contrast, many scholars have called for more attention to creative industry development for more balanced economic and cultural developments (Caust 2003, Evans 2003, Landry and Wood 2003, Markusen and Gadwa 2010). Based on the notion that the key to success in a creative economy is innovation, scholars have investigated how to promote 'soft infrastructure' (Landry 2000) or 'scene' (Silver *et al.* 2011) to nurture innovation-related activities in creative industries.

Networks in creative industries: means for knowledge transfer and learning

Creative industries are characterised as 'unpredictability, rapid shift in trends and fashions' (Garmann Johnsen 2011, p. 1166). Products are valued according to originality and uniqueness, and are considered to be successful only when they satisfy fast changing circumstances and tastes (Schoales 2006). A large number of freelancers and small specialised firms work primarily on short-term projects (Cummins-Russell and Rantisi 2012). Accordingly, access to a broader pool of knowledge, such as employment opportunities, potential partners, and new products and techniques, is critical for workers in creative industries to gain competitive advantage (Malecki and Tootle 1996, Sydow and Staber 2002, Lehner and Dowling 2003, Kingsley and Malecki 2004, Mackinnon *et al.* 2004, Dowd and Pinheiro 2013). Particularly for freelancers and start-up companies in creative industries, 'the know-why, know-how, know-who, know-when and know-from' are critical given their lack of access to knowledge sources (Malecki and Tootle 1996, p. 45).

Meanwhile, as innovation-related knowledge is mostly tacit, in other words, not explicitly available in manuals; it tends to be transferred primarily through face-to-face interactions (Bethelt and Glückler 2011). In this regard, a growing body of research has provided a number of well-developed concepts that acknowledge the role of interactions among actors in promoting knowledge transfer and learning. (Camagni 1991, Amin and Thrift 1995, Malecki and Tootle 1996, Cooke *et al.* 1997, Keeble *et al.* 1999, Maskell and Malmberg 1999, Benz and Furst 2002, Benner 2003). In addition, empirical cases provided by the extent literature has highlighted the significance of geographical and relational proximities in developing

working conditions for creative workers (Coe 2001, May *et al.* 2001, Neff 2005, Watson 2008, Heebels and van Aalst 2010).

As such, extensive research has investigated regional clusters and industrial districts that are characterised by agglomeration of highly skilled workers, firms, and institutions, and the synergies generated from their interactions (Scott 1988, Sweeney 1996, Saxenian 1996, Pratt 2000, 2002, Rantisi 2002). Geographical proximity of clustered firms promotes 'repeated, face-to-face interactions' among individuals with various knowledge and expertise (Saxenian 1996, p. 57). These 'tangled informal networks of useful knowledge about production methods, business conditions, and employee practices' are beneficial to regional innovation processes (Scott 1988, p. 39). Accordingly, actors in industrial districts tend to be innovative, because they can 'interact and cooperate with other high-ability people ... communicate complex ideas with them, and are highly motivated' (Storper and Venables 2004, p. 365).

Localised knowledge diffusion and creation have also been a major topic in innovative (creative) milieux discussions (Maillat 1998, Landry 2000, Camagni 1999, 2002, Fromhold-Eisebith 2004). An innovation milieu is comprised of 'heterogeneous networks' within a limited geographical area (Fromhold-Eisebith 2004, p. 754), where 'face-to-face interaction creates new ideas, artifacts, products, services and institutions and as a consequence contributes to economic success' (Landry 2000, p. 133). Such interaction encourages a 'strong sense of belonging' that enhances the local innovative capacity through 'collective learning processes' (Camagni 2002, p. 2405).

In addition to the research emphasising the importance of dense relationships between actors in local and regional clusters, there has been an increasing body of research on discovering the nature and characteristics of what is called buzz (Bethelt *et al.* 2004, Storper and Venables 2004, Bathelt 2008). Buzz refers to 'a thick web of the information, knowledge and inspiration which circulate between the actors of a cluster' (Bathelt 2008, p. 86). One important feature of buzz is its emphasis on flexible and informal methods to allow open access to information without any specific investment (Trippel *et al.* 2009, Mould and Joel 2010). A variety of non-designed and non-structured communication, such as chatting in a café or brainstorming at a firm's lounge or having in-depth discussions during after-business meetings, can contribute to creating buzz (Bathelt *et al.* 2004).

However, physical proximity is not always a sufficient condition for knowledge diffusion and learning (Giuliani 2007, Bathelt and Glückler 2011, Healy and Morgan 2012). An 'intangible something' must exist to connect and bind individuals and organizations together (Kay 2006, p. 163), and facilitate 'some form of sustained interactions, within which there is necessarily a degree of commonality' (Huggins 2000, p. 112). Putnam (1993) refers to this as social capital. Social capital is generated from trust and emotional solidarity of closely related people that 'facilitate co-ordination and cooperation for mutual benefit' (Putnam 1993, p. 38). While cluster-based knowledge is largely dependent on face-to-face contacts, social capital requires a specific period of time because it 'does not develop automatically from interactions' (Malecki 2012, p. 1029). Therefore, both informal and formal network settings are important for social capital building as they help create and maintain long-term relationships between specific parties (Trippel *et al.* 2009, Martin and Moodysson 2011, Malecki 2012, Dowd and Pinheiro 2013).

Due to the invisible nature of networks, there are methodological challenges in the measurement and data collection (Mould and Joel 2010). To address this challenge, recent empirical research has used social network analysis to explore networks in particular industries or region (Uzzi and Spiro 2005, Mould and Joel 2010, Garmann Johnsen 2011, Martin and Moodysson 2011). This research shows that while social network analysis is relatively new to cultural policy (Mould and Joel 2010), it is an effective tool for identifying connections between individuals or organizations and capturing meanings behind the connections (Scott 2000).

Assessment of networks in creative industries: a framework

Based on the previous discussion, this article provides a framework to analyse and assess networks in creative industries. The following question has been posited: What are the indicators of networks that actively promote knowledge spillover and learning? Using methods taken from social network analysis (Wasserman and Faust 1994, Scott 2000), this article proposes two primary indicators: (1) connectivity, and (2) quality of information.

The first indicator relates to the extent to which actors in a network are actively participating in knowledge exchange. This indicator is comprised of the following two sub-indicators: *density* and *central connectors*. *Density* refers to the number of actors who are engaged in a positive relationship (White 2002). A high *density* within a network indicates that this network provides ample opportunities to create influential information exchange channels with regard to common issues or problems (Scott 2000).

Central connectors relate to the number of connections that an actor maintains with other actors (Birk 2005). Birk (2005) characterises *central connectors* as the most popular actors with whom other actors in a network frequently meet with and talk to. Due to their intensive face-to-face contacts, *central connectors* are expected to play an important role in knowledge diffusion (Birk 2005). As they have more connections than others, *central connectors* can help other network members by providing opportunities for accessing various sources of knowledge (Birk 2005).

The second indicator is related to the extent to which knowledge exchanged in a network contributes to solving more *complex* problems and creating new ideas. Not all members of a network have valuable knowledge, but only a small number of actors in a network play a leading role in providing solutions for difficult issues with their 'innovation-related knowledge' (Giuliani 2007, p. 144). Those actors in a network who are recognised as key sources for advice are referred to as *knowledge bases* (Giuliani 2007, Wasserman and Faust 1994). Given that the number of network connections does not accurately reflect the quality of information, the presence of *knowledge bases* reflects whether a network provides ample opportunities to access more valuable information (Giuliani 2007). *Central connectors* have many connections to others and tend to have access to a wide variety of information, whereas *knowledge bases* have more 'specialised expertise' that can help other actors in need of advice when they face challenges (Birk 2005, p. 46).

In sum, based on the premise that active interactions among actors who are connected via networks have more chances to access knowledge, the nature and characteristics of an ideal network that stimulates knowledge transfer and learning is characterised by following: (1) a large number of connections, and the continuous

flow of information between actors, (2) the presence of actors who actively facilitate information transfer by establishing connections between actors, (3) the presence of actors with unique and expert information that is useful for solving complex problems and generating new ideas.

Case study: a network of entrepreneurs in creative industries

The empirical case presented in this article is based on the dataset comprised of a group of entrepreneurs who participated in the Youth Startup 1000 Project (hereafter ‘1000 Project’) in 2013, which has been planned and administered by the SMG since 2009. Approximately 273,314 creative industry workers live in Seoul (48.8% of the total creative industry population in South Korea) indicating there is a heavy concentration (MCST 2012). City-level attempts to support entrepreneurs and SMEs in creative industries have been actively promoted since 2009, which include announcing an action plan for nurturing promising entrepreneurs and SMEs. The 1000 Project is one of these attempts, and its goal is to create a vibrant start-up atmosphere for entrepreneurs between the ages of 20–39 years, who are preparing or just beginning their career in creative industries. Selected applicants for this project are provided with free office spaces in the Seoul Gangnam/Gangbuk Youth Incubation Centre for 12 months. This centre offers group mentoring and one-on-one mentoring programs regarding management strategy, investment consulting, and lectures focusing on cutting-edge issues that are relevant for the actual starting up of a business.

Methodology

A name generator question was used during the data collection procedure. First, 31 individuals were identified from selected applicants of the 1000 Project in 2013 as an initial sample. These individuals had worked in the Seoul Gangnam Youth Business Incubation Centre (hereafter, ‘the Centre’) since June of 2013. All of the 31 individuals were preparing to launch their businesses in the design industry. They were asked to identify three other people from the 1000 Project whom they had relationships with. Then, the same question was asked to individuals who were not in the initial sample but were named by individuals who were in the initial sample. Based on their responses, a dataset of the network of 89 entrepreneurs in the 1000 Project was constructed (see Table 1).

Table 1. Overview of profiles of surveyed entrepreneurs.

<i>Field of industry</i>	
Advertising	10
Design	62
E-commerce	17
<i>Firm size</i>	
1 employee	48
2–3 employees	35
>3 employees	6
<i>Age of business</i>	
<1 year	69
1–3 years	13
>3 years	7

Two aforementioned aspects of networks, which are connectivity and quality of information, were examined with regard to the extent to which actors in creative industries interact for knowledge exchange and learning. 89 entrepreneurs were asked two survey questions. The first question asked them to identify people that they talk to about their personal or daily business matters. This question was used to measure connectivity, including the number of connections in a network (i.e. *density*), and the presence of actors who help others participate in networking activities (i.e. *central connectors*). The second question asked the survey participants to indicate the most important person who had helped them handle more *complex* problems. This question identified the actors who had the most important knowledge (i.e. *knowledge bases*), and examined whether the network was useful for problem solving and new idea generation. The analysis of *density* and *centrality* score, and the visualization of the network are based on the UCINET software (Borgatti *et al.* 2002).

Findings

Density

The *density* score of this network was 0.016. Meaning that 1.6% of the actors in this network were directly connected to one another. Therefore, only 1.6% of the actors in this network had the opportunity to meet other actors and exchange information about personal issues or daily business matters, including gossip about their field, funding information, or new government policies. Figure 1 presents the structure of the entrepreneurs' network in the 1000 Project. In this visualization, each node represents an actor. A line between nodes represents a link that connects each actor. Node IDs correspond to the field to which each actor belongs: a (advertising), d (design), and e (e-commerce). Figure 1 shows that the network examined in the current paper had a disconnected structure. As shown in Figure 1, this network was composed of 5 non-overlapping sub-networks including one large sub-network of 77 actors and 4 small sub-networks of two to six actors. Given that there were no

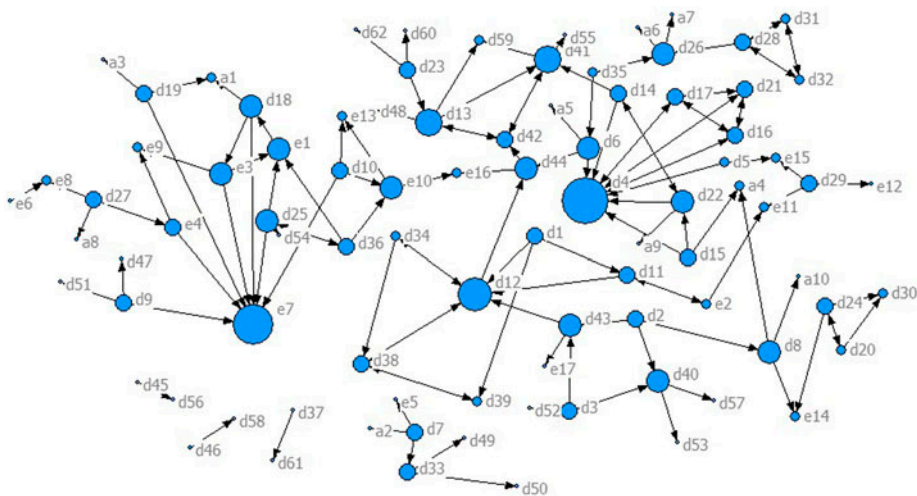


Figure 1. Entrepreneurs' network in the 1000 Project (*central connectors*).

associations that could transfer information from one sub-network to another, some actors in this network may not be able to obtain information that other actors have. For example, both d57 and d58 had only one connection with other actors; however, the quantity of information that they have access to may differ. While d57 may receive accumulated information from a maximum of 76 people who are members of the same sub-network, d58 may only have access to relatively low quantity of information.

Central connectors

In Figure 1, the size of each node represents the number of connections that an actor maintains. In this figure, the actor who is represented as the largest node is considered the most popular person, who has a wide range of connections with others. In this network, d4 and e7 were identified as *central connectors*. Given their large number of connections, d4 and e7 were considered the most influential people in this network with regard to knowledge diffusion and sharing as ‘brokers’ (Birk 2005, p. 46). For example, e7 could help d9 who were preparing to launch an Internet shopping mall, by providing information regarding fashion trends with the help of others (e.g. d10, d18) who worked in the fashion design industry, and by introducing e1, e3, and e4 who had skills related to e-commerce. The connections that e7 maintained in this network were developed prior to e7 joining the 1000 Project. e7 had managed an online forum regarding Internet shopping malls. Most of people connected to e7 in this network already knew each other from former relationships through online message board or private parties. In contrast to e7, d4 was a college student who had relatively little information about the field. Therefore, she actively participated in programs offered by the 1000 Project to make her personal connections. Eventually, she was able to meet many people provided her with various information. Most of the people connected to d4 were peers from the mentoring group offered by the 1000 Project.

Knowledge bases

As previously discussed, *central connectors* are characterised as having frequent face-to-face contacts, which results in ‘a random leakage of knowledge’ that is formed by ‘unstructured’ interactions between network insiders (Giuliani 2007, p. 144). In contrast, *knowledge bases* are characterised as ‘a purposeful behavior’ on behalf of actors who seek ‘innovation-related knowledge’ that is associated with the solution of complex problems in the field (Giuliani 2007, p. 144). Figure 2 presents a visualization of the distribution of *knowledge bases* within this network. Individuals who have ‘innovation-related knowledge’ are represented as the largest nodes. Figure 2 shows that two people – e7, and d22 were considered to be *knowledge bases*. In Figure 2, not every actor of this network was associated with *knowledge bases*. There were several isolates. Meanwhile, d4 who received high scores in the *central connector* relationships, were received low scores in the *knowledge base* relationships. Meaning, while d4 had many buddies, few people relied on d4 for important matters. In contrast, d22, who is represented as the second largest node in Figure 2, received low score in the *central connector* relationship (see Figure 1). This indicates that important knowledge in this network may not be transferred to other actors in this network, as one of *knowledge bases* did not

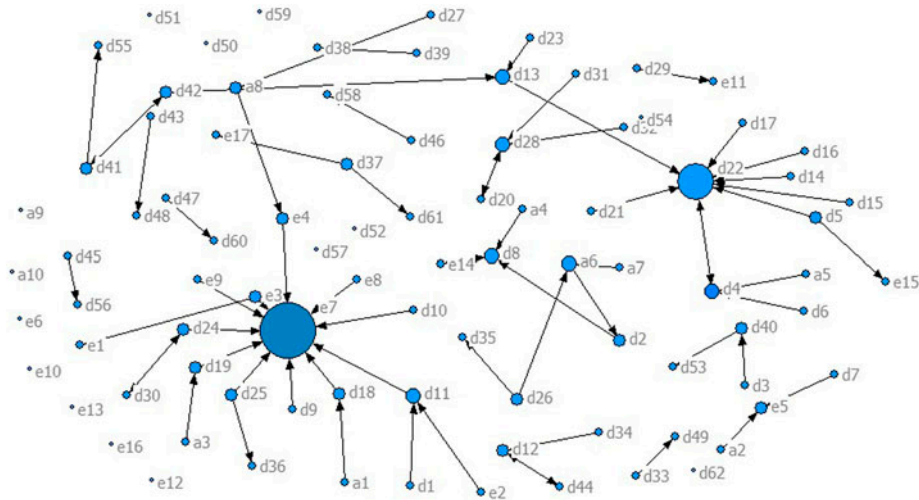


Figure 2. Entrepreneurs' network in the 1000 Project (*knowledge bases*).

actively participate in knowledge exchange activities. Meanwhile, e7, identified as the most popular person in this network, again received a highest score for *knowledge bases*. Therefore, e7 was expected to contribute to provide various and valuable information to other members in this network.

These findings indicate that the 1000 Project seems to help entrepreneurs participating in knowledge exchange and sharing activities to an extent; however, the disconnected network structure may limit the speed and quantity of knowledge flow between its members. Therefore, some actors in this network may not be able to make connections with others, which may eventually marginalise them from valuable knowledge sources. Two actors in this network were considered to play as *central connectors*. Meaning, there were people who tried to make connections between network members; however, due to the network structure, there may be an information divide among members in this network.

Meanwhile, this network was composed of actors from various fields in creative industries, meaning that a variety of information can spread across the network. However, due to the network structure and some actors' introverted knowledge seeking styles, the range of information transferred across this network seems to be limited. In addition, in this network, one actor was considered the most resourceful for advice on complex business issues, and at the same time very actively interacting with other actors. This means that some actors in this network were likely to have opportunities to access innovation-related knowledge; however, at the same time, innovative-related knowledge in this network may be transferred in a polarized manner, and isolated actors may remain poorly connected to useful knowledge and information.

Conclusion

A growing number of theoretical and empirical studies have raised issues about the role of creative industries in urban development and relevant policy actions to

enhance their positive effects. Central to this is to develop a network-friendly environment which stimulates knowledge transfer and interactive learning in creative industries. In line with these studies, this article attempted to develop an analytical framework to assess networks in creative industries in terms of knowledge transfer and learning. Based on this framework, this article investigated the structure and knowledge flow of a network of entrepreneurs in creative industries. SNA was found to be a useful tool to make the connectivity of actors and knowledge circulation in a network visible and recognisable.

Most studies on networks in creative industries emphasise advantages from clustering because geographical proximity generates increased flows of information and know-hows acquired by informal face-to-face interactions (Scott 1988, Saxenian 1996, Pratt 2000). However, spatial proximity does not always help for whom just 'being there' (Gertler 1995, quoted Bathelt and Glückler 2011, p.133). Cluster-based relationships are best facilitated by 'gatekeepers' who connect actors and encourage them to participate in and maintain long-term relationships (Malecki and Tootle 1996, Huggins 2000, Bathelt *et al.* 2004).

The 1000 Project translates this concept of gatekeepers into practice by developing a pre-planned and structured formal network setting to facilitate informal connections. Selected applicants of this project are required to share office spaces together, to attend mentoring programs and lectures on a regular basis, so that they gradually develop and expand relationships with their peers. The findings of the case study presented in this article show that this city-level effort to promote networks in creative industries seems to be helpful to an extent. The entrepreneurs of the 1000 Project observed in the case study were mostly engaged in networking activities. Considering that entrepreneurs or start-up companies tend to have few opportunities to reach valuable information because they have limited access to existing networks in the field (Malecki and Tootle 1996, Garmann Johnsen 2011), policy-implanted network initiatives like the 1000 Project offer a useful starting point for entrepreneurs who want to make connections.

Meanwhile, the findings also suggest that knowledge transfer and learning are best mobilised when there exist trust and solidarity. Some entrepreneurs who already maintained relationships before joining the 1000 Project were more likely to exchange and share knowledge. This indicates that aside from policy initiatives, the role of 'social entrepreneurs' is also important to stimulating networking activities in creative industries (Malecki 2012). In the 1000 Project, an on-line forum manager played as a social entrepreneur. In addition, while formal network setting and informal interactions are helpful for actors in creative industries to gain access to knowledge, individual characteristics and enthusiasms are the most important features that facilitate knowledge exchange and learning. For those who are 'introverted' in knowledge-seeking activities, tend to have relatively few opportunities to reach information than who are 'extroverted' (Malecki and Poehling 1999, p. 250). This can be one of the limitations of a network. Networks are helpful for some actors who are connected to key actors; however, some actors who are separated from the core network may remain disadvantaged in their knowledge seeking activities.

This article has the following limitations. Firstly, due to the time limit and resource constraints, the data for the case analysis presented in this article was extremely limited. As the scores in the current case study were calculated based on the data collected from 89 survey participants, we cannot expect the same results for a complete network of entrepreneurs who participate in the 1000 Project.

Secondly, as this article demonstrated a snapshot of a network, it is not possible to examine the change of the nature and structure of the network over time. In this respect, longitudinal studies will help evaluate the impact of policy interventions designed to encourage and facilitate networking activities in creative industries. Finally, as this article focused on visualizing the flow of knowledge in a given dataset, more qualitative factors such as individual actors' characteristics and motivation, and the content of information were missing.

References

- Amin, A. and Thrift, N., 1995. Globalization, institutional "thickness" and the local economy. In: P. Healey, S. Cameron, S. Davoudi, S. Graham and A. Mandani-Pour, eds. *Managing cities: the new urban context*. Chichester: John Wiley, 92–108.
- Banks, M. and O'Connor, J., 2009. After the creative industries. *International journal of cultural policy*, 15 (4), 365–373.
- Bathelt, H., 2008. Knowledge-based clusters: regional multiplier models and the role of 'buzz' and 'pipelines'. In: C. Karlsson, ed. *Handbook of research on cluster theory*. Cheltenham: Edward Elgar, 78–92.
- Bathelt, H. and Glückler, J., 2011. *The relational economy: geographies of knowing and learning*. Oxford University Press.
- Bathelt, H., Malmberg, A. and Maskell, P., 2004. Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation. *Progress in human geography*, 28 (1), 31–56.
- Benner, C., 2003. Learning communities in a learning region: the soft infrastructure of cross-firm learning networks in Silicon Valley. *Environment and planning A*, 35 (10), 1809–1830.
- Benz, A. and Furst, D., 2002. Policy learning in regional networks. *European urban and regional studies*, 9 (1), 21–35.
- Bianchini, F., 1993. Remaking European cities: the role of cultural policies. In: F. Bianchini and M. Parkinson, eds. *Cultural policy and urban regeneration: the West European experience*. Manchester: Manchester University Press, 1–20.
- Birk, S.M., 2005. *A mixed-method study using social network analysis to identify an organization's knowledge capabilities and communication paths*. Thesis (PhD). University of Idaho.
- Borgatti, S.P., Everett, M.G. and Freeman, L.C., 2002. *Ucinet for windows: software for social network analysis*. Harvard, MA: Analytic Technologies.
- Brooks, A. and Kushner, R., 2001. Cultural districts and urban development. *International journal of arts management*, 3 (2), 4–15.
- Bryson, J., 2007. Arts, dance, cultural infrastructure, and city regeneration: knowledge, audience development, networks, and conventions, and the relocation of a Royal Ballet company from London to Birmingham. *Norwegian journal of geography*, 61, 98–110.
- Camagni, R., 1991. Local "milieu", uncertainty and innovation networks: towards a new dynamic theory of economic space. In: R. Camagni, ed. *Innovation networks: spatial perspectives*. London: Belhaven, 121–142.
- Camagni, R., 2002. On the concept of territorial competitiveness: sound or misleading? *Urban studies*, 39 (13), 2395–2411.
- Caust, J., 2003. Putting the "art" back into arts policy making: how arts policy has been "captured" by the economists and the marketers. *International journal of cultural policy*, 9 (1), 51–63.
- Coe, N., 2001. A hybrid agglomeration? The development of a satellite-Marshallian industrial district in Vancouver's film industry. *Urban studies*, 38 (10), 1753–1775.
- Cooke, P., Gomez Uranga, M. and Etxebarria, G., 1997. Regional innovation systems: institutional and organizational dimensions. *Research policy*, 26, 475–491.
- Cummins-Russell, T.A. and Rantisi, N.M., 2012. Networks and place in Montreal's independent music industry. *The Canadian geographer*, 56 (1), 80–97.

- Currid, E., 2007. *The Warhol economy: how fashion, art and music drive New York City*. Princeton: Princeton University Press.
- Dowd, T.J. and Pinheiro, D.L., 2013. The ties among the notes: the social capital of jazz musicians in three metro areas. *Work and occupations*, 40 (4), 431–464.
- Evans, G., 2003. Hard-branding the cultural city: from Prado to Prada. *International journal of urban and regional research*, 27 (2), 417–440.
- Florida, R., 2002. *The rise of the creative class*. New York, NY: Basic Books.
- Fromhold-Eisebith, M., 2004. Innovative milieu and social capital-complementary or redundant concepts of collaboration-based regional development? *European planning studies*, 12, 747–765.
- García, B., 2004. Urban regeneration, arts programming and major events. *International journal of cultural policy*, 10 (1), 103–118.
- Garmann Johnsen, I.H., 2011. Formal project organization and informal social networks: regional advantages in the emergent animation industry in Oslo, Norway. *European Planning Studies*, 19 (7), 1165–1181.
- Giuliani, E., 2007. The selective nature of knowledge networks in clusters: Evidence from the wine industry. *Journal of economic geography*, 7, 139–168.
- Grodach, C., 2010. Beyond Bilbao: rethinking flagship cultural development and planning in three California Cities. *Journal of planning and education research*, 29 (3), 353–366.
- Gülümser, A.A., Levent, T.B. and Nijkamp, P., 2010. Measuring regional creative capacity: a literature review for rural specific approaches. *European urban and regional Studies*, 18 (4), 546–563.
- Hall, P., 2000. Creative cities and economic development. *Urban studies*, 37 (4), 639–649.
- Healy, A. and Morgan, K., 2012. Spaces of innovation learning, proximity and the ecological turn. *Regional studies*, 46 (8), 1041–1053.
- Heebels, B. and van Aalst, I., 2010. Creative clusters in Berlin: entrepreneurship and place in Prenzlauer Berg and Kreuzberg. *Geografiska annaler series B: human geography*, 92 (4), 347–363.
- Huggins, R., 2000. The success and failure of policy-implanted inter-firm network initiatives: motivations, processes and structure. *Entrepreneurship & regional development*, 12, 111–135.
- Kay, A., 2006. Social capital, the social economy and community development. *Community development journal*, 41 (2), 160–173.
- Keeble, D., Lawson, C. and Moore, B., 1999. Collective learning processes, networking and “institutional thickness” in the Cambridge region. *Regional studies*, 33 (4), 319–332.
- Kingsley, G. and Malecki, E., 2004. *Small business economics*, 23, 71–84.
- Kong, L., 2000. Culture, economy, policy: trends and developments. *Geoforum*, 31 (4), 385–390.
- Landry, C., 2000. *Creative cities: a toolkit for urban innovators*. London: Earthscan.
- Landry, C. and Wood, P., 2003. *Harnessing and exploiting the power of culture for competitive advantage*. London: Comedia.
- Lehner, C. and Dowling, M., 2003. Firm networks: external relationships as sources for the growth and competitiveness of entrepreneurial firms. *Entrepreneurship & regional development*, 15 (1), 1–26.
- Lorenzen, M. and Täube, F.A., 2008. Breakout from Bollywood? The roles of social networks and regulation in the evolution of Indian film industry. *Journal of international management*, 14 (3), 286–299.
- Mackinnon, D., Chapman, K. and Cumbers, A., 2004. Networking, trust and embeddedness amongst SMEs in the Aberdeen oil complex. *Entrepreneurship & regional development*, 16, 87–106.
- Maillat, D., 1998. Innovative milieux and new generations of regional politics. *Entrepreneurship & regional development*, 10, 1–16.
- Malecki, E., 2012. Regional social capital: why it matters. *Regional Studies*, 46 (8), 1023–1039.
- Malecki, E. and Poehling, R., 1999. Extroverts and introverts: small manufacturers and their information sources. *Entrepreneurship & regional development*, 11, 247–268.
- Malecki, E. and Tootle, D., 1996. The role of networks in small firm competitiveness. *International journal of technology management*, 11, 43–57.

- Markusen, A. and Gadwa, A., 2010. Arts and culture in urban or regional planning: a review and research agenda. *Journal of planning education and research*, 29 (3), 379–391.
- Martin, R. and Moodysson, J., 2011. Innovation in symbolic industries: the geography and organization of knowledge sourcing. *European planning studies*, 19 (7), 1183–1203.
- Maskell, P. and Malmberg, A., 1999. The competitiveness of firms and regions: ubiquitousness and the importance of localized learning. *European urban and regional studies*, 6 (1), 9–25.
- May, W., Mason, C. and Pinch, S., 2001. Explaining industrial agglomeration: The case of the British high-fidelity industry. *Geoforum*, 32 (3), 363–376.
- McNeill, D., 2000. McGuggenization? National identity and globalization in the Basque county. *Political geography*, 19, 473–494.
- McNeill, D., 2009. *The global architect: firms, fame and urban form*. London: Routledge.
- Ministry of Culture, Sports and Tourism (MCST), Republic of Korea, 2012. *2012 Contents industries white paper*. Seoul: Ministry of Culture, Sports and Tourism.
- Mould, O. and Joel, S., 2010. Knowledge networks of ‘buzz’ in London’s advertising industry: a social network analysis approach. *Area*, 42 (3), 281–292.
- Neff, G., 2005. The changing place of cultural production: the location of social networks in a digital media industry. *The annals of the American academy of political and social science*, 597, 134–152.
- Plaza, B., 2006. The return on investment of Guggenheim Museum in Bilbao. *International journal of urban and regional research*, 30 (2), 452–467.
- Pratt, A., 2000. New media, the new economy and new spaces. *Geoforum*, 31 (4), 425–436.
- Pratt, A., 2002. Hot jobs in cool places. The material cultures of new media product spaces: the case of South of the Market, San Francisco. *Information, communication and society*, 5 (1), 27–50.
- Putnam, R., 1993. The prosperous community: social capital and public life. *The American prospect*, 13, 35–42.
- Rantisi, N., 2002. The local innovation system as a source of “variety”: openness and adaptability in New York City’s garment district. *Regional studies*, 31 (5), 491–503.
- Rosenfeld, M.T.W. and Hornych, C., 2010. Could cities in de-industrialized regions become hot spots for attracting cultural businesses? The case of media industry in Halle an der Saale (Germany). *European planning studies*, 18 (3), 371–384.
- Saxenian, A., 1996. Inside-out: regional networks and industrial adaptation in silicon valley and route 128. *Cityscape: A journal of policy development and research*, 2 (2), 41–60.
- Schoales, J., 2006. Alpha clusters: Creative innovation in local economies. *Economic development quarterly*, 20 (2), 162–177.
- Scott, A.J., 1988. *New industrial spaces: flexible production organization and regional development in North America and Western Europe*. London: Pion Limited.
- Scott, J., 2000. *Social network analysis: a handbook*. 2nd ed. Newberry Park, CA: Sage.
- Silver, D., Clark, T.N. and Graziul, C., 2011. Scenes, innovation and urban development. In: D.E. Andersson, A.E. Andersson and C. Mellander, eds. *Handbook of creative cities*. Massachusetts: Edward Elgar Publishing, 229–258.
- Sklair, L., 2010. Iconic architecture and the culture-ideology of consumerism. *Theory, Culture and Society*, 27, 135–159.
- Storper, M. and Venables, A., 2004. Buzz: face-to-face contact and the urban economy. *Journal of economic geography*, 4 (4), 351–370.
- Strom, E., 1999. Let’s put on a show! performing arts and urban revitalization in Newark, New Jersey. *Journal of urban affairs*, 21 (4), 423–435.
- Strom, E., 2002. Converting pork into porcelain: cultural institutions and downtown development. *Urban affairs review*, 38 (1), 3–21.
- Strom, E., 2003. Cultural policy as development policy: evidence from the United States. *International journal of cultural policy*, 9 (3), 247–263.
- Sweeney, G., 1996. Learning efficiency, technological change and economic progress. *International journal of technology management*, 11, 5–27.
- Sydow, J. and Staber, U., 2002. The Institutional embeddedness of project networks: the case of content production in German television. *Regional studies*, 36 (3), 215–227.

- Tripl, M., Tödting, F. and Lengauer, L., 2009. Knowledge sourcing beyond buzz and pipelines: evidence from the Vienna software sector. *Economic geography*, 85 (4), 443–462.
- Turok, I., 2003. Cities, clusters and creative Industries: the case of film and television in Scotland. *European planning studies*, 11 (5), 549–565.
- Uzzi, B. and Spiro, J., 2005. Collaboration and creativity: the small world problem. *American journal of sociology*, 111 (2), 447–504.
- Wasserman, S. and Faust, K., 1994. *Social Network Analysis*. Cambridge: Cambridge University Press.
- Watson, A., 2008. Global music city: knowledge and geographical proximity in London's recorded music industry. *Area*, 40 (1), 12–23.
- White, L., 2002. Connection matters: exploring the implications of social capital and social networks for social policy. *Systems Research and Behavioral Science*, 19, 255–269.
- Wyszomirski, M.J., 2004. From public support for the arts to cultural policy. *Review of policy research*, 21 (4), 469–484.