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COWORKING SPACES AS A DRIVER OF THE POST-FORDIST CITY: A TOOL FOR BUILDING A CREATIVE ECOSYSTEM

Abstract. Collaborative places nurture creativity and efficiency of cultural and creative industries. Research in collaborative places revealed they are essential for networking and cooperation in the creative ecosystem. The results of studies focusing on competitiveness of coworking spaces and their effect on boosting entrepreneurship are rather vague. Furthermore, an awareness of how coworking spaces stimulate coworkers to engage in urban regeneration through local community initiatives is limited. Hence, this study seeks to provide an insight into coworking spaces from the organizational perspective devoted to entrepreneurship and competitiveness. Simultaneously, the paper aims to reveal synergies between creative communities and local development. The method of data gathering consists of semi-structured in-depth interviews with managers and entrepreneurs from selected countries of the EU applying the grounded theory for their analysis. The results suggest that coworking spaces indicate a boosting of the entrepreneurship of the creative class through collective projects. These activities tend to stimulate knowledge creation and open innovation in the creative ecosystem that benefit local development. Coworking spaces also represent a driving force to initiate and maintain a dialogue between the creative ecosystem and local authorities for culture-led urban development.

Key words: coworking spaces, coworking, creative ecosystem, creative industries, post-Fordist city.

1. INTRODUCTION TO CREATIVE INDUSTRIES AND COLLABORATIVE PLACES

The notion of the cultural and creative industries (CCI) was firstly acknowledged by the Department of Culture, Media and Sport (DCMS, 1998) as a novelty concept based on individual creativity, skills, and talent. Furthermore, the CCI are considered

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a driver for job creation, mainly through the exploitation of intellectual capital (Florida, 2002). The development of digital media raised awareness of the CCI as they are linked with wider processes and sectors outside creative economy. Therefore, they occur in traditional sectors with the use of ICT, while many scholars (Chapain, 2010; Plum and Hassink, 2014; Chapain *et al.*, 2014) believe that these links make the CCI more innovative than traditional industrial sectors. According to the EU (2010) the CCI and their innovativeness is associated with the creation, production, and distribution of creative products in non-creative sectors. Thus, innovativeness is also stimulated by utilisation of talent, creativity and unique ideas (Howkins, 2002). Concurrently, in the digital era, the CCI depend on the culture and arts as they are often integrated in the process of production (Jones *et al.*, 2015). From the economic perspective this phenomenon is associated with the changes in the relationship between supply and demand among individuals and companies. Consequently, these processes contribute to the shift of public policies towards an advancement of creative economy. Further, the development of the creative economy is also associated with the processes of de-industrialisation and the expansion of the service sector. As De Propriis (2013) mentioned, the concept of the CCI is essential for restructuring manufacturing activities mainly after negative events such as a financial crisis. Another aspect of emerging synergies between the CCI and the service sector leads to the process of output commercialization these industries generate (Martin-Rios and Parga-Dans, 2016). Furthermore, the essential part of output commercialization is its' uniqueness and non-replicated nature (Jones *et al.*, 2016). This eventually corresponds to the process of cultural and creative education with the involvement of users/customers in the process of creation. Involvement of various agents create a favourable environment for crossover innovation that comprises both internal and external features (Cooke, 2018). Moreover, favourable an innovative and entrepreneurial environment nurtures economic growth with pre-conditions corresponding to creativity and interaction in time and place (Copercini, 2016; Farina *et al.*, 2018).

Collaborative places currently provide favourable conditions for the creative and cultural industries in certain areas. Coworking spaces are such a type of new working spaces that unite independent freelancers and micro-companies as they co-exist at the same place. Furthermore, they offer prospects for developing the creative economy and serve as an effective tool for creating and nurturing favourable conditions for the CCI with the focus on non-standardized production. Regarding the favourable conditions, there is a great variety of activities that support collective learning and education (Katz *et al.*, 2015). Mutual activities in collaborative places also rise public interest in active and passive participation in the creative economy on both the local and regional levels. Previously, studies were devoted primarily to conceptualising collaborative spaces with their taxonomy (Mariotti *et al.*, 2017; Capdevila, 2017).

Furthermore, research activities were focused mainly on the characteristics of co-workers as knowledge workers in the entrepreneurial ecosystem (Brown,

2017; Bouncken and Reuschl, 2018). The fact of facing ongoing challenges of local development entails the need for empirical contributions regarding coworking spaces as micro-clusters. Moreover, coworking spaces denote the idea of third places with different socio-spatial characteristics that might invent new ways of collaboration (Kojo and Nenonen, 2017). However, Mariotti *et al.* (2017) argued that the physical proximity does not necessarily lead to networking and collaboration. Thus, coworking spaces and other collaborative places often depend on competent managers and facilitators that contribute to the creative ecosystem.

In addition, managers might develop synergic effects that stimulate new ways of cooperation within the creative class that represent trust-based community (Fuzi, 2015). Thus, the CCI and coworking spaces could enable open innovation approaches that bring various actors to collaborate on mutual projects in the process of production. Nonetheless, a combination of actors changes a view on working and leisure. As Suire (2018) mentioned, this leads to an interplay of time, place and social settings in knowledge work. This might underline the need for a shift in governance not only from practitioners and managers but from policy makers and local authorities alike.

Coworking spaces combine the CCI with places that have cultural and social settings that develop a “local buzz” that is essential for non-standardised production in terms of styles and trends (DeFillippi, 2015). Nevertheless, a local buzz and non-standardised production that is specific for coworking spaces represent a local source that might contribute to global knowledge through global pipelines (Bathelt *et al.*, 2004). Hence, the paper is build on the previously-mentioned empirical contributions and aims to address a research gap regarding coworking spaces as permanent and temporary work settings in boosting entrepreneurship in the sense of competitiveness (Capdevila, 2013; Suire, 2018). Additionally, the paper discusses the implications for local development through coworking centres, and their local communities and initiatives for micro-scale physical transformations (Mariotti *et al.*, 2017). Considering that, the paper is intended to contribute to an overview on coworking spaces as a part of collaborative spaces enhancing collaboration and knowledge interactions for policy implications in urban development and social participation in decision-making for smart urban regeneration (Parrino, 2015; Czupich, 2018; Babb *et al.* 2018).

2. COWORKING SPACES AND THE ROLE OF THE CREATIVE CLASS IN LOCAL CREATIVE ECOSYSTEMS

Collaborative spaces are an alternative way to a second place where freelancers share flexible and part-time work placement (Kubátová, 2016). They are specific for their idea of sharing facilities and offices that bring strangers to

coexist. Nevertheless, the physical proximity and coexistence could be summarised as the first stage of developing collaborative spaces. More importantly, they denote the idea of collaboration that is unique and essential for the creative economy in terms of the crossover of an innovation that utilises technologies and techniques from other related industries (Cooke, 2018). Hence, managers of coworking spaces face challenges of developing human capital in order to achieve sustainability and viability in the long run. Human capital refers to the accumulated value of investments in employee training, competence, and the future. Human capital can be further sub-classified as the employees' competence, ability to build and maintain relations, and values (Kannan and Aulbur, 2004). Furthermore, the relevancy of human capital among coworking spaces is considered most important for those that operate in complex and dynamic competitive environments, where the ability to rapidly acquire and assimilate a new market and technological capabilities is the key to having enduring advantage over competitors (Hayton, 2003).

However, human capital describes the value of the know-how and competences of an organization with competences, competence improvement, staff stability, and the improvement of the capacity of persons and groups (Montequín *et al.*, 2006). Particularly staff mobility is relevant for the creative industries that are associated with a wide range of theoretical streams. Richard Florida is considered a pioneer of the creative class with his book *Rise of the Creative class* (2002), where he considered creativity as a crucial competitive advantage. Florida distinguished professions with capacity to invent new and unique ideas (*ibid.*) Thus, the creative class is a critical mass for collaborative places, represented by individuals engaged in professions such as design, architecture, software design, advertising, publishing, arts, crafts, fashion, film, music, theatre, research, TV, radio, and gaming. Florida (2002) argued that these professions form the “creative core”, while individuals employed in finance, trade, law, and healthcare are perceived as “creative professionals”. The creative class is considered more open-minded, flexible, and having higher levels of individuality (Kagan and Hahn, 2011; Florida *et al.*, 2013). Communities in which the creative class is concentrated are more competitive and more inclined to adopt advanced technologies (McGranahan *et al.*, 2010). These are essential feature of the creative class that are relevant for developing successful coworking centres with diversity and sustainability of communities and mutual activities. The creative class concept is also a subject of critique mainly by economic geographers regarding the fuzziness of some of the concepts and definitions (Pratt, 2008; Clifton, 2008). Nevertheless, Florida (2002) argued that to attract the creative class, cities have to pursue “the three T’s” consisting of talent, tolerance and technology, along with a focus on details, such as diversity and individuality. The attraction of the creative class is simultaneously based on two different streams based on job motivated migration (Niedomysl and Clark,

2010), and the role of cultural amenities in cities (Lawton *et al.*, 2013). Additionally, Florida (2002) developed the Creativity index as a tool for describing how the creativity class is attracted to a city. The use of the Creativity index is still highly limited due to the difficulties in identifying some indexes (Kloudová and Chwaszcz, 2012).

Nevertheless, the current debates among scholars regarding the creative class are not limited solely to attraction *per se*, but rather to its' retention in cities, where coworking might play a vital role for the local ecosystems. Factors influencing the retention of the creative class are associated with pleasant neighbourhood characteristics, local cultural amenities, and the lifestyle in communities (Van Heerden and Bontje, 2013). Then, the factors influencing their retention in small and rural places are community sense, outdoor amenities, and time with family, which are reflected in the nature of coworking centres (Verdich, 2010; Bereitschaft and Cammack, 2015). Hence, coworking centres might facilitate the structural changes of cities, especially in post-Fordist cities that are based on the knowledge economy with flexible production and human capital (Asheim, 2012). Furthermore, the links between the creative class and coworking centres could be further developed by a Neo-Schumpeterian Approach associated with the fifth wave cycle characterised by information technology and innovation in post-Fordist cities (Cooke and Schwartz, 2008). Sternberg (2000) argued that post-Fordism is characterised by flexible and specialised companies with new forms of working and technologies based on collaboration.

Previous studies underline the eminence of creative cities, where the creative class shall contribute to openness, globalisation, and de-industrialisation through flexibility and specialisation (Scott, 2006). Hence, creative cities provide favourable conditions for collaboration and a flexible specialisation approach towards customised goods. Thereby, these principles underline the mutual interactions of various stakeholders that contribute to professional relationships and social networks for access to knowledge (Söpper, 2014; Vinodrai, 2015). Consequently, we assume that knowledge-based competition requires more from freelancers and micro-companies than just the application of their knowledge to generate creative solutions within post-Fordism (Jackson *et al.*, 2003; Amin, 2011). Thereby, they are required to identify the problems to be solved, and present them in meaningful and compelling ways, where coworking centres might play a vital role regarding exhibitions, workshops, and presentations. This could be recognised as knowledge sharing that affects business environment in which coworking centres are located and operate. Generally, the ability to create new knowledge, which enables firms both to innovate and to outperform their rivals in dynamic environments, results from the collective ability of employees to exchange and combine knowledge (Collins and Smith, 2006).

3. THE RESEARCH GAP BETWEEN COLLABORATIVE PLACES, THE CCI AND COMPETITIVENESS

In previous sections, we elaborated on the fundamental underpinnings of coworking centres and their role in post-Fordist cities, mainly regarding socioeconomic transformations. These are being taken into consideration within the concept of the creative economy that develops economic and social activities in collaborative places that overlap a creative ecosystem. Additionally, collaborative spaces are based on both competition and collaboration that create and develop a local creative ecosystem with challenges for enhancing competitiveness and achieving long-term sustainability. Nevertheless, the issue concerning how to create suitable conditions for socioeconomic development through collaborative spaces in both central and peripheral cities remains unclear (Mariotti *et al.*, 2017). Moreover, there is a limited insight into what role do local and regional authorities have in local development towards collaborative places, and what initiatives do local communities take in order to contribute to micro-scale transformations. As a consequence, there is a research gap regarding addressing the role of permanent and temporary work settings in boosting entrepreneurship for which collaborative spaces arrange (Suire, 2018).

Hence, the paper aims to answer the research question regarding how governance in coworking centres develops, and address the current issues regarding entrepreneurship and what mechanisms are utilised in order to achieve competitiveness of human capital. In addition, the paper seeks to clarify the specifics of collective learning and knowledge sharing in the creative ecosystem. The paper considers previous studies that addressed similar research questions and helped to specify the research gap, primarily regarding a) human capital development in coworking centres (Kubátová, 2016) with mobility of labour market; b) the knowledge transfers in the CCI and quadruple helix with institutional frameworks (Cruz *et al.*, 2019); and c) the economic diversity in coworking spaces regarding innovation and business development (Vidaillet and Bousalham, 2018, Farina *et al.*, 2018). Furthermore, the paper follows empirical research concerning emerging workspaces in post-functionalist cities (Di Marino and Lipantie, 2017) as a study to investigate human capital development and collaboration between key agents preferably in post-Fordist cities. Additionally, in order to address the research gap, the paper focuses on collective activities to enhance competitiveness, and adaptive resilience in coworking centres and determinants to boost entrepreneurship (Durante and Turvani, 2018). In order to focus on the research question, the paper is based on qualitative research concerning the phenomena specific for conceptualising new working spaces in local creative ecosystems. Finally, the paper provides an insight into the interplay of time, place and governance in different socioeconomic settings with a key methodological advantage in the process

of gathering and analysis extensive primary data of coworking centres and their practical implications for entrepreneurs and policy makers in developing local creative ecosystems (O'Connor and Gu, 2014).

4. THE METHODOLOGY

The first step was based on a desk research to identify dynamic coworking centres in the EU. Thus, the selection of coworking centres was to highlight the similarities and differences in new working spaces. The research sample was designed to include new working spaces based on their specialisations, active periods, target groups, and socioeconomic activities (Patton, 2014). Subsequently, respondents were selected according to systematised efforts for proposal and implementation of public policies towards the creative economy as a source for competitiveness local development. Even though countries included in the sample were at different stages of policy implementation, they shared a common goal of developing sustainable creative economy as a driver for socioeconomic development. Purposeful sampling was employed with the aim to include coworking spaces with experience in human capital development through collective learning and knowledge sharing. Hence, the respondents could share their opinions and expertise in different settings for boosting entrepreneurship. As a final point, the sample reflects on collaboration with public authorities in order to identify policy implications for urban development and regeneration. In order to address the research question regarding coworking centres in post-Fordist cities, the paper includes new working spaces located in both peripheral and central cities, where brownfields were recognised. A new element proposed by the paper could be the diversity of human capital involved in cultural and creative activities for enhancing competitiveness and developing the entrepreneurial spirit among the creative class. Subsequently, a key advantage of the methodology might be marked in structure and analysis-focused interviews in different cultural settings (Leavy, 2014).

Data collection was performed with extensive face-to-face semi-structured interviews that lasted 90 minutes each, with management in order to address top-down and bottom-up approaches in coworking centre development. The interviews were conducted in 2017–2018, with the total sample of 20 observations (see Table 1 for their list and selected structural indicators). The sample included post-Fordist cities, more specifically capital cities Berlin, Copenhagen, Stockholm, Helsinki, Tallinn, Riga, Warsaw, and peripheral cities Linz, Zlín and Trenčín. Moreover, it was designed to be gender balanced to avoid any bias in the creative class management and development. The respondents were selected based on their expertise in management of coworking centres along with best practices criteria in the creative class development, which was reflected in sustain-

ability and viability of new working spaces. The best practices criteria were based on desk research of coworking centres, which were intended to support the development of the CCI along with their activities to nurture the creative ecosystem. In addition, the selection respected the approaches of local governments towards the creative economy as a tool for local development and entrepreneurship. Hence, the paper employed purposive sampling concerning coworking centres and their characteristics, which was later enriched with the respondents causing a snowball effect to widen the perspective on competitiveness and entrepreneurship.

Interviews were structured into three blocks in order to address the underpinnings of boosting entrepreneurship, knowledge sharing, and the participation in local development. The first block of questions was devoted to the involvement of local stakeholders in the creative ecosystem development and local development in terms of changes in the scenery where coworking centres were situated. The second block was concerned about knowledge sharing and collective learning towards boosting entrepreneurship through mechanisms, mutual activities, and constrains/opportunities. The third block of interviews was devoted to the specific role of communities in local development through engagement of various stakeholders in the process, along with an insight into the mutual interactions of coworking centres and the local milieu. In order to address volunteer bias regarding the respondents in the sample, we had discussed the process in the research group with a focus on errors of judgement prior their selection. Nevertheless, the sample embraced differences in economic activities of the creative class, where respondents were randomly selected by managers. Thus, this procedure was intended to avoid volunteer bias in the selection of entrepreneurs.

Table 1. Sample characteristics

Coworking centre	Brownfield/ownership	Previous purpose	Financing
CWS1, Berlin	No/private	office building	fees
CWS2, Berlin	Yes/private	wood factory	fees/crowdfund
CWS3, Berlin	Yes/private	family house	fees/crowdfund
CWS4, Copenhagen	Yes/public	hospital laundry	public finance
CWS5, Stockholm	Yes/public	factory	public finance
CWS6, Helsinki	No/combination	university building	public finance
CWS7, Helsinki	Yes/combination and public	cable factory	fees, grant
CWS8, Tallinn	No/private		fees
CWS9, Tallinn	Yes/combination	power station	fees, public finance
CWS10, Tallinn	Yes/private	factory	fees/crowdfund
CWS11, Riga	Yes/private	factory	fees/crowdfund
CWS12, Riga	Yes/private	mill	fees/crowdfund

Coworking centre	Brownfield/ownership	Previous purpose	Financing
CWS13, Riga	No/private		fees/crowdfund
CWS14, Warsaw	Yes/private	rubber factory	fees/sponsorship
CWS15, Warsaw	No/private	family house	fees/crowdfund
CWS16, Linz	Yes/public	tobacco factory	public finance
CWS17, Linz	No/public		public finance
CWS18, Zlín	No/public		public finance
CWS19 Trenčín	No/combination		fees/crowdfund

Source: own work.

Considering the research gap mentioned above, the qualitative research design employed a critical incident technique in order to learn the perspective from the respondents. Furthermore, this procedure was included to address positive or negative activities regarding permanent and temporary work settings in developing human capital towards entrepreneurship and competitiveness. In order to capture similarities and differences among coworking centres, the survey entailed fifteen questions regarding establishing, managing, and developing coworking centres in post-Fordist cities, which were proposed and pre-tested in order to comprehend responses and issues regarding semi-structured interviews. Additionally, respondents were asked about the motivations to establish and develop coworking centres and the target groups they were focused on in the initial stage and later in the process. Subsequently, the questions were focused on the criteria of localisation, experience with collaboration outside of centres, and the opportunities in financing new working places. Regarding boosting entrepreneurship, the respondents could share their experiences with developing human capital, critical events, opportunities and barriers for collaboration, and local competition. Semi-structured interviews enabled them to share their views on the strengths and weaknesses of coworking centres, along with apparent benefits coworking centres generate for local creative ecosystems. Both managers and the creative class could share their insights and perspectives in the changes of the scenery by coworking centres regarding urban development. Hence, the paper employed the Grounded theory as the systematic qualitative methodology approach focused on qualitative data collected with semi-structured interviews. The systematic approach was dedicated to an inductive process with an objective to reveal, understand and interpret critical incidents and circumstances in boosting entrepreneurship (Shen, 2014).

The final stage of the methodology was devoted to thematic data analysis that relied on a constant comparison of codes and categories to complete constructivist paradigm (Braun *et al.*, 2018). The critical incident technique and the grounded theory were selected to address different forms of links between management, entrepreneurs and communities with an explanatory approach and an interplay between data, cate-

gories and concepts (Glaser *et al.*, 2013). Both these methods were applied to investigate and interpret critical events and meanings in different socioeconomic settings that new working spaces represent. Nevertheless, both could be affected by a misinterpretation of data and categories by authors, or even inconsistency in coding and categorisation. In order to avoid diminishing original significance of the phenomena, we utilised the process of coding and categorisation in a group (Birks *et al.*, 2013). Thereby, we applied the systematic methodology in investigate specifics of place, key actors and activities of coworking spaces in order to understand interactions of stakeholders, and their activities towards boosting entrepreneurship and competitiveness in local creative ecosystems. The methodological advantage of the procedure might be reflected in pattern coding regarding the reduction of large amounts of data into compact units that enable one to identify construct patterns in the data.

5. THE FINDINGS

5.1. An overview of findings

Generally, the respondents agreed that the desire to change of the respective cities and its attitude towards the position of arts, culture and design in local creative ecosystem was the motivation to develop coworking centres. Furthermore, interviews revealed that new working spaces were an effective tool for promoting local young talent and providing quality environments for their development in terms of human capital. In the case of boosting entrepreneurship, centres promoted and linked the creative class with active communities that met at the workplace every day. The respondents emphasised that some aspects of freedom and variability of environment coworking centres provided stimulated creativity and networking, which resulted in new contacts regarding new market opportunities along with professional guidance to run sustainable business.

‘Our centre allows members to experiment from prototypes to very specific events that help to stimulate local communities and individuals’.

Hence, the respondents highlighted the role of urban regeneration, especially places that were not attractive for longer periods of time that became vital and interesting for economic and leisure activities. We can summarise that most of coworking centres were established by more people cooperating in local networks or as small teams forming communities with shared goals, which supports social participation. Communities primarily included freelancers, new start-ups and graduates, who together with the local creative milieu created an opportunity for the creative class retention. This opportunity was also reflected in the positive

feature of coworking centres on the civic aspect in particular cities, due to establishing and developing creative coworking centres. Managers and representatives of the creative class experienced higher interest in educational activities within the cultural and creative industries due to various mutual events to promote the CCI and to bring the creative ecosystem into the spotlight.

'We have a long term vision to create an environment where people learn from each other and pursue their careers'.

Generally, managers identified the creative class as the target group, however, they stressed that a further development of the local creative ecosystem attracts related industries that might not be labelled as the CCI, for instance crafts and software development. However, creatives who are not typical businesspeople who generally manage coworking centres. Thus, the respondents emphasised the necessity to develop an entrepreneurial spirit through collective learning and knowledge sharing. Competences in management and creative economy form a favourable alternative or new working spaces that stimulate creativity, the entrepreneurial spirit, and combine both for the development of the community. The respondents highlighted the role of coworking centres as places for mutual competition to some extent offering opportunities for collaboration on common goals together with building mutual trust among co-workers.

In most cases, common goals were to promote cultural and creative industries and run sustainable and viable businesses. Despite that, the respondents noted the fact of there existing competition in new working spaces, they stressed the variability in spaces for work and free time allows for knowledge exchange based on mutual trust to work together and boost entrepreneurship among co-workers. Thus, successful management depends on trust building through continual networking and supporting mutual projects to stimulate innovation activities and generating new ideas. In addition, the respondents underlined that coworking centres helped build mutual trust with public authorities resulting in communication that is more effective, and relationships that are more cultured. This might be attributed to the process of engagement in local development, where communities share a common goal with public authorities. Hence, the collaboration of coworking centres and public authorities might generate new opportunities for boosting local entrepreneurship and urban development through unambiguous public policies in post-Fordist cities.

5.2. The role of coworking centres in boosting entrepreneurship in post-Fordist cities

The respondents stressed that finances was the main barrier in the process of establishing centres and their further development. Thus, some centres were dependent on EU projects in the initial stage. That support was utilised for the infrastructure.

Also private finances were provided with the aim of boosting entrepreneurship in the local creative ecosystem. In case of development, certain difficulties were identified from the managerial perspective, especially with process of managing small groups with different scopes of economic activities. Those issues were based on the differences regarding knowledge and skillset among the creative class. Hence, managers faced challenges in bridging different branches and knowledge in order to facilitate collaboration. The central piece for addressing these challenges is trust building through mutual activities. Even though the CCI might be labelled as a fuzzy concept, there are certain rules to follow regarding intellectual property.

The creative class is exposed to open environment and relationships in coworking spaces that reflect both strengths and weaknesses. The respondents mentioned creative people as the major strength, because they work and live in the community and they create the overall atmosphere with intangible benefits for boosting entrepreneurship. Non-standardised shifts and free spirit gives the members the freedom and comfort to bring new ideas into the reality of business. Moreover, the respondents considered a well-organised management team and the right visual identity as additional strengths as coworking centre provide brand name that could be utilised for gaining access to new markets. The respondents highlighted the role of coworking centres as a bridge between “the artistic and the real” worlds, especially regarding the promotion of the creative economy to private and public sectors. Thus, coworking centres provide an orchestrating role for promoting non-standardised production on both local and regional levels. The respondents indicated such promotion benefits as the brand name of coworking centres, and brought the CCI into the spotlight for potential consumers. Mutual events and activities engage the population in the process of the creation and presentation of creative outcomes that might stimulate new forms of collaboration. In order to develop a brand name that brings various branches together, the management faces the challenge of finding an effective way of marketing profit and non-profit activities together. The interviews revealed that marketing on social media is not enough to promote a brand name and the respondents indicated the importance of events as a tool for marketing in terms of presentations.

Presentations and exhibitions of cultural and creative outputs were identified as a crucial factor for marketing the CCI and raising awareness of the creative economy in a broader sense. These efforts nurtured the cooperation with local organisations in the cultural or creative industries that were not part of the coworking centres. Hence, coworking centres successfully engage other entrepreneurs in the local creative ecosystem in terms of developing entrepreneurship on temporary or permanent settings. The engagement is reflected mainly in entrepreneurial education with a focus on business skills, marketing and effective presentation in order to reach new markets and opportunities for collaboration. The development of business skills of the creative class is crucial for their sustainability and viability that create synergies between the real and the artistic worlds. The respondents

also highlighted the need to collaborate with other centres in terms of sharing experience in development and seizing opportunities to address mutual objectives for developing sustainable and long-term socioeconomic activities. The sharing of knowledge in that sense is considered as knowledge or ideas behind coworking centres that are often difficult to define. Nonetheless, it similarly depends on the specifics of a place, people, environment, and the atmosphere in permanent and temporary workplaces. The interviews revealed that individuals were motivated to take part in coworking centres due to their image as a favourable environment that stimulates creativity and enhances entrepreneurial perspectives of the CCI. In terms of developing entrepreneurship, co-working centres aid to seize networking opportunities for accessing new potential markets. Sharing information about opportunities among co-workers was identified as one of the main benefits to support entrepreneurship among the creative class that might struggle with entrepreneurial thinking and business skillset required to run sustainable economic activities. Hence, all the above-mentioned features leads to conceptualisation of CWS in boosting entrepreneurship (see Fig. 1).

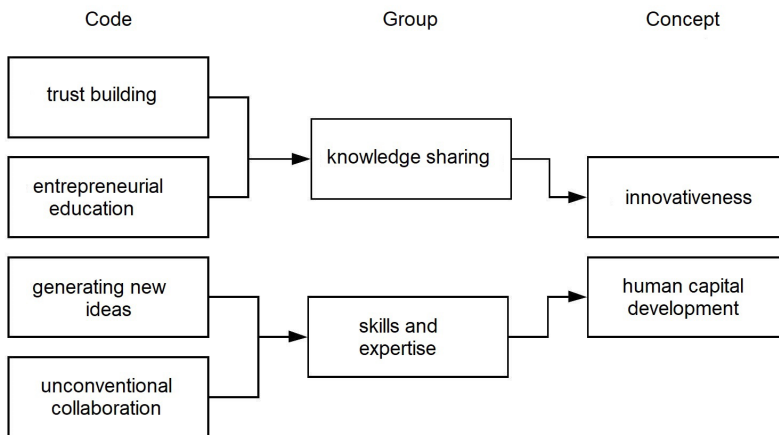


Fig. 1. Conceptualisation of CWS in boosting entrepreneurship

Source: own work.

5.3. Specifics of coworking centres in post-Fordist cities

The localisation of coworking centres took place preferably in old industrial buildings identified as brownfields, while the main criterion was the potential for a culture-led urban regeneration in post-Fordist cities. However, the regeneration of brownfields and old industrial buildings requires long term participation and re-

lies on public investment, which happens to be a constrain for developing a local creative ecosystem. Nonetheless, the respondents stressed it was not necessary to localise in large buildings, but rather smaller that are easier to maintain, mainly due to the fact that creatives were motivated to start with their economic activities as soon as possible. Localisation was also based on availability of public transport and nearby green places, parks, museums and galleries that might be summarised as cultural amenities with a potential for collaboration on various projects. The interviews revealed that culture helped stimulate business environment by bringing the CCI into spotlight with the efforts of coworking centres. In terms of coworking centres and their contribution to regeneration, that is reflected in their operation and maintenance that are financed by membership fees. Additional financial resources for developing new working spaces are generated by events, workshops, lectures, and conferences. These facilities are attractive due to their uniqueness of work and free time environment for both the CCI and related industries.

'Our centre serves as a platform to put local agents together to change a scenery in an effective way'.

In regards to the previous features, the respondents highlighted the role of communities and their links to different stakeholders. Exhibitions, seminars, lectures, presentations, and workshops increase the attractiveness of coworking spaces for both the private and the public sectors. Additionally, various cultural and social events create an image and attractive environment in post-Fordist cities. In terms of the socioeconomic development of a local creative ecosystem, coworking centres are responsible for creating a social motion in the districts they are located mainly through a variety of events and cultural initiatives to connect the artistic world with local communities. The respondents stressed the role of coworking centres as mediators in establishing and facilitating communication between the creative class and the public sector towards smart governance. The interviews revealed that coworking centres helped develop tourism in post-Fordist cities as they increased people's interest in the cultural and creative industries in local creative ecosystems. The respondents stated that the contribution also consisted of raising the awareness and relevance of design and architecture in the civic perspective as those branches were previously considered as redundant. Currently, coworking centres and the creative class contribute to entrepreneurship with spill-over effects in post-Fordist cities by dint of crossover innovations combining various stakeholders in the process of production.

'The variety of events nurtures local creative communities and brings creative industries into the spotlight'.

Therefore, positive effects were not limited merely to certain districts and communities in which they were located. The interviews revealed that they improved the cooperation between various branches of the CCI in terms of generating new

ideas for mutual projects through systematic knowledge sharing towards new social environments like the “fourth place”. Continual efforts to showcase the CCI enhances local creative ecosystems, since members agreed on increasing attention and participation on lectures and workshops, along with increasing attendance at exhibitions and sideshows presenting cultural and creative outcomes. This could be also interpreted as a better communication between the real world and the artistic world in cities with developing human capital capable of implementing public policies towards smart governance and the CCI.

‘Systematic joint activities and being visible raise interest in cultural and creative industries from local communities and public authorities’.

Interestingly, residents often support centres and members financially and with their engagement in public leisure activities that the centres organise. However, the capacity is limited. That also affects community development since there is a focus on quality rather than quantity in terms of their sustainability and viability. Furthermore, limited capacity also means a unique atmosphere for collaboration in coworking centres for creatives and artists. The respondents expressed the role of cultural socialisation among the strengths of coworking centres that might attract the creative class to be a part of permanent and temporary work settings in post-Fordist cities. Hence, all the above-mentioned features lead to the conceptualisation of the role CWS represent in post-Fordist cities (see Fig. 2).

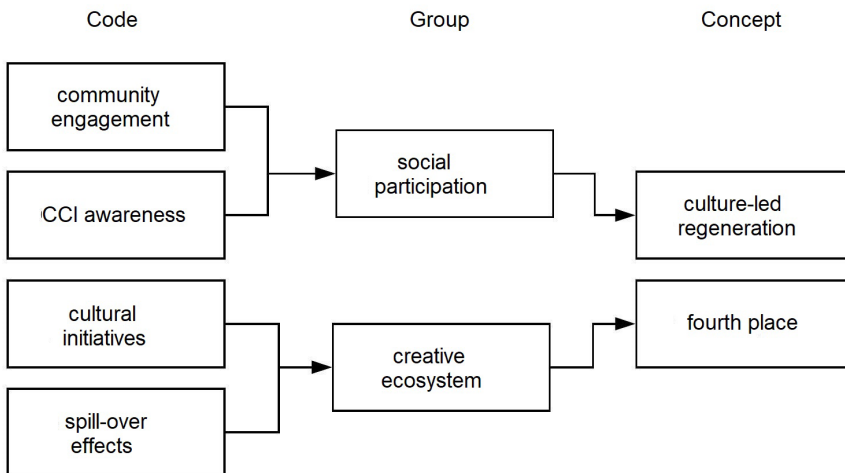


Fig. 2. Conceptualisation of the role CWS represent in post-Fordist cities

Source: own work.

6. DISCUSSION AND CONCLUSION

In general, the paper strengthens the notion of the coworking centres towards encouraging entrepreneurial spirit of the CCI. Furthermore, it provides empirical evidence on how coworking centres develop human capital in the creative economy with opportunities for cross-over innovation in the local creative ecosystem. The paper supports the findings of Durante and Turvani (2018) regarding the sustainability and viability of coworking centres, which depend on internal factors related to entrepreneurial actions. Concerning the former idea, the results indicated that internal factors were crucial for human capital development through knowledge sharing and mutual events engaging various stakeholders. The analytical part extends findings by Farina *et al.* (2019) regarding coworking places and innovation activities that are based on mutual trust, tacit knowledge, and expertise in non-standardised production. Hence, as the respondents highlighted, learning from experience and sharing tacit knowledge in communities combining various stakeholders in the CCI is the key principle in boosting entrepreneurship in the local creative ecosystem (see Bouncken and Reuschl, 2018). These values reflected on different stakeholders collaborating together on shared objectives regarding their economic diversity presented in a study by Vidaillet and Bousalham (2018). Furthermore, the creative class in coworking centres embraced social movement in communities that might be of both formal and informal nature. Moreover, the findings underlined the importance of engagement in events that serve as a showcase of outcomes in the CCI with an idea of developing a mutual brand name and identity of a place. Remarkably, social movement tends to be a catalyst for bridging the artistic and real world in post-Fordist cities as it triggers the interest of both the private and public sectors in the creative economy. In regards to post-Fordist cities, coworking centres indicate the idea of a culture-led urban regeneration by creating cultural identity and developing sustainable communities that involve various stakeholders in the CCI as mentioned by Zeng and Chan (2014).

To summarise, coworking centres could be utilised as an effective tool for maintaining a dialogue between the creative economy and public authorities who might collaborate on developing policies to retain and attract the creative class in local creative ecosystems. Temporary and permanent settings boost entrepreneurship mainly via a systematic approach towards human capital development and networking in order to support cross-over innovations. Hence, the paper presents a novelty view on entrepreneurship in coworking centres that are based on the creative economy, and the specifics associated with the community-place interaction that results from the micro-scale physical transformations in post-Fordist cities as a contribution to Capdevila (2013). Coworking centres

and their creative class represent prospects for culture-led urban development through systematic planning concerning coworking centres as a driving force for socioeconomic development. Key findings indicate that the districts where coworking centres are located experienced changes of their scenery by dint of the social movements and synergies between cultural-creative activities. Therefore, coworking centres boost entrepreneurship by linking different stakeholders and creative branches in collaboration on common ideas and projects in local creative ecosystems, while these link support innovative thinking in non-standardised production. In addition, these synergies stimulate the engagement and participation of communities in urban regeneration through profit and non-profit oriented projects. Hence, active coworking centres facilitate platforms for micro-scale transformations in post-Fordist cities through networking and social interactions, along with collaboration and competition in the sense of the “fourth place” (Morisson, 2018).

The findings have certain implication for practitioners in order to develop competitive and entrepreneurial permanent and temporary collaborative spaces that create a liveable and vibrant environment. The paper provides an insight into policy making that could tap into the local creative ecosystem regarding the design and implementation of locally oriented policies and initiatives towards smart governance in post-Fordist cities. Public policies and initiatives concerning culture-led urban development ought to be based on a systematic collaboration of coworking centres, cultural amenities, and local authorities in order to ensure policies which respect the local specifics and industrial heritage towards smart governance (see Babb *et al.*, 2018). Further research could be directed towards geographical differentiation, primarily considering the fact that there were no major differences identified in the study regarding the sample and its’ characteristics. Nevertheless, we need to address the limitations of the paper in regarding the sample and epistemological standpoint that enabled only an interpretation of the reality of coworking centres experience concerning the development of entrepreneurial spirit without the ability to generalise the phenomenon. Thus, further research will incorporate a survey in order to employ quantitative research design with modelling the role of coworking spaces towards boosting entrepreneurship. Moreover, there are certain prospects for investigating performance of coworking spaces and tackle drivers of enhancing their competitiveness.

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REFERENCES

- AMIN, A. (2011), *Post-Fordism: a reader*, John Wiley & Sons.
- ASHEIM, B. (2012), 'The changing role of learning regions in the globalizing knowledge economy: A theoretical re-examination', *Regional Studies*, 46 (8), pp. 993–1004. <https://doi.org/10.1080/00343404.2011.607805>
- BABB, C., CURTIS, C. and MCLEOD, S. (2018), 'The Rise of Shared Work Spaces: A Disruption to Urban Planning Policy?', *Urban Policy and Research*, 36 (4), pp. 496–512. <https://doi.org/10.1080/08111146.2018.1476230>
- 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), pp. 31–56. <https://doi.org/10.1191/0309132504ph469oa>
- BEREITSCHAFT, B. and CAMMACK, R. (2015), 'Neighborhood diversity and the creative class in Chicago', *Applied Geography*, 63, pp. 166–183. <https://doi.org/10.1016/j.apgeog.2015.06.020>
- BIRKS, D.F., FERNANDEY, W. and LEVINA, N. (2013) 'Grounded theory method in information systems research: its nature, diversity and opportunities', *European Journal of Information Systems*, 22 (1), pp. 1–8. <https://doi.org/10.1057/ejis.2012.48>
- BOUNCKEN, R.B. and REUSCHL, A.J. (2018), 'Coworking-spaces: how a phenomenon of the sharing economy builds a novel trend for the workplace and for entrepreneurship', *Review of Managerial Science*, 12 (1), pp. 317–334. <https://doi.org/10.1007/s11846-016-0215-y>
- BROWN, J. (2017), 'Curating the 'third place'? Coworking and the mediation of creativity', *Geoforum: Journal of Physical, Human, and Regional Geosciences*, 82, pp. 112–126. <https://doi.org/10.1016/j.geoforum.2017.04.006>
- CAPDEVILA, I. (2013), *Knowledge dynamics in localized communities: Coworking spaces as microclusters*, Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2414121. <https://doi.org/10.2139/ssrn.2414121>
- CAPDEVILA, I. (2015), 'Co-working spaces and the localised dynamics of innovation in Barcelona', *International Journal of Innovation Management*, 19 (03), pp. 1–25. <https://doi.org/10.1142/S1363919615400046>
- CHAPAIN, C., COOKE, P., DE PROPRIIS, L., MACNEILL, S. and MATEOS-GARCIA, J. (2010), *Creative clusters and innovation: Putting creativity on the map*, NESTA London.
- CLIFTON, N. (2008), 'The «creative class» in the UK: an initial analysis', *Geografiska Annaler: Series B, Human Geography*, 90 (1), pp. 63–82. <https://doi.org/10.1111/j.1468-0467.2008.00276.x>
- COLLINS, C.J. and SMITH, K.G. (2006), 'Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms', *Academy of Management Journal*, 49 (3), pp. 544–560. <https://doi.org/10.5465/amj.2006.21794671>
- COMUNIAN, R., CHAPAIN, C. and CLIFTON, N. (2014), 'Creative industries & creative policies: A European perspective?', *City, Culture and Society*, 2 (5), pp. 51–53. <https://doi.org/10.1016/j.ccs.2014.05.009>
- COOKE, P. (2018), 'Generative growth with 'thin' globalization: Cambridge's crossover model of innovation', *European Planning Studies*, 26 (9), pp. 1815–1834. <https://doi.org/10.1080/09654313.2017.1421908>
- COPERCINI, M. (2016), 'Berlin as a creative field: Deconstructing the role of the urban context in creative production', *Quaestiones Geographicae*, 35 (4), pp. 121–132. <https://doi.org/10.1515/quageo-2016-0040>
- CRUZ, A.R., ALMEIDA, R.M., COSTA, P., GATO, M.A. and PERESTRELO, M. (2019), 'Knowledge Transfer in the Cultural and Creative Sector: Institutional Aspects and Perspectives from Actors in Selected Atlantic Regions', *Social Sciences*, 8 (3), p. 77. <https://doi.org/10.3390/socsci8030077>

- CZUPICH, M. (2018), 'Level of Social Participation in the Creation of Urban Regeneration Programmes – The Case Study of Small Towns in Poland', *European Spatial Research and Policy*, 25 (2), pp. 81–98. <https://doi.org/10.18778/1231-1952.25.2.05>
- DEFILLIPPI, R. (2015), *Managing project-based organization in creative industries*, The Oxford handbook of creative industries, pp. 268–283.
- DEPARTMENT OF CULTURE, MEDIA AND SPORT (1998), *Creative Industries Mapping Document*, 1998, DCMS, London. Retrieved from: http://www.culture.gov.uk/Reference_library/Publications/archive_1998/Creative_Industries_Mapping_Document_1998.html.
- DE PROPRIIS, L. (2013), 'How are creative industries weathering the crisis?', *Cambridge Journal of Regions, Economy and Society*, 6 (1), pp. 23–35. <https://doi.org/10.1093/cjres/rss025>
- DI MARINO, M. and LAPINTIE, K. (2017), 'Emerging workplaces in post-functionalist cities', *Journal of Urban Technology*, 24 (3), pp. 5–25. <https://doi.org/10.1080/10630732.2017.1297520>
- DURANTE, G. and TURVANI, M. (2018), 'Coworking, the Sharing Economy, and the City: Which Role for the «Coworking Entrepreneur»?', *Urban Science*, 2 (3), p. 83. <https://doi.org/10.3390/urbansci2030083>
- EUROPEAN COMMISSION (2010), *Unlocking the Potential of Cultural and Creative Industries*, Brussels.
- FARINA, M.C., NETO, A.F., CARVALHO, A.A. and BERNE, D.F. (2018), 'Coworking and the Generation of Employment and Income', *International Conference on Innovation, Engineering and Entrepreneurship*, Springer, Cham, pp. 898–904. https://doi.org/10.1007/978-3-319-91334-6_123
- FLORIDA, R. (2002), *The rise of the creative class: and how it's transforming work, leisure, community and everyday life*, Basic books, New York.
- FLORIDA, R., MELLANDER, C. and RENTFROW, P. (2013), 'The happiness of cities', *Regional Studies*, 47 (4), pp. 613–627. <https://doi.org/10.1080/00343404.2011.589830>
- FUZI, A. (2015), 'Co-working spaces for promoting entrepreneurship in sparse regions: the case of South Wales', *Regional Studies, Regional Science*, 2 (1), pp. 462–469. <https://doi.org/10.1080/21681376.2015.1072053>
- GLASER, B., WALSH, I., BAILYN, L., FERNADEZ, W., HOLTON, J. and LEVINA, N. (2013), 'What Grounded Theory Is', *Academy of Management Proceedings*, Briarcliff Manor, New York. <https://doi.org/10.5465/ambpp.2013.11290symposium>
- HAYTON, J.C. (2003), 'Strategic human capital management in SMEs: An empirical study of entrepreneurial performance', *Human Resource Management*, 42 (4), pp. 375–391. <https://doi.org/10.1002/hrm.10096>
- HEERDEN, S. and BONTJE, M. (2014), 'What about culture for the ordinary workforce? A study on the locational preferences of the creative class in Prenzlauer Berg, Berlin', *Journal of Urban Affairs*, 36 (3), pp. 465–481. <https://doi.org/10.1111/juaf.12048>
- HOWKINS, J. (2002), *The creative economy: How people make money from ideas*, Penguin UK.
- JACKSON, S.E., DENISI, A. and HITT, M.A. (2003), *Managing knowledge for sustained competitive advantage: Designing strategies for effective human resource management*, John Wiley & Sons.
- JONES, C., LORENZEN, M. and SAPSED, J. (2015), *The Oxford handbook of creative industries*, Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199603510.001.0001>
- JONES, C., SVEJENOVA, S. and STRANDGAARD, J. (2011), 'Misfits, mavericks and main-streams: Drivers of innovation in creative industries', *Organization Studies*, 32 (9), pp. 1308–1310. <https://doi.org/10.1177/0170840611424019>
- KAGAN, S. and HAHN, J. (2011), 'Creative cities and (un) sustainability: from creative class to sustainable creative cities', *Culture and Local Governance*, 3 (1), pp. 11–27. <https://doi.org/10.18192/clg-cgl.v3i1.182>

- KANNAN, G. and AULBUR, W.G. (2004), 'Intellectual capital: measurement effectiveness'. *Journal of Intellectual Capital*, 5 (3), pp. 389–413. <https://doi.org/10.1108/14691930410550363>
- KATZ, B., VEY, J.S. and WAGNER, J. (2015), 'One year after: Observations on the rise of innovation district Brookings', June 24, 2015. Retrieved from: <https://www.brookings.edu/research/one-year-after-observations-on-the-rise-of-innovation-districts/>.
- KLOUDOVÁ, J. and CHWASZCZ, O. (2012), 'Transformation of 3T model towards the comparison of creative centres within the European Union', *Ekonomie+Management*, 20 (32), pp. 56–70.
- KOJO, I. and NENONEN, S. (2017), 'Evolution of co-working places: drivers and possibilities', *Intelligent Buildings International*, 9 (3), pp. 164–175. <https://doi.org/10.1080/17508975.2014.987640>
- KUBÁTOVÁ, J. (2016), 'Human capital of the 21st century in coworking centers', *Proceeding of ECIC 2016 8th European Conference on Intellectual Capital*, pp. 145–151.
- LAWTON, P., MURPHY, E. and REDMOND, D. (2013), 'Residential preferences of the 'creative class'?', *Cities*, 31, pp. 47–56. <https://doi.org/10.1016/j.cities.2012.04.002>
- LEAVY, P. (2014), *The Oxford handbook of qualitative research*, Oxford library of psychology. <https://doi.org/10.1093/oxfordhb/9780199811755.001.0001>
- MARIOTTI, I., PACCHI, C. and DI VITA, S. (2017), 'Co-working Spaces in Milan: Location Patterns and Urban Effects', *Journal of Urban Technology*, 24 (3), pp. 47–66. <https://doi.org/10.1080/10630732.2017.1311556>
- MARTIN-RIOS, C. and PARGA-DANS, E. (2016), 'The early bird gets the worm, but the second mouse gets the cheese: Non-technological innovation in creative industries', *Creativity and Innovation Management*, 25 (1), pp. 6–17. <https://doi.org/10.1111/caim.12131>
- MCGRANAHAN, D., WOJAN, T. and LAMBERT, D. (2010), 'The rural growth trifecta: outdoor amenities, creative class and entrepreneurial context', *Journal of Economic Geography*, 11 (3), pp. 529–557. <https://doi.org/10.1093/jeg/lbq007>
- MONTEQUÍN, V.R., FERNANDEZ, F.O., CABAL, V.A. and GUTIERREZ, N.R. (2006), 'An integrated framework for intellectual capital measurement and knowledge management implementation in small and medium-sized enterprises', *Journal of Information Science*, 32 (6), pp. 525–538. <https://doi.org/10.1177/0165551506067127>
- MORISSON, A. (2018), 'A Typology of Places in the Knowledge Economy: Towards the Fourth Place', *International Symposium on New Metropolitan Perspectives*, Springer, Cham, pp. 444–451. https://doi.org/10.1007/978-3-319-92099-3_50
- NIEDOMYSL, T. and CLARK, W. (2014), 'What matters for internal migration, jobs or amenities?', *Migration Letters*, 11 (3), pp. 377–386. <https://doi.org/10.33182/ml.v11i3.231>
- O'CONNOR, J. and GU, X. (2014), 'Creative industry clusters in Shanghai: a success story?', *International Journal of Cultural Policy*, 20 (1), pp. 1–20. <https://doi.org/10.1080/10286632.2012.740025>
- PARRINO, L. (2015), 'Coworking: Assessing the Role of Proximity in Knowledge Exchange', *Knowledge Management Research & Practice*, 13, pp. 261–271. <https://doi.org/10.1057/kmrp.2013.47>
- PATTON, M.Q. (2014), *Qualitative research and evaluation methods*, SAGE.
- PLUM, O. and HASSINK, R. (2014), 'Knowledge bases, innovativeness and competitiveness in creative industries: the case of Hamburg's video game developers', *Regional Studies, Regional Science*, 1 (1), pp. 248–268. <https://doi.org/10.1080/21681376.2014.967803>
- PRATT, A. (2008), 'Creative cities: the cultural industries and the creative class', *Geografiska Annaler. Series B, Human Geography*, 90 (2), pp. 107–117. <https://doi.org/10.1111/j.1468-0467.2008.00281.x>
- SHEN, A. (2014), 'Recommendations as personalized marketing: insights from customer experiences', *Journal of Services Marketing*, 28 (5), pp. 414–427. <https://doi.org/10.1108/JSM-04-2013-0083>

- SÖPPER, K. (2014), 'Governance and Culture – a New Approach to Understanding Structures of Collaboration', *European Spatial Research and Policy*, 21 (1), pp. 53–64. <https://doi.org/10.2478/esrp-2014-0005>
- STERNBERG, R. (2000), 'State-of-the art and perspectives of economic geography –taking stock from a German point of view', *GeoJournal*, 50 (1), pp. 25–36. <https://doi.org/10.1023/A:1007194406290>
- SUIRE, R. (2019), 'Innovating by bricolage: how do firms diversify through knowledge interactions with FabLabs?', *Regional Studies*, 53 (7), pp. 939–950. <https://doi.org/10.1080/00343404.2018.1522431>
- VERDICH, M. (2010), 'Creative migration? The attraction and retention of the 'creative class' in Launceston, Tasmania', *Australian Geographer*, 41 (1), pp. 129–140. <https://doi.org/10.1080/00049180903535642>
- VIDAILLET, B. and BOUSALHAM, Y. (2017), 'Coworking spaces as places where economic diversity can be articulated: towards a theory of syntopia', *Organization*, 27 (1), pp. 60–87. <https://doi.org/10.1177/1350508418794003>
- VINODRAI, T. (2015), 'Constructing the creative economy: Design, intermediaries and institutions in Toronto and Copenhagen', *Regional Studies*, 49 (3), pp. 418–432. <https://doi.org/10.1080/00343404.2014.933204>
- ZHENG, J. and CHAN, R. (2014), 'The impact of «creative industry clusters» on cultural and creative industry development in Shanghai', *City, Culture and Society*, 5 (1), pp. 9–22. <https://doi.org/10.1016/j.ccs.2013.08.001>