

The entrepreneurial ecosystem of cultural and creative industries in Porto: A sub-ecosystem approach

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Abstract

It is still a matter of dispute whether entrepreneurial ecosystem (EE) frameworks can be confined to a single industry in isolation, let alone whether such a sub-ecosystem approach can be employed in a domain that is distinct from the high-growth industries usually scrutinised in the literature. This article seeks to apply a systemic and dynamic EE perspective to the development of cultural and creative industries (CCIs) within an urban context, with a particular focus on how urban development interacts with the sub-ecosystem of this sector over time. An in-depth case study in the city of Porto (Portugal) revealed that existing EE frameworks are well-suited to research on creative sub-ecosystems. It also enabled us to flesh out associations with other entrepreneurial activities and policy domains within the city. We highlight the prominent roles of local culture and policies when the context is resource-constrained: policy led to an upward, positive spiral that moved Porto's EE in relation to CCIs into a growth stage, during which it began to interact with, and faced resource competition from, high-tech entrepreneurship. We argue that having an integrated view of the dynamics of entrepreneurial sub-ecosystems and urban

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affairs can improve what is understood of productivity and causality in entrepreneurship.

KEY WORDS

cultural and creative industries, entrepreneurial ecosystem, sub-ecosystem, urban policy, urban regeneration

1 | INTRODUCTION

There have been a large number of studies advocating the importance of entrepreneurial ecosystems (EEs) for fostering innovation and economic growth over recent decades (e.g., Best, 2015; Feld, 2012; Saxenian, 1994; Stam, 2015). The ecosystem approach describes successful entrepreneurship as a process emerging from the interactions between entrepreneurs and the surrounding environment, and which involves the “dynamic local social, institutional, and cultural processes and actors that encourage and enhance new firm formation and growth” (Malecki, 2018, p. 1; Neck et al., 2004). While many studies highlight each embedding context’s specificities, which render pure replication strategies inadequate (e.g., Isenberg, 2010, 2011), the employment of a “process-based view” (Spigel & Harrison, 2018) and “evolutionary dynamics” (Mack & Mayer, 2016) in research into EEs contributes to fleshing out the causal links between their components and entrepreneurship in general. This is not only relevant to policy makers seeking to improve the entrepreneurial potential of a territory, but is also of theoretical interest to urban and regional scholars (Acs et al., 2017; Alvedalen & Boschma, 2017; Audretsch et al., 2018; Cohen, 2006; Feld, 2012; Stam & van de Ven, 2019).

Opinions vary on whether or not EEs—as holistic combinations of institutional, organisational and other systemic elements that influence the identification and commercialisation of entrepreneurial opportunities (Audretsch & Belitski, 2017)—can be confined to the study of one specific sector. In contrast with, for example, cluster theories, the EE framework does “not presuppose a particular sectoral focus” and has been “largely industry agnostic,” even though research has generally focused on high-tech businesses (Spigel & Harrison, 2018, p. 156). There is also a view that successful EEs can be characterised not only by a sector or industry alone, but by the “entrepreneurial dynamism” (Malecki, 2018, p. 11) that transcends the presence of several sectors in a single place. Alternatively, some authors suggest that the peculiar technological, organisational, institutional and policy contexts of an EE allow the framing of specific industrial “sub-ecosystems” (Malecki, 2018), meaning that the EE can be both bound to a specific industrial domain and a “highly variegated, multi-actor and multi-scalar phenomenon” (Brown & Mason, 2017, p. 12; Autio et al., 2014; Malecki, 2018; Mason & Brown, 2014).

Nevertheless, innovative technology-oriented, high-growth or young high-growth (*gazelles*) firms have been the protagonists in most EE research (e.g., Best, 2015; Guzman & Stern, 2016; Stam, 2015). These studies typically highlight the roles of key actors like venture capitalists, technical universities, and regulatory bodies in orchestrating regional innovation processes in ways that have been described in earlier research into regional innovation systems (RISs; cf., Brown & Mason, 2017). Nonetheless, analyses of the applicability of the EE framework beyond high-tech regional environments in developed economies are, overall, still few in number, although assessments of entrepreneurial systemness at the urban level do also exist (van Winden et al., 2014).

In a particular context are so-called cultural and creative industries (CCIs), or those that centre on “activities which have their origin in individual creativity, skill and talent and which have a

Keypoints

- The frameworks of existing entrepreneurial ecosystems (EEs) function well when examining sub-ecosystems beyond high-tech and high-growth activities, namely in the cultural and creative industries (CCIs).
- The development of Porto's sub-ecosystem around its CCIs has greatly benefitted from social interactions and alternative transactions based on reciprocity; these elements are more likely to be a manifestation of value creation in ecosystems that are early stage and/or more resource-constrained than is prototypical for CCIs.
- Studying EEs through an urban lens sheds light on a number of dimensions (e.g., local demand dynamics, competition for physical space, gentrification, and policy focused on high-tech industries) that affect their growth and sustainability over time.

potential for wealth and job creation through the generation and exploitation of intellectual property" (Jeffcutt, 2004, p. 68). The late 1990s onwards saw a growing recognition of the economic potential of CCIs, causing the creative economy to become a strategic priority for policy makers at the local, regional, national, and international levels (Braun & Lavanga, 2007; Florida, 2002; Florida et al., 2008; Jeffcutt, 2004). Beyond having a direct economic impact, these industries, including the arts, design, advertising, entertainment, and some areas of digital content creation, are also perceived to be supportive of other processes in society, such as strengthening social cohesion and urban regeneration (Bianchini & Parkinson, 1993; Hall, 2000; Montgomery, 2003).

The spatial and temporal organisation of CCIs has been widely studied through the lenses of clustering theories (e.g., Lavanga, 2020; Lorenzen & Frederiksen, 2008; Santagata, 2002; Scott, 2006) and urban regeneration and gentrification studies (Cameron & Coaffee, 2005; Caulfield, 1994; Lavanga, 2013; Ley, 1996; Zukin, 1987). Research about their development has repeatedly highlighted the importance of cities to creative entrepreneurs (e.g., Florida, 2002; Hall, 2000; Pratt, 2010). Consequently, while ever more products and services are being traded on a global scale, the local dimension is important to many CCI-entrepreneurs, as this is not only where professional networks (Scott, 2012), socialisation activities (Currid, 2007) and specialist labour (Lavanga et al., 2020) reside, but is also from where inspiration (Drake, 2003) and product identities (Molotch, 2002) originate. Such dynamics do, however, also have a downside: locations can become overcrowded with creative individuals seeking work opportunities, leading to social phenomena like informal labour, self-exploitation, precarious work, and barriers to social mobility (Merkel, 2019). Several studies have also evidenced that notwithstanding their contributions to the rehabilitation of urban areas, creative entrepreneurs are generally later excluded because of property prices and an influx of more affluent residents (Ley, 1996; Peck, 2011; Zukin, 1987), as well as the subsequent inflow of other high-tech, fast-growth economic sectors, which outbid CCIs for space and policy attention.

Drawing on previous work, this paper has two main objectives: (1) linking the growing literature on EEs to studies analysing the development of CCIs in cities. This is achieved by examining: how different cultural, social, and material attributes (Spigel, 2017) deemed to be important in the development of EEs play out and interact in a CCI context; and what the major differences are vis-à-vis the high-tech, fast-growth ecosystems upon which most of the EE literature is based. While there is an abundance of research on the growth of CCI agglomerations (i.e., cultural clusters), applying such a systemic perspective to creative entrepreneurship is, to our knowledge, somewhat unexplored; and (2)

investigating how urban development and policy dimensions influence the sub-ecosystems of CCIs over time, thereby highlighting the role of the “urban” setting and a time dimension that may have been overshadowed in previous analyses. In doing this, the paper seeks to highlight the need to adopt an integrated approach to the dynamics of EEs and contemporary urban, economic, and regeneration affairs. Accordingly, it also theorised that a dynamic view of EEs must “recognize that entrepreneurship is socially constructed and coevolves with the similarly socially constructed and development of regions and places” (Malecki, 2018, p. 11).

The paper addresses these matters through the lens of an in-depth case study conducted in the city of Porto (Portugal). This examines the processes through which an EE supporting CCIs formed and evolved over a period of more than 15 years (2001–2018). Although largely unexplored in the urban and regional policy literature (Carvalho et al., 2019), Porto is representative of the dynamics of CCI-entrepreneurship in second-tier, medium-sized, European cities that lack an abundance of entrepreneurship-related resources. This enables the processes of how EEs emerge and consolidate in these conditions to be better understood, and also increases what is known about how they both support and compete with other economic and entrepreneurial dynamics at the urban level.

The remainder of the paper is structured as follows: Section 2 reviews and brings together the literature on EEs and the urban dynamics of CCIs; Section 3 describes the research setting and the methods used; Section 4 presents the main findings; Section 5 contains the discussion; and Section 6 comprises the conclusion and suggests avenues for further research.

2 | LITERATURE REVIEW

2.1 | The systemic, relational, and dynamic dimensions of entrepreneurial ecosystems

With roots in several lines of literature, the ecosystem approach to entrepreneurship combines insights from economics, strategic management, entrepreneurship studies, and economic geography, highlighting synergies between entrepreneurship and territory (Acs et al., 2017; Mack & Mayer, 2016; Mason & Brown, 2014; Porter, 2000; Spigel, 2017). The approach views an EE as the result of diverse and co-evolutionary interactions between individuals and institutions embedded in a specific environment (Acs et al., 2014; Audretsch & Belitski, 2017; Isenberg, 2010, 2011; Mason & Brown, 2014; Neck et al., 2004). Each environment is characterised by the presence (or absence) of particular resources, including capital and demand, land, skilled labour, services and suppliers, and government policy and regulation (Valdez, 1988). Typical of the ecosystem approach is its focus not on firms, but on the entrepreneur as a core actor, and on the potential role of policy makers and other influential figures who act more as “feeders” (supporters) than as “leaders” of the entrepreneurial process (Stam, 2015; Stam & Spigel, 2016). Defined as “a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory” (Stam & Spigel, 2016, p. 1), an EE is more than just self-employment, business formation, and ownership. Instead, it is a fusion of entrepreneurial activity through which individuals in a particular place create opportunities for innovation, which can in turn lead to significant improvements in the welfare of those located there.

Scholars, including Isenberg (2011), Spigel (2017), Stam (2015), and Valdez (1988), have identified several environment *attributes* (resources) that are crucial to the development of an EE: (1) finance (available capital and investors); (2) culture (local success stories, societal norms, risk-taking, meritocratic approach); (3) support (physical infrastructure like broadband and airports, related

businesses, non-governmental organisations, and professional associations); (4) human capital (labour, educational institutions); (5) markets (large pools of early adopters and sophisticated demand); (6) leadership (by respected and committed individuals or organisations) and (7) policy (several types of government support). However, because of the complexity and multi-level nature of ecosystems, many studies produce only long lists of relevant factors, without any clear reasoning on cause and effect, and in doing so provide only limited insight for policy makers and entrepreneurial leaders (Alvedalen & Boschma, 2017; Mack & Mayer, 2016; Stam, 2015).

Neck et al. (2004) and Cohen (2006) were early examiners of the interactions between the multiple attributes of EEs and their combined influence on the creation of new firms in a place. Spigel (2017) has distinguished between cultural, social, and material attributes, arguing that the connections between them help to reproduce an EE's structure and provide benefits to entrepreneurs. Furthermore, the focus of Spigel and Harrison (2018) and Mack and Mayer (2016) on processes and evolutionary dynamics has paved the way for studies of EEs to include a clear, either truly longitudinal or retrospective, temporal dimension. An evolutionary perspective provides a sense of how history, culture, and the institutional setting may affect EEs (Mack & Mayer, 2016), as well as how this process can differ between places with favourable pre-conditions vis-à-vis those where key resources have to be created actively through agency and recombination (Carvalho & Vale, 2018; Porras-Paez & Schmutzler, 2019).

Policy is an important and dynamic component of the institutional setting in which entrepreneurship originates and evolves (Acs et al., 2014; Cohen, 2006; Feld, 2012; Stam & Spigel, 2016). In this regard, recent work has started to link policy features with different developmental stages in the lifecycle of an EE. Mack and Mayer (2016), for example, observed that in the "birth" stage, policy is not so much orientated towards entrepreneurship per se, but instead to traditional economic expansion; strategies to both attract and then retain companies in an area are, therefore, prioritised. In the "growth" phase, policy makers begin to understand the importance of building an EE and so develop policies that support entrepreneurship; More firms come to an area than leave it in this stage, because many of the environment's features (e.g., access to finance, the availability of education on entrepreneurship, opportunities for internationalisation) are favourable for entrepreneurship. A particular role for policy here is to prevent a growth-stage ecosystem from moving into decline, with strategies aiming to ensure the survival of firms, rather than endorsing start-ups (Stam & Spigel, 2016). In the third stage—"sustainment"—the survival of an EE is at stake and can be supported by policy, while in the "decline" stage, policies begin to shift their focus from the EE to other types of economic development (Mack & Mayer, 2016). Throughout this process, policies navigate in a co-evolutionary manner between top-down ("boosterism") and bottom-up support (Feld, 2012; Mack & Mayer, 2016). So, when entrepreneurs and others on the "bottom" rung of political power have played a prominent role in founding the ecosystem, they may attempt to attract the interest and support of policy makers at the "top" (Stam & Spigel, 2016). Inversely, when a policy strategy is developed top-down, local embeddedness is required for successful implementation (Mack & Mayer, 2016).

2.2 | Entrepreneurial ecosystems for the cultural and creative industries

As noted above, the dominant focus of the literature on EEs is on industries that incorporate high-tech, high-growth, and "ambitious" entrepreneurship (e.g., Stam, 2015). In this narrative, the material, social and cultural elements that make up an EE are both at the heart of its evolutionary dynamics and serve as causal explanations for its success, which is often equated with scaling upwards at the firm and system levels (Audretsch & Belitski, 2017; Autio et al., 2014; Brown & Mason, 2017; Spigel &

Harrison, 2018). These elements simultaneously underpin and rely on three factors: (1) the presence of entrepreneurs who create blockbuster companies and can act as sources of capital and mentorship (Brown & Mason, 2017); (2) spin-offs from large anchor firms that act as seedbeds for newcomers (Mayer et al., 2011); and (3) policies, universities, incubators and accelerators that focus on the needs of start-ups (Malecki, 2018; Spigel & Harrison, 2018). The standard notion concerning the development of an EE is that “success breeds success” through a process of cumulative entrepreneurship (Brown & Mason, 2017, p. 18; Isenberg, 2011, p. 9). Although this form of entrepreneurship has crossovers with entrepreneurship in the CCIs (e.g., in the fields of software production and digital media), there may be specific ways in which the latter takes shape from the interactions between entrepreneurs and elements of the EE. As noted earlier, CCIs include the arts, cultural production, and creative sectors. These encompass activities as diverse as advertising, architecture, art, and antique markets, crafts, design, fashion, film, music, the performing arts, publishing, some forms of software development, television and radio, which are all sectors in which creativity, knowledge and intellectual property take centre stage (DCMS, 1998). CCIs have been defined as “the set of agents in a market characterized by [the] adoption of novel ideas within social networks for production and consumption” (Potts et al., 2008, p. 171). Awareness of their positive spillover effects on the economy, in general, has meant that policy makers have long been interested in nurturing a favourable environment for the growth of these types of activity (e.g., Garnham, 2005).

While there is abundant literature covering the antecedents and outcomes of a creative urban ecology, as well as on the development of cultural and creative agglomerations (Jacobs, 1969; Caulfield, 1994; Hall, 2000; Lavanga, 2020; Lorenzen & Frederiksen, 2008; Markusen, 2014; Santagata, 2002; Scott, 2006), using an EE approach to examine creative entrepreneurship and its (urban) context is an unexplored domain. Jeffcutt’s (2004) study of Northern Ireland comes close, but lacks an explicit focus on entrepreneurship. His systemic approach to the dynamics between individuals, organisations, and the environment identifies five important conditions if regional CCIs are to flourish: (1) the sector and its infrastructure; (2) government (policy); (3) new and existing creative businesses; (4) learning; and (5) market opportunities. Similarly, Scott (2006) used specific geographical and historical conditions to demonstrate the interrelatedness of creativity and innovation. He identified four main prerequisites for regional creativity: (1) intra-urban networks of specialist and complementary producers; (2) the local labour market and social networks that connect workers in the urban space; (3) the wider urban environment; and (4) institutions of governance and collective action (Scott, 2010). Other studies pinpoint the “drivers” (Chapain & Propris, 2009) or “pillars” (KEA, 2009) of creativity in a place, and their inclusion of talent, culture, and the ways in which policy engages with such local resources means that they bear a resemblance to the systemic EE models of Isenberg (2011) or Stam (2015).

The current great reliance of CCIs on local resources is both widely consensual and primarily associated with the sector’s dependence on symbolic forms of knowledge that are very sensitive to context (e.g., Asheim et al., 2019). Moreover, the widespread organisation of work around project teams, freelancing, the relevance of *knowing who*, social networks, the aesthetic qualities of a place (e.g., Drake, 2003; Grabher, 2002), and even “conviviality and fun” (Culture for Cities and Regions, 2017) suggest that resources which coalesce and are co-created in localised EEs may be key to explaining entrepreneurship in these types of industry.

In contrast, the great reliance of CCIs on local resources raises concerns about the sustainability of entrepreneurial dynamics, particularly in places where these are emerging or consolidating. The fragility of these dynamics can be affected by shifts in policy cycles or changes in the urban environments that initially supported the emergence of CCIs. Although not explicitly focusing on entrepreneurship, gentrification research has long highlighted these latent tensions (e.g., Cameron & Coaffee, 2005; Ley, 1996; Zukin, 1987). Several studies have documented the displacement of CCI-entrepreneurs

from neighbourhoods (and even cities), which occurs when land prices grow exponentially due to an increase in a city's appeal to new types of resident, with "talent" and high-tech activities out-bidding CCIs and their entrepreneurs (Florida, 2017). The recent and rapid rise of urban tourism has had similar effects in cities (Carvalho et al., 2019; Sequera & Nofre, 2018). Consequently, even if a city attracts CCI-entrepreneurs at a particular point in time (e.g., through the quantity and quality of the demand for new cultural goods and services), the dynamic effects on EEs overall are uncertain (e.g., van den Berg et al., 2014). Moreover, fragile CCI-ecologies may suffer the most from shifts in the focus of policy makers, which are commonplace in local political spheres as different businesses and sectors compete for attention (Knill & Tosun, 2012). In particular, in places with diverse economic structures, industries tend to exert power and battle for limited policy support, possibly leading to inequality in the overall portfolio of policy "offers" and causing harm to different types of industry over time (e.g., Boschma, 2009).

3 | RESEARCH SETTING AND METHODS

In order to explore the ways in which CCI-related entrepreneurship has emerged from interactions between entrepreneurs and their environment, and the role played by urban development and policy affairs over time, we describe key insights from an in-depth case study conducted in the Portuguese city of Porto (215,000 inhabitants; 1.67 million in the metropolitan area). Our focus is on the development of CCI-entrepreneurship in the period 2001–2018.

Porto was chosen as our case study for three main reasons: (1) although the city is largely underexplored in the local and regional economic-development literature, it is a typical example (Yin, 1989) of the dynamics of CCI-entrepreneurship in second-tier, medium-sized European cities over the last two decades. It is particularly interesting because of: the overall expansion of CCIs globally; the impact on it of major cultural events held there (or close by) and the 2008 economic crisis; and the increasingly sophisticated consumption patterns of new groups of city users like high-tech workers, students and tourists (Carvalho et al., 2019). Of the 1,175 CCI¹ firms active in Porto's city centre in 2016, 65% were established after 2001 and 49% after 2009 (Ferreira, 2018), signifying the strong dynamism of the process of new-firm formation over the past two decades; (2) the city is illustrative of a context of both bottom-up activism and top-down policy initiatives to support the establishment of CCI-related ecosystem resources (Romeiro, 2017). However, the early stages of a number of latent synergies and tensions can also be observed, particularly when elements of the CCI-ecosystem interact with other types of urban and regional dynamics, notably the rapid growth of urban tourism, gentrification, and the city's attractiveness to those involved in other kinds of high-tech activity (Fernandes et al., 2018); and (3) from a methodological perspective, the city's moderate urban scale and the relatively recent emergence of CCI-entrepreneurship there enables us to reliably trace back and reconstruct the co-evolutionary processes at stake between agents and their context, limiting the recall bias inherent in qualitative longitudinal research (George and Bennett, 2005).

We used several data sources to make sense of, and recreate, the key dimensions in the interplay between the establishment of the EE and CCI-entrepreneurship in Porto. First, we collected a vast array of secondary data, including policy and industry reports, news articles, press releases, former studies, and other grey literature. Second, we triangulated that data with evidence from in-depth, semi-structured interviews with 16 key informants: old and new entrepreneurs in different CCI-segments (coded as ENTR#, with "#" referring to the interview timeline); not-for-profit associations (NFP); policy makers (GOV); representatives of industry associations (ASSOC); and local experts (EXPERT). These participants were purposely selected for their roles as privileged witnesses and/or

their deep knowledge and long-term involvement in the field (Kincaid & Bright, 1957; for more detail, see Annex 1). The interviews were carried out in April 2018 and July 2019, which allowed for validation, theoretical reconsiderations, and the strengthening of initial findings.² The fieldwork was concluded when saturation was achieved. The interviews lasted for an average of 56 min, were recorded with the participants' consent and transcribed in the language of the recording. The interviewees were asked about: (1) the interdependence of entrepreneurs and the elements of their urban and regional environment; (2) their individual and collective performance over time; (3) the roles of policy and; (4) the sustainability of the EE. The resulting primary and secondary data was analysed using a thematic analysis (Bryman, 2016) and was, ultimately, organised around the core constructs of the frameworks by Spiegel (2017) and Stam (2015) and the dynamic theory by Mack and Mayer (2016).

4 | EMPIRICAL ANALYSIS

4.1 | Key attributes of the EE of Porto's CCIs and their interactions

As Spiegel (2017) argues, the inputs of an EE are localised *cultural*, *social*, and *material* attributes that interact with one another to support entrepreneurial activity and reproduce the overall EE. In the remainder of this section, these interactions are analysed with respect to Porto's CCI sub-ecosystem.

4.1.1 | Material and cultural interactions

Porto's material attributes (including the presence of traditional industries and physical infrastructure) are strongly intertwined with cultural traits like attitudes, norms, and examples of successful enterprises. Porto has benefitted from the established presence of industries whose renewal and competitiveness rely on creative and symbolic inputs and the city's international, economic connectedness. While Lisbon (Portugal's capital) is characterised by a large service sector, the area around Porto is more renowned for its industrial production, also benefitting CCIs; for example, there has been a revival of furniture, footwear, and textile-manufacturing (currently branded as luxury or craft) over the past two decades, leading international observers to note that the city has been "busy designing itself out of a major recession by reinvesting in heritage homeware brands that celebrate the country's diverse artisanship and rich craft traditions" (Ryder, 2017). There was a wide array of entrepreneurial and industrial actors involved in that revival, ranging from craftworkers producing novelties on a local scale to entrepreneurs seeking to champion the "Made in Portugal" label globally and well-established brands. The latter include international luxury brands, for example in footwear, which rely on design and production in the surroundings of Porto and have outpriced their Italian counterparts on the global markets for more than a decade (e.g., Carvalho, 2008). This is illustrated by ASSOC 11, an industry expert, who described how such a context strengthens Porto's CCIs, particularly as:

[an important share of] of the world's production of luxury goods, be it jewellery, furniture, clothing, comes from an 80–100 km radius around Milan and Porto. Think of it: we have textiles from Guimarães, cutlery ... Chanel, Bulgari are producing pieces here [and these include] clothing and shoes.

Porto's infrastructure in terms of housing and amenities has also been an important resource. During the mid-late 2000s, a number of partially abandoned buildings in centrally located areas were gradually

occupied by new cultural and creative entrepreneurs, namely art gallerists, craft producers, and music venues (EXPERT14). Moreover, according to ASSOC11, co-working spaces played a crucial role in forming the ecosystem: “If I had to map the CCI entrepreneurial ecosystem, I’d start with co-working spaces like UPTEC [a refurbished university building used by CCI-entrepreneurs].” Apart from a number of real-estate agency incubators, many co-working spaces merge material and cultural elements that are supportive of the EE, for example, by organising mediation activities that promote contact and exchanges between tenants, as well as between tenants and outsiders. Co-working amenities are appreciated for the proximity to other workers, the community feeling they engender, the synergies, and the social-support systems that can arise. Some of the early entrepreneurial ventures analysed functioned as informal collective workspaces, for example, ENTR5 sub-rented office spaces to creative enterprises, while promoting their bundled services, and ENTR2 offered workshops to craftspeople who, in turn, used their skills and expertise to create visibility for the initiative. This reciprocity between the founders and the tenants in such spaces (including those of ENTR8, ENTR9, and ENTR11) was pivotal to the success of CCI-entrepreneurs.

Accordingly, it is the case that an inherent aspect of the infrastructural amenities, and therefore a key component of the cultural attributes of an EE, are the norms and values of the entrepreneurs who make use of those amenities. The interviewees explained that cooperation and co-creation were key factors in not only their own firm’s survival, but also for sustaining the overall CCI-ecosystem. This is because the moderate scale, resource scarcity, and concomitant stage of development of the EE produced a strong spirit of reciprocity amongst the creative workers, contributing to a supportive local community that several of those interviewed for this study described as a “family.” Most of the respondents stated explicitly that competition had not (yet) been relevant. Voicing this, ENTR1, from the field of music production, argued that “there is no competition: there are common points”; likewise, ENTR4, an audio-visual producer, recognised that “Porto (...) still allows you to do something for the first time.” The scale of the EE enables entrepreneurs to have an overview of other people’s activities, which they often take into account. As NFP11, the director of an experimental sound lab, illustrates:

We can’t talk about competition ... Casa da Música [a large cultural venue and concert hall] has an entity called Digitópia related to electronic music as well. If we plan to do a workshop, we try not to have conflicting schedules; to not compete for the same audience.

4.1.2 | Material and social interactions

Interactions between Porto’s material (higher education and support services) and social attributes (talent and networks) have also played a role in the development of an EE for CCIs in the city. Beyond “local talent,” many creative entrepreneurs from both within the country and abroad moved to Porto to start a business; for example, ENTR3, a Spanish fashion designer, moved to the city because of its proximity to specialist fabric suppliers and the cost advantages of production in the region. Nonetheless, those who became part of Porto’s consolidating ecosystem experienced a number of setbacks and had to combine creative occupations with part-time jobs (e.g., door-keeping for ENTR3), while other entrepreneurs had to complement their most precarious business stream with more lucrative ones, for example, the workshops in ceramics put on by ENTR2 became her largest revenue source, even though they took the smallest share of her time; and ENTR1 owned a transportation company as well as a music venue.

Like in many other EEs, Porto’s Higher Education Institutions (HEIs) have also been important material attributes, fostering the creative talent that designs and produces creative goods and services. They have also, and perhaps more importantly, nurtured a receptive audience for CCIs’ offerings. Musicians educated at the Fine Arts Academy, for example, attend ENTR10’s cultural venue for music

gigs and are selective consumers of all other types of CCI product. From the moment Porto's HEIs started to attract foreign exchange students, their role in catalysing an advanced and selective demand for cultural goods and services in the city increased (Ferreira, 2018). Such a role is also attributed by the entrepreneurs in our study to the Serralves Foundation, a modern art museum (created in 1989 as a public-private partnership), which contributed to the international exposure of the city and fuelled local cultural dynamics and "several artistic movements, that stayed [in the city over time]" (ENTR2).

4.1.3 | Social and cultural interactions

The interplay between the social and cultural attributes of Porto's creative EE has, ultimately, also contributed to its development. The city's opening up to international audiences was a counterweight to both the initial lack of social support experienced by our entrepreneurs from their environment and the scepticism of the local community (e.g., ASSOC12; EXPERT14). Confrontation with a new and diverse audience motivated many of the participants, as explained by ENTR5, the owner of a creative hub:

[The city] has high-quality [culturally savvy] foreign visitors. It's improved a lot. It's much more fun to live in Porto ... [In 2012] there wasn't this "fresh air", these different views, people who were congratulating you for your project, which is original in any part of the world. When you don't have those views, it's demotivating.

Moreover, despite the somewhat organic emergence of the ecosystem, leadership—or those actors and factors directing its progression (Stam, 2015)—also contributed to steering its future course. Early entrepreneurs became both role models and influential, with some sharing premises that became CCI-hubs within the city. Additionally, as explored further in section 4.2, some entrepreneurs founded associations and agencies to raise awareness and attract government funding for new projects, and to leverage those that already existed. What were, originally, local initiatives became regional associations for the CCIs (e.g., as championed by ASSOC12, ASSOC13, and EXPERT15), and also started to exert an influence at the national level. At this stage, although lacking the scale of other CCI-supportive EEs in the country (notably Lisbon), Porto has nevertheless developed into a sizable and dynamic agglomeration for this sector (Ferreira, 2018; Guerra, 2013).

In summary, the interplay between *cultural*, *social*, and *material* attributes (Spigel, 2017) in Porto contributed to the formation of a CCI-supportive EE, particularly as entrepreneurial activity co-evolved along with an increasingly accommodating local context (Stam, 2015). Resources like talent (the human capital of current and potential entrepreneurs, collaborators or partners), demand (the quantity and nature of consumers, or, in cultural terms, audiences, visitors, and clients), and formal and informal collaboration networks jointly and reciprocally contributed to the initial development of the EE. The physical infrastructure, support services/intermediaries, and leadership in this process enhanced the synergies and further articulations between entrepreneurs. HEIs also contributed to these interactions, as did the material availability of cheap and derelict real estate that entrepreneurs mobilised to create and market their offerings.

4.2 | The entrepreneurial ecosystem of Porto's CCIs over time

Along with, and complementing, the dimensions discussed above, urban-development affairs and policy-related factors also influenced the progression of Porto's EE, specifically because they interacted

with the aforementioned CCI sub-system during the different development stages (cf., Mack & Mayer, 2016).

4.2.1 | The birth stage

Beyond organic entrepreneurial activities, the birth stage of Porto's creative EE and its key resources can be linked to a number of policy actions, including bottom-up and top-down agency, even though they were not specifically targeted at fostering CCI-entrepreneurship. This period can unambiguously be linked to the European Capital of Culture title awarded to the city in 2001. All the interviewees, as well as the extant evidence (e.g., Balsas, 2004; Fundação de Serralves, 2008), highlight this as both a turning point in Porto's international exposure and a catalyst for the physical rehabilitation of the urban space. In the words of ENTR10, the founder of a music and cultural venue:

Porto [European Cultural Capital] 2001 was a very important milestone in the city, for the [physical] rehabilitation of many [decaying] streets in the city [centre]; it's not a coincidence that they're now the liveliest ... I think it was a turning point ... for the city, the people's attitude [towards culture], institutions.

Nevertheless, the physical rehabilitation of the urban space took time to bear fruit, in line with several other cases of culture-led regeneration. Balsas (2004) reported that Porto's city centre became somewhat livelier from 2001 onwards, but entrepreneurial dynamics did not follow on apace. In fact, several respondents experienced what they described as a "dead period," "hangover effects" or an "incredible rewind," which they ascribed to the lack of interest by decision makers and policy officers. However, it was also during this aftermath that some CCI-pioneers launched their ventures (e.g., art galleries, cultural venues), despite the overall lack of policy support. Urban rehabilitation and the general inflow of capital into Porto received a second boost in 2004 when the city hosted UEFA's Euro 2004 football tournament. The interviewees recognised the event as "an extension of the Capital of Culture" in terms of international exposure, as well as a period in which a number of important cultural venues opened their doors for the first time.

The following years marked the rise of CCI-entrepreneurship. It was also a turning point, with the CCIs sub-ecosystem gaining momentum and a rapid rise in the number of entrepreneurs. As analysed by Ferreira (2018), 65% of the CCI-firms active in Porto's city centre were established after 2001, although 49% of these were founded after 2009, mirroring the typical time lag between hosting major events and the development of an ecosystem. By the mid-late 2000s, a number of external developments, such as regional policy support to attract low-cost air carriers and Porto University's growing appeal to international students (Carvalho et al., 2019), created an upwards spiral in which new life, culture, and leisure started to collide in the city, pushing the CCI sub-ecosystem unambiguously into a growth stage.

4.2.2 | The growth stage

In this stage, and as predicted by the literature, policy support becomes more attuned to CCI-entrepreneurship and the ecosystem itself. A turning point in policy interest was the foundation of ADDICT in 2008—a government-funded agency for the development of creative industries in the Porto region, which was supported by regional and national funding. The agency drew attention to the growing economic contribution of CCI-entrepreneurship in the regional and local economy and

lobbied for additional policy support. Increased financial support came from regional and national policy programmes and was topped up with ecosystem-building strategies like sector-mapping, network-building, international promotion, and competence-centre formation (Guerra, 2013). New ecosystem-supportive partnerships, including national entrepreneurship awards for CCIs, brought together ADDICT, museums, not-for-profit organisations and major private firms. In 2008, the Serralves Foundation launched a CCI-incubation facility for promising projects, while the University of Porto founded PINC, a specific department dedicated to CCIs within its science and technology park; at about the same time, other HEIs in Porto also started to offer master's degrees and advanced education on entrepreneurship in the creative industries (Brito, 2018).

In the early 2010s, the link between culture, creativity, and entrepreneurship became a strong assumption in policy circles, including as an antidote to the unfolding 2008–2012 economic crisis in Europe. Consequently, when the city of Guimarães (a 45-min drive from Porto) was named as the 2012 European Cultural Capital, the legacy plan focused explicitly on entrepreneurship (EXPERT14). Moreover, according to ENTR4, an audio-visual producer, “Guimarães 2012 was really important [for cultural production] because (...) a lot of people from Porto got a “big balloon of air” to breathe, because they were really struggling [from the economic crisis].” The crisis did not seem to have significantly affected the consolidation of the CCIs' sub-ecosystem. Although some interviewees (EXPERT14) suggested that a number of CCI entrepreneurs might have left the city and closed their businesses, the crisis also created new entrepreneurship opportunities for people who turned their attention to new activities and creative solutions. For example, ENTR2's latent entrepreneurial talent was activated by the negative circumstances, causing her to leave her job and start a business in ceramics. Another example is the “ephemeral architecture” movement that resulted from the crisis, with many architecture studios in Porto moving in this direction (ENTR4).

In 2013, as a new mayor took office, the role of culture became preeminent in the municipal strategy; although the attention paid to CCIs had been increasing in Porto, it was only at this time that it became central to the Council's policies (GOV16). ENTR5, the founder of a creative hub, describes this shift “[as] a revolution in the city, [in which] Rui Moreira [new mayor], with the help of Paulo Cunha e Silva [alderman], managed to activate all the cultural agents in the city, the spaces and the civic society, to participate in cultural activities.” As described by ENTR6, the co-founder of a gallery, “it became hard to find a problem with the city council's programme of cultural intervention ... [it became] very avant-garde.”

Overall, by the early-mid 2010s, a CCI-supportive ecosystem had formed in Porto, in which entrepreneurship and the aforementioned resources co-evolved with available funding, policy-attention, and networks of entrepreneurs and other actors and advocates. Although the municipal strategy came late to the party, the role of the CCIs was widely acknowledged in all policy spheres by this time and was included as a spearhead in the region's economic strategy for 2014–20, underpinning economic-diversification goals around “culture, fashion and creation” and “symbolic capital and tourism” (CCDRN, 2015).

4.2.3 | At the crossroads between growth and decline?

Porto's sub-ecosystem for CCIs started to interact with two new adjacent forms of urban dynamics from the mid-2010s onwards: the rapid rise of digital, high-tech entrepreneurship (driven by both indigenous and foreign investment); and an exponential rise in platform-mediated urban tourism (Chamusca et al., 2019). Overall, due to proactive policies to attract investment at the local level and the presence of highly qualified graduates in technological fields, Porto's economy grew from 2013 to

2019 at annual rates of 4%–5%, which was way above the national and European average (EY, 2019). At the same time, the city became a popular tourist destination, with the number of people arriving at its airport growing by 140% from 2007 to 2017 (exceeding 5 million in 2017). Property prices overall also doubled (Carvalho et al., 2019). These urban economic dynamics had an ambiguous effect on the consolidation of Porto's CCI sub-ecosystem, positively contributing to, on the one hand, new demand and, on the other, the displacement of entrepreneurs and competition for the talent and policy-support that ignited the sub-ecosystem in the first place.

The emergence of new high-tech economies, the inflow of international talent and new users of the city brought increased demand and more sophisticated cultural-consumption markets to Porto, further developing CCI-entrepreneurship and its ecosystem (e.g., in the fields of performative arts, architecture, crafts and fashion, cultural production, and leisure). Some of this is reflected in the fact that about four in ten downtown retail units experienced functional and/or ownership changes from 2012 to 2017 (Chamusca et al., 2019), specifically to accommodate new CCI-entrepreneurship. Nonetheless, there is also evidence that rising consumption in the city did not benefit all of the industry's segments equally, as demand for space led to disproportionate rent increases, which is a well-known phenomenon in culture-led gentrification processes (Zukin, 1987). As explained, and experienced, by some of our interviewees (ENTR5, ENTR10, EXPERT14), art galleries, more vulnerable cultural organisations, and other CCI-businesses had to relocate to different areas in the city, endangering the support and collaboration the EE established over the decade.

The rise of high-tech entrepreneurship and new rapidly growing digital businesses in Porto also increased the competition for talent. In particular, creative industries associated with, for example, advertising and graphic/web design have seen higher demand and faced a shortage of available workers (Talent Portugal, 2017). The reasons for this can be found in the growing need for such skills from foreign investors, combined with the significant emigration of skilled labour during the recent economic crisis (as explained by ASSOC13, which was involved with ADDICT and the Portuguese Arts Council). Data show that the declared private investment in new ventures in the fields of media and fashion in Porto from 2013 to 2019 was €3.5 million. This represented only 6% of the total new private investment in the combined fields of enterprise and mobility software and fintech (€53.7 million, Porto Digital, 2020).

Although the notion of "*ecosistema*" became part of the lexicon of local policy makers (ENTR2; GOV16; EXPERT15), showing awareness of the intertwinement of entrepreneurship with its environment, there is also evidence that policy on CCIs digressed to favour new urban-growth engines—high-tech ventures and tourism—and their need for space. Even though there have been recent plans for new flagship urban redevelopments involving CCI-entrepreneurship (e.g., turning a former slaughterhouse into a cultural hub), these goals remain mired in politics; at the same time, the policy focus on high-tech entrepreneurship and "scale-ups" has been on the rise (Rivas, 2018; GOV16).

In 2018, a lack of funding saw ADDICT close its doors after ten years. While this could be conceived as a preference of local CCI-entrepreneurs for "organically emergent" entrepreneurship instead of organised top-down support, the fact remains that the resources of the CCI sub-ecosystem changed as they met new urban, high-tech economic dynamics and policy conditions.

5 | DISCUSSION

5.1 | The specificities of a sub-ecosystem for CCIs

As observed above in relation to its attributes (Spigel, 2017) and "systemness" (cf., Malecki, 2018), Porto's EE for CCIs has benefitted significantly from the presence of increasingly fine-tuned policy

support, human capital, an industrial tradition, and a rising international demand. Even at times when the EE had limited financial reserves, creative individuals were reinvigorated to start entrepreneurial ventures by the city's local culture and other less tangible elements that reside in the traditions and atmosphere of a place and its quality of life (Drake, 2003; Florida, 2002; Lavanga et al., 2020; Mason & Brown, 2014; Scott, 2010). While the literature has related the strength of (high-tech) EEs to the resources available to entrepreneurs, with "munificent ecosystems" being rich in assets like financing, knowledge, and talent (Spigel & Harrison, 2018), a major strength of Porto's CCI sub-ecosystem—and a precursor to its development—can be very much linked to inter-personal exchanges, in line with Spigel's (2017) cultural and social attributes. The resource constraints during the birth of Porto's EE for CCIs activated a strong, supportive culture amongst creative entrepreneurs, putting in motion various transactions in which human (skills, talent) and social capital (contacts) were exchanged and converted into entrepreneurial value (cf., Scott, 2012). Likewise, a key material attribute supporting the nascent EE was the presence of available physical space at a price-point that was still affordable. This acted simultaneously as a facilitator of creation and co-creation, and as an alternative currency within the convivial and reciprocal transactions between local entrepreneurs.

Nevertheless, even if supportive behaviours and a sensitivity to the local community are tempting candidates for typifying the sub-ecosystem attributes of CCIs in Porto, they are probably just as much (if not more) related to the time and spatial dimensions of EEs than to the "creative" side of the industries under analysis. Indeed, shared intentions and goals and a sense of community have also been found to be important for the progression of EEs in other industrial contexts in both developed and developing economies (Malecki, 2018).³ In contrast, the cohesive interactions in the EE of Porto's CCIs are more likely to be a particular manifestation of the *local culture* dimension in the extant EE frameworks (cf., Isenberg, 2011; Stam, 2015); in any given place, and similar to physical infrastructure, it may be that talent, knowledge, demand, leadership and the like simply play out differently in "embryonic ecosystems" compared with "scale-up" versions (Brown & Mason, 2017). Accordingly, from our analysis of Porto's CCI sub-ecosystem, the adoption of new, alternative dimensions for EE frameworks, which are applicable to non-high-tech and non-high-growth settings, does not immediately seem to be relevant.

5.2 | Ecosystem development in conjunction with urban development

By examining how urban development and policy dimensions come into play in the progression of a CCI sub-ecosystem over time, our study has addressed the statement by Brown and Mason (2017, p.15) that the "initial conceptualisations of EEs appear to be somewhat under-socialised, lacking a time dimension and fail to incorporate the full complexities of the socio-spatial context mediating entrepreneurship." Our empirical findings illustrate the importance of investigating the congruity of structure *and* agency in order to fully understand the complexity of an EE (Brown & Mason, 2017; Stam & van de Ven, 2019).

Strong, intertemporal interdependencies between talent, an entrepreneurial culture, physical infrastructure, leadership, and demand were present in Porto's CCI-EE from its birth stage to 2008. Such a collection of elements in the territory provided a favourable context for CCI-entrepreneurship and policy initiatives, existing as a manifestation of *a structure that affected agency* (Stam & van de Ven, 2019). In turn, the productive entrepreneurship of creative entrepreneurs, in conjunction with policy initiatives, influenced the structural dimensions of Porto's EE, which became characterised from the mid-2010s onwards by more sophisticated cultural-consumption markets, the inflow of international talent and visitors, innovative educational programmes and foreign investment. Policy brought about

some unrelated CCI changes (e.g., the increasing accessibility of the city and neighbourhood redevelopment projects), leading to an upwards, positive spiral that propelled the CCI-EE into a growth stage in the mid-2010s. In this stage, Porto's CCI-EE began to interact with new urban growth engines (i.e., emerging high-tech entrepreneurship and tourism), which had partly been enacted by policy.

In this sense, the case of Porto suggests that an urban lens helps to shed light on a number of dimensions that are often overlooked at the regional level, namely the interactions between entrepreneurial dynamics and urban affairs (e.g., competition for physical space, gentrification, and policy focused on high-growth industries). These could potentially affect many other resource-scarce EEs around the world. In fact, the lens of EE-studies appears to have mainly been on high-growth and high-tech ventures, presumably because of the notion that it is only the performances of these sub-ecosystems that have a transcendent power that might spill-over into other sectors, thereby producing a mature EE (Malecki, 2018; Stam & van de Ven, 2019). Such conceptions of EEs appear to confirm that entrepreneurship has a "cumulative self-perpetuating effect on future levels of entrepreneurship" (Brown & Mason, 2017, p. 18), which *must* start off as technology- and innovation-related. Our findings suggest that accounting for both the structure and agency of sub-ecosystems, including those that initially appear to be neither productive nor innovative, could provide greater depth to EE frameworks. Indeed, having an integrated view of the dynamics of entrepreneurial sub-ecosystems and urban affairs improves what is understood of a causal EE model (Stam & van de Ven, 2019).

6 | CONCLUSIONS AND CHALLENGES AHEAD

Using an in-depth case study of Porto, this paper sought to apply a systemic perspective to an entrepreneurial sub-ecosystem (that of CCIs). This was achieved by linking studies analysing the development of CCIs in cities to the growing literature on EEs. These activities were studied not only because of their assumed contributions to Porto's development, but also in order to assess the potential implications for EE-frameworks of relating a sub-ecosystem to the specific urban context in which it plays out. Although quite different from the more commonly examined high-tech, high-growth EEs, existing frameworks (Mack & Mayer, 2016; Spigel, 2017; Stam, 2015) performed well in explaining the formation of a CCI-EE and its development over time. In this concrete case, we found that resource-constraints (associated with the industrial and geographical context under analysis) were compensated by social relations and aspects of the local culture, with policy support activated and aligned only after the birth stage of the sub-ecosystem.

Beyond explaining the development and consolidation of a CCI sub-ecosystem in Porto, this research also contributes to highlighting the evolving links between the sub-ecosystem and the broader evolutionary process of entrepreneurial development. On the one hand, the city's CCIs contributed to improving the overall context and the local cultural offer upon which high-tech entrepreneurship could emerge and grow; on the other, new high-tech, high-growth entrepreneurial dynamics, and the emergence of new urban economies started to affect—and actually challenge—the consolidation of the CCI sub-ecosystem. If new high-tech entrepreneurship fuelled the demand conditions under which the CCIs could continue to thrive, it also endangered other pivotal attributes of the sub-ecosystem (e.g., physical collaborative space, talent, and policy attention) that made it grow in the first place. These dynamics raise concerns about the sustainability of the CCI sub-ecosystem, calling for further research and policy attention on the interplay between the different sub-ecosystems that shape entrepreneurial dynamics in places where resources are scarce.

Building on the findings set out above, three additional avenues for further research stand out. First, future sub-ecosystem studies could continue to highlight the processes and agents at work, while also

accounting for the congruity of structure and agency (Brown & Mason, 2017). It is not only how entrepreneurs make use of available resources in an EE, but also how they deal with their absence, that requires further examination. The heterogeneity of such processes should be better accounted for, because they are often assumed to be homogenous for all industry members (cf., Spigel & Harrison, 2018). In this respect, the present study also over-generalised by implicitly assuming that all cultural and creative industries (visual arts, performing arts, music, fashion, ceramics, etc.), and all agents, ranging from solo-entrepreneurs to larger cultural institutions, act on ecosystem elements in similar ways.

Second, new studies should open up EE frameworks to other forms of collective achievement that do not strive for growth or financial success, but can nevertheless be regarded as productive entrepreneurship, that is, the output of an EE (Stam & van de Ven, 2019). In the words of William Baumol (1993, p. 30), productive entrepreneurship is “any entrepreneurial activity that contributes directly or indirectly to [the] net output of the economy or to the capacity to produce additional output.” Interpretations other than in terms of ambitious entrepreneurs (Stam & van de Ven, 2019) and blockbuster firms (Brown & Mason, 2017) are required if we are not to be ignorant of the entrepreneurial activity that only makes *indirect* contributions to the net outputs of an economy, or that which adds to *the capacity to produce additional outputs* (cf., Baumol), as highlighted in this study for cultural and creative industries.

Finally, closer engagement with minorities other than cultural and creative entrepreneurs, including women, who may have other visions of success and act on place-based needs and community well-being (e.g., Jennings & Brush, 2013; Malecki, 2018), should also contribute to challenging further contemporary EE frameworks. This is also true for social (Roundy et al., 2017) and non-profit sectors that may play crucial roles in nurturing the elements of an EE (Stam & van de Ven, 2019). If such indirect contributions to a local economy are considered to be hallmarks of productive entrepreneurship, justice can be done to the roles of non-growth-oriented (creative, social, etc.) entrepreneurship in aggregate welfare creation, which is said to be the ultimate outcome of entrepreneurship (Stam, 2015).

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ENDNOTES

- ¹ These included businesses directly linked to culture and the arts, artistic creation, specialist retail, small-scale software development, the production of cultural and creative goods, and other activities linked to cultural production and consumption. Of these firms, 96% had fewer than ten employees (Ferreira, 2018).
- ² The data collected in 2018 was part of the thesis “Liquid city. The evolution of Porto’s cultural and creative entrepreneurial ecosystem” written by Miguel Jácome Neiva for his MA in Cultural Economics and Entrepreneurship (Erasmus University Rotterdam) under the supervision of dr. Mariangela Lavanga.
- ³ For example, a supportive local culture was observed in Boulder, Colorado, when the industry was in its infancy (Feld, 2012); start-ups in technology EEs in places like Phoenix, Arizona, and St. Louis, Missouri, have been found to be more inclined towards cooperating by sharing resources rather than competing (Mack & Mayer, 2016; Motoyama & Knowlton, 2017). Using dense social and support networks to overcome problems of limited resources and a shortage of venture capital and technology have also been noted in EEs in developing economies, such as the Atlántico department in Colombia (Porrás-Paez & Schmutzler, 2019), and in Lagos (Nigeria) and Accra (Ghana) (Sheriff & Muffatto, 2015; Spigel & Harrison, 2018). This means it is not a unique attribute of CCI-ecosystems, in which competitive behaviours are just as common (Loots et al., 2018).

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ANNEX 1

Overview of the interviewees

Interviewee #	Main activity type	Startup date/ Current activity	Position	Sector	Previous/further professional experience
1	ENTR	2006	Co-founder, director	Music event promoter	Artist manager, logistics
2	ENTR	2016	Founder, director	Crafts (ceramics)	Social service officer (Porto municipality)
3	ENTR	2015	Co-founder, designer	Fashion	Night club doorman
4	ENTR	2011	Executive producer	Arts & culture audiovisual media	Co-founder of OPO'Lab, Get Set Festival, cultural events
5	ENTR	2001	Founder, director	Creative hub (restaurant, bar, night club, gallery)	Photographer, board member of ADDICT, cultural advisor
6	ENTR	2013	Co-founder, director	Gallery and performing arts venue	High-school teacher, publishing industry
7	ENTR	2013	Co-founder, director	Gallery and performing arts venue	Banking sector
8	ENTR	2016	Co-founder, designer	Media arts (art-technology)	Researcher (PhD)
9	ENTR	2016	Co-founder, architect	Media arts (art-technology)	Architecture studio
10	ENTR	2004	Founder, owner	Night club, cinema and concerts	Cultural venue and bar owner
11	NFP	2008	Co-founder, director	Experimental sound lab	Researcher (PhD), Professor, cultural events
12	ASSOC	2008	Executive director (2010-14)	Cultural and creative industries policy	Member of European Cultural Capital Committee; independent policy advisor
13	ASSOC	2008	Executive director (2015-16)	Cultural and creative industries policy	Vice-director of Portuguese Arts Council (DGArtes) Chief Talent Officer of Porto Municipality, Designer, worked in Silicon Valley

Interviewee #	Main activity type	Startup date/ Current activity	Position	Sector	Previous/further professional experience
14	EXPERT	Late 1980s	Managing director	Consulting	Senior Cultural Policy Advisor since 1980s
15	EXPERT	2008	Founder, managing director	Consulting	Executive Director of Guimarães 2012 European Capital of Culture; Chairman of ADDICT; Member of the National Council for Culture; Educator
16	GOV	In office since 2016	Councillor for the Economy, Tourism, and Commerce	Government	City Councillor for European Funds; in charge of InvestPorto and Porto Convention & Visitors Bureau

Abbreviations: ASSOC, Industry Association; ENTR, entrepreneur; EXPERT, Expert; GOV, Governmental organisation, policy maker; NFP, not-for-profit organisation.