A manifesto for researching entrepreneurial ecosystems

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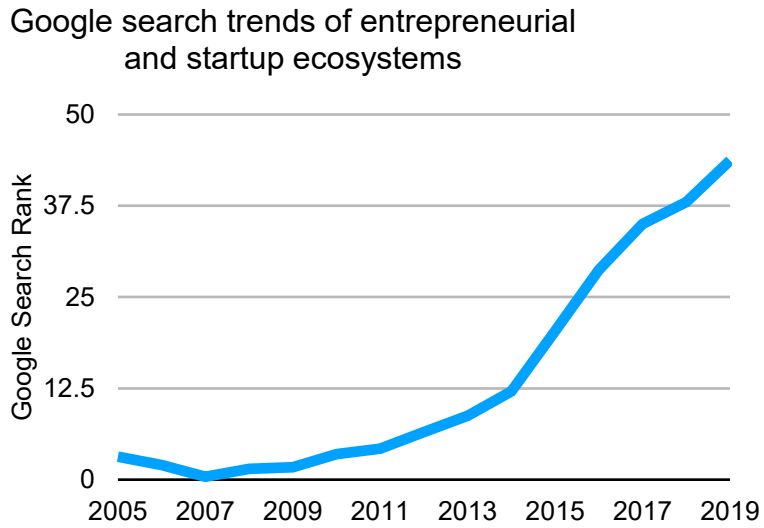
A MANIFESTO FOR RESEARCHING ENTREPRENEURIAL ECOSYSTEMS

1. THE LANDSCAPE

Entrepreneurial ecosystems have emerged as one of the most popular new economic development policies of the decade. Governments in developed and developing economies have turned to ecosystem approaches as a way in which to create jobs, boost innovation, and, in turn, generate economic prosperity. There has been a substantial growth in interest in topics such as entrepreneurial and startup ecosystems over the past 15 years (Figure 1). Major international NGOs such as the Kauffman Foundation (Motoyama and Watkins, 2014), the World Economic Forum (2013; 2014), and the OECD (Mason and Brown, 2014) have all advanced ideas on the development of entrepreneurial ecosystems. They have been joined by a growing collection of economic development policy advisors, gurus, practitioners, and researchers who are implementing ecosystem ideas on the ground.

FIGURE 1



The popularity of the ecosystem concept has emerged at a time of profound austerity, economic stagnation and a widening of geographical disparities in economic development in many economies. Harnessing the potential of local entrepreneurs is seen as a way in which to transform the economic trajectory of economically lagging regions, potentially helping to reverse the declines caused by de-industrialization, and automation. In the most successful cases, small nudges from public servants and local business communities can create a self-sustaining cycle of entrepreneurial innovation, growth, and re-investment. These shifts make entrepreneurial ecosystems an attractive idea for policymakers and researchers (Spigel, 2017). Unlike clusters and innovation systems, it is argued, ecosystem approaches do not call for major investments in new physical infrastructure. Rather, they seek to build an engaged community of entrepreneurial actors who can co-create the support required to help innovative new firms start and scale (Feld, 2012). Ecosystem approaches seek to harness local skills and specialties to create new value rather than depending on tax incentives or grants to attract in footloose global players who may leave as quickly as they come.

Given this, there is a need to bring together stakeholders to investigate what we know about entrepreneurial ecosystems, what we don't know, and what is needed to create the best environment for innovative entrepreneurship. This public policy interest demands critical inquiry by scholars. Much like older ideas of clusters and innovation systems, ecosystem concepts are easy to promote but hard to implement.

According to Autio and Levie (2017), entrepreneurial ecosystems are "...dynamic, regionally embedded interaction systems that drive the allocation of resources towards productive uses through the creation, operation and growth of new ventures." We define entrepreneurial ecosystems here as *the regional collection of actors (such as entrepreneurs, advisors, workers, mentors, and workers) and factors (cultural outlooks, policies, R&D systems, and networks) that all contribute to the creation and survival of high-growth ventures* (Stam, 2015). We focus on high-growth

entrepreneurship because it is seen as a major driver of job creation and economic growth in both advanced and emerging economies (Brown et al, 2014; OECD, 2010). Governments have a keen interest in identifying barriers to this kind of innovative entrepreneurship and are looking for new avenues to support it. Whereas in the past many regions have looked to attract new investment from multi-national companies, local entrepreneurship is now seen as a leading engine for economic development (Auerswald, 2015). At the same time, throughout the world, economic development powers are being devolved to city-regions so they can build new policies that reflect their unique resources, capabilities, and strengths, creating a new urgency for localized, contextually-sensitive policies (Katz and Bradley, 2013).

More research is necessary to understand not only what entrepreneurial ecosystems are — the types of actors and factors most associated with high-growth entrepreneurship — but also how and why certain ecosystems help increase the performance and survival of innovative firms. More research is needed on how entrepreneurial ecosystems develop and what types of events or conditions can constrain this growth. Critical research is needed to separate the possible from the impossible, to identify what best practices can be transferred from place to place, and to question the validity of the connections between high-growth entrepreneurial and overall social prosperity. Such insights will not only help policymakers and entrepreneurial communities understand how to overcome common challenges in the quest to build stronger ecosystems but will also provide insights into fundamental questions about how entrepreneurship works and how it is affected by its environment.

To address these research and policy needs, supported through the UK-Japan Social Sciences, Arts and Humanities (SSH) Connections grants under the Economic and Social Research Council (ESRC) and the Arts and Humanities Research Council (AHRC), we organized two international workshops in the UK and Japan in 2019 to help create a community of interested researchers and practitioners with the hope of identifying the most salient research questions and identify the

challenges to building effective public policy and entrepreneurial support. This Manifesto is designed to synthesize the major themes and discussions from these workshops and sketch out a research agenda that will produce both engaged scholarship to move forward debates in entrepreneurship and innovation research and identify actionable insights and ideas that can be applied to help strengthen entrepreneurial ecosystems around the world.

At the first workshop in Glasgow (7 May 2019) –"**Measuring entrepreneurial and innovation ecosystems**" - we identified several issues facing research on entrepreneurship ecosystems. At the second workshop in Tokyo (24 June 2019) – "**Place-Based Ecosystems: Making Connections between Entrepreneurship and Innovation**", we came to realize the very different contexts and challenges facing the two different nations and regions within them, requiring different approaches to ecosystem policy. Identifying the problems is a first step to addressing them. Below, we summarize the problems that limit the policy-relevance of ecosystem research as well as its ability to grow as a self-sustaining field. We then discuss the diverse and evolving nature of policy needs, with different initiatives taken by governments at both national and local levels. We conclude with some suggestions for future research agendas.

2. THE PROBLEMS

2.1. Problems with existing data

One of the major topics of discussion in the first workshop was the limitations of existing data sources such as government censuses, business surveys, and economic data and existing research data such as the Global Entrepreneurship Monitor (GEM). The first issue is one of scale: much of the most important data are only available at national levels[1], while ecosystems function predominantly at the sub-national (e.g. city, city-region, regional) scale. National-level data hide a

[1] In addition to GEM, some other examples may include: *George Mason University's Global Entrepreneurship and Development Index (GEDI)*, the *World Bank's Doing Business ranking* and the *OECD's Entrepreneurship Measurement Framework.*

great deal of variation between and within city-regions, which makes it difficult to understand the reality of the situation on the ground.

The more pernicious problem is the difficulty of gathering quantitative data on how entrepreneurial ecosystems work. This begins with the challenges of identifying "high-growth" firms — the firms that ecosystems are, in principle, designed to support. For instance, the OECD's definition of "high-growth firms" ("All enterprises with average annualised growth in number of employees or turnover greater than 20% per annum, over a three year period") is overly restrictive and excludes many job-creating innovative firms (Daunfeldt, Halvarssonb and Johansson, 2015). Corporate registries provide very few details on the growth patterns of early stage or small firms, making it hard to identify firms beginning their scaling phase. Although some business intelligence companies are developing methods to identify these firms, such data is restricted, expensive, and rarely is available across multiple countries.

But as hard as it is to define high-growth firms, it is even harder to measure many of the actors and factors that make up strong entrepreneurial ecosystems. While a few measures such as highly educated talent (if we define this people with university degrees) and innovation (if we define this as patents or R&D investment) can be easily counted, other aspects of ecosystems such as the presence of entrepreneurial cultures, dense social networks, and pools of angel investors are much harder to measure. Existing proxy measures and expert surveys are limited in what they can tell us. We are also missing dynamic data that shows the underlying processes of how ecosystems develop and deliver benefits to entrepreneurs within them.

At the Glasgow meeting, we discussed different measurement approaches, both qualitative and quantitative. There are already different forms of 'ecosystem rankings' and a set of comparative

measures has been developed and adopted internationally (e.g. MIT REAP Framework[2]). But there is a need for new and innovative metrics that can measure aspects of ecosystems that have so far been obscured. We discussed new techniques for using data from digital platforms (e.g. Meetup.com and LinkedIn) to quantify ecosystem attributes such as entrepreneurial culture and the movement of people and ideas between firms, and new ways to use data from firm websites to systematically identify innovative, high-growth firms (discussed further in Section 4).

2.2 The challenge of combining qualitative and quantitative insights

One of the most common themes discussed by policymakers at our workshops was the importance of bringing together findings from quantitative case studies of ecosystems with qualitative insights from discussions with key stakeholders within ecosystems. These stakeholders range from those in the public sector who are charged with supporting entrepreneurial activity to members of the business and investment community to the entrepreneurs themselves. This reflects the core arguments of practitioners like Dan Isenberg (2010) and Brad Feld (2012) that the ecosystem must be focused on the needs of the entrepreneurs themselves.

One particular issue that was discussed at both the Glasgow and Tokyo meetings was the tendency to focus on formal support rather than the informal support networks between entrepreneurs. This is often a consequence of visibility: support programmes funded by the government are easy to identify and have known directors and missions, making them easier to study. Although studying formal support programmes is important, this misses out on the complexity of what entrepreneurial ecosystems are and how they work.

[2] Several cities and regions in the UK and Japan, including Scotland, Wales, London and Tokyo, have participated in this programme. https://reap.mit.edu

But whereas an idealized view of ecosystems may have entrepreneurs as the main leaders and organizers, the reality is that they often lack the time, resources, and ability to take on this role. Possible leaders of entrepreneurial ecosystems may not be necessarily currently engaged in entrepreneurship. They may be, for example, cashed out and exited entrepreneurs, or 'hands-off' entrepreneurs who have brought in senior management people to enable them to step aside from day-to-day involvement. Other actors must take the lead by creating buy-in about the needs of entrepreneurs and the wider community and to develop short-term interventions and long-term plans. This requires more than just surveys to measure existing actors, factors, and resources in an ecosystem; it also necessitates a deep engagement with the needs of many different groups to identify and plan the best path forward. New research and engagement approaches are required to bring these groups together to build consensus and a shared vision of how the ecosystem should progress.

2.3 Ecosystems as a policy buzzword

There is a long tradition of "policy fads" that are positioned as cure-alls for ailing economies. Examples include clusters, regional innovation systems, creative cities, and the attraction of mobile investment though grants and tax subsidies. Entire consulting industries have developed to sell such solutions. However well-meaning the research and practice community is, entrepreneurial ecosystems risks falling into this category. If this were to happen, we would lose the focus on building entrepreneur-focused communities that aid the scaling and innovation processes.

At this point in time, research interest in ecosystems is driven by its intense popularity in policy circles rather than more fundamental research questions. This interest can be seen at large events such as the Global Entrepreneurship Congress which feature multiple sessions on ecosystem building and investments by organizations such as the Kauffman Foundation in creating 'Ecosystem Playbooks'. These activities have contributed to a deep cynicism within research communities

whether ecosystems is a useful term or if it is just a new buzzword with a limited lifespan before the community moves on to the next economic development fad (see Martin and Sunley, 2003).

Moving ecosystems from a buzzword to a reliable robust policy idea requires more systematic research. Critical, independent research is needed to both aid regions in building effective entrepreneurial ecosystems, but also to identify when such developments might not be feasible. Ideas about how ecosystems work cannot simply be transferred from one place, such as Silicon Valley, and applied to a different context such as Tokyo or Glasgow. There is a need for nuanced understanding of how the nature of a place, its people, and its politics affects how strong ecosystems can develop and become embedded in a society.

2.4 Inclusion and Exclusion in Ecosystems

Both policy and research on entrepreneurial ecosystems have focused on a small segment of firms: digital startups and scale-ups. This reflects both the interest of the major practitioners who helped establish its popularity[3] as well as a broader bias in the research literature towards high-tech firms (Aldrich and Ruef, 2018). To be sure, technology firms have the potential to scale by developing new digital products that can be sold globally for comparatively little upfront investment. However, this focus ignores the evidence that high growth firms (HGFs) are not predominantly high tech (Brown, Mawson and Mason, 2017) and excludes the large number of potential entrepreneurs who are not in technology sectors.

Entrepreneurship, including high-growth entrepreneurship, occurs in multiple sectors, ranging from food and drink to tourism to fashion to creative industries. This is particularly true in emerging economies in general, where technology entrepreneurship is limited by a number of intractable macro-economic factors that cannot be overcome by ecosystem policies alone. A hotel that draws

[3] Brad Feld founded the Techstars incubator. https://www.techstars.com/brad-feld/

upon its home region's cultural heritage to attract tourists is likely to have a greater economic impact than an app development startup. There is also an urban bias in the ecosystem literature. In smaller cities and towns and rural areas, there are a different range of entrepreneurial practices and opportunities (Roundy, 2017). Instead of building a technology entrepreneurial ecosystem in a rural area, it may be possible to build an ecosystem of food, travel, or leisure entrepreneurs. If we focus too much on creating and building ecosystems aimed at urban technology entrepreneurship, we are implicitly excluding entrepreneurial activities in these other geographies.

Different demographic groups of entrepreneurs (e.g. women, minority, migrant, indigenous groups, the Third age, and other types of entrepreneurs) may have preferences for different approaches with a diverse range of their entrepreneurial activities. They may be implicitly or explicitly excluded from discussions of high-growth entrepreneurship. Consequently, these groups may fall outside a stereotypical view of who is a 'legitimate' or 'mainstream' entrepreneur. Research must move beyond the limited scope of technology entrepreneurship to embrace a broader view of what (high-growth) entrepreneurship is and who it is for.

2.5 Parsimony or Complexity

Research on ecosystems is caught between two research traditions. The first, dominant in economics and management theory, is based around building parsimonious, generalizable models of real-world phenomenon. The goal is to create a simplified model of the world that can explain phenomena across a wide array of different contexts. The second research tradition, which is most often found in economic geography but is also widely represented in entrepreneurship research, instead explores the complexity of different situation and contexts, seeking to identify how these complex systems operate. While these differences can be portrayed as the divide between quantitative and qualitative methods, this represents a more fundamental difference in how

researchers see the world. But this is not an 'either/or' situation: ecosystem research is enriched by both approaches.

We must ensure that a variety of different perspectives are embraced in order to build a vibrant research domain that contributes to both economic development policy and our broader understanding of the entrepreneurship process.

3. POLICY DIVERSITY

3.1 Diversity of policy contexts and actors

At both the Glasgow and Tokyo workshops, we saw evidence of strong buy-in from the highest levels of government. Representatives from national and local governments attended both meetings and shared details of their latest policy initiatives. This made the diversity of policy readily apparent. There are different roles for local governments at different levels: the importance of designing multi-scalar support mechanisms for start-ups and small and medium enterprise (SME) innovation was pointed out. In the Japanese context, growing roles are recognized for municipalities (i.e. cities and towns) rather than at the prefectural level (Okamuro, Nishimura and Kitagawa, 2019). Large metropolitan cities and smaller towns and places need to collaborate more to create and build larger ecosystems and enhance cross/inter-sectoral collaboration. However, challenges for such horizontal collaboration are recognized in terms of the complexity of 'identities' of places.

The very diverse contexts and challenges facing the two different nations have led to distinctive approaches to ecosystem policy. In Scotland, policy challenges are found in terms of scaling-up due to limited sources of sources of local investment and a small local market, In Japan, ecosystem policies are forced to engage with much larger societal issues: how to deal with the implications of a shrinking population and stagnant national economy, as well as promoting entrepreneurial culture.

The Scottish policies have been based on a diffuse network of support organizations and stakeholders brought together by both government effort (such as the *Scotland CanDo* framework) and entrepreneur-led organizations such as *Entrepreneurial Scotland*. The Japanese approach has been more top-down, led from the central government - Cabinet Office, and the Ministry of Economy, Trade and Industry (METI). Local governments, including large ones such as Tokyo Metropolitan Government and Osaka Prefectural Government also play active roles. There are exemplars of strong place-based leadership and significant local efforts by cities of different size, such as the 'Startup City Fukuoka' [4] initiative, and technology-based local entrepreneurial initiatives as in the case of Tsuruoka City (Nishizawa and Gibson, 2018).

3.2 New models of ecosystem policies and governance

It is appropriate to recall the ecological and biological perspective of the ecosystem concept (Isenberg, 2016). Here the ecosystem is defined as "a biological community of interacting organisms and their physical environment". Ecosystems cannot be created top-down. Can entrepreneurial ecosystems be built, or do they emerge naturally? Questions remain about the roles of government and policies: What is the feasible and appropriate role of government – is it as 'curators' rather than 'builders'? Picking and choosing 'good practices' in the ecosystem at a particular point in time may not work – in the long term, different elements of the ecosystem influence each other, and particular policy measures will have unintended consequences.

Existing studies on governance point out that large-scale social change comes from better cross-sector coordination rather than from the isolated intervention of individual organizations (Kania and Kramer, 2011). The ecosystem approach needs to include experimental governance from a systemic point of view – with goals, metrics, and decision making that involve a widening circle of actors (Brooks, Vorley, Gherhes, 2019). Balancing policy measures for both short-term growth (i.e.

[4] Startup City Fukuoka https://startup.fukuoka.jp/

gazelles) and more locally-embedded, long-term growth is needed. This raises the question: what might be effective policies and who is the appropriate actor for implementing them? The importance of longitudinal data and collaboration between academic, private, and government sectors for the setup of data collection and management is imperative. More explicit start-up and entrepreneurial ecosystem models for non-metropolitan towns, older industrial towns (Beattie and Fothergill, 2018) and rural areas are required across different national contexts.

What this suggests is that there is a need to build a typology of ecosystems and ecosystem policies and governance. This typology should be built from the ground-up by studying ecosystems in places throughout Asia, Eastern and Western Europe, North and South America, and Africa, in both developed and emerging economies, and advanced and lagging regions (Potter and Lawton Smith, 2019). Asia offers the potential to ask new questions of entrepreneurial ecosystems; for example, does a mega-city like Tokyo have a single ecosystem or multiple, distinctive district-based ecosystems? Further research is required also to investigate entrepreneurial ecosystems in non-metropolitan areas.

4. NEW DIRECTIONS OF TRAVEL

There have been several recent developments in entrepreneurship research both in terms of new data sources through the use of social media and also in terms of innovative research methodologies, where entrepreneurial ecosystem approaches are influencing the state of the art in entrepreneurship research and policy. When combined with new data sources, these new methodological approaches represent a way to overcome some of the empirical and policy challenges discussed earlier, and have the potential not only to direct policy efforts but also to understand the complex interrelationship between elements of an ecosystem and thereby help develop the research domain of entrepreneurial ecosystems.

4.1 New Data Sources

As discussed earlier, there are significant limitations in what existing data can tell us about how entrepreneurial ecosystems work and their impact on the broader economy and society. But new data sources are being developed by researchers to better understand these processes. These include work to create alternative data sources from internet sources such as social media and company webpages. This has been demonstrated in the TechNation reports (2016) on the UK's digital economy, which uses data from sources such as Meetup,com, GitHub, and Glassdoor to show trends in jobs, skills, and networks. Other researchers have built machine learning tools to create new classifications of firms to better identify scale-up firms and technological innovation. These new data will provide valuable insights into how entrepreneurs engage with, and are impacted by, their ecosystems in ways not previously possible.

One of the most promising new directions for data are the use of social media and other non-governmental data (Feldman & Lowe, 2015). New business directories like Crunchbase and AngelList provide immediate, up-to-date information on new entrepreneurial firms, investment trends, and product introductions. Nevertheless, Crunchbase and AngelList only capture what is visible, and there is a considerable amount of invisible activity that is not captured by these data sources.[5] Social media sites like Twitter, LinkedIn and Instagram have the potential to shine new light on not just who entrepreneurs are, but also what they are doing and how they interact both with each other and other ecosystem actors. Platforms such as Meetup.co and Slack allow new perspective on the networks within and between ecosystems, with the potential to understand the flow of knowledge and insight in ways that were previously not possible. There is a need to build new innovative research methodologies by using these new data and newly available analytical

[5] For example, Crunchbase does not record all of the investments made by Scottish angel groups. See Mason et al., 2019.

tools and data infrastructures, but at the same time recognizing the limitations of such new approaches (Nathan and Rosso, 2015).

The meetings also highlighted a very different direction of data source development based on collaborative links between the government initiative, commercial business database and academic research in Japan. The *Regional Economy Society Analysing System (RESAS)*, was launched in Japan in 2018 as an open digital data platform aggregating and charting public and private data on industrial structure and population dynamics. This is known as "the world's largest visualization system for a nation's economic big data", [6] and would appear to have a potential for ecosystem policy analyses especially for those working at local government and open new opportunities for collaboration between the government and academia as well as citizens.

4.2 New Methodologies

Along with new data sources, researchers have been applying novel research methodologies to better understand entrepreneurial ecosystems. . The bottleneck methodology, a statistical way to understand the relationship between different ecosystem elements and to identify which attributes need the most development in order to improve overall scaling efforts, has been used by the EU to better understand the strengths and weaknesses of regional ecosystems (Szerb et al., 2014; Szerb, Lafuente, Horváth, & Páger, 2018). New qualitative methods such as Qualitative Comparative Analysis (QCA) show great promise in helping to reveal the diversity of different types of ecosystems (Coduras, Clement, and Ruiz, 2016). QCA methods allow researchers to explore how different configurations of elements can lead to the same outcomes, allowing for more explanatory space that encompasses the variety of different ecosystem types. This approach is useful for

[6] https://apolitical.co/solution_article/japan-has-built-the-worlds-largest-national-economic-data-viz-tool/ accessed 4 October 2019

establishing what types of regional attributes are required to achieve higher rates of scale-up entrepreneurship and what types of individual and firm attributes are required to successfully engage in local entrepreneurial communities. In order to better capture regional ecosystem attributes than the existing national-focused approach (e.g. the GEM national survey) new data collection and subnational indices have been implemented in a limited number of cities and regions around the world (Sternberg, von Bloh, and Coduras, 2019).

More methodological innovation is required to better capture the subtle ways in which ecosystems work. Ecosystems inherently involve a complex interplay between a variety of different localized economic, social, policy and cultural factors along with the individual attributes of entrepreneurs and firms. Revealing this interplay is crucial to understand how ecosystems work. There is also a need for more nuance in how we understand the connections between a region's resources, culture, and structure with outputs such as entrepreneurial action and firm growth. There may not be clear lines of causality in ecosystems, particularly when thinking about the impacts of individual policies or support programs. It is this focus on the interplay between local and individual factors that makes ecosystems a unique research domain and a fertile area for methodological innovation.

5. NEW QUESTIONS AND NEXT STEPS

The purpose of these workshops was not to define a new research agenda but rather to bring together interested researchers and policymakers to identify the most pressing questions that need answers. Throughout the two workshops, it became apparent that more granulated understanding of ecosystem thinking is required, with greater consideration of the institutional context given the heterogeneous nature of places and complex interactions between actors and networks (Huggins, Izushi, Prokop and Thompson, 2015). These questions help shed light on difficult policy problems around how best to identify and support productive, high-growth entrepreneurship and if and how successful policies from one place can be replicated elsewhere. This depends on specific contexts

that define the 'success' for a place-based ecosystem. These questions also help provide a deeper understanding of the entrepreneurship process as a socially embedded phenomenon that is affected by where it takes place.

Beyond Japan and the UK, we recognize the multiplicity of entrepreneurial ecosystem models across countries in East Asia, North America and Europe. There is a dearth of evidence as to:

1. What are key drivers of the diversity of entrepreneurial ecosystems?;
2. How do different entrepreneurial ecosystems vary in their performance?

We need to investigate the institutional factors further that could help us explain the differences between the different ecosystems. Another interesting point of reflection from cross-national perspectives is the time dimension. For example, one of the speakers at the Tokyo workshop made the following observation: "for both innovation and entrepreneurship, it takes 10 years for a firm to change their culture of the organization". Can regional cultures, in which firms are embedded, change within a similar time span? Recent studies in Germany show that "regional entrepreneurship culture" has remained almost unchanged over the last century (Fritsch and Wyrwich, 2014) . This opens up a set of interesting policy questions: how does a regional culture of entrepreneurship emerge and what can policy do to stimulate the development of such a culture? Can governments sustain long-term entrepreneurship cultures through changes in economic conditions so that substantial changes can be identified at both micro (e.g., firm, individual) and macro levels (Fritsch and Wyrwich, 2014) ? How does learning take place as part of the entrepreneurial ecosystems (Pugh, Soetanto, Jack and Hamilton, 2019)? This may suggest the need for research on those rare places that have shifted from low level of entrepreneurship to high levels of entrepreneurship.[7] It is also important to understand how different resources and capabilities (e.g. human, financial, technological) are recycled in the ecosystem, and move between ecosystems (e.g. mobility of

[7] e.g. Washington DC (Feldman and Francis, 2010) and Ottawa (Mason, Cooper and Harrison, 2002).

talents, graduate start-ups). Local capability changes over time, and support mechanisms need to evolve accordingly.

But above all, new approaches should give voice to communities that have so far been excluded from ecosystems research. This should include a renewed focus on women (McAdam, Harrison and Leitch, 2019), minority, indigenous, disabled and older entrepreneurs who are often implicitly or explicitly excluded from discussions of high-growth entrepreneurship. Their experiences may be missed by existing methods that focus on a narrowly defined band of so-called 'high-tech firms' or that use samples derived from organizations that have inherently exclusionary selection processes like venture capital firm or accelerators.

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REFERENCES

Aldrich, H. E., & Ruef, M. (2018). Unicorns, Gazelles, and Other Distractions on the Way to Understanding Real Entrepreneurship in the United States. *Academy of Management Perspectives*, *32*(4), 458–472. http://doi.org/10.5465/amp.2017.0123

Auerswald, P. (2015). Enabling Entrepreneurial Ecosystems. In D. B. Audretsch, A. Link, & M. Walshok (Eds.), *The Oxford Handbook of Local Competitiveness*. Oxford: Oxford University Press. http://doi.org/10.1093/oxfordhb/9780199993307.013.4

Autio, E. and Levie, J. (2017) Managing entrepreneurial ecosystems. In Gorkan

Ahmetoglu, Tomas Chamorro-Premuzic, Bailey Klinger and Tessa Karcisky (eds.), The Wiley Handbook of Entrepreneurship.pp.423-452. Chichester: John Wiley & Sons.

Beatty, C. and Fothergill, S. (2018) The contemporary labour market in Britain's older industrial towns. Centre for Regional Economic and Social Research, Sheffield Hallam University. https://www4.shu.ac.uk/research/cresr/sites/shu.ac.uk/files/labour-market-britains- older-industrial-towns.pdf

Brooks, C., Vorley, T. and Gherhes, C. (2019). Entrepreneurial ecosystems in Poland: panacea, paper tiger or Pandora's box? *Journal of Entrepreneurship and Public Policy*

Brown, R., Mason, C., & Mawson, S. (2014). *Increasing "The Vital 6 Percent": Designing Effective Public Policy to Support High Growth Firms*.

Brown, R, Mawson, S and Mason, C (2017) Dispelling the myths underpinning high growth entrepreneurship policy, *Entrepreneurship and Regional Development*, 29 (5-6), 414-433.

Coduras, A., Clement, J., & Ruiz, J. (2016). A novel application of fuzzy-set qualitative comparative analysis to GEM data. *Journal of Business Research* 69(4): 1265-1270.

Daunfeldt , S-O, Johansson, D and Halvarsson, D (2015) Using the Eurostat-OECD definition of high-growth firms: a cautionary note, *Journal of Entrepreneurship and Public Policy*, 4 (1), 50-56.

Feld, B. (2012). *Startup Communities: Building an Entrepreneurial Ecosystem in your City*. Hoboken, NJ: Wiley.

Feldman, M., and Francis, J.L (2010) Fortune Favours the Prepared Region: The Case of Entrepreneurship and the Capitol Region Biotechnology Cluster, European Planning Studies, 11 (7) 765-788.

Feldman, M., and Lowe, N. (2015). Triangulating regional economies: Realizing the promise of digital data. *Research Policy*.

Fritsch, M and Wyrwich, M (2014) The Long persistence of regional levels of entrepreneurship: Germany, 1925-2005. *Regional Studies*, 48(6) 955-973.

Huggins, R, Izushi, H, Prokop, D and Thompson, P (2015), Network evolution and the spatiotemporal dynamics of knowledge sourcing, *Entrepreneurship & Regional Development* 27 (7-8), 474-499.

Isenberg, D. J. (2010). The Big Idea: How to Start an Entrepreneurial Revolution. *Harvard Business Review*, *88*, 40–50.

Isenberg, D. J. (2016). Applying the Ecosystem Metaphor to Entrepreneurship: Uses and Abuses. *The Antitrust Bulletin* 6(4) 564-573.

Katz, B., and Bradley, J. (2013). The Metropolitan Revolution: How Cities and Metros Are Fixing Our Broken Politics and Fragile Economy (Reprint edition). Brookings Institution Press.

Kania, J., and Kramer, M. (2011). Collective Impact. *Stanford Social Innovation Review*, Winter 2011, 36-41 .

Martin, R. and Sunley, P. (2003) Deconstructing Clusters: Chaotic Concept or Policy Panacea? *Journal of Economic Geography 3(1):5-35*

Mason, C., Cooper, S., and Harrison, R. T. (2002). The role of venture capital in the development of high technology clusters: the case of Ottawa. In R. Oakey, W. During, & S. Kauser (Eds.), *New Technology-Based Firms in the New Millennium, Volume II* (pp. 261-278). (New Technology Based Firms in the New Millennium). Bingley: Emerald Publishing Limited.

Mason, C, Botelho, T and Harrison, R. (2019) The changing nature of angel investing: some research implications, *Venture Capital: an international journal of entrepreneurial finance*, 21 (2-3) 177-194.

Mason, C. M., & Brown, R. (2014). *Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship*. OECD.

McAdam, M, Harrison, RT and Leitch, C M (2019) Stories from the field: women's networking as gender capital in entrepreneurial ecosystems, Small Business Economics, 53, 459–474.

Motoyama, Y., and Watkins, K. (2014). *Examining the Connections within the Startup Ecosystem: A Case Study of St. Louis*. Kansas City, Missouri.

Nathan, M., and Rosso, A. (2015). Mapping digital businesses with big data: Some early findings from the UK. *Research Policy*, *44*(9), 1714–1733.

Nishizawa, A and Gibson, D (2018) Launching a Tech-based economy: Similarities and differences across national context: Austin, TX and Tsuruoka, Japan. Interdisciaplinary Journal of Economics and Business Law, 7 (1), 50-70.

Okamuro, H, Nishimura, J and Kitagawa, F. (2019) Multilevel policy governance and territorial adaptability: Evidence from Japanese SME innovation programmes, *Regional Studies* 53(6) 803-814

OECD. (2010). High-Growth Enterprises. OECD Publishing. http://doi.org/10.1787/9789264048782-en

Potter, J. and Lawton Smith, H (2019) 4. Smart Specialisation in Eastern Europe: Insights from two lagging Polish Regions, *Regional Studies Policy Impact Books*, 1:2, 43-53.

Pugh, R, Soetanto, D. Jack, S and Hamilton, E (2019) Developing local entrepreneurial ecosystems through integrated learning initiatives: The Lancaster case, *Small Business Economics*.

Roundy, P. (2017) "Small town" entrepreneurial ecosystems: Implications for developed and emerging economies, *Journal of Entrepreneurship in Emerging Economies*. 9(3) 238-262.

Spigel, B. (2017). The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice*, *41*(1), 49–72.

Stam, E. (2015). Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique. *European Planning Studies*, *23*(9), 1759–1769.

Sternberg, R., von Bloh, J., and Coduras, A. (2019): A new framework to measure entrepreneurial ecosystems at the regional level. Zeitschrift für Wirtschaftsgeographie

Szerb, L., Acs, Z., Autio, E., Ortega-Argilés, R., and Komlósi. (2014). *REDI: The Regional Entrepreneurship and Development Index — Measuring Regional Entrepreneurship*.

Szerb, L., Lafuente, E., Horváth, K., & Páger, B. (2018). The relevance of quantity and quality entrepreneurship for regional performance: the moderating role of the entrepreneurial ecosystem. *Regional Studies*, *0*(0), 1–13.

TechNation. (2016). *Tech Nation 2016: Transforming UK Industries*. London: Tech City.

World Economic Forum. (2013). *Entrepreneurial Ecosystems Around the Globe and Company Growth Dynamics*.

World Economic Forum. (2014). *Entrepreneurial Ecosystems Around the Globe and Early-Stage Company Dynamics — The Entrepreneur's Perspective*.