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**Entrepreneurial Ecosystems: A
Critique of the Latest
Industrial Policy Blockbuster**

By *Ross Brown and Suzanne
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Entrepreneurial Ecosystems: A Critique of the Latest Industrial Policy Blockbuster

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Abstract

Efforts to develop entrepreneurial ecosystems (EEs) have proliferated in recent years making it the latest industrial policy 'blockbuster'. This paper critiques the concept and reviews its application within public policy. It reports the findings from a comprehensive comparative analysis of policy approaches deployed under this conceptual umbrella. Empirically, the findings suggests it is fraught with conceptual ambiguity and is predominantly (and rather crudely) used to promote 'more' entrepreneurship. Genuine systemic policy instruments to aid the functioning of ecosystems are extremely rare. The paper suggests the concept is a 'chaotic' one open to wide-ranging misinterpretation and indeed misuse by policy makers.

1. Introduction

The recent Global Financial Crisis acutely demonstrated that, contrary to engrained neo-liberal orthodoxies, markets were far from infallible and that without strong government intervention economies may have collapsed (Bailey and Tomlinson, 2017). In its immediate aftermath, many advanced economies witnessed a ‘rejuvenation’ of industrial policy (Stiglitz et al, 2013)¹, leading some notable observers to declare emphatically “industrial policy is back” (Rodrik, 2010, p. 1).

A new market-oriented industrial policy approach taking a ‘starring role’ in this post-crisis era is that of *entrepreneurial ecosystems* (henceforth EEs).² This concept (and associated terminology) is now widely deployed by governments around the world, becoming a ubiquitous feature within public policy (Isenberg, 2014) and scholarship (see Alvedalen and Boschma, 2017; Malecki, 2018). While government policy is often portrayed as a central facet underpinning successful ecosystems, the precise details of these supportive policies have “proven elusive” (Feldman and Lowe, 2018, p. 337-338). Given the need to avoid the pitfalls of previous inefficient industrial policy interventions (Warwick, 2013), and following in the tradition of other seminal policy critiques (Martin and Sunley, 2003), this paper provides a much-needed critique of EEs as a policy construct and examines its application within public policy.

While originally conceived as a metaphorical device for describing how localised business environments function (Moore, 1993), the EE concept has been explicated as a systemic

¹ Herein we align with the following broad definition of industry policy as “government policies directed at affecting the economic structure of the economy” (Stiglitz et al, 2013, p2).

² Given industrial policy is typically delineated into vertical and horizontal variants (Bailey and Tomlinson, 2017), EEs can be viewed as a “horizontal” or “a-sectoral” industrial policy approach facilitating “firm entry and resource deployment” (Lazzarini, 2015, p. 99).

mechanism for analysing and nurturing local economies by putting entrepreneurship centre-stage (Isenberg, 2010; 2014). With striking parallels to the ubiquitous clusters concept (Martin and Sunley, 2003), this latest conceptual ‘fad’ (Martin, 2015) has similarly captivated the policy-making community (Isenberg, 2014; Stam, 2015; Spigel, 2017). Given its origins in the practitioner community (Isenberg, 2010), it is fair to say that EEs have become as much of a policy construct as an academic concept for scientific study (Malecki, 2018).³ Organisations such as the OECD, World Bank, World Economic Forum and Kauffman Foundation have all proactively promoted the concept as a new *modus operandi* for future market-oriented industrial policy (Mason and Brown, 2014; WEF, 2014; Mulas et al, 2017). Given its regional focus, sub-national and urban actors have also widely embraced the ecosystem concept (Markley et al, 2015; Isenberg and Onyeman, 2016; Motoyama and Knowlton, 2016; Spigel, 2016).⁴

The emergence of this place-based policy-oriented concept stems from increasing evidence amassed on the importance of localised factors underpinning entrepreneurship (Feldman, 2014; Feldman and Lowe, 2018)⁵, which has ‘shifted’ the debate on the establishment of new firms towards more holistic perspectives such as EEs (Schäfer and Henn, 2018). Indeed, EEs have quickly established themselves as the “word du jour” within regional entrepreneurship (Lowe and Feldman, 2017, p. 2). Yet, despite growing academic interest and policy appeal, spatial scholars have been slow to critically examine the concept from a policy perspective.⁶

While a growing evidence base exists on the dynamics of EEs (Malecki, 2017; Cavallo et al,

³ The work of Daniel Isenberg in particular has been instrumental in the propagation and permeation of the concept into the policy sphere (Brown and Mason, 2017).

⁴ There is now a consultancy ranking start-up ecosystems in cities across the world (Startup Genome, 2017).

⁵ See Müller (2016) for a good review of the recent empirical literature.

⁶ Stam (2015) being a notable exception.

2018)⁷, little or no research has critically (or comparatively) examined the nature of public policy approaches utilised under this conceptual umbrella (Alvedalen and Boschma, 2017). To rectify this important omission, this paper critically unpacks the rationale for, and nature of, public policies designed to nurture EEs across a wider range of institutional contexts.

The paper draws on two main sources of evidence. First, a comprehensive assessment of policy approaches was undertaken scrutinising policy documents, government websites and evaluation reports across 48 different countries. This analysis examined the use of the concept, the alignment to other policy areas, the nature of policy interventions and implementation processes and perceived effectiveness and policy coherence. Second, interviews were conducted with a range of policy makers charged with implementing different EE policies. Sixteen interviews were conducted with officials involved in government ministries, economic development agencies, scale-up programmes, incubator organisations and accelerator programmes in various OECD and developing economies. Key policy and academic experts were also consulted to triangulate the interview findings. Together, this evidence base provides a strong vantage point for reviewing the rapidly developing policy landscape surrounding EEs policy approaches.

The paper's main contribution is twofold. First, it provides a critique of the EE concept and examines the rationale for policy intervention. Second, it fills a gap within the EE literature by examining the use and application of the concept within public policy. To our knowledge, this is the first systematic attempt to examine and take stock of policy frameworks under this new conceptual policy lens. The paper is structured as follows. First, we unpack the concept

⁷ A search using the term "entrepreneurial ecosystems" in Google scholar in September 2018 reveals a total of some 40,000 papers on this topic.

empirically and review the rationale for policy intervention. Second, we highlight how the concept is being adopted and applied within public policy. A policy discussion is presented then our concluding remarks are made.

2. Unpacking the EE concept

2.1 Definitions and Conceptual Antecedents

In order to theoretically unpack the EE concept, we must first clarify what we mean by EEs. Invoking the term from the natural sciences, authors first began using the ecosystems metaphor analogously with their counterparts in the business world around 25 years ago (Moore, 1993). According to some, the multiplicity and labyrinthine qualities of business ecosystems mean they cannot be “decomposable to an aggregation of bilateral interactions” (Adner, 2017, p. 42). A number of scholars have taken issue with the relevance of biological metaphors, given that they ignore the dynamic nature of entrepreneurial agency that can reconfigure EEs (Roundy et al, 2017). The metaphor may also over-emphasise equilibrium and continuity, rather than disruption and dynamism (Isenberg, 2016). To some scholars, the metaphor should not be taken too literally as EEs “are man-made systems, rather than natural phenomena” (Alvedalen and Boschma, 2017, pg. 890).

While there are now numerous competing definitions of the concept (see Cavallo et al, 2018; Malecki, 2018), the uniting theme is the centrality of entrepreneurship. One of the more comprehensive and widely used definitions in both policy and scholarly studies depicts EEs as “a set of interconnected entrepreneurial actors, institutions, entrepreneurial organisations and entrepreneurial processes which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment” (see Mason and

Brown, 2014, p.5). Rather than viewed in isolation, entrepreneurship under most definitions is viewed systemically as a spatially, relationally and socially embedded phenomenon.⁸

According to Acs et al. (2017), the use of the ecosystem moniker within entrepreneurship draws on a long and varied intellectual lineage based on related concepts from the regional development and strategic management literatures. Innovation and management scholars have also used the term to denote innovation platform ecosystems such as Android (Adner, 2017).⁹ In this paper, however, we focus specifically on the spatially-oriented systemic concept of EEs.¹⁰ Several scholars claim EEs have also been subject to considerable interpretive flexibility (and indeed ambiguity), largely due to these varied antecedents and uses across disciplines (Brown and Mason, 2017; Spigel and Harrison, 2017). Indeed, owing to these diverse origins and definitional ambiguities, the concept has been labelled as a conceptual ‘umbrella’ depicting a variety of theoretical perspectives on the geography of entrepreneurship (Spigel, 2017). Others have been less kind, depicting the EE concept as rather ‘chaotic’ owing to the imprecise manner of its use within empirical studies and public policy (Stam, 2015; Brown and Mason, 2017).

Several key authors examining EEs have drawn parallels to other important strands of literature. Most notable among these have been strong comparisons with the clusters concept. Most contemporary work on EEs is co-terminus to prior work on industrial clusters and shows strong connections between the two concepts (Spigel and Harrison, 2017). This is

⁸ Interestingly, Malecki (2018) notes only a handful include spatial parameters (such as a 30-60 mile radius) whilst delineating ecosystems.

⁹ Oddly, these scholarly communities do not interact despite their common conceptual heritage. Yet innovation scholars have been as equally critical of the lack of definitional precision around the term innovation ecosystems (Oh et al, 2016).

¹⁰ This paper also focuses on the central role of growth-oriented entrepreneurship, rather than more prosaic necessity entrepreneurship whilst unpacking the EE framework.

perhaps unsurprising given the strong spatial interdependencies shaping entrepreneurial activity as previously noted. Spigel and Harrison (2017) claim the EE concept draws on three core principles of cluster/agglomeration theory: i) the presence of other firms is a source of competitive advantage; ii) knowledge outside the firm is important; iii) close proximity facilitates firm competitiveness.

While these are undoubtedly core theoretical building blocks underpinning the EE literature, other authors have identified important parallels between EEs and the regional innovation system literature (Alvedalen and Boschma, 2017; Brown and Mason, 2017; Spigel and Harrison, 2017). While few entrepreneurship scholars invoke this construct, it is perhaps a closer intellectual companion to the EE concept than clusters *per se* (Brown and Mason, 2017). Adopting a systemic perspective highlighting the inter-relationships and interdependencies between institutional actors, the innovation systems literature investigates how networks of localised actors “are involved in the generation, diffusion and use of innovations” (Alvedalen and Boschma, 2017, p. 892). This is very similar to the manner in which the EE literature views how networks actors foster and spawn entrepreneurial activity in close geographic proximity. Despite being rooted in the Schumpeterian tradition, the factor “conspicuously absent” from the systems of innovation literature is the role of the entrepreneur (Acs et al, 2014, p. 478). Perhaps because of the connections to previous concepts, scholars have avoided asking difficult questions about what precisely the EE perspective contributes to these related ideas, and how it adds value both empirically and conceptually to our understanding of the entrepreneurial process. As others have noted, the somewhat ‘fuzzy’ (Markusen, 1999) indeterminate nature of the concept is perhaps one of the main reasons why policy makers themselves have deployed the term rather indiscriminately (Stam, 2015). Importantly, these

ambiguities suggest that industrial policies under the EE rubric may mean “different things to different people” (Pack and Saggi, 2006, p. 267) potentially creating opportunities for “misconceived policy interventions” (Brown and Mason, 2017, p. 26).

2.2 Main components of EEs

While disagreement and ambiguity surround the intellectual antecedents of the EE concept, a stronger consensus exists concerning its core constituent parts. Indeed, the majority of the now burgeoning empirical literature has tended to focus on examining and measuring the main components and drivers underlying the functioning of EEs (Malecki, 2017; Cavallo et al, 2018). While the primary focal point of an EE under this systemic lens is the entrepreneur, there are a range of actors, institutions and processes that coalesce to shape entrepreneurial behaviour.

The early work by Isenberg (2010) first mapped six main domains delineating an ecosystem: policy, finance, culture, human capital, support and markets. This underscored the crucial role of key institutional actors within EEs such as banks, universities, large firms, business accelerators/incubators, innovation centres, venture capital and business angels. While it seems irrefutable that these institutions are central to the entrepreneurial process, some have criticised the EE literature for failing to properly unpack the nature and importance of such inter-actor connections and how they shape ecosystems. Indeed, some observers dismissively claim these represent a “long laundry list of relevant factors”, rather than a proper mechanism for explaining causal relationships (Stam, 2015, p. 1764).

While these actors are considered the core elements of EEs, empirical studies have tended to focus on a single organisational actor or aspect, in stark contrast to the intended systemic nature of the concept. Perhaps the actor most heavily scrutinised has been the university,

often showing the crucial role played by universities in spawning new firm formation within local economies (Hayter, 2016; Wright et al, 2017).¹¹ Other important types of key institutional actors, such as business incubators, accelerators and banks, receive much less attention in the EE literature (Hochberg, 2016). This seems surprising given the crucial role that institutions such as the famous business accelerator Y-Combinator play in developing strong EEs such as Silicon Valley. On account of its phenomenal success nurturing companies like Airbnb and Dropbox, Y Combinator has been labelled “perhaps the world’s most successful entrepreneurial initiative” (Huggins et al, 2018, p. 1302). These important entrepreneurial actors are not confined to Silicon Valley and, by the end of 2016, there were 14 such accelerators in the Indian city of Bangalore alone (Goswami et al, 2018). Given their important ‘match-making’ role in building connections between start-ups, new investors and customers these actors (Business Finland, 2018; Clayton et al, 2018), accelerators perhaps warrant closer empirical inspection. There are significant variations of accelerators (Pawels et al, 2016), however, suggesting that there is likely to be considerable divergence in how they perform within different contexts (Gonzalez-Uribe and Leatherbee, 2017).

In addition to the importance ascribed to institutional actors, the EEs literature has also started to examine the complex relational ‘processes’ facilitating entrepreneurship. Early work noted the powerful role played by a small number of rapidly growing successful entrepreneurial firms - so-called ‘blockbuster entrepreneurship’ (Napier and Hansen, 2011) - which confers major benefits to ecosystems in terms of ‘demonstration effects’ and experiential learning for spin-offs (Brown and Mason, 2017). These often take the form of privately-owned companies valued at over \$1bn, the mystical and much desired ‘unicorns’

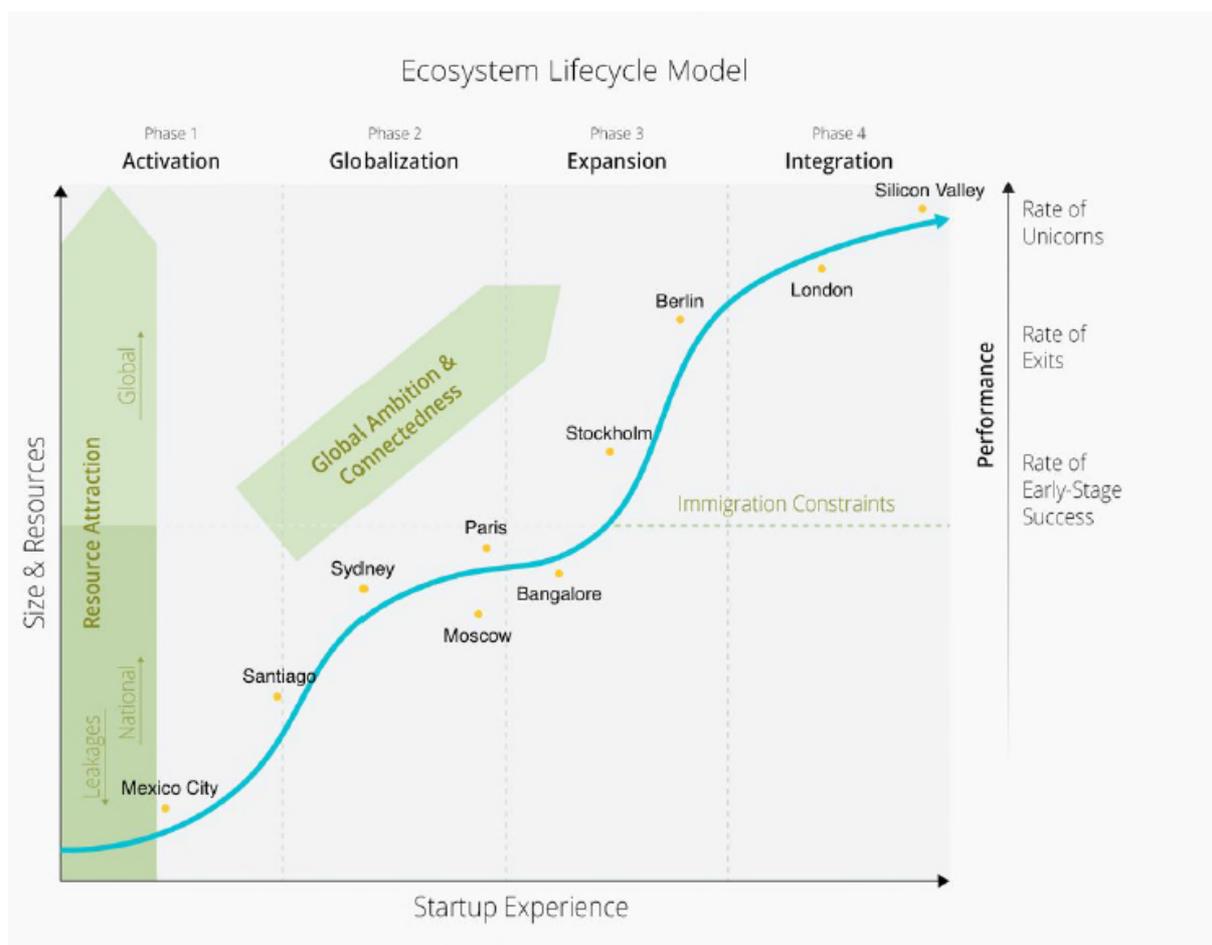
¹¹ Usefully, more recent work has begun to look at interactions between universities and other local actors in the EE (Ghio et al, 2017).

(Acs et al, 2017). Such firms and entrepreneurs provide crucial role models and often become mentors and investors to smaller entrepreneurial ventures. Another important process is the role played by 'dealmakers' who are often former entrepreneurs or lawyers with fiduciary ties who provide invaluable mentoring to entrepreneurs, mediate relationships and make connections to enable new firm formation (Clayton et al, 2018). To date, these key processes have tended to represent a small part of the EE literature rather than a core constituent part. The recent adoption of social network analysis within empirical studies could be a useful mechanism for exploring these complex relational actors and processes further (Neumeier et al, 2018).

An additional weakness within the EEs literature is the lack of a dynamic or evolutionary perspective (Alvedalen and Boschma, 2017). Attempts have been made to categorise different varietal 'types' of EEs (Brown and Mason, 2017; Spigel and Harrison, 2017) and while these models provide useful 'analytical snapshots' of different archetypes, they fail to fully capture a temporal perspective of how EEs function and develop over time, including the role of policy. Consultants have attempted to crudely rank EEs using a basic life-cycle model to depict the linear evolution of EEs into four distinctive phases of activation, globalisation, expansion and integration (see Figure 1 below), suggesting rather disingenuously that all EEs will eventually evolve into more rounded and developed ecosystems (Startup Genome, 2017). Despite firm-level life-cycle models being harshly (and justifiably) criticised for being too linear and reductionist (Levie and Lichtenstein, 2010), some scholars have incorporated them into their work (Mack and Mayer, 2016). Interestingly Mack and Mayer's (2016) case study of Pheonix, Arizona speculates how policy may have to evolve in parallel with the ecosystem. They claim that encouraging more new entrepreneurial entrants in the early life of an EE is

important, whilst developing networks and connections to other ecosystems increases in importance as EEs mature. Similarly, Brown and Mason (2017) note that public policy is often most proactive in nascent ‘embryonic’ ecosystems. Unfortunately, studies have yet to empirically explore how policies towards ecosystems actually manifest themselves and evolve over time.

Figure 1: A Lifecycle Model of Entrepreneurial Ecosystems



Source: Startup Genome 2017

2.3 Policy Rationale

As policy makers increasingly succumb to the EEs concept, it is important to examine *a priori* the justification for policy intervention under this approach. Traditionally, the rationale for

industrial policy was predicated on the role of market failures (Dosi, 1988), whereby economies are faced within sub-optimal allocative efficiency. Market failure theory suggests that governments intervene to fix markets by investing in areas characterized by positive or negative externalities (Mazzucato, 2016), the classic rationales for intervention being positive externalities (e.g. R&D), abuse of market power, asymmetric information and public goods such as infrastructure.

Under a systemic perspective, however, the rationale for public policy hinges on rectifying 'systems failures' (Stam, 2015) or 'systemic problems' (Wieczorek and Hekkert, 2012). These occur when systems produce insufficient levels of entrepreneurship and/or a lack of interaction between institutional actors (e.g. between entrepreneurs and venture capitalists). While this type of policy rationale is perfectly legitimate, it does ensure that under a systemic perspective almost any 'systems' failure can be used *ex ante* as grounds for policy intervention.¹² This policy standpoint is most closely associated with innovation scholars, who advocate rather vague market-creating interventions such as "types of public-private interactions that can create new innovation and industrial landscapes" (Mazzucato, 2016, p. 153). Within this view, enterprise policy makers are handed something of an 'open goal' where almost anything promoting entrepreneurship may be deemed valid.

From a conceptual perspective, some take issue with this *dirigiste* policy prognosis. Isenberg (2016) claims that policy makers are misinterpreting the true meaning of the EE concept due to what he calls the 'creation mistake'. He observes that EEs are often viewed as something that can be purposively 'created', resulting in policy makers conflating particular institutional actors (such as a mentor networks and incubators etc.) with the ecosystem itself (Isenberg,

¹² Although as Rodrik (2009, p. 2) notes market failures are similarly "rarely documented with any precision".

2016). Yet intrinsic to the EEs concept is their relatively self-organised and self-sustaining nature, arguably making them impervious to external control or influence by public policy. Despite this, policy makers implicitly ascribe themselves a central guiding role in orchestrating EEs. Indeed, some scholars claim that state intervention can “add resources to an ecosystem” (Spigel and Harrison, 2017, p. 164), but under what circumstances do these activities add genuine value to the functioning of an EE? It would appear that the strong role bestowed on the state, as embedded within policies oriented towards EEs, is potentially at odds with the conceptual underpinnings of these complex phenomena.

3. Entrepreneurial Ecosystems and Public Policy: Empirical Findings

Having interrogated EEs from a conceptual perspective we now examine how the concept is operationalised and deployed within public policy. Given space limitations, as well as the relatively high-level comparative nature of the research, we restrict findings and discussion to the following main issues: (i) conceptualisation and application of the EE concept; (ii) the nature of policy focus, associated interventions and implementation approaches; and (iii) policy coherence and perceived effectiveness.

3.1 Conceptualisation and application of the EE concept

The EE term has proliferated rapidly across the policy-making community over the last five years and is now appearing ubiquitously in policy documents, governmental websites and entrepreneurship programme campaigns. Many countries specifically reference organisations such as the OECD, Kauffman and the World Economic Forum as promoters of the concept. This is the case across both advanced economies, as well as a growing number of middle-income and developing economies such as Colombia, India, Jordan and Lebanon. Across the OECD, many countries appear to be pro-actively using the EEs concept including

Australia, Canada, Ireland, the Netherlands, Poland the UK and Nordic countries such as Denmark and Finland. Our interviewees outlined the rationale behind this widespread adoption, noting the EE concept *“makes enormous common sense”* and so is so intuitively appealing that *“we can’t really say no to it”*.

Upon interrogation of policy documents, it became clear that despite adoption of the EE concept and terminology there was seldom an explicit or clear explanation of the concept, let alone a rationale for what the adoption of an ecosystem perspective entailed for industrial or entrepreneurship policies. Most documents discussed up front the need to ‘strengthen’ or ‘develop’ an ecosystem. For example, the Indian government claimed it is *“imperative that we create a vibrant entrepreneurial ecosystem in India that creates wealth, employment, and economic growth that the country needs”* (Government of India Planning Commission 2012, p. 13). Meanwhile, in Russia the goal is to *“foster a stronger tech entrepreneurship ecosystem”* (OC&C, 2018). Yet there was often little reflection on what was meant by the term ecosystem. Interestingly, in most policy documents, the ‘ecosystem’ term was almost universally used without a proper definition. Even in documents that included extensive glossaries of different entrepreneurial terminology, a definition or basic understanding of the ‘ecosystem’ term was conspicuously absent (see, for example, Office of the Chief Economist, 2017).¹³

As a result of this ‘opaqueness’, there is quite a large degree of interpretative latitude in terms of how the concept is deployed. When this issue was explored with policy makers during interviews, there was recognition that the ecosystem term and conceptualisation was often implicit as was seen as a *“way of thinking”* and *“something that shapes what we do, but that*

¹³ The rare exception being Maine in the US: [https://www.maine.gov/decd/reports-pubs/docs/CNBEVENTS_LeadershipMaineBooklet_vPDF_060415%20\(1\).pdf](https://www.maine.gov/decd/reports-pubs/docs/CNBEVENTS_LeadershipMaineBooklet_vPDF_060415%20(1).pdf)

we don't ever really specifically talk about – it operates behind the scenes.” As a result, many documents merely referenced a long list of institutional actors constituting the ‘ecosystem’, such as start-ups, accelerators, incubators, universities etc. Plus, ecosystems ‘maps’ often adorn many of these documents (see OC&C, 2018) and websites¹⁴.

Within policy documents the term is widely pre-fixed with various other terms, the most common being “start-ups”. The Irish government claim that policy is strongly focused on “*the creation of a strong start up ecosystem*” (Department for Jobs, Enterprise and Innovation, 2014, p. 6), while the Lebanese government has focused on building an ecosystem for new firms and SMEs.¹⁵ Start-Up Estonia emphatically declares on its website that “*we need to have a strong start-up ecosystem*” to grow the next Estonian success stories¹⁶ and the Municipality of Tel Aviv in Israel “*sees the continued growth of its startup ecosystem a top priority*”.¹⁷ This focus on new ventures was often conflated with innovation, as seen in Italy where the government has strongly focused legislation towards “*the development of an ecosystem of innovative start-ups*” (Italian Ministry of Economic Development, 2016, p. 3), as well as Russia in their efforts to “*develop an innovative ecosystem and support high tech start-ups*”.¹⁸ Entrepreneurs and local practitioners in support organisations also frequently pre-fix the ecosystems label with ‘start-ups’ and ‘innovation’ when referring to EEs (see Haines, 2016). For example, in New Zealand there is the belief that if “*we create healthier start-up ecosystems, we can generate more successful startups*” (New Zealand Angel Association, 2017).

¹⁴ A Danish example being: <https://inno-overblik.dk/>

¹⁵ https://www.economy.gov.lb/public/uploads/files/6833_5879_4642.pdf

¹⁶ <http://www.startupestonia.ee/startup-ecosystem>

¹⁷ https://www.tel-aviv.gov.il/en/contactus/Documents/english%20format_booklet-hitech-WEB3.pdf

¹⁸ https://www.rvc.ru/upload/iblock/db4/Report_RVC2016_ENG.pdf

In terms of policy alignment, at a national level EE policies were for the most part operated by industrial policy makers to help examine and develop their national economies. As one policy maker explained, “[we consider EE to cover] all that’s happening in the public policy that influences entrepreneurship”. However, EEs are also frequently linked to innovation policies in some countries. Australia, China, Ireland and Italy specifically refer to the term ‘innovation ecosystems’ within their policy literature (see Department of Industry, Innovation and Science, 2017). For example, the Irish government discusses the need to develop their ecosystem of research and technology centres¹⁹ and the Canadian government note how they “can leverage the many advantages that stem from a strong, stable and vibrant science, technology and innovation ecosystem”.²⁰ Given some of the definitional ambiguities detected in the use of the concept, it is perhaps unsurprising that it is aligned to different policy areas. Overall, the concept is primarily seen as something designed to inform industrial policies. The lack of explicit integration within national regional policy is perhaps somewhat surprising, given the fact that many EEs are delineated by geographical parameters.

There are many localised activities and initiatives that could be classified as EE-informed policies undertaken by regional and local governmental actors. In countries such as Estonia and Poland, local policies are undertaken and funded by EU regional policy and the use of the concept at a local level has primarily been designed to aid economic development. In the UK, national industrial policy makers have also strongly encouraged use of the concept within Local Economic Partnerships (LEPs) in England and Wales. Indeed, the majority of Strategic Economic Plans produced by UK LEPs have been informed by the systemic EEs approach. In

¹⁹ Interestingly, Italy and Ireland both adopt both the start-up and innovation ecosystem terminology (Italian Ministry for Economic Development, 2017).

²⁰ https://www.ic.gc.ca/eic/site/113.nsf/eng/h_07657.html

other parts of the UK such as Scotland, it heavily informs the work of the Scottish Government and its economic development support agencies where an ecosystem perspective is “*becoming embedded*” according to policy makers. This is also the case for many local urban initiatives operated in cities like Brisbane and Sydney in Australia, where the role of EEs are strongly promoted by policy makers (Queensland, 2014; City of Sydney, 2016). Even in less developed economies, work undertaken by the World Bank uses the ecosystem concept specifically in the context of high-tech industries in cities such as Beirut (Mulas et al, 2017).

3.2 Nature of Policy Focus and Associated Interventions

Central to the EE concept is the focal role attributed to entrepreneurship. Unpacking how policy makers attempt to foster entrepreneurship is therefore a key aspect shaping policy approaches. There are a number of commonalities across different policy contexts, as well as recurring omissions.

Given the definitional matters discussed above, it perhaps comes as little surprise that much of the policy focus is on new venture creation. Again, this suggests that despite the systemic nature of the concept there is a dominant tendency to concentrate policy efforts on singular entrepreneurial actors (or a small subset thereof). Indeed, the overwhelming majority of EE initiatives typically focus on support to assist the development of new start-ups. Such entrepreneurial entrants are promoted in a vast array of different ways, including start-up grants, innovation grants, informational services (e.g. business plan advice), mentoring, access to finance schemes and visa programmes. Often a core focus within EE policies is a focus on the provision of equity investment. Indeed, the goal of New Zealand’s Investment Venture Fund is to build a “*vibrant early stage investment ecosystem*”.²¹ In terms of physical

²¹ <http://www.nzvif.co.nz/media/news-articles/creating-our-own-silicon-valley/>

infrastructure development, business incubators and accelerators now feature widely across most EEs. For example, public sector accelerator programmes such as the VIGO programme operated by TEKES in Finland. These take various forms, but in most embryonic EEs tend to be publicly rather than privately funded, such as the Start-Up Chile business accelerator which offers equity-free seed capital and shared office space to cohorts of start-ups (Gonzalez-Uribe and Leatherbee, 2017).

Many of the above initiatives are marketed and publicised through national start-up campaigns. Nearly all advanced economies (e.g. Start-up Canada, Start-Up Denmark and Start-Up Estonia etc.) have these ubiquitous programmes, which offer virtually identical services. In the main, most of these initiatives are generic support measures to encourage entrepreneurship, rather than customised programmes tailored to the unique circumstances within their respective entrepreneurial environments. This core focus on new venture created was reinforced by many of the policy makers interviewed, who noted that there will *“always be a focus on start-ups”*.

Another recurring feature of policy efforts designed to stimulate entrepreneurship across many ecosystems is a strong emerging focus on promoting high-growth firms (HGFs) or scale-ups. While this has been noted as a key theme within entrepreneurship policy more broadly (Brown et al, 2017), the focus on scale-ups within EEs is seen as a critical ingredient to generate the types of ‘blockbuster’ entrepreneurship which can generate the types of spillovers highlighted earlier such as entrepreneurial re-cycling. In Australia there is now a distinctive focus on the development of scale-ups due to their perceived economic importance and recognition that they *“participate in a multifaceted ecosystem that includes many partners and stakeholders”* (Office of the Chief Economist, 2017, p. 101). A focus on

scale-ups tends to involve qualitatively different types of support instruments given the differing support needs of firms who are experiencing rapid growth. Many of these types of initiatives tend to be less transactional (e.g. grants and loans) and more focused more peer-based support and management development programmes.

Scale-up programmes are thus becoming almost as commonplace as start-up programmes within some advanced economies, reflecting the central importance attached to these firms. Again, these programmes are often a mixture of private and public actors who provide services to assist the rapid growth of companies. This is the case in Denmark, which operates Scale-Up Denmark.²² Within this initiative, an ecosystems perspective is strongly embedded in their work connecting start-ups to larger companies to help provide entrepreneurial mentoring to growth-oriented smaller companies. In the UK, the privately funded Scale-Up Institute aims to campaign for and support scale-ups. As part of the Scale-Up Institute's work, they have developed specialist courses to help regional actors hone their respective local EEs and to develop "*their ecosystems for scale-up businesses*" (Scale-Up Institute, 2017, p. 84). These programmes often stress factors such as building on local growth sectors, engaging local business leaders, linking businesses and universities and developing interventions which are peer-based and account managed.

While a focus on targeting scale-ups was evident in more advanced EU countries (e.g. UK, Belgium, Scandinavia), in less resilient economies such as Chile, Estonia, Mexico and Russia there seemed a much stronger focus on promoting a broader culture of entrepreneurship. In these types of countries the government often promotes entrepreneurship through

²² See <https://scale-updenmark.com/>

information and support measures under campaigns like Start-Up Estonia, Start-Up Mexico and Start-Up Russia. The remit of Start-up Mexico is, for example, “*the promotion of innovation, entrepreneurial culture and economic development*” in Mexico. On the whole, the systemic perspective seems less well rooted in these locations. More apparent in these contexts are initiatives which target universities to help foster entrepreneurship education activities with a view to altering longer-term perceptions of entrepreneurship. Most initiatives do not seem to be spatially differentiated or customised, especially in countries like Poland, where policy makers remarked that “*policy comes from the top*”. A good example of top down policy making being the flagship Skolkovo Innovation Centre in Moscow established at the behest of former President Dmitry Medvedev which claims to be “the Russian government’s most ambitious endeavour to support start-ups to date” (OC&C, 2018, p.27).

In terms of recurring omissions within policy, a distinct lack of genuinely systemic initiatives designed to help foster connections between different entrepreneurial actors was observed. In the main, there seemed to be an overriding policy focus on targeting single actors such as entrepreneurs, universities and business incubators with policy support. While some of these interventions may prove beneficial, they will not in their own right help increase connectivity across an ecosystem.

There are exceptions of course.²³ A good example of a genuinely systemic initiative examined is the UK’s Future Fifty programme which offers a bespoke peer-based series of mentoring and advisory services specifically designed to connect promising high-tech scale-up firms to

²³ Indeed, other scholars have similarly noted good examples of effective targeted support in urban areas such as Edinburgh (Spigel, 2016).

other key entrepreneurial resources such as the stock market and specialist government services. Designed to support and grow “*the next generation in our tech ecosystem*”²⁴, this unique cohort-based programme has helped to spawn entrepreneurial successes (so-called ‘unicorns’) such as Scotland’s Skyscanner and Darktrace, raising some \$5.5bn in venture capital and achieving five IPOs. The Future Fifty programme is probably closer to the private sector-led Y Combinator model than the vast majority of public sector initiatives within the EE policy landscape.

Whilst less systemically oriented, other interesting programmes include the “Hiyaku Next Enterprise” programme operated by the famous Ministry of Economy, Trade and Industry (METI) in Japan. This enables Japanese start-ups with cutting edge technology to spend time in the world’s most dynamic EEs like Silicon Valley, attempting to “*bridge the Japanese start-up ecosystem, start-ups and entrepreneurs with those in Silicon Valley*”.²⁵ This seems a highly innovative approach, particularly as research shows such ‘transnational entrepreneurs’ confer multiple benefits from simultaneously operating across EEs (Schäfer and Henn, 2018). Public-private partnerships are also creatively using a competitive grant scheme to foster connections across EEs in US cities like St Louis, Missouri (Motoyama and Knowlton, 2016). Some localised initiatives to help promote the functioning of emerging ecosystems such as Manizales-Mas in Colombia have also proved to be successful (Isenberg and Onyeman, 2016).

3.3 Policy coherence and perceived effectiveness.

²⁴ <https://technation.io/programmes/future-fifty/>

²⁵ See http://www.meti.go.jp/english/press/2017/0105_001.html

Having reported on the qualitative nature of the use of EE within public policy we wish to comment upon its perceived level of coherence and effectiveness. Both the documentary analysis and interviews showed that policy makers have keenly embraced the use of the ecosystem concept; their overall perception is that it is a positive tool for informing industrial policy. From a conceptual standpoint, many felt that the construct was a *“very useful as a perspective, but could do with more specific guidelines what you can actually do”*. This was echoed by others, who articulated the need *“to make it more accessible”*.

In terms of its perceived effectiveness for informing and assembling bespoke interventions, a murkier picture emerged. Local practitioners charged with operating and implementing scale-up programmes or local partnership-based regional ecosystem initiatives broadly support it as a mechanism for informing policy. Many of these local practitioners are acutely aware that policy is more likely to fail if they do not *“take account of local interdependencies”*. The perceptions of national policy makers, on the other hand, seem somewhat more circumspect. Being one stage removed from the mechanics of the policy implementation process, national policy makers and indeed politicians seem yet to be fully convinced of its cost-effectiveness. Interestingly, in Estonia it was explicitly rejected by politicians for its perceived *“amorphous”* qualities.²⁶

On the whole, quantitative evaluation evidence assessing the effectiveness of ecosystem-related interventions is extremely rare. Where hard evaluation evidence exists, it shows that public sector interventions supporting ecosystems are broadly effective in catalysing start-ups through loans, funding and mentoring, but are less successful promoting networks and

²⁶ Interestingly, in the Estonian context it was basically seen as indivisible from other horizontal industrial policies designed to help develop the general business environment.

interconnections across the ecosystem (Business Finland, 2018). Evidence on the success of bespoke initiatives such as accelerators is also somewhat mixed, but tends to stress the importance of softer aspects associated with these organisations (Gonzalez-Uribe and Leatherbee, 2017; Business Finland, 2018; Roberts et al, 2018).

4. Policy Discussion

While divergence resonates across the policy landscape examined, our empirical work detected a number of key commonalities across different policy jurisdictions as well as some glaring absences. Previously, scholars identified anomalies in the usage of EEs whereby policy makers over-engineered due to the ‘creation mistake’ (Isenberg, 2010; 2016).²⁷ Arguably, similar misapprehensions or ‘mistakes’ seem to be permeating EE policies, three of which are highlighted.

4.1 Conceptual Ambiguity and Policy Misconceptions

A key finding is that policy makers are encountering profound conceptual ambiguity surrounding EEs, creating something of a ‘*comprehension mistake*’. While increasingly utilised, there appears to be significant diversity in how the concept is both perceived and adopted. The evidence from our interviews suggests that a lack of knowledge or common language has fostered misconceptions about the concept of EEs. This was starkly demonstrated in the frequent use of the term in the specific context of ‘start-up’ ecosystems. This illustrates that many policy actors perceive the term to be connected with specific constitutive elements of an ecosystem, rather than viewing ecosystems as an integrated whole. Perhaps a causal factor underlying this conceptual ambiguity concerns a lack of

²⁷ Indeed, our research found a similar belief that policy was in some special cases attempting to artificially ‘jump start’ an ecosystem ‘from scratch’.

detailed knowledge about EEs as a policy construct. Interviewees repeatedly mentioned that there was a lack of practical instruction of how to intervene and that more guidance is needed to “*make it more accessible*”. So while many policy makers view it favourably, the concept is largely seen as an opaque one, with few explanatory instructions attached.

Another important observation to be drawn is the manner in which policy makers translate the EE concept into policy action. This may be generating a ‘*volume mistake*’. For many policy makers, the concept is primarily synonymous with the foundation of new start-ups. Start-ups have the advantage of being tangible and quantifiable, whereas enhanced connectivity within ecosystems is much more nebulous and difficult to measure. Faced with limited knowledge about the proper operationalisation of the EEs concept, many policy makers are using it as a kind of ‘default option’ to foster and promote ‘more’ entrepreneurship. The root causes of this reside in the miscomprehension noted above coupled with path-dependencies within the policy-making process (Shane, 2009; Isenberg and Brown, 2014). A crude volume-led approach is most evident in less well-developed institutional contexts (see below).

A third key observation - the ‘*systemic mistake*’ - concerns the lack of genuinely holistic or systemic interventions. There seems to be a profusion of public sector policy initiatives geared towards developing singular aspects of ecosystems, such as targeting start-ups, the creation of business incubators/accelerators, universities, business angel networks etc. While constituent parts of an ecosystem, these actors are not necessarily closely interwoven with other parts of EEs (see Business Finland, 2018). By contrast, so-called systemic instruments (Wieczorek and Hekkert, 2012) are designed to improve the functioning of the entire ecosystem. In some fully functioning EEs, certain organisations such as business accelerators and intermediaries such as dealmakers play these types of important coordinative or ‘match-

making' roles (Clayton et al, 2018). In less-developed EEs, however, these types of crucial bridging mechanisms are often absent or anaemic. Overall, these 'boundary spanning' initiatives were largely absent within the public policies examined.

While a lack of genuine systems thinking imbued most of the policy frameworks examined, useful efforts have been expended to help foster relational connections across some advanced ecosystems. In places like Denmark, the Netherlands, the US and the UK this typically involves bringing various 'stakeholders' together through strategy building exercises. While these *ad hoc* policy initiatives are useful, there is a lack of concrete policies deliberately fostering inter-linkages between key entrepreneurial actors such as start-ups with other parts of the EE. Evaluation evidence notes this as one of the key weaknesses of policy interventions (Business Finland, 2018). An exception noted earlier is the highly innovative peer-based Future Fifty programme funded by the UK government. While on paper this model is proving effective in the UK context, it is important to recognise that it may not be amenable to policy transfer to other less suited EEs.

Health warnings around policy isomorphism seem particularly salient given the varied and socially embedded nature of different local economies (Feldman and Lowe, 2018). It could be possible that "the nature of the local region, its existing institutions, and its ecosystem" may cause certain types of programmes such as accelerators to work well in some areas but not in others (Hochberg, 2016, p. 48). There seems to be some evidence of this regarding accelerators in developing economies, where start-ups in Africa are often unable to absorb the levels of funding available.²⁸ Echoing others, a "one-size fits all" (Brown and Mason, 2017,

²⁸ <https://nextbillion.net/how-much-do-accelerators-help-entrepreneurs-raise/>

p. 26) policy prognosis is unlikely to succeed as imported ideas can often “backfire” (Rodrik, 2014, p. 204).

4.2 *Different Types of Policy Frameworks*

The preliminary nature of the proceeding analysis precludes us from forming a definitive classification system of different policy approaches. What seemed evident from our analysis, however, was that three broad types of policy landscapes coalesce under the EE conceptual umbrella.

First, in *emergent policy ecosystems* the perceptual ambiguity and misuse of the concept was strongest. Many of these countries lack the basic institutional infrastructure to foster a strategic approach towards EEs and national start-up campaigns and entrepreneurship education dominate the policy landscape. Policy is public sector-led and very top-down. Countries like Estonia, Chile, Mexico, Poland and Russia fall into this grouping.

Second, *developing policy ecosystems* policy makers are grappling with the concept but are ‘institutionally thicker’ than the first group. In these contexts, start-ups are still viewed as the primary conduit for entrepreneurial success, but some are experimenting with policies to develop scale-ups. Public policies are creating a strong public sector-led ‘support ecosystem’ towards supporting start-ups. Countries and regions resembling these traits include Australia, Belgium, Ireland, New Zealand and UK regions like Scotland.

In the final group of *advanced policy ecosystems*, policy makers have fully embraced the EEs concept. In these economies, intermediaries and connectors in the ecosystem are more sophisticated, with a stronger role for private sector actors such as accelerators. Within these

contexts, policy heavily focuses on scale-ups, boundary-spanning intermediaries such as accelerators and enhancing connectivity across ecosystem actors. Many US states and countries like Denmark, Finland, the Netherlands and Sweden resemble this policy archetype. Even in this group of countries, however, genuine systemic approaches remain rare.

5. Conclusions

In conclusion, it is fair to say the EE concept is being ubiquitously utilised across economies for analysing, informing and intervening to promote entrepreneurial activity. This popularity of course by no means guarantees its “profundity” (Martin and Sunley, 2003, p. 7). This is the first attempt to examine and characterise policy frameworks under this new conceptual policy lens, thereby making an important contribution to the EE literature. Our findings strongly point towards a large degree of conceptual ambiguity and policy incongruence between the underlying systemic nature of the EE concept and its operationalisation within public policy. The continued and overriding focus on start-ups under this conceptual umbrella also reflects pervasive path-dependencies within this policy making sphere.

Ultimately, whether the concept becomes a policy panacea or remains an elusive chimera is an interesting question for further research to empirically explore. Inevitably, this paper only scratches the surface of how public policy operates in this highly variegated, complex and rapidly moving policy domain. More detailed and intensive research methods will be required to properly unpack these issues further. We hope this paper emboldens other scholars to subject this latest industrial policy ‘blockbuster’ to further critical reviews.

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