

***A Social Ecosystem Model:
conceptual developments and implications for VET***

Ken Spours

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Corresponding author:

Prof. Ken Spours

Capital Normal University, Beijing

UCL IOE 20 Bedford Way, London WC1H 0AL

Email - k.spours@ucl.ac.uk

Abstract

This article focuses on the conceptual development of a Social Ecosystem Model (SEM) that connects the worlds of working, living and learning. The inclusion of 'living' in the learning equation results from critical reflections on new powerful dynamics within capitalism - wealth creation of FinTech 'entrepreneurial ecosystems' and their social exclusionary effects on cities and their populations. The inclusive social ecosystem model results from conceptual extensions to existing skills ecosystem models by adopting a holistic perspective of the 'working-living-learning' nexus in urban locations and, in doing so, draws attention to the facilitating roles for national and local government working with the public and private sectors and further and higher education. The article concludes by exploring the implications of the SEM for spatial and place-based approaches to VET and the critical contribution of new forms of partnership working and the role of further education colleges as local anchor institutions.

Introduction – a place-based and spatial approach to VET

Research on vocational education and training (VET) has, understandably, been primarily associated with the world of work either the macro level - national systems (e.g. Brockmann *et al.*, 2008; Keep 2015) - or the micro-level - the role of the enterprise or workplace (e.g. Fuller and Unwin 2003; Malloch *et al.*, 2010). While these remain important modes of analysis, this article explores an intermediate area-based and sub-regional level. This place-based and spatial approach to VET results in part from observations of two economic and policy developments. The first is the shifting nature of capitalism (Srnicsek, 2018) and the frontiers of financial and technological change (Fintech) in global cities that combine economic dynamism and urban social exclusion. The second, and in the English context, concern the ways in which economic and social development is becoming increasingly focused at the regional and sub-regional with the development of combined authorities, limited devolution powers to local authorities and the rise of inclusive growth strategies (Metro-Dynamics, 2017).

This article constructs a Social Ecosystem Model (SEM) that is derived from place-based VET research and critiques of existing human ecosystem models. The research informing the conceptual framework was undertaken in urban settings in East London 2016-2018 (Hodgson and Spours, 2018). The new ecosystem model was also shaped by a critique of an exclusionary entrepreneurial ecosystem model (e.g. Maleki, 2011; Mason and Brown, 2013) and an extension of the Skills Ecosystem approach (e.g. Finegold, 1999; Payne, 2007; Buchanan *et al.*, 2017). The urban research base and these critiques result in an inclusive ecosystem approach to reflect on the relationship between disruptive economic and technological developments and how they affect local economies, jobs, the shape of urban environments and the living conditions of their populations. As a result of this analysis and a number of theoretical developments, the emergent SEM suggests a 'spatial' approach linking VET and skill development not only to future work, but also sustainable living through what is termed the 'working, living and learning nexus'.

This article comprises three parts. Part 1 outlines the conceptual road to the SEM based on several theoretical steps. Part 2. elaborates the main dimensions of the SEM – horizontal,

vertical, mediation and chrono – in the context of urban environments. Part 3. provides an initial application of the SEM in relation to ‘place-based’ VET linked to the development of inclusive economies and local civil society.

Part 1. Conceptual construction of the Social Ecosystem Model

Elite entrepreneurial ecosystems – innovation and exclusion

Finegold (1999), researching the rise of software and computer companies in California in the 1990s, showed how particular enterprises became successful due to their participation in self-sustaining ‘high skills ecosystems’ (HSEs). HSEs comprised four elements – (i) ‘catalysts’ which can trigger development (ii) ‘nourishment’ to provide a stream of new talent; (iii) a ‘supportive environment’ and (iv) ‘interdependence’ between the ecosystem actors. HSEs and their growth dynamic were contrasted to the ‘Low Skills Equilibrium’ (Finegold and Soskice, 1988) that conceptualised systemic low demand for skill within the UK economy in the 1980s.

Through a retrospective look at this ground-breaking work before the dot.com boom and the subsequent rise of ‘big data’ of the early 2000s, we can appreciate how Finegold’s HSE analysis provided an explanation of the conditions that gave rise to clusters of high growth companies that would in subsequent decades develop into what is termed ‘Platform Capitalism’ (Morozov, 2015; Srnicek, 2016).

In the intervening years Finegold’s HSE analytical approach has been revised and adapted both indirectly and directly. The indirect relationship can be found through the emergence of an ‘entrepreneurial ecosystem’ model, reflecting the dynamics of high growth clusters of digital technologies. Entrepreneurial ecosystem literatures do not directly cite Finegold’s seminal HSE work, although they are clearly part of the same mode of thinking.

Entrepreneurial ecosystems have been defined as clusters of firms of different sizes using high skills and innovative practices that connect digital development, marketing and finance. Entrepreneurial ecosystem literatures have focused particularly on technological innovations associated with the relationship between ‘start-up companies’, the role of

venture capital, flatter company structures and university-based or university-related innovation (e.g. Isenberg, 2011; Maleki, 2011). The distinguishing features of entrepreneurial ecosystems are the exploitation of 'placed-based assets' – environments attractive to economic actors; adaptive industrial traditions; strong infrastructure; preexisting large companies with high tech functions -and the processes of company decline and new shoots. These are understood through the 'metaphorical device' of natural ecosystems to retrospectively reflect on the dynamics of tech/financial clustering and rate of 'spin offs' (ecosystem effect) in order to develop more high growth firms (Mason and Brown, 2013).

High innovation, FinTech-related entrepreneurial ecosystems appear to have emerged 'naturally' in a financialised economy via a confluence of facilitating conditions including efficient transport and attractive housing, a conducive relationship between small and large businesses and the generation of ideas through bringing together different leaderships (Moss Kantner, 2012). Crucially, these niche and market-oriented company clusters establish relationships with elite universities around technological innovation and can rely on a steady stream of highly educated labour prepared to migrate to global cities.

While the global role of giant Financial/Technological (FinTech) platform companies such as Google, Facebook and Uber have been criticized for the ways in which they manipulate 'big data' and their relationship with consumers (e.g. Zuboff, 2019, Morozov, 2019), less attention has been paid to their spatial effects. The entrepreneurial ecosystem model with its focus on high tech industries, wealth production and the attraction of educational elites has resulted not only in immense wealth production, but also profound inequalities. Relying largely on self-employment, temporary and flexible contracts and educated migrant labour, these global companies have also produced social displacement effects on surrounding areas through rising property prices and rents (Waters, 2017; Carrie, 2019). The Silicon Valley dynamic in the San Francisco area presaged FinTech developments in other global cities, such as London, where the effects of financial and central business districts are producing similar environmental effects. Entrepreneurial ecosystems, due to their exclusionary economic, living and learning dynamics, can be legitimately considered as elite

and exclusive entities. Figure 1 summarises its key characteristics along three dimensions – horizontal, vertical and mediating forces.

Figure 1. Contrasting elite entrepreneurial and inclusive social ecosystem models

Dimensions	Elite entrepreneurial ecosystems	Inclusive social ecosystems
Horizontal Terrain		
Place	‘Place utilisation’ to act as ‘magnet’	‘Place-shaping’ (inter-relationship between education, housing, transport, high/low skills)
Networks and institutions	Entrepreneurial connectors and privatised civil society networks	Public/private networks and anchor institutions
Role of Education	‘Flat’ companies (see Vertical Structures)	Popular participation and social partnership-based companies Place-based partnerships between higher and further education, employers and state/civil society actors for skills co-production and innovation
Role of digital technologies	(see Vertical Structures)	Socially-designed assistive digital technologies to support collaboration and urban development
Vertical Structures (role of state structures and policies)	Utilisation of existing infrastructure; venture capital and business support from government	Planned confluence of ‘catalytic factors’ (e.g. public investments; private sector initiative; empowered local state and national policy steers)
Role of Education	Innovation role of universities and ‘talent magnet’ for graduates	(see Horizontal Terrain)
Role of Digital Technologies	Dominant role of digital/finance nexus for market expansion	(see Horizontal Terrain)
Mediating factors		
Mission	Private wealth production	Inclusive economic growth and sustainable living
Leadership	Leading role for companies	Commonly negotiated mission and local ecosystem leadership

As can be seen in Figure 1, the elite entrepreneurial ecosystem model while having some horizontal features is, in reality, relatively vertical due to the economic and technological power wielded by global companies and the utilization of elite education institutions. This exclusive ecosystem concept has been used to stimulate thinking about the main features of an alternative, inclusive and much more horizontal Social Ecosystem Model (SEM). Both models link the worlds of ‘working, living and learning’ albeit in very differing ways.

While the comparative grid in Figure 1 is used as a conceptual tool in order to clarify the features of contrasting human ecosystem models, what has been developing in economic and technological reality, however, may be hybrids of these two conceptions. On the one hand, key figures in Silicon Valley would subscribe to many of the collaborative features associated with the SEM, in order to ensure that platform capitalist companies become more socially acceptable (Zuboff, 2019). Conversely, social ecosystem development will contain within it the dynamics of entrepreneurial ecosystems, particularly concerning start-ups and micro-companies that seek to create the ecosystem dynamic of wealth creation and innovation. Both models will contain dominant and subordinate features – the question will be the main organizing principle of each.

Moreover, running through this comparative ecosystem analysis is an important distinction between retrospective and prospective thinking. The Entrepreneurial Ecosystem approach retrospectively reflects on the existing and historical phenomenon of Fintech by utilizing an ecosystem ‘metaphorical device’, linked to the natural world, to understand growth dynamics. Social ecosystems, on the other hand, do not yet fully exist in practice. Here prospective imagining about a potential future social ecosystem model requires the development of ‘social ecosystem theory’ as a guide to a future ecological construction process ¹.

¹ The wider human ecology background to ecosystem theory and the conceptual distinctions between ‘ecological metaphor’ and ‘ecological theory’ and ‘ecologies’ and ‘ecosystems’ is discussed in a project paper *A social ecosystem model: Conceptualising and connecting working, living and learning in London’s New East* (Hodgson and Spours, 2018).

The Skills Ecosystems approach: strengths and limitations

The second, and more direct interpretation of Finegold's HSE work, has been through the concept of Skills Ecosystems that has, over the past two decades, captured the imagination of academics and policy-makers in relation to skills formation and economic innovation in Anglo-Saxon type economies (e.g. Australia, UK and US). The ecosystem 'analogy' aims to utilize key ideas of the life sciences to capture the organic and dynamic relations associated with the 'skills-political-economic development nexus' (Buchanan *et al.*, 2017: 3). The skills ecosystem contribution to the skills debate has focused on the importance of the wider context or settings in which skills are developed and has been used in order to move the policy and practice debate beyond the prevailing policy orthodoxy of 'skills supply' (Keep, 2016).

Skills ecosystems have been defined as regional or sectoral social formations in which human capability is developed and deployed for productive purposes (Finegold, 1999). Buchanan and colleagues (2017) applied Finegold's ecosystem elements – catalysts; nourishment; supportive environment and interdependence - to a variety of economic and VET skills formation settings and associated business models. In doing so they were able to consider the type of product market, competitive strategies pursued, business organisations, networks and the financial system; institutional and policy frameworks; modes of labour hire and the structure of jobs (e.g. job design and work organization); as well as the level, type and mode of skills formation (e.g. apprenticeships, formal and informal on-the-job training).

These ideas were applied through Australian Skills Ecosystem Pilots that focused on skills utilisation by workplaces and the generation of 'decent work' (Buchanan, 2006). Rather than going with the flow of a neoliberal growth model (Payne, 2007), they worked against the headwinds of flexible labour markets, low-quality production, low-skill development and skills shortages. Critical of a narrow competency approach to work definition, they aimed to respond to new work developments - the emergence of more hybrid and complex 'vocational streams' or 'jobs families' (Wheelahan *et al.*, 2015). Based on the formation of networks across different sectors and involving a wide range of social partners (Hall and Lansbury, 2006), the skills ecosystem approach attempted to produce a strong synergy

between education, training and workforce development in a variety of production settings, both high skill and at more foundational levels. The broadening of economic focus may, therefore, be relevant in 'harder to grow' conditions where the 'natural' confluences of digital technologies, the availability of highly skilled and educated employees, work space and private finance that favour the elite model are not readily available.

However, more recent reflections on skills ecosystems, using what has been termed the 'Oxford School' of skills analysis (Buchanan *et al.*, 2017), have pointed to a number of systemic difficulties. The first concerns complexity. Insofar as ecosystems comprise multiple components, so growth and sustainability cannot result by reforming one component in isolation from the others. The second is economic/political. Buchanan and colleagues have argued that the relative failure of skills ecosystem initiatives to make significant progress has not only been due to the challenges of complexity and time-consuming forms of collaboration to build 'healthy' ecosystems, but also to resistances resulting from employer influenced 'skills settlements' within neoliberalism. The Oxford School analysis has concluded with the observation that factors that appear to support skills ecosystem development are dispersed across different national systems, but are not all present in one geographical location (Buchanan *et al.*, 2017).

The challenges identified by Buchanan and colleagues point to both the strengths and limitations of the skills ecosystem approach. Its strength lies in the fact that it goes beyond the orthodoxies of skills supply strategies in liberal-market economies with its holistic approaches to skills utilization and its development in companies with links to the VET system. Moreover, it has moved beyond Finegold's original HSE work that focused on high skill environments to recognize more diverse economies (high, medium and foundational) with their different skills requirements.

At the same time, these evident strengths have been offset by limitations. The most significant proved to be the confinement to private sector firms and the problems of overcoming the attitudes of owners and managers that might choose less progressive routes to business viability. Furthermore, the focus on the private sector under-estimates

the role of the public realm and the role of the national and local state to develop skills ecosystems in less favourable work and economic environments than those of Silicon Valley.

But there are also conceptual limitations. The skills ecosystem approach has continued to use metaphorical thinking that relies on an analogy with natural ecosystems, thus focusing on Finegold's four ecological elements to examine how far these exist in any context. The limited use of theory means that this form of thinking has been less able to fully take into account the wider economic and political system conditions required for its future effectiveness. The challenge here is to attempt to extend the boundaries of the skills ecosystem approach to introduce a more explicit political economy analysis.

Extending elements of High Skills Ecosystems

In his 1999 work, Finegold identified four inter-related 'elements' contributing to the creation of high skill ecosystems (HSEs) that have since given rise to global companies such as Google, Apple, Facebook and Uber:

- 'catalysts' which can trigger development (e.g. the original impulse of military spending, government demand and investment, together with key individuals in the case of California's computer and biomedical industries) (pp 66-67);
- 'nourishment' from world-class research universities that have provided a stream of new talent (pp. 67-68);
- a 'supportive environment', including physical infrastructure such as transportation and housing, a climate that attracts and retains knowledge workers and a regulatory regime sympathetic to risk-taking (pp. 68-70);
- 'interdependence' and co-operation between the actors in the region based on flatter hierarchies within enterprises, together with strong local and regional networks (70-71).

In order to build an inclusive SEM, these ecosystem 'elements' have been extended along three dimensions – horizontal terrain, vertical structures and a mediating dimension of 45-degree relations (see Figure 3).

The horizontal terrain

Finegold's model has been extended horizontally. 'Inter-dependent relations' and 'nourishment', that focused on entrepreneurial networks and talent from research intensive universities, now include a wider range of enterprises at different skills levels (this adaption had already been undertaken in the Skills Ecosystem approach), together with a wider set of contributions from other institutions, such as further education colleges and training providers, supporting skills development at intermediate and lower levels in more diverse local and regional economies (Hodgson and Spours, 2016, 2018). In the SEM, the role of education and digital technologies is seen as an integral part of the horizontal terrain as they are used together to produce inclusive economic and social growth in particular local environments.

In addition, the horizontal dimension has also been given a more spatial character. Hodgson and Spours (2013, 2015a) added to Finegold a spatial interpretation of Bronfenbrenner's (1979, 1994) ecological systems theory to give the concept of a skills ecosystem a more dynamic, multi-layered and spatial character linked to localities, sub-regions and regions:

- 'microsystem' (learner's immediate environment - school, family, and immediate learning relationships)
- 'mesosystem' (wider institution and its more complex relationships e.g. a large college)
- 'exosystem 1' (local context for a school or college and provision of VET)
- 'exosystem 2' (regional economy dimension)
- 'macrosystem' (wider national policy, socio-economic & cultural contexts)
- 'chronosystem' (patterning of environmental events & transitions over the life course).

In terms of governance within England and the UK more widely, spatial interpretations have emphasized the importance of the 'middle tier' of political and social relations; the local levels of state and civil society where factors for skills, economic and social activity are essentially played out. These spatial distinctions also resonate with current devolution debates and the importance of intermediate collaborative governance relations that lie

between individual institutions and national governments that have been relegated in the neoliberal era. The concept of 'nested' relationships also opens up a way of explaining how a broad social ecosystem might contain different types of sub-systems (e.g. elite finance and tech-based ecosystems and skills ecosystems involving workplaces). The horizontal terrain is, therefore, conceptualised as layered; inter-locking and ultimately collaborative.

Vertical structures

'Catalysts' and a 'Supportive Environment', that referred to limited state actions including financial boosts of military spending, key infrastructure projects and regulatory regimes, have also been extended by proposing a more comprehensive role of the state (e.g. forms of public risk-taking in areas in which the private sector is reluctant to tread; supporting fundamental research; undertaking strategic long-term investments; providing regulatory regimes that protect the environment and 'market shaping' rather than simply 'market fixing') (Mazzucato, 2016). The emergent SEM, therefore, envisages an extended state role through what is referred to as 'facilitating verticalities'.

Mediation and 45-degree relations

The SEM due to its diversity and social aims is conceived as a 'managed' environment and thus contains elements not present in the Finegold high skills model. These include a mediating role of 'common mission and purpose' (Mazzucato, 2016) and 'ecosystem leadership' (Doel, 2018) between the horizontal and vertical dimensions. This can also be understood as form of 45-degree politics (Lawson, 2019).

Common mission is related, in particular, to the needs of the locality that provide the 'glue' between a diverse set of social partners, each with their own specialisms and preoccupations. The common mission is exercised through what might be termed 'ecosystem leadership', the key function of which is to nurture, cohere and educate the different elements or forces of an expanded social ecosystem by relating its horizontal and vertical features. Seen in terms of 'system leadership' Senge and colleagues (2015) point to three core capacities – 'the ability to see the larger system'; 'fostering reflection and more generative conversations'; and shifting the collective focus from reactive problem-solving to co-creating the future' (pp3-4).

Summary

These conceptual innovations aid the development of social ecosystem 'theory' that seeks to leave behind a dependence on natural metaphorical approaches and to open up a theoretical space for a consideration of political economy, including the role of the national state and local civil society in ecosystem thinking. With this theoretical approach, the SEM can be applied not only thinking about skills and lifelong learning in relation to the world of 'work', but also the world of 'living'. This broader focus highlights the contribution of local government, inclusive institutions, popular participation, the wider local economy and new urban developments. Parts 2 article comprise a conceptual exploration of the SEM model for urban contexts because these are the economic, technological and geo-social spaces in which different ecosystem conceptions can play out. Part 3 of the article outlines the implications for of an inclusive and social ecosystem model for place-based VET.

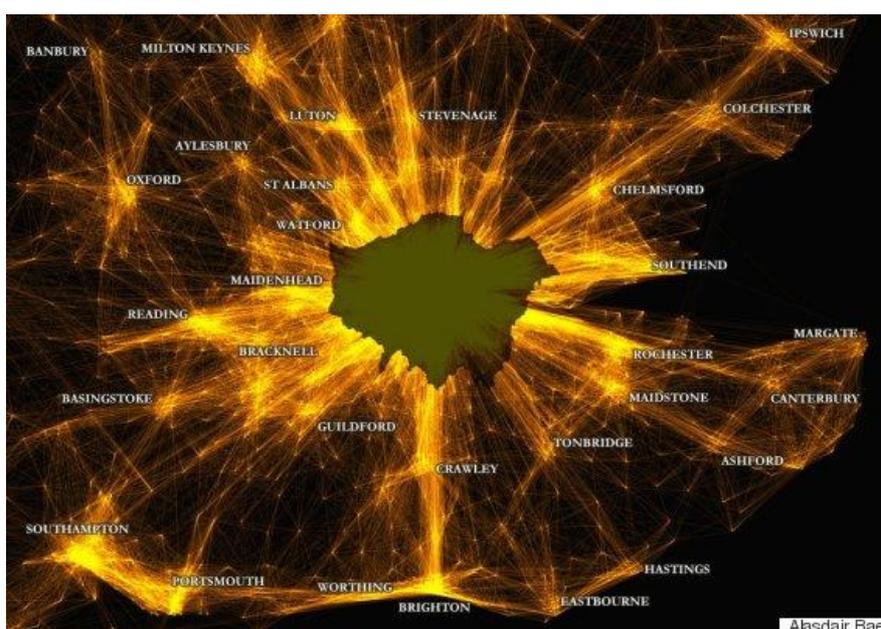
Part 2. The Social Ecosystem Model – contexts and dimensions

The spatial context – supernova and polycentric cities

The skills ecosystem approach, in its attempts to move beyond skills supply orthodoxies, has been concerned with the world of work but did not bring the issue of ‘living’ into focus. For the SEM, however, recognition of the relationship between economic and urban developments has introduced ‘living’ as an explicit and integral feature of human ecosystems. Through a critique of the inequalities and urban displacement effects of the entrepreneurial ecosystem model, a central concern of the SEM is how economic, social and educational development can become more inclusive.

The specific spatial context for the exploration of this concept has been the development of ‘supernova London’ in which high-value business services (e.g. finance, insurance and now tech) have expanded the mono-centre of the capital in which companies seek to utilize prime real estate and attract workers from all over Greater London, the wider South East, the UK and from abroad. As a consequence, the cost of living in London has become increasingly prohibitive with an increase in mass commuting, resulting in the intensification of travel-to-work patterns converging on and radiating from the centre, thus giving rise to its supernova appearance (see Figure 2).

Figure 2. Supernova London



Source. Rae 2016

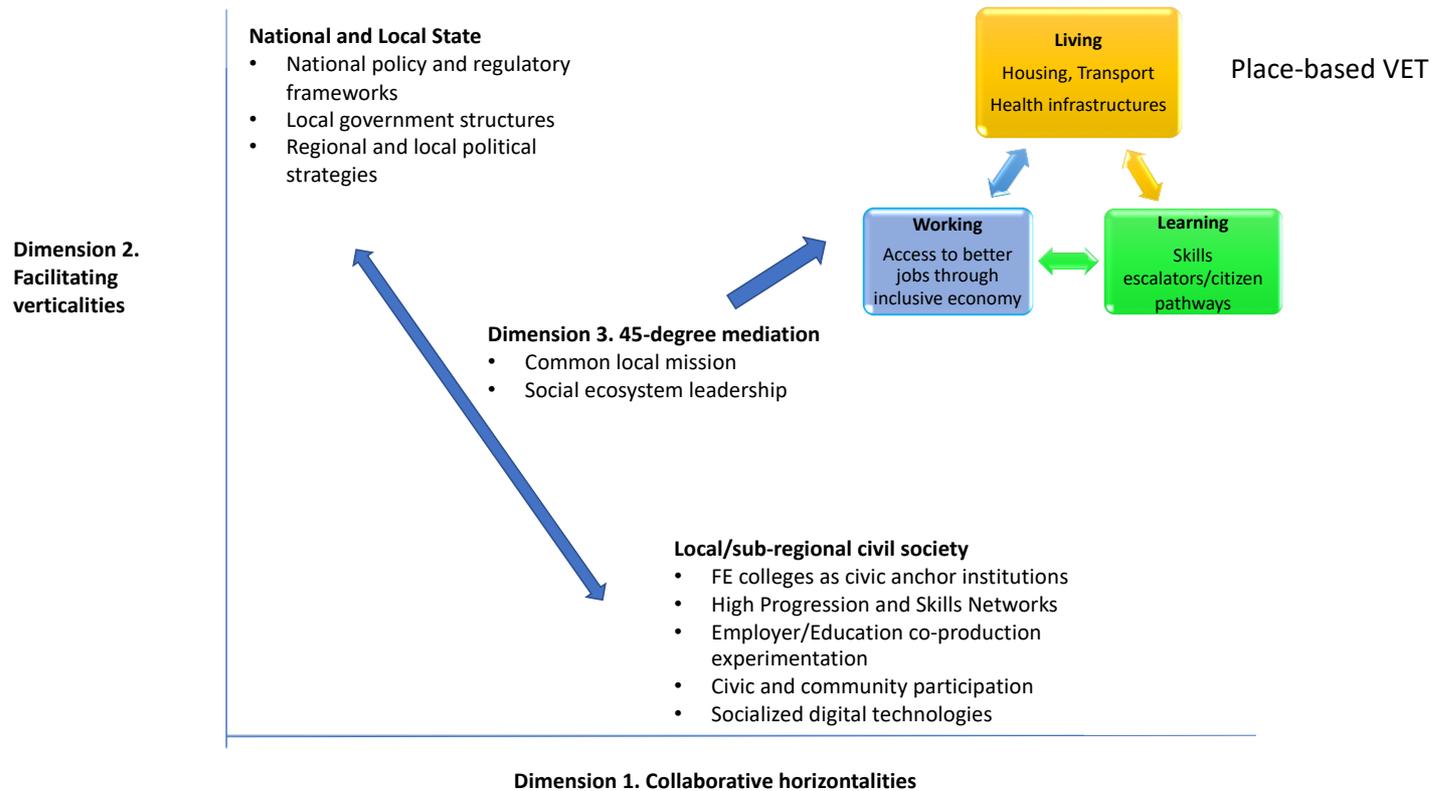
As Rae (2016) points out, however, supernova London is also linked to more minor supernovae across the South East of England and thus cannot be seen in isolation from these wider spatial relations. Monocentric supernova London can be contrasted with emergent polycentric urban developments. While supernova realities currently dominate, a more polycentric vision of London is emerging with plans such as Cities in the East and West; Innovation Districts and London's Remade Towns (Mayor of London, 2015; Katz and Wagner, 2014; New London Architecture, 2017). These new polycentric developments, that are also embedded in regional and sub-regional strategies, point to a possible future 'rebalanced' London that comprises not only a dynamic centre, but also a range of vibrant urban hubs/communities in the outer boroughs (social ecosystems) which seek to integrate working, living and learning through the production of better paid jobs, affordable housing and sustainable communities, reinforced by inclusive approaches to VET and lifelong learning both in education institutions and in the workplace (Mayor of London, 2016).

Social ecosystem dynamics – connecting working, living and learning

In Figure 1 the dimensions of the dominant elite entrepreneurial ecosystem and emergent social ecosystem models were contrasted. Following on from this, the theoretical innovations outlined in the previous section lead to a provisional definition that connects the worlds of working, living and learning through four dimensions of activity and thinking (see Figure 3).

'A social ecosystem is conceived as an evolving, place-based social formation that connects the worlds of working, living and learning with the purpose of nurturing inclusive, sustainable economic, social and educational development in diverse communities, localities and sub-regions. The social ecosystem model (SEM) is currently conceptualized as comprising four related dimensions - 1. collaborative horizontalities (education networks, local anchor institutions, a range of social partners/communities supported by the connective the role of digital technologies); 2. facilitating verticalities (an enabling national state and empowered local state); 3. 45-degree politics and mediation through common mission and ecosystem leadership; 4. the concept of ecological time that allows for processes of holistic and deliberative system evolution'

Figure 3. The dynamics of SEM: connecting working, living and learning



Dimension 1. Collaborative horizontalities (e.g. local networks, anchor institutions, workplaces and communities, digital technologies). Extended and participatory horizontal terrains are a fundamental feature of the SEM. The prime focus of the elite ecosystem is the company, whereas the prime focus of the SEM is the ‘area’ or ‘local place’ as a platform for economic, civic and educational participation. Company-focused elite ecosystems are dependent on ‘place utilisation’ or even ‘place exploitation’ (the attraction and therefore utilization/exploitation of particular geographies to entrepreneurs and residents). Conversely, the SEM suggests a greater emphasis on ‘place-making’ in environments where some place-based assets may be scarce and in need of investment and/or construction. Building networks between public, private and community organisations concerned with working, living and learning is crucial in developing the contexts for the SEM to function and flourish.

At the same time, however, network-building has to progress to institution-building because the future stability of the social ecosystem will depend not only on networks and

relationships, but also on strong inclusive anchor organisations. An anchor organisation/institution is one that, alongside its main function, plays a significant and recognised role in a locality by making a strategic contribution to the local economy and supporting a sense of local identity (Stringer *et al.*, 2006). Entrepreneurial ecosystem literatures, including Finegold's HSE work, have emphasised the role of research-intensive universities in the 'nourishment' process. The SEM, on the other hand, due to its inclusion function looks also to more 'comprehensive' institutions such as further education colleges.

At the heart of the SEM lies horizontal collaborative experimentation through the working, living and learning nexus – economic co-production in and for the workplace; public participation in relation to developing sustainable living; and the full involvement of education providers to assist with growing education and skill capacity (see final section for the implications of the SEM for place-based VET).

Dimension 2. Facilitating verticalities (national state policies and regulations, local/regional government and aspects of civil society). For the SEM, the role of 'facilitating verticalities' is part of a recognition that local horizontal terrains do not exist in isolation; they are tied in various ways to regions, to the national state and to wider civil society. Social ecosystems will require not only strong horizontal strategies, but also supportive vertical ones, marked by a strengthening of the investment, innovation, regulatory and market-shaping roles of the national state (Mazzucato, 2011; 2016). Accompanying this would also be the expansion of the public realm combined with democratic and devolution reforms (Spours, 2016). This would involve national government seeking to empower the 'middle layer' of governance and popular participation by devolving important powers to the local level through 'democratic localism', reflecting a rebalancing of national, regional and local relations (Hodgson and Spours, 2012). In addition, the SEM also contains a downward vertical dimension involving local communities that often find it difficult to express a voice in 'local place-shaping' around regeneration schemes; a seemingly progressive aim that can all too easily become an exercise in urban gentrification (Jones, 2018).

Dimension 3. 45-degree mediation (common mission and ecosystem leadership). Social ecosystems are not formed naturally within current economic and political conditions but,

instead, require a range of new conditions and nurturing processes to come into existence. Referred to elsewhere as '45-degree Politics' (Lawson, 2019), a third and fundamental dimension of the SEM concerns the role of 'mediation and connectivity', including the concepts of ecosystem leadership, formative educational activity and socially-designed technological connectivity.

Social ecosystem leadership, comprising the twin-mission of cohering horizontalities and mediating state verticalities, is essentially a collaborative enterprise involving representatives from local government, further and higher education, workplaces and wider civil society. Working on horizontal terrains requires 'prospective' thinking and not just reflection on what has already happened. This will necessarily involve a deep knowledge of the complexities of the locality and its key challenges, together with a capacity to foster a shared sense of mission between a variety of social partners and their specialisms (Mazzucato, 2016). Social ecosystem leadership, therefore, seeks to bring about a 'synergy of differences' with a common focus on inclusive economic growth, sustainable living and lifelong learning. The mediation of 'verticalities', on the other hand, will involve fully utilising devolved political responsibilities and the ability to 'creatively translate' national policy for the local/regional context (Coffield *et al.*, 2008), in order to coordinate a diverse range of catalytic factors including public investments and allied private sector initiatives.

Local systems of education and training are vital forms of social ecosystem connectivity. In order to support the 'combinational economy', that includes lower levels of skill and integrates SMEs as well as high skills and large companies, will involve partnerships between higher and further education institutions, employers and state/civil society actors to develop the local education and training opportunities that ensure local people can access new jobs, progress within employment and fully participate in civic life. The educational formation of the SEM is, therefore, much broader, more inclusive and more central than the educational relations that support the elite ecosystem model.

Social digital technologies also play an important connective role. While it will be important to create 'talent pipelines' in digital skills and to utilize apprenticeships to help fill envisaged skills gaps, the social ecosystem concept suggests more fundamental connective and

participatory roles for digital technologies in what might be described as their 'socio-technical' function. These could include becoming an integral part of polycentric urban developments through devolved clustering of digital entrepreneurs linked to innovations in public services and the new local economy (Deloitte, 2016) and the concept of 'City as Platform', in which the networked city sees citizens as co-designers, co-producers and co-learners (Bollier, 2016).

Dimension 4. Ecosystem construction and evolution over time - elite ecosystems are viewed as highly dynamic but 'time bound', insofar as they are dependent on degeneration/regeneration cycles in order to produce entrepreneurial spin-offs and recycling (Mason and Harrison, 2006). In contrast, the SEM should be considered as a long-term historical project in which continued intellectual effort is required to understand the configuration of forces needed for the flourishing of such a system and the nurturing of complex relationships over time.

While there will be a necessary element of unpredictability in ecosystem development insofar as complex social organisms themselves evolve, the SEM suggests that particular activities are important on local and sub-regional terrains where place-based social ecosystems are essentially built. These would include the identification and mapping of existing relations and challenges to formulate the common mission, building networked sets of activities to develop new forms of collaborative activity that would, in turn, create the demand for new types of skills, thus creating a 'social ecosystem effect' (Hodgson and Spours, 2018). In developing this evolutionary character, the new SEM may be able to address some of the barriers facing the skills ecosystem approach by: (a) increasing the range of social forces involved; (b) using a long-term chrono-dimension in the form of a staged ecosystem construction process that suggests not all components of the social ecosystem have to be assembled simultaneously; (c) and creating mechanisms for self-renewal and evolution through problem identification and its solution.

Part 3. Implications for place-based VET in the English context

Social ecosystems and place-based approaches to the economy and skills

Grounded in the current realities of English VET and its possible trajectories of development, the SEM operates as a spatial and social extension of the skills ecosystem approach.

Through this, the role of VET is conceptualised within the long-term process of re-imagining global cities away from the mono-centre/supernova model towards a more polycentric urban landscape. As part of the process of urban rebalancing, the SEM approach to VET and skills development aims to involve all sections of local populations through integrating economic, social and lifelong learning developments. The focus of VET thus moves beyond the workplace to become part of inclusive, place-based economic and social strategies and, in doing so, involves a wide range of social partners in a mission to promote inclusive economic growth and transform local environments. Viewed from the perspective of political economy the SEM can be seen to operate between the poles of marketisation and state-led reform strategies to provide a means of linking a diversity of social forces through what have been termed 'synergies of difference' (Spours, 2016).

As Figure 3 illustrates, the social ecosystem dynamic focuses on the reciprocal relationship between working, living and learning activities in a locality.

Working activities could include new partnerships between employers, education and training providers and local government to produce better jobs in a new sustainable and inclusive local economy. This could include attracting high-value companies to localities that work, for example, in the cultural or digital industries; developing new ecological enterprises that are part of a 'greening economy' and supporting improvements in public infrastructure and services transport, healthcare and construction. An integral part of the new working dimension will be co-production projects between workplaces, education providers and civic society organisations to stimulate the development of new high-value jobs and to improve skill utilization at work.

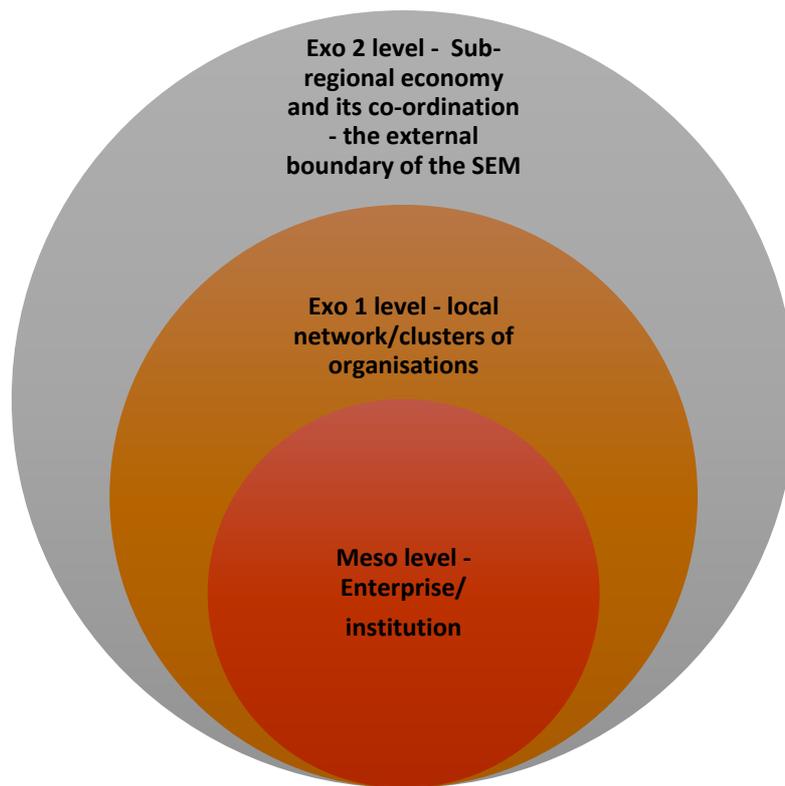
Living activities will have a strong anti-gentrification logic, including the local development of affordable housing; new transport systems; the regeneration of high streets; improved

local health services and development of new green spaces. The aim is to build a sustainable approach to living that reinforces a strong sense of local identity; creates an attractive environment and closeness to working life. It has been shown, for example, that high streets and the centres of small towns become sustainable when more work is taking place in the vicinity (Rushby, 2018).

Learning activities both drive and are dependent upon the Working and Living activities. One of the main objectives of learning activity is to support the participation of local people in the new local economy. This will require a high degree of consensus amongst local civic society actors as to the future shape of the local labour market and creating pathways to it. At the same time, a life-long learning perspective will enable local people to engage in education, not only to meet the needs of better jobs, but also to lead better lives.

Due to their combined economic, social and educational functions social ecosystems are conceptualised as multi-scalar. As Figure 4 suggests, a social ecosystem does not simply contain the inter-relationship between horizontal elements on a single terrain; it is a model of synergistic activity of inter-dependent scalars (i.e. an institution, a local network, a formal administrative entity such as a borough or district council and a local economy stretching across a sub-region). According to this conception, a sub-regional economy that defines the outer boundaries of a social ecosystem (at the Exo 2 level), could contain within it multiple clusters and networks at Exo 1 level and more entities still at the Meso level.

Figure 4. A multi-level social ecosystem



Inclusive growth, the combinational economy and combinational VET

This multi-scalar conception of the social ecosystem could also serve to capture the diversity of local economies. Strategies for inclusive economic growth, which focus both on the rate of local growth and its social distribution (Metro Dynamics, 2018), require a recognition of the total anatomy of a local and sub-regional economy. This might be understood as a 'combinational economy', that embraces different sizes of enterprise and a variety of workplaces within the private, public or third sectors. Combinational economies will thus require 'combinational VET', that emphasises not only high-skill approaches, but also the intermediate and foundational skill levels associated with technical jobs and progression routes to them.

While the social ecosystem conception is essentially played out on the local terrain, it is important to recognize the role of the workplace that can become the focus of work-oriented skills ecosystems. In this sense, skills ecosystems, defined as a set of relations around the enterprise, could be seen as nested within wider local/regional social ecosystems. One of the aims of the SEM, for example, could be to use local authority

commissioning powers in health and social care to improve the quality of care provision and the nature of care jobs, thereby creating a potentially greater demand for higher level training. As part of the wider local/regional SEM, a skills ecosystem approach would emphasise both the processes of co-creation between employers and education providers that help improve working practices for all partners and also the forging of progression routes into working life for social groups marginalized in previous economic eras (see Hodgson and Spours 2018 for some examples of this type of activity).

Expansive and connective roles of education and training in social ecosystems

In contrast to elite entrepreneurial ecosystems that depend largely on receiving outputs from higher education, education and training in the SEM plays a more expansive, connective and multi-dimensional role to support all sections of local populations to learn, to access better work and experience sustainable living. In order to achieve an expansive role for education and training in a combinational economy, VET providers will need to be particularly attuned to infrastructure developments that can assist with local and sub-regional economic development (Grainger and Spours, 2018).

While there will be need to focus on intermediate technical forms of employment (Mayor of London 2018), the crucial role of education and training will be to provide support for local populations to move upwards and along a lattice-work of progression routes, to follow transitions between initial learning and access to employment and, subsequently, to engage in learning and progression within work. This extended form of personal progression has been referred to as 'skills escalators' (Colechin *et al.*, 2017).

In social ecosystems, with the aim of economic and social inclusion, further education colleges can be regarded as key institutions due to their commitment to skill development and educational progression. However, to fulfil this collaborative and place-based mission in the English context will involve a significant shift away from a competitive to a collaborative post-Incorporation mindset among further education institutions (Hodgson and Spours, 2015). In some ways this process has already begun with the more collaborative agenda

emerging from the Area-Based Reviews² (see Spours *et al.*, 2018 for more detail) and the fact that many colleges, despite their incorporated status, have for some time seen themselves as locally networked and place-based organisations (Sharp, 2011; Grainger and Little, 2019). But there will have to be a step change in the English context in which colleges conceive their identity less as an actor in a training marketplace and more as a fundamental organiser in a local learning system working with ‘fluidity, ambiguity and mutuality’ (Doel, 2018).

This inclusive and spatial approach to skill development will also require a significant expansion of horizontal networking to attract a broad range of social partners into collaborative activity to support inclusive economic, social and educational growth. The SEM therefore, achieves an immediate organizational form by becoming a formal network and social alliance at the local and sub-regional levels (i.e. FE and HE institutions, employer clusters, key civil society bodies and local government) that would be able to contribute different specialist functions to support skills formation for inclusive growth. It is possible to see emergent networks, for example, in the form of the Skills and Employment Boards that are a longer-term outcome of Area-Based Reviews in England (Spours *et al.*, 2018).

Political challenges in the economic, social and skills context

Ecosystem thinking has become a highly contested terrain as various models, arising from differing social and political forces, present competing versions of futures (Hodgson and Spours, 2018). Socially inclusive models, operating mainly on the place-based horizontal terrain of local civil society, face particular obstacles because they cannot flourish without positive actions of a facilitating national and local state. This brings us to the challenges ahead and the need for supportive actions in the areas of skills and the economy, including an acceleration of the devolution of powers to the local level, inclusive curriculum and qualifications reform of upper secondary education, an expanded regulatory framework for employers, such as the extension of ‘licence to practise’, and incentives for institutional collaboration.

² Further Education (FE) Area-Based Reviews in England were a review of the economic viability of FE colleges and their relationship with employers and local economies carried out by the Government 2016-2018.

The flourishing of the SEM will depend, therefore, not only on strong ecosystem leadership at the local level, but on new relationships between the national, regional and local state. In a country that is excessively centralized, this shift will involve a change of mindset across the political spectrum. Without it, the SEM, which aims to bring a wide range of actors into collaboration for economic, social and educational transformation, will have to contend with political headwinds that can only impede its development.

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