

Stream 3. Entrepreneurship, Start-Ups and Small Business:
Competitive Session

**Exploring Entrepreneurial Ecosystems: Consistencies, Contrasts and
Contributions**

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ABSTRACT

With innovation and entrepreneurship said to be the saving grace for Australia's economic future, there is a pressing need to unravel the complexities of entrepreneurial ecosystems as a conducive context for cultivating new businesses initiatives. This paper reports on the deconstruction and analysis of the entrepreneurial ecosystem concept, as undertaken in a symposium by a group of international scholars interested in advancing this pre-paradigmatic perspective. Consistencies, contrasts and contributions from theoretical paradigms – particularly business networks and systems thinking - are explored to reveal parallels and divergences. The concepts of place and dynamics specifically emerge as potentially making a significant contribution toward advancing our current understanding of entrepreneurial ecosystems and provide a potential path forward for research and policy investigations.

Key words: Entrepreneurship, Start-ups, Small Business Development, Networks, Systems, Ecosystems.

INTRODUCTION

With innovation and entrepreneurship in focus as a means for delivering a sustainable economic future, there is an urgent need for researchers and policy makers to unravel the complexities of entrepreneurial ecosystems (EE's). Innovation and entrepreneurship rely on processes of human initiative, which implies contexts where resources and activities are brought together to cultivate artefacts as manifestations of innovation and entrepreneurship, for example emergence of new technologies, novel combinations of resources or creation of new business ventures. Over recent years the concept of the entrepreneurial ecosystem has evolved in some way to represent this phenomenon of synergistic action and elements toward initiative. Understanding the characteristics and attributes of the entrepreneurial ecosystems concept, in framing conducive milieus for innovation and entrepreneurship is the challenge discussed in this paper. The concept of entrepreneurial ecosystems as a new concept is the subject of much debate with network researchers, systems theorists, cluster researchers, economic geographers and others questioning the significance and legitimacy of the notion.

This paper reports on the conceptual deconstruction and analysis of the entrepreneurial ecosystems concept undertaken by a group of international scholars brought together in a symposium in Adelaide, Australia. A significant, novel and timely contribution to academic literature and to the

nomenclature of policy makers is offered here by drawing attention to key elements as well as highlighting consistencies, convergences and contrasts of entrepreneurial ecosystems with other theories of business development, start-up, entrepreneurship and innovation. The paper is informed by the reflective interpretations of the intellectual discussions and debates of a group of researchers, from across the globe that gathered at a small focused symposium, to explore and examine the theoretical and empirical consistencies, contrasts and contributions of entrepreneurial ecosystems with other established business development paradigms. Significant parallels with other more established theories were evident from the discussions at the two-day symposium. In this paper we take two such theories, business networks and systems thinking, as a basis from which to compare and contrast the entrepreneurial ecosystem concept. Insights from those theoretical perspectives in conjunction with scrutiny and exploration of the entrepreneurial ecosystems concept by diverse scholars revealed some significant cross-overs, parallels and differences in theory and empirical evidence. The concepts underlying discussion included; context, content, process dynamics, purpose and place.

This paper is structured with the presentation of the two key informing theoretical fields following this introduction, then a subsequent brief overview of the symposium and reflective processes as the principle source of intellectual resources for subsequent analysis and interpretation. The results of the reflective interpretations are presented in the penultimate section with a final discussion to synthesise and highlight key conceptual parameters as the foundations for future theoretical development.

INFORMING THEORY

In the economic sphere, the term ‘ecosystem’ was coined in an article by Moore (1993) who argued that businesses do not evolve as isolated entities but rather develop through relationships and interaction with suppliers, financiers and customers. This definition highlights the interdependencies of entities as part of a business ecosystem, as well as its purposive nature. These characteristics are logical and substantiated, and there are strong parallels with characteristics of networks and systems to which we turn to source alternative theory as a foundation to further explore entrepreneurial ecosystems in this paper.

For the purposes of this paper and for the sake of space, business networks and systems thinking are the two theoretical perspectives which will briefly be presented to expose potential contributions and present constructive frameworks for developing the emerging theoretical concept of entrepreneurial ecosystems. Business networks and systems thinking have both been explored extensively as significant contexts supporting business development, innovation, start-ups and entrepreneurial ventures. The question here is how do these theoretical viewpoints contribute to the discussion and foundations of entrepreneurial ecosystems?

At this point it is pertinent to say that the consistencies across these and other start-up and business development frameworks are inherent in levels of analysis, such that a) participating entities (individuals or businesses, and other organisations), b) connect with each other or others (agencies and consumers) to achieve c) mutually beneficial but not necessarily agreed goal/s. In doing so, they source and share d) resources which they transform through their e) dynamic processes, interactions and activities. In addition, f) context is important as it can influence and impact the entities and their connections as well as the availability of resources and the purpose of various interactions and alternatively, g) the entities can and do also influence and affect their surroundings and context so that new opportunities are created. Thus multiple stakeholders and entities, as actors, with varying degrees of interests and differing intentions negotiate and interact within a particular context or understood space. There is no contention that details and nomenclature can be debated and it is appropriate to acknowledge up front that no resolution or reconciliation of the conceptual debate is sought as an end result. Rather, this paper offers an exposé of the differences, consideration of similarities and seeks to reify the arguments as constructive contributions to the paradigmatic evolution of entrepreneurial ecosystems.

Business networks

The business network model emerged in the mid-1970s from a program of research focused on the functioning of business markets at the University of Uppsala, which spread to other research organisations mainly in Europe (Håkansson & Snehota 1989). The business network concept was the subject of multiple approaches but the focus was on the characteristics, structure and development of ‘organically evolved’ networks (Möller & Svahn, 2003: 211, citing Moller & Halinen 1999). This

approach was similar to the Industrial Network Approach studied by the Industrial and Marketing Purchasing (IMP) Group which emphasised the long term and evolving character of such networks (Möller, Rajala, & Svahn, 2005; Möller & Svahn, 2003). Since that time the IMP Group has provided conceptual models and empirical studies designed to improve understanding of the nature of relationships and the interrelatedness of businesses. Concepts such as interdependence, trust, adaptation, investment, and mutuality have been explored in these studies as have various studies on business relationships in different empirical settings. These features of business networks suggest multiple interactions, interdependence and connections between diverse participants together with linked processes within a networked context. In sum this is similar to the view of Isenberg (2010) who suggests “(t)he entrepreneurship ecosystem consists of a set of individual elements—such as leadership, culture, capital markets, and open-minded customers—that combine in complex ways.” Implied within that definition are the distinct and different interests and intentions to create value by various actors, and open is the question of how the elements are combined or even connected.

Methodologies for examining business networks have spanned qualitative and quantitative approaches and involved surveys, interviews and case studies generating a wealth of empirical insights from which the IMP Group produced the ‘Actors-Resources-Activities’ (ARA) model depicting B2B markets as interwoven networks of actors, resources and activities (Håkansson & Johanson, 1992). In this model each interaction in the network is conceptualised as being composed of *actors* (firms, individuals, or groups) who perform *activities* using directly or indirectly controlled/owned *resources*, explored through business *relationships* with other actors (Sousa, 2010). Thus, the relationship is laden with value from a number of perspectives, being either - the nature of actors involved (content), the available resources or factors of production they utilise (context) or the activities they undertake (process). Links (between activities), ties (between resources) and bonds (between actors) constitute three dimensions of interactions contributing to the dynamic processes within business networks.

Each relationship is unique, dynamic and connected to other relationships contributing to a network where the boundary is obscure but the interactions are key. “Relationships have value for their participants beyond the immediate transactions that take place within them” (Ford & Håkansson

2006: 250-251). Rather than separate transactions, the relationships are continuous over time, and characterised by a complex and evolving set of interdependencies. In this way a 'web of interactive relations' is formed (Håkansson and Snehota 1989: 190-191). The complexity of multiple interactions that constitute business networks means no one can manage the network but everyone can influence it through their exchanges, expectations and contributions.

The dynamics of an organically evolving network arise from the collective interactions of each business relationship. Firms adapt within their business relationships (Hallén, Johanson, & Seyed-Mohamed, 1991), and each relationship within the network spreads or absorbs changes to some degree (Easton & Lundgren, 1992). Firms also proactively adjust their position within the network by changing their business relationships (Aaboen, Dubois, & Lind, 2013; Harrison, Holmen, & Pedersen, 2010; Medlin & Törnroos, 2015). Evident in the dynamic business network view is a pragmatic approach to theory development, with the key concept of interaction involving subjective interpretation, joint action, interdependencies, relativity and time (Ford & Håkansson, 2006). This insiders' view of change, purpose, interests and intentions within the network strongly contrasts with our next theoretical field.

Systems thinking

Systems thinking sees parts (elements – individuals, groups, businesses) and their relationships and interactions as part of a complex dynamic interconnected whole. That whole is recognised by its boundary, which is arbitrary and relative to the focus of investigation or discussion, because in reality systems are connected to and are part of other systems, just as networks are connected to and part of other networks. A boundary is an important integral system property, providing characteristics and purpose, as well as informing processes, and filtering inputs and outputs. Without boundaries there is no system or systems. Open systems thinking is grounded in the premise that the system responds to its environment to receive inputs (e.g. resources) and to accept outputs (Ashmos & Huber, 1987) and as such emphasises the permeability of boundaries (Peery, 1975). Further the system, is a set of interconnected elements which affect and are affected by other elements in the system, both directly and indirectly, such that a change in one part of the system will influence changes in the rest of the system often in subtle or unexpected ways (non-linearity). Changes within systems arise through the

continual adjustments of elements as they respond and adapt to each other through their internal and external connections (feedback). Thus, a system is considered to have properties greater than the sum of its parts (Meadows, 2008; Sherwood, 2002). Self-organization, or "autogenesis," is the natural result of complex adjustments and feedback between system elements, and so order arises inherently, as a dynamic equilibrium, because parts are partially, not fully connected (Anderson, 1999).

Characteristics of complex systems include a large number of 1) elements (often diverse - complexity) which 2) combine and adjust in either routine or unpredictable ways (dynamic processes arise through inter-dependencies, non-linearities, tipping points, critical junctures) such that the nature of their connectedness is key to the evolution of the system. 3) Emergence results from evolving patterns and trends resulting need for adaptations and adjustments, so introduces novelty as the system self-organises in response to change. 4) Strange attractors are distinct events which emerge from within the system. These can catalyse change and anchor the actions of entities around novel events providing zones of renewal and adaptation which keep the system poised at the edge of chaos and thus stimulated, motivated and changing (Connell, 2001; Dimitrov & Woong, 2000; Gilstrap, 2005; Marion, 1999). Additionally, the communication that occurs between entities as they interact is 5) feedback and 6) hierarchy is recognised in the order which emerges from element interactions at a lower level of aggregation up to collective actions through the connections between different sub-systems whose various activities collectively support the 7) purpose of the complex dynamic whole (Anderson, 1999; Stacey, 1995). Consequently, change in a systems view is strongly theorized as dynamic patterns and novel perturbations of multiple elements, interactions and inter-dependencies evolving on the edge of chaos (Marion, 1999).

Applying systems thinking to social and organisational considerations means understanding how the dynamic whole actually works. This is significant because the premise is that for systemic change to occur system level drivers need to be identified if a sustainable change is sought. At issue is a the hierarchal structure of social systems. Thinking of social systems as an iceberg helps delineate key levels for analysis, see Figure 1. System level drivers result in broad shifts in actions among entities rather than just local effects which eventually become subsumed and changed by systemic influences. The system at any time is informed fundamentally through 1) participant mental

models (e.g. values, motivations, expectations and beliefs) which are expressed and must act through the 2) existing structures and systems (i.e. frameworks which establish how things are done e.g. social, regulatory, policy, or community standards, conventions, frameworks and policies etc.). Those governance systems, organisational and community structures influence 3) the patterns of exchanges and nature of relationships which ultimately 4) inform and are manifest in the events, activities and outcomes evident in the experienced reality of those involved. The following illustration reveals the relationship of those various levels of influence to system outcomes.

-----Insert Figure 1 HERE-----

METHODS

The rich detail for the argument presented in this paper is a reflective interpretation of the authors, achieved through a process of participant observation at a two-day symposium on entrepreneurial ecosystems. In addition, leximancer analysis was undertaken on the content gathered at the symposium by the authors. The symposium was conducted in Adelaide in June, 2016 and involved nineteen (19) researchers from around the world who specialised in entrepreneurial ecosystems albeit from a variety of perspectives, including entrepreneurship, innovation, regional development, economic geography, knowledge, gender studies, business networks, business development, and strategic management. The two days of discussion, presentations and debate yielded a volume of rich in-depth perspectives about theory, concepts, practice, policy and empirical research into entrepreneurial ecosystems. The conversations and dialogue across the two days was interpreted and interrogated by a half a dozen participant observers; the results from which have been collated to inform the discussion for this paper.

The notes from the symposium were codified and then assessed using Leximancer analysis to produce a broad but objective conceptual framework (Smith & Humphreys, 2006). Leximancer software was utilised to identify and support the investigation of the key concepts based on the co-occurrence between high-frequency words to develop a multi-dimensional array of hierarchically ordered concepts. The concepts are hierarchically grouped in themes, depending on the weight of inter-concept connections. Next, the concepts and their groupings are projected onto a two-dimensional display to allow analysis by a researcher (Smith, 2007). A multi-colour two-dimension

concept map is ultimately generated for the researcher, where warm red colours indicate higher dominance of the concepts and cooler blue tones indicate less prevalence (Leximancer, 2011). The most prevalent concepts evident in the entrepreneurial ecosystem discussion were grouped by Leximancer into four major themes with an ordinal hierarchy of (i) ecosystems, (ii) place, (iii) entrepreneurship, and (iv) dynamics, depicted in Figure 2.

-----Insert Figure 2 HERE -----

CONSISTENCIES, CONTRASTS AND CONTRIBUTIONS

The hierarchy of concepts, as presented in Table 1 below, reflects first that the seminar was concerned with entrepreneurial ecosystems, and further that advancing theory was the point of the discussion. Thus, ecosystem is a higher order of prominence and seems to have represented a catch all concept or boundary object for the discussants (Star & Griesemer, 1989).

-----Insert Table 1 HERE -----

The prominence of place arises directly from the concept of an ecosystem. Place, for the symposium group, was considered to be conceptually closely linked to the idea of entrepreneurial ecosystem. What is intriguing is that the system concept was inherent or subsumed within that of ecosystem, while the network remained as an identifiable concept with actors, interactions and their complex inter-dependencies clearly part of the ecosystem. Further, in identifying dynamics with the software it was evident that relationships were key to change, actors, networks, social, innovation, and time in Figure 2, with little difference in related concepts found in Figure 3, while entrepreneurship was linked to people, business, economics and boundaries in Figure 2 with knowledge resources, people and diversity, see Figure 3. The juxtaposition of innovation in both cases relative to dynamics, change and social rather than entrepreneurship presents an interesting conceptual juncture. Finally, the importance of place and dynamics being adjacent and intercepting both the concepts of entrepreneurship and ecosystems in both figures is noteworthy.

-----Insert Figure 3 HERE -----

There was rich and descriptive discussion across the two-day symposium about theories, context, challenges and paradigms which informed a more robust understanding of the concept of entrepreneurial ecosystems (EE). It was observed that the debate around the concept of

entrepreneurial ecosystems illustrated a pre-paradigmatic field with conceptual reaches into paradigms of entrepreneurship, networks, systems, clusters, economic geography and regional development to name a few (Nicholls, 2010). The term entrepreneurial ecosystem could be seen as a boundary object, which allows researchers to seemingly discuss the same concept but in different ways (Star & Griesemer, 1989). Thus, the term has yet to achieve a recognised level of consensus and legitimacy among 'normal' academic science (Nicholls, 2010). Following Kuhn (1962) a pre-paradigmatic state is recognised in a field when a concept lacks an established and agreed a) epistemology (framework of understanding) and b) rules (methods and approaches to research) (cited in Nicholls, 2010; p613). This *modus vivendi* was the basis of discussions and presentations at the Entrepreneurial Ecosystems Symposium as those present sought to extend understanding and explore the concept to consider if there was sufficient paradigmatic substance for advancing the field.

It was evident from the discussions that there was consistency across a variety of issues about entrepreneurial ecosystems and, to the extent that there was consensus, it revolved around there being no apparent formula for creating, sustaining or examining them. There were clear analytical tensions evident in considering the multiple academic perspectives, temporal dynamics, nebulous boundaries, and definitional variance across levels of analysis and nomenclature. There were clear consistencies and considerable cross-overs in concepts like entities, resources, purpose, connections, and levels of analysis; indicating a basis for further exploration and development of an acceptable paradigmatic basis, but again there were also continuing differences and distinctions in how these terms were to be understood. However, some opportunities were found for conceptual refinement as the tension between theoretical domains highlighted that place, the permeability and morphing of boundaries and the dynamics of interactions, change and time were important considerations in thinking about entrepreneurial ecosystems.

The issue of purpose also raised a distinction and point of delineation for EE's as the discussions revealed a clear difference in its role of contextual reframing to that of networks or systems. In business networks purpose was viewed as originating from actors in their exchanges and interactions while alternatively from a systems perspective a collective purpose is evident from the whole, frequently in contradiction to that articulated or intended by the elements i.e. entities and

actors involved. For EE's the notion of purpose was relative and arbitrary to the analysis since EE's are primarily concerned with place, complex collectives of enterprise building actors and the resources and connections that constrain or enable them in pursuit of independent albeit entrepreneurial purposes. Table 2 presents the conceptual consistencies, parallels, and cross-overs apparent in the entrepreneurial ecosystem discussions.

-----insert Table 2 HERE -----

The notion of place was considered as a space where humans construct meaning i.e. 'place' is relative to specific human interactions while space, alternatively exists as a more general human construction (Törnroos, Halinen, & Medlin, 2016). Unlike systems thinking where the integrity of the whole is integral to the concept and relative to the sum and synergy of the parts, albeit informed by context, in contrast, for entrepreneurial ecosystems, it seems integrity is ultimately about a place (actual or virtual). Place is interpretive, relative, historic, opaque and needs to be shared to be known (Pred, 1984). Place-based knowledge was highlighted as a valuable resource for EE's where actors or entities are embedded in the informing context of their interactions. Characteristics of place (environmental/inherent assets) and nature of the place (process dynamics) were considered to be key influencing factors to the arrangement of entities, availability of resources and the nature of processes and interactions therein. Capital, culture, people, identity and history were all mentioned relative to place (see Figure 2), as features and factors that matter. Nonetheless place alone doesn't indicate potential for EE's but rather place-specific elements and influences may facilitate entities seeking connections for potential advantage, be that value, resilience, survival or sustainability. Thus, place appears integral to the concept of EE's.

Consistent with the fundamentally human oriented nature of EE's, business network thinking it suggests a need to look closely at the nature of boundaries, their permeability and the continually changing nature. The permeability of EE boundaries is also consistent with systems thinking, suggesting again that this deserves further research attention. The temporal nature of EE's was a topic which emerged in discussion repeatedly contributing to demarcating dynamics as a contributing concept. The nature of progress, time and change in relationships, the potential for re-emergence over time, the recycling of resources and actors, and the transitions of activities as relationships change

over time all framed the notion of dynamics. Stability, evolution and change were understood to co-exist in EE's as consistent with the view for business networks. Systems thinking also brought to the forefront the dynamic aspect of EE's although the modus operandi and conceptualisation of the root of change were considerably different on epistemological and ontological grounds. Still, the emergence and development of businesses was seen as inherent to the fundamental purpose of EE's.

Recognition of the implicit requirement for the emergence and evolution of entrepreneurial ventures in EE's gave rise to discussion about resources and context in supporting that process. In particular, the availability and appropriateness of resources for the start-ups and initiatives emerging from that context led to conversation about EE's as incubators or accelerators. The importance of diversity and flexibility of connections to facilitate fortuitous serendipity, opportunities and circumstance in their development as well as strategic positioning for optimum growth and contribution was discussed.

IMPLICATIONS FOR RESEARCH AND POLICY

There are implications here for research and policy as the debate about what constitutes an EE continues to evolve through the confounding and confusing comparisons of other business development paradigms. The term 'ecosystem' was coined by Moore (1993) in an article where he argued that businesses do not evolve as isolated entities but develop through interaction with suppliers, financiers and customers. This idea was earlier elaborated in business network thinking (Håkansson & Snehota, 1989). This paper shows that at issue is how to treat boundaries and intent and/or purpose. Stam (2015) proposed EE's where "a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship". These perspectives are consistent with the views shared in the discussions reported above. A comparison of key elements of business development paradigms is presented in table 3 below.

-----Insert Table 3 HERE -----

According to Moore (2006) ecosystems are intentional communities of economic actors whose individual business activities share in some large measure the fate of the whole community. Moore proposed in a business ecosystem, companies coevolve capabilities as they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the

next round of innovations (Moore 1993: 76). Similarly (Zahra & Nambisan, 2012: 220) suggest that a business ecosystem is a group of companies – and other entities including individuals ... that interacts and shares a set of dependencies. Indeed, Moore (2006: 53) proposes the ecosystem is a ‘collaboration’ to ‘create a system of complementary capabilities’ and to support innovation. In doing so he implies a clear intention suggestion of self-organisation and perhaps indeed some degree of self-determination. These definitions are clearly consistent with issues discussed from a variety of perspectives and so reveal a clear foundation for EE understanding.

Consistent with networks and the systems view, EE’s have multi-levels of intent or purpose. However, in contrast to networks where the relationship is based on interaction, and systems where the whole is the focus, for EE’s the intent is relative to the interactive community supporting the various ventures. Thus, EE’s are a collective of diverse actors supported by strong institutional stakeholders. A contribution of this paper is the suggestion that place and place specific resources, especially those of place specific stakeholders, are relevant and fundamental to an EE’s purpose while this may be much less so with the other discussed theoretical framings used in our analysis. A further implication was reflected in discussions on measurement which often focuses on elements rather than connections, relationships or process. For EE’s it may be better to examine what elements are involved and the processes that influence them given that simple relocation of elements, relationships, resources or activities will not produce an identical EE. Finally, while business networks are about relationships, and systems are about holism, perhaps research on entrepreneurial ecosystems may consider participant relations more generally, within the context of inter-dependencies around levels and/or differences of intent or purposes. Our analysis of the data also suggests that intent and purpose may be embedded in or related to the concepts of dynamics and change. Many questions still remain, as many as there are opportunities for EE’s, unique, diverse, complex, dynamic and grounded in place but emergent, evolving and relative. This is a start.

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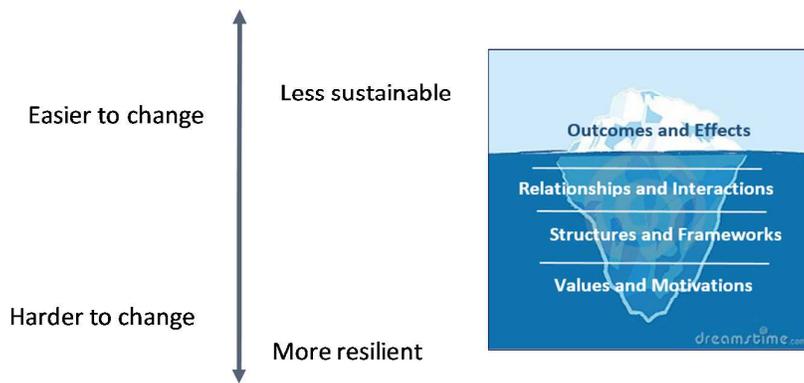


Figure 1. A systems thinking view of interacting dimensions in social systems (adapted from (Bosch, Nguyen, & Sun, 2013))

Table 1. The count and percentage of concepts discussed at the symposium.

Concept	Count	Percentage of occurrence
Ecosystem	67	100%
Place	39	58%
Entrepreneurship	29	43%
Dynamic	22	33%
Relationships	22	33%
Actors	18	27%
Change	17	25%
Networks	17	25%
People	17	25%
Business	16	24%
Social	15	22%
Time	11	16%
Research	11	16%
Resources	10	15%
Innovation	10	15%
Culture	10	15%
Knowledge	10	15%
Analysis	9	13%
Diversity	9	13%
Economic	8	12%
Capital	8	12%
Policy	7	10%
Perspectives	6	09%
Boundaries	5	07%

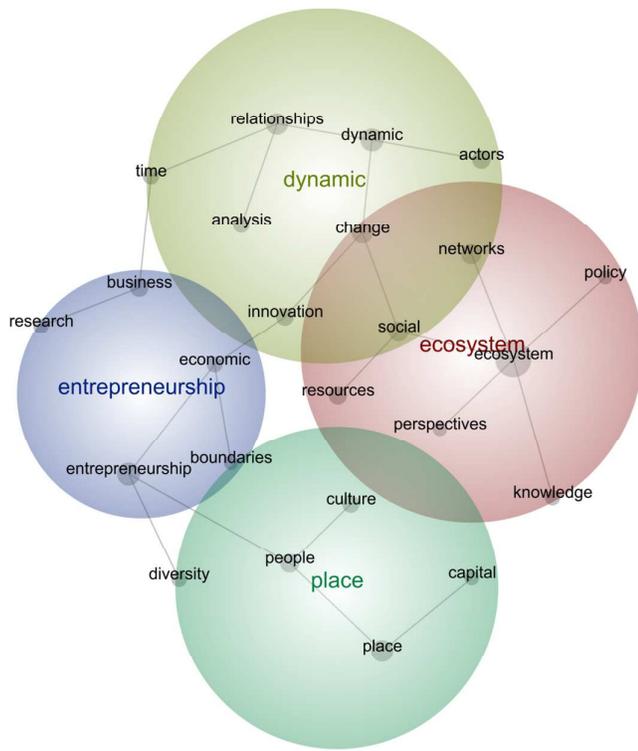


Figure 2. The most prevalent concepts related to Entrepreneurial Ecosystem

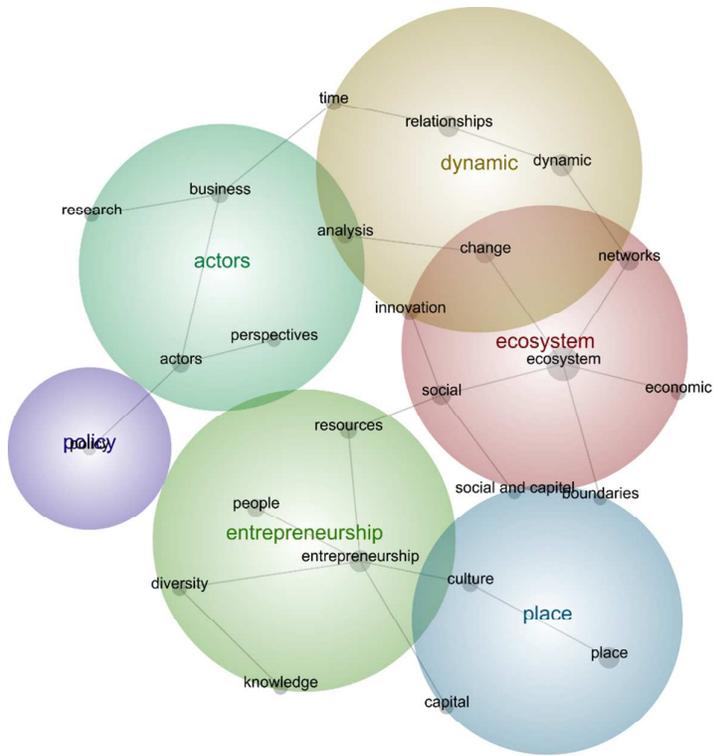


Figure 2. The most related concepts related to Entrepreneurial Ecosystem

Table 2. Conceptual consistencies and cross-overs apparent in the entrepreneurial ecosystem discussions.

Concept	Describes	Consistent concepts
Entities	Content	Stakeholders, participants, SME's, actors, entrepreneurs, microbusinesses, elements.
Resources	Content	People, finance, assets, inputs, factors, place-based advantage
Levels of Analysis	Context	Sub-systems, hierarchy, value chain, networks, businesses, business relationships, leaders, local, regional, global, community, individuals,
Connections	Process	inter-dependence, relational capital, interactions, relationships, within and with external entities/resources
Purpose	Boundary (Systems) Actor (Networks)	Agenda, goal, objectives, intent, place-based purpose
Place	Context	Network, region, community, place-specific resources

Table 3. Table of common frames of reference and how they exist in the different theoretical perspectives.

Concept	Context	Content	Process	Place	Purpose (raison d'etre)
Business Networks	Relationships	Multi-Level	Relational Interaction	Nebulous	Actor/Firm Interests and Intentions
Systems Thinking	Relative	Collective	Dynamic	Integral/Relative	Systemic
Entrepreneurial Ecosystems	Communities	Multi-Level	Serendity, opportunity, and circumstance	Relative	Enterprise Development