


Deconstructing the Entrepreneurial Ecosystem Concept

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Abstract With innovation and entrepreneurship lauded as important contributors to economic futures, there is a pressing need to unravel the complexities of entrepreneurial ecosystems as a context for cultivating new businesses initiatives. This chapter reports on the deconstruction and analysis of the entrepreneurial ecosystem concept, through a hermeneutic reflection catalysed by a symposium of international scholars. We apply the theoretical fields of business networks and systems theory within our reflective method. This reflective comparison reveals parallels and divergences as well as consistencies and contrasts between these two fields and the concept of entrepreneurial ecosystems. The analysis revealed that the concepts of place and dynamics are specific to entrepreneurial ecosystems and so provide a path for guiding research and policy investigations.

Keywords Entrepreneurship · Ecosystems · Business network
Systems · Hermeneutic phenomenology

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1 Introduction

With innovation and entrepreneurship in focus as a means for delivering sustainable economic futures, there is a need for researchers and policy makers to unravel the complexities of entrepreneurial ecosystems. Innovation and entrepreneurship rely on processes of human collective initiative, which implies contexts where resources and activities are brought together to cultivate artefacts as manifestations of innovation and entrepreneurship, for example as the 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 seeking towards an innovation or an initiative within a context. Understanding the characteristics and attributes of the entrepreneurial ecosystem concept, in framing adaptive milieus for innovation and entrepreneurship, is the challenge discussed in this paper. The notion of the entrepreneurial ecosystem as a new concept is the subject of much debate by network researchers, systems theorists, cluster researchers, economic geographers and others questioning the significance and legitimacy of the notion.

This chapter reports on the conceptual deconstruction and an analysis of the entrepreneurial ecosystem concept undertaken through the hermeneutic reflections of the authors. This follows discussions and presentations by a group of international scholars brought together in a two-day symposium exploring 'The Entrepreneurial Ecosystem' in Adelaide, Australia. The paper is informed by the reflective interpretations and critical appraisals of the authors as a group of researchers and participant-observers in the intellectual discussions and presentations at the symposium. 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 motivation for the analysis and critique of these conceptual positions, inform a process of conceptual deconstruction of entrepreneurial ecosystems that arose because of significant parallels with the other more established entrepreneurship and business development theories. In this paper two established approaches, business networks and systems thinking, provide the basis from which to compare and contrast the entrepreneurial ecosystem concept. Insights from these theoretical perspectives in conjunction with scrutiny and exploration of a current understanding of the entrepreneurial ecosystem concept revealed some significant cross-overs, parallels and differences in approaches and in what constitutes empirical evidence. The key conceptual themes underlying the discussion include; context, content, process dynamics, purpose and place.

This paper is structured in four parts. First, we present the two key informing theoretical fields. Second, a brief overview of the symposium, as the source of intellectual dialogue for subsequent hermeneutic analysis and interpretation follows. Third, the results of that reflective critique are presented. Fourth, a final discussion to synthesize and highlight key conceptual dimensions of the

entrepreneurial ecosystem as the significant characteristics for future theory development and policy advances.

2 Informing Theories

In the world of business, 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 their purposive nature. These characteristics are logical and substantial, and there are strong parallels with the characteristics of business networks and systems to which we turn as a foundation to further explore entrepreneurial ecosystems. This is in line with recent pleas for more use of network and systems approaches to the study of entrepreneurial ecosystems (Alvedalen and Boschma 2017; Stam 2017—this book).

For the purposes of this chapter and because of their specific focus on change and dynamics, 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 regional and business development, innovation, start-ups and entrepreneurial ventures (Huggins 2000; Lechner and Dowling 2003; Isenberg 2010; Kanter 2012; Munksgaard and Medlin 2014a, b). The question here is how do these theoretical viewpoints contribute to the discussion and foundations of a dynamic approach to the entrepreneurial ecosystem?

At this point it is pertinent to say that the consistencies across these and other start-up and business development frameworks inherently involve levels of analysis issues, such that (a) participating entities (individuals or businesses, and other organizations), (b) connect with each other or others (agencies and consumers) to achieve, (c) mutually beneficial but not necessarily agreed goals. In doing so, they source and share (d) resources which they transform through their, (e) dynamic processes, interactions and activities. In addition, (f) contexts are important because they 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 contexts 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. The ontological distinctions likely preclude a full resolution. 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.

2.1 Business networks

While there are other network conceptions that prioritize the nature of relationships between individuals, for instance the social network perspectives of Granovetter (1985) and Burt (2005), our research is focused on the dynamics of change that is inherent in 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 organizations mainly in Europe (Håkansson and 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 and Svahn 2003: 211, citing Moller and Halinen 1999). This approach became known as the Industrial Network Approach studied by the Industrial Marketing and Purchasing (IMP) Group which emphasized the long-term and evolving character of such networks (Möller and Svahn 2003; Möller et al. 2005). 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 (Håkansson 1982; Håkansson and Johanson 1992; Håkansson and Snehota 1995). Concepts such as interdependence, trust, adaptation, investment, and mutuality have been explored in these studies, as have business relationships in various studies within different empirical settings. These studies of business networks suggest that multiple interactions, interdependence and connections between diverse participants together with linked processes occur within a networked context. In sum, the multiple, interdependent and connectedness represents a complexity that is similar to the view of Isenberg (2010: 43) 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 connected.

Methodologies for examining business networks have spanned qualitative and quantitative approaches and involved case studies, interviews and surveys generating a wealth of empirical insights, from which the IMP Group produced the ‘Actors-Resources-Activities’ (ARA) model depicting business-to-business markets as interwoven networks of actors, resources and activities (Håkansson and Johanson 1992). In this model each interaction in the network is conceptualized as being composed of *actors* (firms, individuals, or groups) who perform *activities* using directly or indirectly managed *resources*, and explored through business *relationships* with other actors (Sousa 2010). Thus, the business relationship is laden with value from a number of perspectives, being either the nature of actors involved (content and intention), the available resources or factors of production they utilize (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 business relationship is unique, dynamic and connected to other relationships contributing to a network where the boundary is obscure but the interactions are a key. The network has no boundaries and the firm boundaries are permeable in different ways and are continuously changing. “Relationships have value for their participants beyond the immediate transactions that take place within them” (Ford and Håkansson 2006: 250–251). Rather than separate transactions, the relationships are continuous over time and are characterized 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 actor or firm can manage the network but everyone can influence it through their exchanges, expectations and contributions.

The dynamics of an organic network arise through changes emerging among the interactions of each business relationship. Firms adapt within their business relationships (Hallén et al. 1991) and each relationship within the network spreads or absorbs changes to some degree (Easton and Lundgren 1992). Firms also proactively adjust their position within the network by changing their business relationships (Harrison et al. 2010; Aaboen et al. 2013; Medlin and 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 and Håkansson 2006). This *insiders’ view* of change, purpose, interests and intentions within the network strongly contrasts with our next theoretical field.

2.2 *Systems thinking*

Systems thinking views parts (elements—individuals, groups, businesses) and their relationships and interactions as a complex dynamic interconnected whole. That whole is recognized 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 to the system, 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—which must deliver it inputs (e.g. resources) and accept its outputs (Ashmos and Huber 1987)—and as such emphasizes the permeability of boundaries (Peery 1975). Further, the system is a set of inter-connected parts 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 (Sherwood 2002; Meadows and Wright

2008). Self-organization, or “autogenesis,” is the natural result of complex adjustments and feedback between system elements, where order arises spontaneously and inherently, as a dynamic and evolving 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) Dynamics emerge from those evolving patterns and trends, resulting in a need for adaptations and adjustments, so introducing novelty as the system self-organizes in response to change. (4) Strange attractors are random, distinct events which emerge from within the system. Strange attractors 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 (Marion 1999; Dimitrov and Woong 2000; Connell 2001; Gilstrap 2005). Additionally, the communication that occurs between parts is (5) feedback, and additionally, (6) hierarchy is recognized in the order which emerges from interactions. The various activities in a system, from lower level of aggregation (dyads, groups) up to collective actions, occur through the connections between different sub-systems and collectively support (7) the purpose of the complex dynamic whole as well as the unique objectives of the parts (Stacey 1995; Anderson 1999). Consequently, change in a systems view is strongly theorized as dynamic patterns and novel perturbations of multiple parts, and their interactions and inter-dependencies evolving on the edge of chaos (Marion 1999). Boundaries are important in conceptualizing the elements which make up a whole system.

Applying systems thinking to social and organizational considerations means understanding how the dynamic whole actually works. This is important because the premise is that for a sustainable systemic change to occur system level drivers need to be identified and applied. One issue is the hierarchal structure of social systems. Thinking of the embedded dimensions of social systems helps delineate key levels for analysis, see Fig. 1. Drivers of system level change result in broad shifts in actions among entities rather than just discrete, 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, institutional, or community standards, conventions, frameworks and policies etc.). Those governance systems, organizational and community structures influence (3) the patterns of exchanges, opportunities and nature of relationships which ultimately (4) inform and are manifest in the events, activities, artefacts and outcomes evident in the experienced reality of those involved. The following illustration reveals the relationship of those various levels of influence in a complex social system.

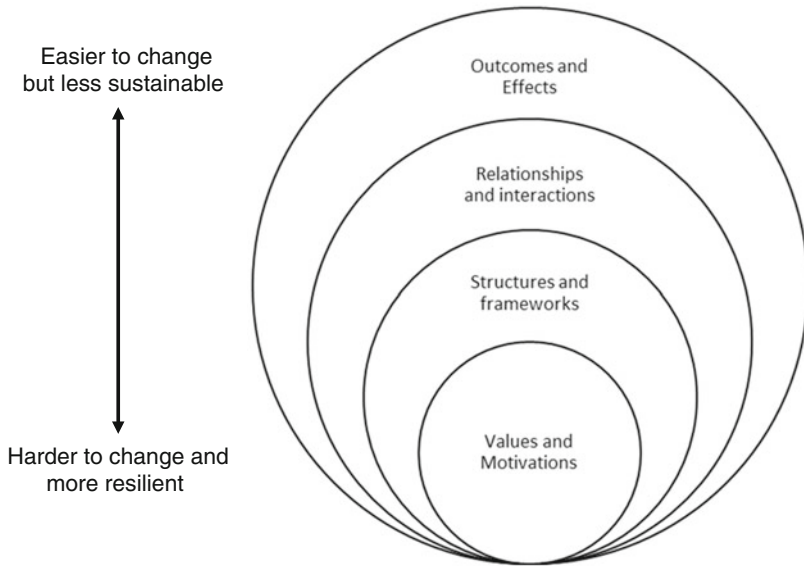


Fig. 1 A systems thinking view of interacting dimensions in social systems (adapted from Bosch et al. 2013)

3 Methods

The rich detail for the argument presented in this paper is derived from the reflective critique by the authors, achieved through a process of participant observation after a two-day symposium on the entrepreneurial ecosystem. The authors, who hosted the symposium, engaged two note-takers during the symposium, who with the permission of participants recorded the various academic approaches and conceptual perspectives discussed and presented. This occurred alongside the co-authors participating in the symposium, who themselves were simultaneously making reflective interpretations of the content and perspectives presented.

The authors are part of an emerging research group interested in the ‘Strategic Innovation of Place’ and who jointly initiated the symposium concept. The Entrepreneurial Ecosystem symposium was held in Adelaide in June, 2016 and involved nineteen researchers from around the world who held research interests in the entrepreneurial ecosystem 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 tapestry of rich in-depth perspectives about theory, concepts, practice, policy and empirical research into entrepreneurial ecosystems. The conversations and dialogue attended to and noted by the authors, as reflexive participant observers, was then interrogated and interpreted, consistent with a Socratic dialogue approach

(Skordoulis and Dawson 2007). The subsequent discussions, critiques and reflections, the extrapolations and insights distilled were next collated to inform the results and discussion for this paper. This experiential engagement and critical reflection is consistent with a hermeneutic phenomenology epistemology whereby the experienced reality of the participants was both considered and interpreted to facilitate intellectual extension and insight (Kafle 2011).

While acknowledging the intellectually catalytic contributions of symposium participants, this research and the insights it presents is the product of the reflective practice of the contributing authors and does not necessarily represent the views of the other symposium participants. Naturally, the data carries the bias of the observers which is to some extent ameliorated by the number of participant observers but not completely. In theory building research, bias is inescapable but acknowledged. Whetten (1989) described the issues of credibility in the theory building venture as pertaining to the explication of the underlying assumptions. Logic replaces data as the basis of evaluation and the logic of the theory and the underlying assumptions both need full explanation to satisfy the issue of credibility. The objective of this research is to compare and contrast between network and system thinking and provide a basis from which to inform theory development about entrepreneurial ecosystems. The analysis contained in this research explicates and opens for critique the underlying assumptions, as perceived through the of participant observers.

Leximancer software was utilised to identify and support the investigation of the key concepts. The notes from the authors and assistants at the symposium were codified and then assessed using Leximancer analysis to produce a broad conceptual framework (Smith and Humphreys 2006). The Leximancer software develops a multi-dimensional array of hierarchically ordered concepts based on the co-occurrence between high-frequency words in two sentence passes through the document set. Computer coding of textual data produces an objective conceptual framework based upon quantitative criteria, so providing a strong foundation for qualitative interpretation (Munksgaard and Medlin 2014a, b). An assumption made in using Leximancer is that each word has the same meaning regardless of the speaker's purpose or theoretical meaning in use. While this assumption avoids bias in constructing the framework it then is incumbent on the researcher(s) to interpret meaning(s) in accordance with the data collected. To ensure clarity of the input data the notes and transcriptions were examined to eliminate conventionally used words by adding them to the stop words list. Furthermore, over-connected indiscriminate concepts such as 'social capital', 'business networks' or 'complex systems' were substituted by single concepts in order to avoid distortion caused by negating the associations between less connected concepts by over-connected ones (Leximancer 2011). Leximancer hierarchically groups the concepts, depending on the weight of inter-concept connections. An issue here is that the interconnected concepts are held in a multi-dimensional database, which cannot be easily interpreted. Two solutions, the first provided by Leximancer and the second by the researcher are performed. First, Leximancer codes the degree of concept connection from high to low where warm red colours indicate higher dominance of the concepts and cooler blue tones

indicate less prevalence (Leximancer 2011). Next, the concepts and their groupings or themes are projected onto a two-dimensional display to allow analysis by a researcher (Smith 2007).

Since projection of a multi-dimensional array of concepts onto a two dimension plane to form a map necessarily results in a different representation for each occurrence, the researcher must perform the operation multiple times. The researcher then selects the map that is most commonly presented by Leximancer's projection to a two dimension representation. Leximancer automatically assigns the most frequently occurring concept as the theme name. The concentration or spread of concepts in a map is a researcher's decision. The researcher can choose a highly concentrated view with only one or two major themes through to a dispersed view, when each theme may represent a single concept. Ultimately the most representative map is decided by the researcher, based on working back and forth between a theoretical view and the many projections undertaken. In our research we found two useful representations. Our first representation provides a high order view, where concepts are concentrated into fewer mapped themes. The second representation, based on a theoretical decision that agency is an important concern, provides a view where the actor concept is brought into focus as a theme. Thus the different Leximancer figures presented in this research allow analysis at two levels of concept concentration.

4 Consistencies, Contrasts and Contributions

The hierarchy of concepts prepared by Leximancer, as presented in Table 1 below, reflects evidence of the key entrepreneurial ecosystem themes: entrepreneurship and place with the supporting economic, geographic and social dimensions of ecosystems (cf. Spigel 2017). The dominance of the ecosystem theme displays that the term operated as a boundary object, that is one which allows researchers to seemingly discuss the same concept but in different ways (Star and Griesemer 1989).

The hierarchy of themes also reveals place was considered to be conceptually closely linked to the idea of an entrepreneurial ecosystem. The strong ordering of ecosystem and place in Table 1 suggests that each concept relies on the other for its definition. What is intriguing is that the system concept is not found in Table 1. The likely reason is that ecosystem subsumes the system concept. Network alternatively was a clearly identifiable concept, as were the concepts of dynamic and relationships. The network concept was found within the ecosystem theme in both projections. Interestingly concepts ranked fourth to twelfth are all focused in some way on the dynamics theme. The policy concept, ranked at 22nd in Table 1, deserves attention because governments have been attending to how entrepreneurial ecosystems might further economic development.

Figure 2 presents the first Leximancer projection displaying a highly concentrated interpretation of concepts linked into fewer themes. The most prevalent

Table 1 The Leximancer count and percentage of concepts discussed at the strategic innovation of place 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

themes evident in the entrepreneurial ecosystem discussion were according to an ordinal ranking: (i) ecosystems, (ii) place, (iii) entrepreneurship, and (iv) dynamics.

Interesting in Fig. 2 is how the first and second ranked themes of ecosystem and place are connected to each other by the themes dynamic and entrepreneurship. The doing themes (i.e. dynamic and entrepreneurship) connect the object themes (ecosystem and place). Looking inside each theme, entrepreneurship captured the concepts of research, business, economic and boundaries, while place captured capital, people, culture and diversity (see Fig. 2). Also interesting are the long chains of concepts connecting themes, for example ecosystem is connected to place by the concept chain: ecosystem, social, change, innovation, economic, entrepreneurship, people and place. Another chain of concepts connects the entrepreneurship theme to itself via concepts within the dynamic theme: entrepreneurship, research, business, time, relationships, dynamic, change, innovation, economic, and entrepreneurship. Clearly dynamics and relationships have a high value in the way the symposium participants conceptualized innovation and entrepreneurship.

In Fig. 3 a larger number of themes are projected from the multi-dimensional hierarchy of concept connections. Important in selecting this projection is the

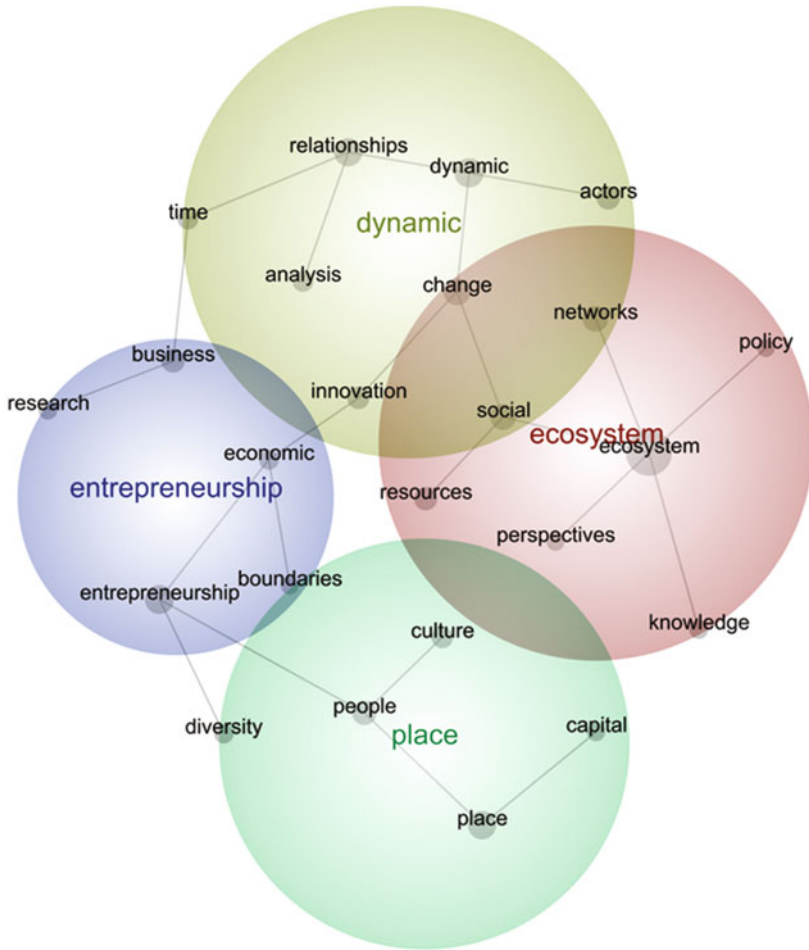


Fig. 2 The most prevalent concepts from discussions of strategic innovation of place

bringing forth of the actors theme, so that questions concerning agency are brought into focus. Interesting is that this projection also brought into focus the policy theme. Policy is connected to entrepreneurship through the themes of actors, dynamic and ecosystem. According to a single view of the symposium participants the dynamics of actors in an ecosystem appears as the key to developing entrepreneurship.

In Fig. 3 the theme actors captured the concepts of business, research, and perspectives, which in Fig. 2 are dispersed within the themes of entrepreneurship, dynamic and ecosystem. In Fig. 2 the concept of actors is neither related to business and research nor to perspectives. Interestingly, in both projections, business and research concepts hold together. Our interpretation is that agency within an entrepreneurial ecosystem is located in the activities of business and research.

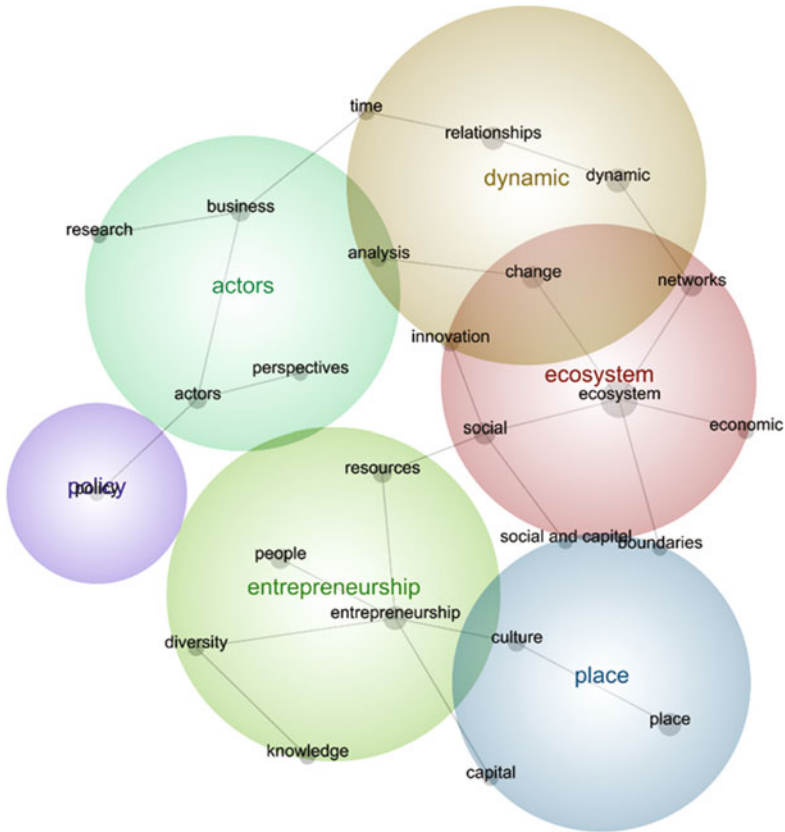


Fig. 3 A less concentrated view of related concepts from discussions of strategic innovation of place

Turning now to the chain of concepts connecting the policy and entrepreneurship themes we find: policy, actors, business, time, relationships, dynamic, networks, ecosystem, social, resources, and entrepreneurship. The series of concepts suggests policies should support business actors in a network of business relationships that forms an ecosystem of resources and social connections. Since policies must be bounded in some way the concept of an entrepreneurial ecosystem seems to make a logical concept suitable for influencing a social system. The close connection of place to the entrepreneurship theme offers a means to define a boundary for an entrepreneurial ecosystem.

Although limited by diversity, 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. The strong debate illustrated a pre-paradigmatic field (Nicholls 2010), with conceptual linkages into the research domains of entrepreneurship, business networks,

systems, clusters, economic geography and regional development to name a few. Thus, the term has yet to achieve a recognized level of consensus and legitimacy among 'normal' academic science (Nicholls 2010). Following Kuhn (1962) a pre-paradigmatic state is recognized 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; p. 613). This was the basis of discussions and presentations at the symposium as those present sought to extend understanding and explore the concept to consider if there was sufficient paradigmatic substance for advancing the field.

Turning now to consistencies and tensions, it was evident from the notes and reflections among the participant observers 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 evident and observable clear analytical tensions 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 raised a distinction and point of delineation for entrepreneurial ecosystems as reflections 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 inside their exchanges and interactions while alternatively from a systems perspective a collective purpose is defined by the whole, frequently in contradiction to that articulated or intended by the elements i.e. entities and actors involved. The dynamics of networks and systems are emergent in nature emanating from the changing basis of relationships. For entrepreneurial ecosystems the notion of purpose was primarily concerned with place, complex collectives of venture building actors and the resources and connections that constrain or enable them in pursuit of independent albeit entrepreneurial purposes. Important to the entrepreneurial ecosystem purpose and dynamic is the declaration for growth in the number and size of entrepreneurial ventures and consequently socioeconomic development of place. Different to the emergence view of dynamics in networks and systems, the dynamics in the entrepreneurial ecosystem are suggested to be more purposeful and prescribed by political and collective interventions to achieve place-based outcomes by changes in entrepreneurial behaviour. Notable in Fig. 3, is that policy and actors are connected to place and entrepreneurs by the dynamics of an ecosystem. This suggests that the purpose and intention of a political actor is at least one way to focus entrepreneurial ecosystem analysis.

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

Concept	Describes	Consistent themes
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/ context	Inter-dependence, relational capital, interactions, relationships, within and with external entities/resources
Boundary (systems) actor (networks)	Purpose	Agenda, goal, objectives, intent, place-based purpose
Environmental context (social, geographic, economic, institutional)	Place/ context	Network, region, community, place-specific resources
Time	Dynamics	Change, evolution, development, progress, transitions, adaptation, advancement

Table 2 presents the conceptual consistencies, parallels, and cross-overs apparent in the entrepreneurial ecosystem discussions.

The notion of place was considered as a space where humans construct meaning i.e. 'place' is relative to specific human interactions, while space, exists as a more general human construction (Törnroos et al. 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, for entrepreneurial ecosystems the 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 entrepreneurial ecosystems 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. Consistent with Storper (1995), capital, culture, people, identity and history were all mentioned relative to place (see Fig. 2), as features and factors that matter. Nonetheless place alone doesn't indicate potential for entrepreneurial ecosystems but rather place-specific elements and influences may facilitate entities seeking wider connections for potential advantage, be that value, resilience, survival or sustainability. Thus, place appears integral to the concept of entrepreneurial ecosystems.

Consistent with the fundamentally human oriented nature of entrepreneurial ecosystems, business network thinking suggests a need to look closely at the

permeable nature of boundaries and their continually changing nature. Relationships that connect actors and places are thus a key conduit of change for entrepreneurial ecosystems. The permeability of entrepreneurial ecosystem boundaries is also consistent with systems thinking, suggesting again that this deserves further research attention.

The temporal nature of entrepreneurial ecosystems was a topic which emerged to demarcate dynamics as a contributing concept in entrepreneurial ecosystem analysis. 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. These are all concepts strongly present in recent elaborations of dynamic business networks (Chou and Zolkiewski 2012; Möller 2013; Medlin and Törnroos 2015; Olaru and Purchase 2015; Andersen and Medlin 2016; Fonfara et al. 2016). Stability, evolution and change were understood to co-exist in entrepreneurial ecosystems as consistent with the earlier view for business networks. Systems thinking also brought to the forefront the dynamic aspect of entrepreneurial ecosystems, although conceptually change is considered differently with respect to what is changed and how. Still, the emergence and development of businesses was seen as inherent to the fundamental purpose of entrepreneurial ecosystems and an objective dynamic.

Recognition of the implicit requirement for the emergence and evolution of entrepreneurial ventures in an entrepreneurial ecosystem 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 entrepreneurial ecosystems as incubators or accelerators. The importance of diversity and flexibility of connections to facilitate fortuitous serendipity, opportunities and circumstance for development as well as strategic positioning of new firms for optimum growth was also discussed.

5 Implications for Research

There are implications here for research as the debate about what constitutes an entrepreneurial ecosystem continues to develop through the confounding and confusing comparisons of other business paradigms. The term ‘ecosystem’ in a business context 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 and Snehota 1989). This chapter shows that at issue is how to treat boundaries and intent and/or purpose. Stam (2015) proposed entrepreneurial ecosystems are “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 entrepreneurial ecosystem is presented with business network and systems thinking in Table 3.

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 (non-spatial) business ecosystem that 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 and 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 suggestion of self-organization and indeed some degree of self-determination. These definitions are consistent with the issues discussed from a variety of perspectives and so reveal a clear foundation for entrepreneurial ecosystem understanding, where the complementarity of capabilities within a permeable boundary (i.e. place) is sought by actors adopting collective political intentions. The boundary thus defines the ways capabilities are judged to be complementary and how resources should be applied to enhance future capabilities. The concept of political intentions is never separate from actor self-interest, and so the tension between entrepreneurial ecosystem collectives and actors notes a continuing dynamic.

However, in contrast to networks where the relationship is based on interaction, and systems where the whole is the focus, for entrepreneurial ecosystems the intent is relative to the interactive community supporting the various ventures. Thus, entrepreneurial ecosystems 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 entrepreneurial ecosystem’s purpose, which contrasts 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 entrepreneurial ecosystems 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 entrepreneurial ecosystem.

The major contribution to entrepreneurial ecosystem theory of this exploration of network and systems thinking is to highlight the objective nature of entrepreneurial ecosystem dynamics which draws attention to a potential driving force, the politically persuaded actor. In system theory, dynamics are found and emerge inherently from the inter-connected nature of the parts and whole, whereas the evolution of business networks is emerging and more intentional. By contrast the entrepreneurial ecosystem subsumes and depends on actor interaction in a context of network and/or system and therefore to achieve an objective, intervention to drive change needs to be targeted to particular and interdependent actors/levels. By contrast in a systems approach these levels integrate fundamental values and motivations, structures

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

Concept	Context	Content	Process	Place	Purpose	Dynamics
Business networks	Relationships	Multi-level	Relational interaction	Nebulous	Actor/firm interests and intentions	Emergent and changing relationships
Systems thinking	Relative	Collective	Dynamic	Integral/relative	Systemic	Evolutionary interactions
Entrepreneurial ecosystems	Communities	Multi-level	Serendipity, opportunity, and circumstance	Relative	Enterprise/place development	Organic evolution; policy interventions

and frameworks, relationships and interactions to bring about outcomes and effects. Therefore interventions must make sense given a specific system understanding. Alternatively in a network approach, the key old and new relationships are the means for intervention selected by actors relevant to specific business objectives. By contrast entrepreneurial ecosystems may themselves be considered an intervention instrument whereby a particular actor can mediate to achieve a collective outcome as motivated by individual actor objectives. Hence politically motivated actors (in terms of influencing collective action) can act to define the boundary of place and seek to create compatible and complementary capabilities across the encompassed public and private entities to alter the trajectory of the ecosystem.

Finally, while business networks are about relationships connected in an unending net, and systems are about holism, perhaps research on entrepreneurial ecosystems may consider participant relations more generally, within the context of inter-dependencies around connections between actors and differences of intent or purposes. Our analysis of the data also suggests that intent and purpose of actors in entrepreneurial ecosystems may be embedded in or related to the concepts of dynamics and change. Notwithstanding the limitations of a purposive and focused data collection and the particulars of the methodology, our intent was to suggest new areas of investigation as a theory building exercise. Many questions still remain. Understanding entrepreneurial ecosystem's as unique, diverse, complex phenomenon, grounded in place as well as emergent, dynamic, evolving and contingent on context and relative perspectives, opens new research opportunities. What has been presented here is a small start.

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Lisa Daniel brings a cross-disciplinary background to the UoA Business School with a Bachelor of Science with a first class Honours in the field of molecular plant pathology (UQ) and PhD in Technology and Innovation Management (UQ). Her current focus on agri-business eco-system research takes Lisa the full circle from researching the attributes and contributions of food crops to society, to researching agribusiness, regional communities and the people involved in the processes. This research circle demonstrates a profound connection agriculture, rural communities and food production issues.

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Dr. Allan O'Connor is the Academic Director Innovation and Entrepreneurship Government Relations at the Entrepreneurship, Commercialisation and Innovation Centre at the University of Adelaide. Allan combines his extensive industry experience in confronting the growth issues of small and medium enterprises and business start-up to inform and guide his teaching and research. Allan's main teaching interests are in the assessment of business opportunities, entrepreneurial strategy and developing research skills. Since 2012 he has co-authored the leading Asia Pacific text, 'Entrepreneurship: Theory, Process and Practice', with Professors Howard Frederick and Donald Kuratko. His research examines the intersection between entrepreneurship, innovation and socioeconomic development which has led to the development of the Australian Cluster Observatory and an in-depth study of entrepreneurial ecosystems. His portfolio of over fifty research publications in international peer reviewed journals, books and research reports is testament to the significance of Allan's research agenda to his field. In application, his research is designed to inform policy-makers, regional development agencies and the practicing entrepreneur with respect to creating and managing the resources necessary to foster and develop innovation and entrepreneurship in response to the strategic challenges of economic change.

Larissa Statsenko, PhD is a project manager of the Research Consortium at the Institute of Mining and Energy Resources, the University of Adelaide, and Assistant Professor at the Rudny Industrial Institute, Kazakhstan. Her research interests are in Complex Systems and Supply Chain Management. She has an academic, research and consultancy experience, and works on university—industry—government collaboration projects related to mining industry development in Australia and Kazakhstan.

Rowena Vnuk is a current PhD candidate with the University of Adelaide. Building upon her previous business experience and recent Masters of Applied Innovation and Entrepreneurship, Rowena is researching further how intermediary organisations intermediate industry transitions under dynamic conditions and how entrepreneurial endeavours by these organisations may influence industry specific innovation systems. Her particular interests in regional development originates from her knowledge and experience in regional development practice in the field of town planning and regional transport systems; in turn, these resources are now being extended by her research on entrepreneurship and innovation at the industry sector level.

Rowena enjoys research, particularly when she uses her questioning abilities to achieve sound conclusions, based on sound qualitative or mixed methods research methodologies. Past experience in community consultation and project management within transport planning fields enable Rowena to achieve high standards in research and project management. She looks forward to completing and publishing research papers to high level research journals as time progresses.

Gary Hancock is lecturer and undergraduate Bachelor of Innovation and Entrepreneurship program director for the Entrepreneurship, Commercialisation, and Innovation Centre in The University of Adelaide. Involved in the university's e-Challenge competition, Commercialisation Accelerator Program, and ThincLab, the University's business incubator Gary, has taught and developed courses in the areas of small business management, new venture creation, business consulting, and entrepreneurship (both face to face and on-line education modes).

Gary has worked in a large telecommunications organisation both in a technical and senior management role. He spent over sixteen years starting, operating, and harvesting growth-oriented ventures in franchise and non-franchise environments across the entertainment, telecommunications, business consulting, vocational education, and child care industries. Gary also assisted in developing the Innovation Foundation Program, a joint project between the Department of Transport and Regional Services, the City of Salisbury, and UniSA.

Gary provides mentor support and advice to young entrepreneurs via the South Australian Young Entrepreneur Scheme (SAYES). He has developed and run courses about planning and starting a business for Business SA (the South Australian Chamber of Commerce) and for a local not-for-profit education organisation (WEA) and is the past President and Chair of the Board of the WEA.

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