Entrepreneurial ecosystems and venture emergence: the role of institutional logics and infrastructure

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Abstract

While many western economies today make notable investments in entrepreneurial ecosystems, their influence in venture emergence remains unclear. In this paper, we explore the role of entrepreneurial ecosystems in shaping venture emergence by conceptualizing the ecosystems as organizational fields and by studying the role of the logic and the infrastructure of fields in the emergence. Empirically, we study a group of ventures that, despite their demographic homogeneity and shared origins in a single entrepreneurial accelerator, came to reflect different entrepreneurial forms. We identify four different entrepreneurial forms, of which one exhibits higher failure rates than the others. We argue that the heterogeneous forms reflect variations in both the logic and the institutional infrastructure of the field of the emergent organizations. The findings contribute to the understanding of emergence by elaborating the roles of both micro-level entrepreneurial action and the institutional order of ecosystems. For practitioners and policymakers of entrepreneurship, the study highlights how the social order of entrepreneurial ecosystems may influence organizational forms and performance.
ENTREPRENEURIAL ECOSYSTEMS AND VENTURE EMERGENCE: 
THE ROLE OF INSTITUTIONAL INFRASTRUCTURE

ABSTRACT

While many western economies today make notable investments in entrepreneurial ecosystems, their influence in venture emergence remains unclear. In this paper, we explore the role of ecosystems in shaping venture emergence by studying how ecosystem institutional infrastructure shapes venture emergence. Empirically, we study a group of ventures that, despite their demographic homogeneity and shared origins in a single entrepreneurial accelerator, came to reflect different processes and outcomes of emergence. We identify four theoretically possible entrepreneurial forms, of which only three emerge as viable businesses. We show how the four theoretical venture forms and the variation in their emergence reflect a separation of the ecosystem into two semi-independent subsystems with heterogeneous relational and ideational infrastructures. The findings contribute to the understanding of ecosystems and entrepreneurship by demonstrating the active role of ecosystems in both the processes and outcomes of venture emergence. For practitioners and policymakers of entrepreneurship, the study highlights the fact that ecosystems may not form single unitary entities but may rather contain subsystems with important differences that influence entrepreneurial outcomes.
INTRODUCTION

Although both policy and scholarly discourses have highlighted the importance of entrepreneurial ecosystems in facilitating and shaping the emergence of new ventures, how they do so remains a puzzle. The concept of an entrepreneurial ecosystem describes a cluster of interdependent actors the interactions of which are guided by the shared goal of enabling productive entrepreneurship (Adner, 2017; Jacobides, Cennamo, & Gawer, 2018). Entrepreneurial ecosystems can emerge organically, but are often facilitated by governments or other societal actors who invest economically and socially into their development (OECD, 2015). The involvement of actors in developing and supporting entrepreneurial ecosystems is rooted in the belief that such systems facilitate the entry of individuals into entrepreneurship and increase their chance of economic success (Welter, 2011). This belief is consistent with long-standing organizational research that emphasizes the lasting effects of the early conditions under which new ventures are founded (Stinchcombe, 1965).

Despite widespread enthusiasm for entrepreneurial ecosystems, however, the economic results of the efforts to develop ecosystems have varied widely (Hallen, Bingham, & Cohen, 2014). With or without the support of entrepreneurial ecosystems, a relatively small proportion of new ventures generate significant innovations (Ács, Autio, & Szerb, 2014), employment opportunities (Ács & Mueller, 2008), or even a decent livelihood for the entrepreneurs (Schwartz, 2009). For entrepreneurs, venture failure can effect high financial, psychological, social and relational costs (Ucbasaran, Shepherd, Lockett, & Lyon, 2013). For the societies within which ventures form, low returns on investment in entrepreneurial ecosystems carry significant costs including potential increases in labor market volatility (Davis, 2016), exacerbated inequality (Baker & Powell, 2016), and the deterioration of social wellbeing (Ucbasaran et al., 2013). Thus, understanding how entrepreneurial ecosystems shape the emergence of new ventures is an important question for a wide range of stakeholders.
To explore this question, we focus on the institutional infrastructure of entrepreneurial ecosystems. Originally defined in relation to organizational fields, the concept of institutional infrastructure describes “the features that bind a field together and govern field interactions” (Hinings, Logue, & Zietsma, 2017: 163). Thus, institutional infrastructure in relation to entrepreneurial ecosystems highlights the basic social structures on top of which ecosystems operate (Hinings et al., 2017). A focus on institutional infrastructure highlights both the resources (economic, physical, social, political) that entrepreneurial ecosystems provide to emerging ventures, and the processes through which those resources are negotiated. Thus, examining the role of institutional infrastructures may provide insight into how entrepreneurial ecosystems can play an active role in shaping the processes and outcomes of venture emergence.

Empirically, we focus on a group of ventures that originated from a single entrepreneurship accelerator in Finland between 2011 and 2014. Despite the relative homogeneity among the ventures in terms of the entrepreneurs’ professional histories and the ventures’ shared origins in a single entrepreneurial ecosystem, the ventures were associated with heterogeneous organizational outcomes and significant variation in the processes through which they emerged. Our study builds on a unique archival data set of over 300 ventures and interview data of over 40 ventures, all of which originated within a corporate accelerator operated by Nokia in Finland as a part of its outplacement program for redundant employees.

Our key findings contribute to the literatures on entrepreneurial ecosystems and venture emergence. Whereas previous research on entrepreneurial ecosystems has tended to emphasize their coherence as collective structures, we found that entrepreneurial ecosystems may contain subsystems with important differences that affect the processes and outcomes associated with new venture emergence. The ecosystem into which the Nokia ventures entered was composed of two distinct subsystems: one subsystem supported the development...
of “startups” (new ventures focused on the commercialization of ideas); the second subsystems supported the development of “small and medium enterprises (SMEs)” (new ventures focused on the commercialization of the entrepreneurs’ skills). Second, in contrast to the common assertion of ecosystems act as acquiescent scaffolds for entrepreneurs’ effectuation of a new venture, we found that the ecosystem assertively shaped the emergence of the new ventures: while the emergent forms of the new organizations were initially influenced by the entrepreneurs’ business ideas and interactional patterns, the ultimate outcomes were determined in interaction with the ecosystem. Third, despite previous writing that has associated flexibility and creativity with emergent fields of activity, we found the more mature of the two subsystems (that associated with the development of SMEs) to offer greater scope for divergence in entrepreneurial processes and outcomes than did the younger, developing subsystem (which was associated with developing startups).

The remainder of the paper is divided into four sections. First, we review existing research in order to develop in detail the research questions that guide our study. Second, we describe our data collection and analysis methods. Third, we present the findings of our study. Finally, we discuss the contribution of the findings for theory and conclude with an outline of the implications for entrepreneurship policy.

THEORETICAL FOUNDATIONS

In this section, we review current knowledge of how entrepreneurial ecosystems shape venture emergence in order to develop detailed research questions that guide our study. We first discuss new venture emergence in entrepreneurial ecosystems. We then introduce the concept of institutional infrastructure explore the relationship between two dimensions of institutional infrastructure and the process and outcome of new venture emergence.

Venture emergence in entrepreneurial ecosystems

Entrepreneurial ecosystems represent a set of interdependent actors whose interactions are guided by a focus on collective value creation by enabling productive entrepreneurship
The collective focus is anchored in an understanding of new ventures as deriving key resources regularly from their environments as well as from within the organizations (Adner, 2006; Gawer & Cusumano, 2014; Teece, 2007). Along with providing economic and material resources, recent scholarship has shown that entrepreneurial ecosystems also play important social roles (Jacobides et al., 2018; Thomas & Autio, 2014), with the characteristics of ecosystems shaping emergent ventures (Dattee, Alexy, & Autio, 2018; Singer, 2006; Teece, 1986, 2007).

Building on these insights, recent theorizing has suggested entrepreneurial ecosystems to shape not only the outcomes but also the processes of venture emergence (Spigel & Harrison, 2018).

We define venture emergence as the process through which new entrepreneurial firms come to be (Sarasvathy, 2001). Emergence is thus a process of transformation of ideas into materiality (Chiles, Meyer, & Hench, 2004). Research on venture emergence has emphasized how the transformation of ideas into materiality reflects patterns of interaction between entrepreneurs and other ecosystem actors (Gartner, 2014; Katz & Gartner, 1988; Welter, 2011), as well as the aspirations of the involved parties (Sarasvathy, 2001; Thomas & Autio, 2014).

The process of emergence is triggered by entrepreneurs’ belief that performing given behaviors will result in the fulfillment of the generalized aspiration of starting a business (Boyd & Vozikis, 1994; Sarasvathy, 2001). According to the effectual reasoning, entrepreneurs are only rarely able to articulate predetermined goals that would govern their commitments and behaviors (Sarasvathy, 2001). Instead, they commonly seek to utilize the means immediately available to them in order to learn and to secure stakeholder commitments that support the transformation of the initial idea into a firm (Perry, Chandler, & Markova, 2012; Sarasvathy, 2001). As such, the vision of a business rarely extends to a particular optimal form of firm but rather refers to a set of effects or possible
operationalizations of the generalized aspiration of starting a business (Sarasvathy, 2001; Sarasvathy & Dew, 2005). Entrepreneurs’ consideration of the means immediately available to them regularly concerns the constraints that have a potential to hinder the development and survival of the venture as well as the contingencies that can be used to counteract the constraints (Katz & Gartner, 1988; Sarasvathy, 2001). Emergent ventures survival and competitiveness are known to relate to the value and rarity of its resources (Barney, 1991; Barney, Wright, & Ketchen, 2001), yet nascent ventures rarely control the resources required for the realization of their aspiration (Katz & Gartner, 1988; Stevenson & Jarillo, 1990). Instead, they typically engage in both the search for new, external resources and the repurposing of old, previously accumulated ones (Alvarez & Busenitz, 2001; Baker & Nelson, 2005). Both the search for new and the repurposing of old resources expose the venture to other ecosystem actors and their shared focus on collective value creation through the support of productive entrepreneurship (Chiles et al., 2004; Thomas & Autio, 2014).

While the process of emergence is thus regularly triggered by entrepreneurs’ beliefs and aspirations, the transformation of the initial idea into a firm is likely to involve reciprocal interaction with other ecosystem actors and be subject to the social order of the system.

The transformation of entrepreneurs’ initial ideas into viable businesses is shaped by the ecosystem actors’ shared focus on collective value creation. The focus on collective value creation encourages adaptation (Chiles et al., 2004; Singh, Tucker, & House, 1986), as the ecosystem actors consider their respective roles as complementary asset providers in the process of value creation (Thomas & Autio, 2014: 4). In the case of new ventures, adaptation furthers the ventures’ comprehensibility (Meyer & Rowan, 1977) and improves the likelihood of success in resource repurposing and acquisition (Lounsbury & Glynn, 2001). Ecosystem actors’ shared understanding of value determines the desirability and appropriateness of different venture forms within the ecosystem (Lounsbury & Glynn, 2001; Singh et al., 1986). As such, ecosystems can direct the appropriate usage patterns of resources, render some
forms of resources more salient and some forms of ventures’ resource claims more legitimate. Given that emergent ventures regularly rely on acquisition and repurposing of not only material resources but human (Di Domenico, Haugh, & Tracey, 2010; Welter, Mauer, & Wuebker, 2016), cultural (Lévi-Strauss, 1966; Stinchfield, Nelson, & Wood, 2013), and social ones (Perkmann & Spicer, 2014; Welter, Xheneti, & Smallbone, 2018), ecosystems and their social order can carry far-reaching implications for emergence. Yet, their role in shaping the process and outcome of emergence remains understudied.

**Institutional infrastructure of ecosystems**

A set of disparate organizations form an ecosystem focused on collective value creation only to the extent that the collective of the organizations is institutionally defined or structured by institutional infrastructure (DiMaggio & Powell, 1983). Institutional infrastructure provides the means for coordination of the heterogeneous organizations non-generic, super-modular complementarities towards the common goal of collective value creation (Jacobides et al., 2018; Thomas & Autio, 2014). It provides the underlying fabric for the arrangements and relations between the organizations as constituent parts of the ecosystem and facilitates the synthetization, dissemination, and maintenance of their roles, standards and practices (Hinings et al., 2017). Further, it shapes the ecosystem organizations and their actions both by rendering the interests and values of the system collective and by enabling the enactment of the interests through steering the formation, prioritization, and perpetuation of the roles and interactions of the system.

We define institutional infrastructure as the inter-organizational patterns of coalition, shared meanings, practices, and identities that govern and facilitate the social order of ecosystems (Hinings et al., 2017). We explore the institutional infrastructure of entrepreneurial ecosystems along two dimensions: relational and ideational. Ecosystems’ relational infrastructure forms as the interaction among the organizations in the system increases and the inter-organizational patterns of coalition and domination become evident.
Relational infrastructure thus denotes the arrangement of ecosystem’s actor-networks and system-configuring events. Ecosystem ideational infrastructure forms as, first, the increase in the information load of the ecosystem organizations prompts the formation of shared meanings and practices, and, second, the mutual awareness of common enterprise fosters a shared identity (DiMaggio & Powell, 1983). Ideational infrastructure thus denotes the material and symbolic categories, blueprints, templates, and methodologies of the ecosystem.

Actor-networks and system-configuring events denote the relational infrastructure that governs and facilitates the channels of interaction within the ecosystem. Infrastructural actor-networks encompass both organizations that perform an infrastructure function within the ecosystem, for example, regulators and collective interest organizations, and the network structure that positions the members of the ecosystem within the collective and connects them to each other. Among the group of actors that perform an infrastructure function, regulators determine and maintain regulative frameworks (Busenitz et al., 2000), contribute to boundary control (Eesley, 2016) and distribute common resources. Informal governance bodies, such as entrepreneurship accelerators or the Chamber of Commerce in entrepreneurial ecosystems, define collective goals and exercise control over ecosystem strategies (Nambisan and Baron, 2013; Sine et al., 2007). Collective interest organizations, such as enterprise federations or investor interest groups, render collective interests visible and provide the collective with symbols of legitimacy (Pahnke et al., 2015). Within the actor-network of an ecosystem, the different infrastructure actors, the network of connections between them, and the network that they facilitate between all of the organizations of the ecosystem each perform an infrastructure function in orchestrating the action and interaction toward the focal goal of collective value creation (Saxenian, 1994). Beyond actor-networks, system configuring events, such as networking meetings, pitching competitions, and entrepreneurship fairs,
advance the generation and maintenance of ecosystem practices, interaction networks, and member hierarchies (Van De Ven, 1993; Wallin, Still, & Henttonen, 2016).

Relational infrastructure provides the means for a wide range of commonplace administrative and oversight activities, such as controlling and monitoring of the access to the ecosystem and its resources, diffusion of preferred practices, and judging and sanctioning of breaches of conduct (Greenwood et al., 2011; Hinings et al., 2017). Given the significant role the relational infrastructure assumes in steering ecosystem actors, our first research question queries how ecosystem relational infrastructure shapes the process of venture emergence?

Material and symbolic categories, blueprints, templates, and methodologies denote the ideational infrastructure that governs and facilitates the focus on collective value creation within the ecosystem. Categories, such as startups, scaleups, and unicorns, as well as prizes and ranking positions, contribute to the maintenance of member hierarchy and the preferred practices of the ecosystems (Anand & Peterson, 2000). Organizational blueprints, such as a model of growth startups, practice templates, such as a template for an investor pitch, and methodologies, such as the Lean philosophy of new product development, contribute the maintenance of preferred practices and enable and facilitate the action and interaction of the ecosystem organizations (Clark, 2008; Pahnke, Katila, & Eisenhardt, 2015). In established ecosystems, the multiplicity and varied nature of the different infrastructure elements reinforce each other ensuring the coherence of actors and actions within the system (Hinings et al., 2017).

Ideational infrastructure eases access to the relational infrastructure and simplifies cooperation within the actor-network by synthesizing the material practices and symbolic constructions of the ecosystem into recognized principles of action (Friedland & Alford, 1991; Thornton, 2004). It renders certain practices within ecosystems legitimate while making others appear illicit (Greenwood, Díaz, Li, & Lorente, 2010; Thornton, 2004). It improves the intelligibility of the complex structures of the ecosystem and makes mechanized
decision making possible by standardizing practices and reducing the amount of information that actors within the system need to process (Espeland & Stevens, 1998). Given the importance of the ideational infrastructure in orchestrating the means of action within the ecosystem, our second research question queries how ecosystem ideational infrastructure shapes the process of venture emergence?

Institutional infrastructure provides a helpful lens into the study of venture emergence in an ecosystem, as it focuses the inquiry into, first, the ecosystem’s role in shaping the interactions and relations of emergent ventures and, second, its role in shaping the ventures’ ideational tools and frames of reference. Success in emergence renders the ventures recognized members of the ecosystem and grants them continued access to the actors and resources of collective. Failure in emergence, in contrast, denies the ventures both a position within the collective and access to its resources. The third research question we raise thus queries how ecosystem relational and ideational infrastructures combine to shape the outcomes of venture emergence.

METHODS

Research Context

An inquiry into the role of ecosystem institutional infrastructure in venture emergence, calls for a research context in which it is possible to observe the relational and ideational infrastructure of the ecosystem as well as the process through which ventures come to be. An entrepreneurial accelerator program that Nokia ran in Finland between 2011 and 2014 met both of these requirements. The Nokia accelerator operated as a part of a re-employment program that the company, once the most prominent information and communications technology (ICT) sector employer in Finland, ran to alleviate the large-scale redundancies instigated by a downturn in its consumer electronics business. While the accelerator served a social purpose in supporting re-employment of the laid-off staff, in this case through self-employment, it operated largely as any competitive entrepreneurial accelerator with the
employees selected to join the program based on the strength of an independent assessment panel evaluated business plan.

Around 500 employees representing 10% of laid-off staff were accepted to the accelerator in Finland forming 317 new ventures between late 2011 and early 2014. Upon acceptance, the selected ventures were required to register in the Finnish company registry\(^1\) and were invited to join a broad program of entrepreneurship support that included, among others, access to funding, training, mentoring, and a community workspace. As is common in selection-based accelerator programs, the Nokia accelerator provided its ventures with some seed funding. The amount of funding was determined by the selection panel as a part of the program acceptance review. Apart from the strength of the business plan, the number of entrepreneurs influenced the total funding of a venture as the monies were granted per Nokia entrepreneur and were paid as part of their redundancy packages. The amounts paid varied with the maximum per entrepreneur being set at 25,000€. Nokia took no stake in any of the ventures, rather the seed funds were provided as grants. Beyond the seed funding, business loans were made available for any ventures in need of financing that exceeded the relatively modest grant amounts. Apart from funding, the Nokia accelerator facilitated a wide range of initial business services. Nokia, external trainers and regional entrepreneurship support programs provided training, that varied from basic business skills training such as small business accounting to more technical courses, for example, in the Lean product development philosophy. Equally, Nokia and the regional business community offered mentoring, networking and investor pitching opportunities. Finally, Nokia made a separate community workspace available at the Nokia offices for all of the ventures.

The Nokia accelerator offered a promising context for our study due to the shared origins of a number of ventures in the single accelerator ecosystem. Furthermore, the notable

\(^1\) Four out of the 336 ventures found within the program were registered abroad. Furthermore, in 15 cases the program allowed employees to join the program with previously registered ventures. Both the foreign and the previously registered ventures were excluded from the analysis of this research.
homogeneity of the accelerator entrepreneurs, their professional histories and their ventures’ target industries helped us to focus on the variations both in the venture outcomes and the entrepreneurs’ engagements with the ecosystem. Close to 90% of the ventures remained registered as active at the time of our data collection in 2015-2018, yet many were reporting modest revenues with the majority of the entrepreneurs holding wage-employment roles instead or in addition to the entrepreneurial one.

Data Collection

To enable us to query the role of the ecosystem institutional infrastructure in the Nokia accelerator ventures’ emergence, we needed to collect data regarding, first, the relational and ideational infrastructure that the Nokia entrepreneurs encountered, second, the emergence processes the encounters triggered and, finally, the outcomes of the emergence processes. We chose to collect interview and archival data to capture each the infrastructure, emergence processes, and emergence outcomes.

The main data for the study was collected through interviews. We interviewed primarily the accelerator entrepreneurs but did include also ecosystem infrastructure actors and managers of the Nokia accelerator. The Nokia accelerator operated in four geographic locations in Finland, including the capital and three provincial regions. While all of the locations utilized elements of the national entrepreneurship ecosystem and the few local ecosystem elements in the provincial regions closely reflected each other, we chose to focus our interviews into single geography to minimize the variation in the ecosystem infrastructure that the ventures encountered. We chose one of the provincial geographies for the study, as this enabled us to capture the majority of the Nokia accelerator ventures within the region. An initial pilot interview phase was followed by two separate interview periods from September 2015 to March 2016, and from August 2017 to August 2018. The first phase interviews were selected randomly and the second phase theoretically to capture “polar types” (Eisenhardt & Graebner, 2007). All in all, the first author conducted 54 interviews, of which 40 were with
entrepreneurs and the rest with other ecosystem actors. Three of entrepreneur interviews were conducted in another one of the Nokia accelerator geographic regions to check for any notable variations in the entrepreneurs’ ecosystem engagements between the regions. The interviews were semi-structured and varied between 45 minutes and two and a half hours in length, with the average interview lasting around an hour. All of the interviews were recorded and transcribed by the first author.

To complement the interview data, we further collected archival data relating to the ventures, the accelerator program, and the ecosystem. As part of the interviews and where possible, we collected some company confidential archival materials including the business plans with which the entrepreneurs had applied to join the Nokia accelerator. For the ventures, we further collected an extensive archival database that included information, among others, from the Finnish company registry on venture registration and performance, from government funding database on secured grants, from venture websites and media reports on venture activities, and from LinkedIn on entrepreneur biographies. For the accelerator program, we received some company confidential information from Nokia and collected further public reports from the press and academic reports. For the ecosystem, we developed a profile of all the ecosystem actors based on the actors’ publicity materials collected from their websites as well as public media and policy reports. All in all, the archival data collection utilized 17 different data sources and resulted in a substantial database of material (Table 1). While our focus in this study was on the selected regional geography, the study benefited from the archival data of another study for which the same data was collected for all of the geographies and all of the 317 ventures. The full archival database confirmed the similarity of our focal region and its ventures to the other regions and the overall pool of the Nokia accelerator ventures.
Table 1. Collected data by source

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<thead>
<tr>
<th>Collected data by source</th>
<th>Extent of data</th>
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<tbody>
<tr>
<td>Interviews</td>
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<td>1 Nokia interviews</td>
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<tr>
<td>2 Regional university interviews</td>
<td>2</td>
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<tr>
<td>3 Regional government interviews</td>
<td>10</td>
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<tr>
<td>4 Venture founder interviews</td>
<td>40</td>
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<tr>
<td>Documents and venture materials</td>
<td></td>
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<tr>
<td>5 Internal documents</td>
<td>for 20 ventures</td>
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<td>6 Venture websites</td>
<td>for 317 ventures</td>
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<tr>
<td>7 Venture press releases</td>
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<tr>
<td>Archival data - ventures</td>
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<tr>
<td>8 Finnish Company Registry filing</td>
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<td>9 Kauppalehti company registry (Yrityshaku)</td>
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<td>10 Taloussanomat company registry (Yritystiedot)</td>
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<tr>
<td>11 Suomen Asiakastioto company registry</td>
<td>Full archival</td>
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<tr>
<td>12 TEKES award database</td>
<td>data collected</td>
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<tr>
<td>13 Kauppalehti “The Best of Finland” annual business ranking</td>
<td>for 317</td>
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<tr>
<td>14 Suomen Asiakastioto “The Strongest of Finland” awards</td>
<td>ventures (500)</td>
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<td>15 LinkedIn</td>
<td>founders of</td>
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<td>16 UK Companies House company registry</td>
<td>the Nokia</td>
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<td>17 Bloomberg company registry</td>
<td>accelerator.</td>
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<td>18 Company websites (for prior employers)</td>
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<td>19 Educational institution websites (for educational institutions)</td>
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<td>20 Finland Statistics</td>
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<tr>
<td>Archival data - system of entrepreneurship</td>
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<td>21 Infrastructure information - actor web pages</td>
<td>24 actors</td>
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</tbody>
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Analysis

In data analysis we considered the ventures as individual cases and adopted an inductive cross-case comparison strategy (Eisenhardt & Graebner, 2007; Yin, 2009) that followed three stages: first, we explored the role of relational infrastructure in the process of venture emergence; second, we queried the role of ideational infrastructure in the process of venture emergence, third and finally, we studied the combined effect of relational and ideational infrastructure for the outcome of venture emergence. The analysis and cross-case comparison of the venture cases was conducted using MAXQDA software with the interview files, transcripts, and venture specific documents all managed within the MAXQDA database. The supporting database of the archival data for all of the 317 ventures was maintained and the descriptive statistics were developed using Python.

To study the relational infrastructure of the ex-Nokia ventures’ entrepreneurial ecosystem, we focused on the actors and events that the ventures engaged with. Using in-vivo codes (Miles, Huberman, & Saldana, 2014), we identified in the interview transcripts and
company document all references to external actors, such as local entrepreneurship accelerators or small enterprise interest organizations, and events, such as networking breakfasts or investor pitching competitions. For each instance of identified actor or event, we noted the frequency of the engagement using category codes that helped to separate ventures’ actual engagements from any statements of mere awareness of the actors and events. The frequency codes further allowed rough separation of the actor and event engagements to one-off instances or repeated ones. The actor and event coding created a list of venture-specific ecosystem relations that could be ranked based on the regularity of the interaction. To enable the comparison and contrasting of the relational lists, we next sought to systematize the in-vivo actor and event codes. By referring to the archival materials of the ecosystem actors and events we merged the micro-level actor codes to organizational meso-level ones, as our interest was not in understanding which individual persons the entrepreneurs knew but rather which of the ecosystem infrastructure actors they engaged with. Following a similar principle of meso-level constructs, we systematized any references of the entrepreneurs’ personal connections, such as ‘a university friend’, ‘a Nokia colleague’ or ‘an industry contact’ into collective actor-network constructs, for example ‘university network’ or ‘Nokia network’. The systemization yielded 29 different ecosystem actors, actor-networks and events that the ventures had engaged with to differing degrees, intents and effects. To ensure that our understanding of the 29 different ecosystem actors, actor-networks and events did not rely solely on the ventures’ accounts of their engagements, we developed detailed organization profiles for each of the actors and events based on archival data that we collected from independent sources. The profiles recorded, among others, the function and objective of the organizations, their target audiences and membership criteria, their deliverables, and their geographic reach, and enabled us to identify the ecosystem infrastructure roles of the actors and events. By mapping the infrastructure roles to actors and
events to the ventures’ relation lists we were able to identify the ventures’ relational infrastructures.

To identify the effect of the relational infrastructure to the venture emergence, we compared and contrasted the ventures’ relational infrastructures, as a result of which we were able to, first, identify two groups of ventures with similar patterns of infrastructure engagement patterns, and then inductively trace the practices and outcomes of the groups. The comparison and contrasting of the venture infrastructures identified two groups, one of which interacted with a varying frequency with several different infrastructure actors and events, and another which exhibited regular interactions with only a few of the actors or events of the infrastructure. To explore the separation between the groups, we traced both the intentions that motivated the groups’ infrastructure engagements and whether these intentions were met by the interactions. Our initial in-vivo codes for the intentions included references to the ventures’ attempts to, among others, engage with the incumbent industry, exchange ideas with their peers, and seek customers, finance and training. By focusing on the object of the intents that motivated the engagements, we were able to further categorize the infrastructure engagements according to whether they concerned financial, human, cultural or social capital. We, for example, identified references to pitching for investment or proposing a sale to a customer as engagements concerning financial capital. Following the same logic, we considered remarks on attending training or recruiting a new team member as engagements concerning human capital. Attending a membership event or the acceptance of an industry award was listed as instances concerning cultural capital, while social engagements at business breakfasts and attempts to secure introductions to new contacts were identified as concerning social capital. Separately, the codes for the fulfillment of the intentions categorized the engagements according to whether the engagements had been found beneficial, ineffectual or redundant with the beneficial engagements regularly aligning with repeated interactions and the ineffectual and redundant ones with one-off interactions.
By comparing and contrasting the intent and fulfilment profiles of the infrastructure engagements of the two groups, we could observe that the identified two groups of ventures varied not only in the range of their infrastructure connections but also in the range of resources the engagements concerned and yielded, leading ventures in one group to be scaling up while the ventures in the other group appeared stable.

To study the ideational infrastructure of the ex-Nokia ventures’ entrepreneurial ecosystem, we focused on the ventures’ practices and preferences in their daily operations, maintaining particular alertness for any blueprints, templates, and methodologies the entrepreneurs adopted in developing their ventures. Our initial in-vivo coding of the interview and archival materials identified both the activities the ventures engaged in and their preferred method for them, thus bringing to the forefront, as an example, activity statements, such as, ‘we productized our competence’, ‘we started developing a product’ or ‘we are trying to secure a pilot’ and method remarks, such as, ‘we have a pragmatic cash focus’ or ‘we follow the lean methodology’. The initial codes yielded a list of activities and preferred approaches for each of ventures. The comparison and contrasting of the activity lists showed that while the ventures shared the intent to generate cash from innovation activity, the means and temporal frames of the innovation activity varied. To explore the separation further, we categorized each of the activities according to whether the venture’s innovation activity relied on repurposing an existing object or whether the venture rather relied on recombining existing objects to a new one. The object could in both cases be either a product or a service. We thus considered remarks such as ‘we productized our competence’ and ‘we have commercialized our skillset’ as concerning repurposing of existing objects, while references to ‘we started developing a product’ and ‘we are piloting the service’ as concerning recombination of existing objects. Any supporting activities that did not directly involve the development of the innovation object, such as ‘we pitched the idea’ or ‘we hired a contractor to work on the code’ were categorized as supporting either the repurposing or the
recombining of existing objects. This categorization yielded a separation of the ventures into two groups based on whether they predominantly focused on repurposing or on recombining. The comparison and contrasting of the ventures in the two groups showed the repurposing ventures to rely on blueprints of small and medium enterprises, support of the incumbent industry and short-term cash generation from operating activities, while the recombining ventures prioritized blueprints of innovation startups, support of startup accelerators, investors and mentors together with long-term cash generation from operations enabled by short-term external finance. We considered the heterogeneous blueprints to be representative of separate ideational infrastructures of the two groups.

To identify the effect of the relational infrastructure to the venture emergence, we compared and contrasted the ventures’ ideational infrastructures, as a result of which we were able to, first, identify two groups of ventures with similar blueprints, templates, and methodologies. The comparison and contrasting of the venture infrastructures identified two groups. In one of the groups, the ventures adopted an identity of a startup, engaged in commercialization of ideas and commonly utilized Lean philosophy in the development work, while in the other the ventures rather saw themselves as small enterprises, engaged in commercialization of their skills and utilized common industry practices in the day to day work.

Finally, to study the combinations of relational and ideational infrastructure, we compared and contrasted the two venture groups of different relational infrastructure patterns with the two venture groups of different ideational infrastructure pattern. This comparison and contrasting generated a two-by-two matrix of growth and specialist startups and small enterprises. To observe the combined impact of the relational and ideational infrastructure in venture outcomes, we developed summary statistics of several outcome measures for each of the venture groupings in our 2x2 matrix. We considered both traditional performance measures, such as revenues, revenue and headcount growth, and more developmental
measures, such as grants awarded and grant payments received. The summary statistics implied one of the identified four venture groups to have failed to emergence as a group of viable businesses.

**FINDINGS**

We present our findings in terms of the three research questions that guided this study. First, we identify the ideational infrastructure of the ex-Nokia ventures ecosystem and show how it shaped the venture emergence into two entrepreneurship archetypes. Second, we identify the relational infrastructure of the ecosystem and show how it shaped the scope of the ventures. Third, we observe the interaction of the ideational and relational infrastructure in either enabling or impeding the venture emergence.

**Ideational infrastructure and the process of venture emergence**

The ventures accepted to the Nokia accelerator program represented a range of business ideas that was unusually broad for a new venture accelerator. The variety of ideas reflected both the distinctive entrepreneurship trigger of mass-redundancies and the objective of the accelerator in generating reemployment opportunities. Many of the entrepreneurs reported having considered entrepreneurship as a possible future career choice already prior to their redundancy. Yet, the final ideas that the entrepreneurs included in their applications to join the accelerator program regularly came together only as a result of intense deliberations triggered by the actualization of the layoffs. As such, the ideas were often nascent and the entrepreneurs were able to describe them only in very generic terms, as illustrated by the “business area descriptions” that got logged in the Finnish Business Registry, for example, “internet services and all other legal business activities”, “consumer electronics and all other legal business activities”, “media content and all other legal business activities” (Finnish Business Registry data).

In selecting the ventures for the accelerator, Nokia set few requirements for the business ideas beyond them offering the potential for an ongoing business. Relatively unusual
for venture accelerators, the initial focus of the Nokia accelerator was on the potential for continuity rather than growth, as acknowledged by one surprised entrepreneur: “I was really surprised [to be accepted to the accelerator] as it was clear that this would not be a business that just explodes outwards and returns millions” (Interviews, Entrepreneur Vaninen). While the ideas varied notably in their level of ambition, scope, and industry focus, they, however, in most cases shared a common strand in incorporating aspects of high tech and digitalization that the entrepreneurs had got familiar with at Nokia. Many of the ideas revolved around the development of technology-based solutions or the provision of technology-related services. In a few cases, the ideas originated from the entrepreneurs’ personal interests or hobbies, such as cookery, brewing or photography, but did still commonly integrate elements of digitalization.

When the entrepreneurs first began to interact with the Nokia accelerator, most of them lacked any significant experience with entrepreneurship, as observed, for example, by this entrepreneur: “we had no entrepreneurial experience or understanding of how to generate business out of our idea, but our technical know-how was world-class” (Interviews, Entrepreneur Hitinen). The accelerator thus often introduced the entrepreneurs for the first time to the ideational infrastructure of blueprints, templates and methodologies that governed and facilitated the social order of the ecosystem. The entrepreneurs learned, for example, how to plan or prepare a blueprint for a new venture. They picked up the appropriate templates for various new venture activities, such as employment registrations or investor presentations. Finally, they familiarized themselves with the common methodologies of innovation, such as the Lean philosophy.

The Nokia accelerator introduced the entrepreneurs to the ideational infrastructure through a broad range of services that were intended to increase entrepreneurs’ understanding of how to develop a business from the germ of an idea; these services included, among others, entrepreneurship skills training, leadership mentoring, and ecosystem networking.
Because the ventures were allowed to use all services without any cost, many entrepreneurs experimented with the majority of the offered opportunities. Engaging with these services introduced entrepreneurs to some practical entrepreneurship tools, such as business license and accounting regulations. It also acquainted the entrepreneurs with what were considered appropriate business model blueprints, organizational templates, and innovation methodologies. Ultimately, the engagement with ecosystem services, such as Kasvu Open’s platform “where each company could introduce their ideas, test them, receive feedback, polish the plans and solve problems together with the experts in order to make [their] dreams come true” (Archival data, Kasvu Open) helped entrepreneurs to obtain an understanding of how the ecosystem valued, evaluated, and categorized ventures and their business ideas.

As the entrepreneurs engaged with the ecosystem services, such as the training opportunities or the Kasvu Open platform, those interactions began to reshape the entrepreneurs’ initial ideas. We found three main processes through which this reshaping occurred. First, the ideational infrastructure facilitated the “sorting” of the ventures into separate categories based on the alignment of the initial business ideas with the ecosystem venture blueprints. Early encounters often revealed a misalignment between entrepreneurs’ initial business ideas and the ecosystem’s expectations regarding appropriate venture blueprints. As one entrepreneur observed,

“it was perfectly clear to me what I would do [and] it was obvious that I had a tight offer [thanks to] my skills and networks, [but] for some [of the ecosystem service providers] that did not seem to be enough at all. Rather they wanted me to add [all kinds of] fluff to [the idea], sort of ’if you could also offer A or B’. But I cannot offer A or B, I only have the competencies that I have” (Interviews, Entrepreneur Susonen).

As entrepreneurs saw the misalignments between their venture ideas and the ecosystem expectations, they adapted to ecosystem expectations by reconsidering either their initial
business ideas or their engagements with the ecosystem. Some entrepreneurs chose to “pivot the initial idea” (Interviews, Entrepreneur Joki, among others) in order to increase the alignment of their venture blueprint with the ecosystem expectations. Others distanced themselves from some of the ecosystem services to allow more flexibility with their venture blueprint: as recollected by one entrepreneur, “I attended [the regional accelerator] a couple of times but as I had neither a big spin nor was I a startup, it wasn't for me” (Interviews, Entrepreneur Susonen). In response to the ecosystem ideational infrastructure the entrepreneurs thus actively sorted and adapted their ventures into separate groupings that exhibited heterogenous venture blueprints.

Second, the ideational infrastructure prompted “narrowing” of the entrepreneurs’ organizational templates and methodologies to those deemed appropriate for the select venture blueprints. The ideational infrastructure provided a heuristic that facilitated prioritization of some templates and methodologies over others, as observed by one entrepreneur: “The accelerator activities leaned heavily towards beauty contests and pitching. [The intent was] to secure funding and a steep enough gradient for the [growth of the] operations and money” (Interviews, Entrepreneur Kosunen). Given the limited resources available to the ventures, the template and methodology prioritization often implied a single-minded focus on only the adopted modus operandi as recollected by one entrepreneur:

“Everything that helped us to aim towards cash flow was prioritized. We brought ourselves forward aggressively in all sorts of networking events and sought, right from the start, to commercialize our competence rather than develop yet another idea. This kind of logic was unusual” (Interviews, Entrepreneur Rokenen).

Eventually, the heuristics that encouraged the single-minded focus on select templates and methodologies shaped the venture emergence by narrowing the scope of the ventures that increasingly came to reflect an archetypal form of their venture category.
Finally, the ideational infrastructure facilitated *legitimating* the ventures that were deemed to have adopted appropriate blueprints and to demonstrate apt methodologies in the transformation of entrepreneurs’ ideas into material businesses. The ventures found their membership status within the commercial accelerator, for example, to secure peer support within the community and to support the development of the venture by signaling legitimacy, as observed by one of the entrepreneurs: “being part of the community did, of course, increase our status in the customers’ eyes by making us look more trustworthy” (Interviews, Entrepreneur Lamonen). Eventually, the signals of legitimation supported repetition of the templates and methodologies deemed appropriate and, as such, shaped emergence by encouraging isomorphism in the venture blueprints.

The sorting, narrowing and legitimizing processes facilitated by the ecosystem ideational infrastructure ultimately lead the emergent ventures to reflect one of two archetypal forms, one of “startups of global ideas and business models” and another of “traditional businesses of basic products and known business models” (Archival data, Nokia internal materials). The ventures that identified themselves as startups, adopted a venture blueprint of commercializing ideas or “developing ideas to an extent that they could secure funding and then a good exit at some point” (Interviews, Entrepreneur Jokynen). The activities of the startups relied on the Lean methodology and focused on pitching, piloting and pivoting their ideas. The startups gained legitimation from the recognition in pitching competitions and the financing deals secured. The ventures of the second archetypal form lacked a clear unified identity beyond the recognition of “not being a startup”. These small enterprises adopted a venture blueprint of commercializing their skills, reflecting: “we agreed right from the start that we have to find a customer who is interested in our competence rather than starting to develop technology or some fancy” (Interviews, Entrepreneur Lamonen). The activities of the small enterprises focused on customer target identification and selling, matching and monetizing their skills. The small enterprises gained legitimation from
presenting in trade fairs and through industry partners: “We always get an [industry] insider quote of ‘yes, these are true doers, these guys are skilled and knowledgeable’. That helps to get us into the conversation [with customers]” (Interviews, Entrepreneur Rokenen).

**Relational infrastructure and the process of venture emergence**

The majority of the Nokia accelerator entrepreneurs were mid-career professionals who had commonly built strong contact networks within their area of specialization. Given many of the entrepreneurs had enjoyed long tenures within the large Nokia organization, the professional connections were, however, often highly concentrated as observed by a entrepreneur who referred to him and his colleagues to “have been happily ‘bottled up’ in the big corporation” (Interviews, Entrepreneur Rokynen). Furthermore, many of the active connections created and maintained by the entrepreneurs within the global organization left them lacking local connections:

“The worst aspect of the Nokia background is that one does not have any local network. None. All Nokia colleagues and customers that we [used to] work with were with global companies. Because of this [our] understanding of the local context is pretty non-existent” (Interviews, Entrepreneur Vananen).

Entry into the Nokia accelerator provided the entrepreneurs with an important opportunity to acquaint themselves with the relational infrastructure of the local entrepreneurship ecosystem. The accelerator was especially significant in facilitating connections with relational infrastructure actors and events that operated as network brokers within the ecosystem, such as commercial entrepreneurship accelerators, entrepreneurship interest organizations and promotional events. Many of the ventures, for example, entered a regional commercial accelerator acknowledging that “the startup accelerator was really good for networking and for running into people” (Interviews, Entrepreneur Joki). Others, connected with entrepreneurship interest organizations, such as Business Finland, the government business accelerator that focused on small and medium size enterprises, or the
Chamber of Commerce. Beyond entrepreneurs’ direct engagement with the relational infrastructure actors, the expansion of the ventures interaction networks also commonly took place in ecosystem events as observed by one of the entrepreneurs: “Much good came out of [the ecosystem events]. We found many connections there. This is how it works” (Interviews, Entrepreneur Hitynen).

The Nokia accelerator offered the entrepreneurs an opportunity to experiment with a range of the relational infrastructure that, from early on, shaped the ventures’ interactions with the ecosystem through two processes. First, the relational infrastructure “amplified” entrepreneurs’ initial interaction patterns through a “Matthew effect” that equipped some ventures with a quickly expanding network of ecosystem connections while leaving others increasingly reliant on a few early-stage connections. While the majority of the entrepreneurs experimented with contacts to a broad range of the relational infrastructure actors, only some of the connections gained in importance. Entrepreneurs that found several of the relational infrastructure contacts meaningful for their ventures’ development commonly benefited from the subsequent rapid increase of the “community of the company” (Interviews, Entrepreneur Kosynen) through the introductions made by the infrastructure actors. In contrast, entrepreneurs who sought highly targeted contacts, often found their ecosystem connections to contract around a few key interactions that commonly originated from their prior professional networks.

Second, the ecosystem relational infrastructure encouraged “clustering” of the ventures around some of the infrastructure actors. While the majority of the entrepreneurs experimented with contacts to a range of relational infrastructure actors, the initial connections did not always survive. As some contacts gained in importance and others petered out, the ventures of similar relational patterns formed clusters around some prominent infrastructure actors. One of the clusters formed around a regional commercial accelerator. In this cluster, the ventures interacted mostly with the accelerator and the contacts that the
accelerator facilitated. These ventures interactions within the ecosystem regularly centered on the accelerator community with the entrepreneurs observing how they found actors such as the Business City or the Chamber of Commerce “quite removed from the real activity of startups” (Interviews, Entrepreneur Joki) and as such less beneficial for their venture development. This was, however, not the case with all, as another set of ventures clustered around the small and medium enterprise interest organizations, such as the Chamber of Commerce. These entrepreneurs found the small and medium enterprise interest organizations of more use than startup accelerators that they considered sometimes to be “just talking shops for when you do not know what you are doing” (Interviews, Entrepreneur Hitinen).

The amplification of the initial relational patterns by the ecosystem relational infrastructure ultimately led the emergent ventures to reflect one of two relational forms, one of growth and another of specialization. The growth ventures benefited from a broad range of ecosystem interactions that opened up many opportunities for venture development. The ecosystem relational infrastructure, for example, facilitated the growth of their teams, the increase of the awareness of their offer beyond their immediate contexts and the access to the international markets. As such, these ventures, confident in their growth, regularly hired new staff, developed new customer offers beyond the initial one and sought international expansion. Given the broad range of ecosystem relational infrastructure that the growth ventures relied on, they were rarely dependent on any one of the infrastructure actors. The specialist ventures, in contrast, often depended only a few trust-based reciprocal interactions within the ecosystem. While the specialist ventures’ in-depth connections did, at their best, facilitate knowledge transfer and word-of-mouth marketing, they often left the ventures exposed to a single point of failure within their ecosystem network. As such, the ventures tended to be more cautious with growth, prioritising rather the longevity of the venture. They rarely recruited new team members, relied heavily on the entrepreneurs’ labour and were,
subsequently, highly specialised in their customer offer. The relational infrastructure’s amplification of the ventures initial relational patterns was independent of the infrastructure’s clustering effect. As such, the two venture clusters forming around the regional accelerator and the small and medium enterprise interest organizations contained both growth and specialist ventures.

**Ecosystem infrastructure and the outcome of venture emergence**

The ideational and relational infrastructures of the Nokia ventures ecosystem formed two semi-independent subsystems, one of which focused on the development of innovation startups and the other on that of small enterprises. The actor-networks and events of the innovation startup subsystem clustered around the regional accelerator. The blueprint of the subsystem promoted idea development, the templates and methodologies encouraged Lean philosophy with piloting, pivoting and pitching of the idea. The ventures of this subsystem adopted a startup venture identity. In contrast, the actor-networks and events of the small enterprise subsystem clustered around the small and medium enterprise interest organizations. The blueprint of this subsystem encouraged skill commercialization with the templates and methodologies promoting cash focus. The ventures of this subsystem adopted a small venture identity.

The institutional infrastructure of the ecosystem shaped venture emergence, first, by encouraging self-sorting of the ventures into the two subsystems, second, by narrowing the venture methodologies and amplifying the entrepreneurs relational patterns within the subsystems, and finally, by the subsystems legitimating some emergent venture forms while disenfranchising others to an extent that only three of the theoretically possible forms of the Nokia ventures emerged as viable businesses. The initial ideas of the Nokia entrepreneurs thus emerged in three alternative material forms: as growth and specialist enterprises within the enterprise subsystem, and as growth startups within the startup subsystem. The
theoretically possible form of specialist startup failed to emerge as a material business within the startup subsystem.

In the enterprise subsystem, two alternative venture forms of growth and specialist enterprises emerged as viable. Entrepreneurs of both growth and specialist forms adopted a venture blueprint of skills commercialization. This blueprint supported interactions with the subsystem infrastructure actors, such as the Finnish Enterprise Agency, the Federation of Finnish Enterprises and the Chamber of Commerce, and industry events such as trade shows and regional business breakfasts. The ventures’ organizational templates and methodologies reflected a subsystem focus on cash generation. Growth enterprises actively sought a broad range of connections, new markets, and growth while the focus enterprises approached the subsystem in a more targeted fashion. Growth enterprises ultimately benefited from a Matthew effect that supported a quick expansion of their reciprocal interactions among the subsystem actors. Beyond the legitimation of their many interconnections, the growth enterprises were commonly legitimized also by grants and industry awards. The specialist enterprises developed only a few reciprocal connections within the subsystem but were commonly legitimated as specialist enterprises within their specific contexts.

The emergence of the growth and specialist enterprises as viable businesses was, in the enterprise subsystem, supported by the subsystem infrastructure supporting the utilization of the entrepreneurs previously accumulated capitals. Both the skills commercialization blueprint and the cash-generation methodology of the enterprises encouraged these entrepreneurs to utilize internal means, whether human, cultural or social, in the transformation of their ideas to material businesses. The entrepreneurs thus commonly relied on previously accumulated human capital reflecting that their experience at Nokia “in delivering the most sophisticated technical solutions in the world” enabled them to “walk into any company and offer our expertise” (Interviews, Founder Rokynen). They equally utilized prior cultural capital in “adjusting the learned corporate practices” to their needs.
(Interviews, Founder Rokinen) and relied on prior social capital for both suppliers and customers acknowledging the benefit that arose from the “direct contact with [world class] suppliers of technology” (Interviews, Founder Hitonen). The growth enterprises tended to utilize all the different forms of their capital while the focus enterprises commonly relied only one or two of the different forms reflecting, for example, on their “blessed education” and the ability to “achieve something” with it (Interviews, Entrepreneur Susonen). Both enterprise groups found their internal means legitimate among the subsystems with growth enterprises successfully accumulating additional resources to support their growth and the specialist enterprises largely relying solely on their internal means. As such, both growth and specialist enterprises emerged as viable businesses.

While the startup subsystem exhibited similar division of the ventures into growth and specialist startups, in this subsystem only the growth ventures emerged as viable businesses. In this subsystem, the entrepreneurs adopted a venture blueprint of skills commercialization. This blueprint supported interactions with the subsystem infrastructure actors, such as regional accelerators, angel investors and startup mentors, and ecosystem events, such as the entrepreneurship celebration Slush. The organizational templates and methodologies of the startups reflected these ventures focus on disruptive innovation and the development of the initial idea through pilots, pivots, and pitches. As in the enterprise subsystem, growth ventures sought a broad range of connections to trial and finance their idea work and benefited from the Matthew effect that supported the expansion of their reciprocal interactions within the subsystem. In contrast, the specialist ventures that approached the subsystem in a highly targeted fashion struggled to position themselves within the interaction networks of the subsystem. While the growth ventures gained legitimation through wins in pitching competitions and through investments secured, the specialists commonly failed to achieve legitimation.
In the startup subsystem, the divergent outcomes of the growth and specialist ventures related to the subsystem placing little value on the entrepreneurs’ prior capital and the institutional infrastructure thus focusing rather on the support of new capital acquisition. Both the idea commercialization blueprint and the disruption focused methodology of the startup subsystem called for new resources and the entrepreneurs often found their previously acquired capital of little use. In human capital, the entrepreneurs lamented their “lack of knowledge” in startup management (Interviews, Founder Vanonen) and acknowledged that their skills “just did not seem to be enough at all” (Interviews, Founder Susonen). Referencing cultural capital, they commented on how they had to learn “the [basic] ways of [entrepreneurial] work” (Interviews, Founder Hitenen) and regularly lacked “the required background and references” (Interviews, Founder Rokunen). With regards to social capital, they found that “the Nokia contacts were not really of use” (Interviews, Kosinen). As such, the startup entrepreneurs commonly engaged in active retraining, often at the regional accelerator, which helped them to obtain new skills, develop an understanding of the appropriate cultural practices and expand their social connections. Some of these entrepreneurs reflected on the holistic nature of their newly acquired capital referring to having “done the falling down in the revival meetings” (Interviews, Founder Kosunen) or having “acquired almost all social contacts anew” at the accelerator (Interviews, Founder Kosinen). The growth startups that tended to look for new resources in each human, cultural, social, and financial form were supported in this endeavor by their startup subsystem legitimation, as was recognised by an entrepreneur who reflected how a startup coach in preparing the entrepreneur for a pitch had advised “not to tell anyone about your Nokia background” and rather focus on the experiences within the startup subsystem (Interviews, Entrepreneur Kosinen). This was not a case for the specialist startups, who despite seeking only a limited range of new resources regularly failed to secure even these due to their lacking legitimation within the subsystem. With the prior resources of little use and new
resources lacking, the specialist startups failed to emerge as viable businesses. The institutional infrastructure of the startup subsystem thus shaped venture emergence by only supporting growth ventures.

**DISCUSSION**

Our aim with this study was to understand how the institutional infrastructure of entrepreneurial ecosystems shapes venture emergence. We found the Nokia accelerator ecosystem to encompass two semi-independent sub-systems of separate institutional infrastructure which shaped the venture emergence in the two subsystems toward heterogeneous venture archetypes and enabled only certain material venture forms to emerge as viable businesses. In this section, we explore the findings in more depth, first developing a model of venture emergence, then discussing the implications of the findings for entrepreneurial ecosystems, and, finally examining the role of institutional infrastructure in organizational fields.

**The Process of Venture Emergence in an Entrepreneurial Ecosystem**

Based on the study of the Nokia accelerator ventures, we propose a model that outlines, first, how the ecosystem ideational infrastructure shapes the transformation of entrepreneurs’ initial business ideas into a select form of entrepreneurial reasoning, second, how ecosystem relational infrastructure shapes the transformation of the entrepreneurs’ initial interaction patterns into a resource landscape, and finally, how the relational and ideational infrastructure shape the transformation of the entrepreneurial reasoning and resource landscape into a material form of a business (Figure 1).

**Entrepreneurial reasoning.** Our model proposes the ideational infrastructure to support the transformation of entrepreneurs’ initial business ideas into a form of entrepreneurial reasoning through the processes of, first, sorting the entrepreneurs based on their goals,
Figure 1. Ecosystem relational and ideational infrastructure in venture emergence.

second, narrowing the appropriate means of goal attainment and, as such, the entrepreneurs’
decision agendas, and finally, legitimating the ventures through their ecosystem
commitments. The ecosystem ideational infrastructure functions to ease action and
interaction within the ecosystem and to ensure ecosystem organizations’ shared focus of
common value creation. The ideational infrastructure reduces the ecosystem organizations
information load by encouraging adoption of shared ontology, meanings, and practice and by
fostering a shared identity. As such, the ideational infrastructure supports the transformation
of entrepreneurs’ initial business idea into a form of ‘thinking about the business idea’, a
form of entrepreneurial reasoning, that aligns with the information load reduction objective.
Entrepreneurial reasoning guides the ecosystem organizations thinking regarding the goals of
venture creation, the means for achieving the goals, the entrepreneurs’ decision agenda and
ecosystem commitments (Sarasvathy & Dew, 2005). The Nokia accelerator ecosystem
encompassed two interdependent but separate subsystems with heterogeneous ideational
infrastructures and entrepreneurial reasoning. The startup subsystem relied on causal
reasoning that encouraged the entrepreneurs to design their ventures with a future goal, such as disruptive innovation or venture exit, in mind. The goals determined the actions and resources required of the entrepreneurs. In the case of the startup ventures the future goals commonly relied on the acquisition of new resources and, as such, the entrepreneurs’ decision agenda focused on decisions regarding how to secure the new resources. Their ecosystem commitments thus commonly focused on resource transactions. The enterprise subsystem relied instead on effectual reasoning that focused the entrepreneurs on what they were able to deliver forthwith with the resources that they already held. The enterprise entrepreneurs’ decision agendas and ecosystem commitments thus concentrated on questions regarding the effects that were possible within the ecosystem with the means at hand, while their actions centered on repurposing and recombining existing resources.

**Resource Landscape.** Our model proposes the relational infrastructure to support the transformation of entrepreneurs’ initial interaction patterns into a resource landscape through the processes of, clustering the entrepreneurs, and second, amplifying their interactional patterns. The ecosystem relational infrastructure functions to govern the inter-organizational patterns of coalition and domination. The relational infrastructure thus determines the organizations’ position within the ecosystem and the channels of interaction available to them. In the Nokia accelerator ecosystem, the two interdependent but separate subsystems exhibited separate relational infrastructure with the startup subsystem clustering around the regional entrepreneurship accelerator and the enterprise subsystem around small and medium enterprise interest organizations, such as the Chamber of Commerce. The Nokia entrepreneurs’ initial interactions within the ecosystem positioned them within one or the other of the subsystem clusters thus concentrating their regular interactions channels to those within the subsystem. With the relational infrastructure of the subsystems amplifying the entrepreneurs’ initial interaction patterns, some of the ventures obtained central positions at
their subsystems and thus benefited from a range of subsystem interaction channels while others ended up marginalized relying on only a few connections.

**The material form of a business.** Our model proposes the institutional infrastructure to shape the transformation of entrepreneurs’ reasoning and resource landscape into a material form of the business through inhibition of the forms of business considered inappropriate. The ecosystem relational and ideational infrastructure together function to define the ecosystem and to maintain the social order within it. They provide the means for coordinating the ecosystem organizations’, their complementarities, interactions, shared meaning systems and identities in order to steer towards the collective value creation. In the case of the Nokia ventures ecosystem, the ecosystem encompassed two separate subsystems that despite both focusing on collective value creation by supporting new venture creation, adopted separate means for the attainment of the goal. The separate relational and ideational infrastructures of the two subsystems shaped the emergence of the Nokia ventures towards the archetypes of startups and small enterprises. While both growth and specialist ventures persisted in the enterprise subsystem, only growth ones did in the startup subsystem. In the startup subsystem, specialist ventures relied on new resources yet found their resource access inhibited. As a result of these ventures form failed to emergence as viable businesses within the startup subsystem.

**Implications for Entrepreneurial Ecosystems**

Based on the study of the Nokia accelerator ventures, we propose that rather than entrepreneurial ecosystems forming unitary entities of homogeneous means and ends, they may, in some cases, split into subsystems with significant consequences for both the emergent ventures and the economies within which the ecosystems operate. Ecosystems are recognized to form around singular goals (Adner, 2017), yet may divide based on heterogeneous means. In this study, the Nokia ventures ecosystem encompassed two subfields. The governance of the subfields was found to rely on different relational and
ideational infrastructures that supported different entrepreneurial reasonings and resource landscapes. One of the subsystems prioritized the use of entrepreneurs’ prior resources while another preferred the entrepreneurs to acquire new resources. Entrepreneurs are broadly recognized to be bricoleurs of resources (Baker & Nelson, 2003) and, as such, to rely on resources that have been previously accumulated. The findings of this study suggest that resources may not carry equal use-value in all social contexts. Entrepreneurship policy may thus benefit from the design of the entrepreneurship ecosystems recognizing the need to enable the utilization of prior resources as well as supporting the acquisition of new ones.

**Implications for the Theory of Institutional Fields**

Our findings regarding the entrepreneurial ecosystem of the Nokia accelerator venture contributes to the theory of institutional field in three ways: first, we offer new insight into the nature of mature and nascent organizational fields, second, we clarify the concept of institutional infrastructure of fields by delineating the relational and ideational elements of the concept, finally we demonstrate that the study of institutional fields through the lens of institutional infrastructure can help to overcome the common challenge in field definition and can ensure closer adherence to theory in the empirical application of the concept.

In contrast to the common assertion that mature fields of highly elaborated, coherent institutional infrastructure impose stronger isomorphic pressures on the actors of the field than young, fragmented fields of low coherence and elaboration do (Hinings et al., 2017; Zietsma et al., 2017), we found this not to be the case in the Nokia accelerator ecosystem. Our findings rather showed the mature subfield of small enterprises to offer broader scope for emergence than the younger subfield of startups did, as in the enterprise field, both the growth and specialist ventures emerged as viable ventures while in the startup fields only growth ones persisted. The infrastructure of the enterprise subsystem reflected high elaboration with a number of different infrastructure elements, from the Chamber of Commerce and the Federation of Enterprises to trade shows and industry sector
representatives. Despite the broad range of the institutional elements of the subsystem, the infrastructure exhibited a high level of coherence, with each of the infrastructure actors providing access to some of the resources of the field. The broad range of infrastructure actors providing resources to the emergent small enterprises contrasted clearly with the concentrated infrastructure of the startup subsystem around the regional accelerator. The regional accelerator not only provided many resources directly but also acted as a gate-keeper to many of the other infrastructure actors, for example, investors or mentors. Despite the relative newness of many of the infrastructure actors of the startup subsystem, this community offered notably less scope for complexity and different emergent forms. The findings thus suggest that mature fields of highly elaborated infrastructure and distributed resources may offer more scope for the emergence of different forms.

CONCLUSIONS

Our study explored the role of ecosystem institutional infrastructure in shaping new venture emergence. The findings contribute to the literature of entrepreneurship by proposing a model that outlines how both the relational and ideational infrastructure of ecosystems shape venture emergence. The findings offer insight for entrepreneurship policy and practice by showing how entrepreneurial ecosystems may encompass subsystems of heterogeneous entrepreneurial reasoning with significant consequences for new venture emergence. Finally, the findings contribute to the theory of institutional fields by elaborating the concept of institutional infrastructure and by demonstrating the beneficial usage of the infrastructure lens in studies of organizational fields.

REFERENCES


