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## **Clusters In-The-Making: A Narrative Perspective on Geographic Cluster Formation**

**Thomas Bejarano**  
University of Massachusetts, Boston  
Management  
thomasbejarano@gmail.com

**Stephan Manning**  
University of Massachusetts, Boston  
Management and Marketing  
stephan.manning@umb.edu

### **Abstract**

Cluster development and dynamics have often been discussed using life-cycle and evolutionary models. The focus of prior research has thereby been on the growth and mature cluster stage and the mechanisms supporting sustained cluster development. By comparison, however, drivers of initial cluster growth are much less understood. Borrowing from innovation and entrepreneurship research this conceptual paper discusses the use of narratives as a mechanism to explain the complex dynamics involved in early cluster formation. The paper elaborates how narrative processes inform cluster path creation and how, in this process, narratives become important catalysts of self-reinforcing cluster effects. We argue that entrepreneurial narratives provide insight into the initial events taking place before the development of knowledge spillover effects, conducive resource conditions and legitimacy. We conclude this paper with a discussion on the implications for future cluster research and policy.

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Cluster development and dynamics have often been discussed using life-cycle and evolutionary models. The focus of prior research has thereby been on the growth and mature cluster stage and the mechanisms supporting sustained cluster development. By comparison, however, drivers of initial cluster growth are much less understood. Borrowing from innovation and entrepreneurship research this conceptual paper discusses the use of narratives as a mechanism to explain the complex dynamics involved in early cluster formation. The paper elaborates how narrative processes inform cluster path creation and how, in this process, narratives become important catalysts of self-reinforcing cluster effects. We argue that entrepreneurial narratives provide insight into the initial events taking place before the development of knowledge spillover effects, conducive resource conditions and legitimacy. We conclude this paper with a discussion on the implications for future cluster research and policy.

**Keywords:** Clusters; narratives; path creation

## INTRODUCTION

Understanding the geographic distribution and organization of entrepreneurship and innovation has long been a topic of academic and policy driven discussion. Interest into the phenomenon of clustering, commonly defined as the co-location of interconnected firms, institutions and communities within particular (related) industries (Porter, 2000), has seen a resurgence over the past few decades from multiple disciplines. Examples of clusters include high-tech clusters, such as Silicon Valley (Saxenian, 1994) and Boston Biotech (Owen-Smith & Powell, 2004), but also low-cost manufacturing clusters (Altenburg & Meyer-Stamer, 1999) and knowledge services clusters in developing countries, e.g. Bangalore (Manning, 2013).

Clusters are seen as critical generators of skill development and employment (Bresnahan, Gambardella, & Saxenian, 2001), accelerators of innovation and creativity (Pouder & John, 1996; Saxenian, 1994), magnets of foreign direct investment (Zaheer, Lamin, & Subramani, 2009) and levers of economic development in both advanced and developing countries (Lorenzen & Mudambi, 2012). Resulting, scholars have been very interested in understanding cluster growth and sustaining dynamics (see e.g. Pouder & John, 1996). However, our understanding of how such dynamics come into being in the first place, when clusters are not yet established, remains rather limited.

Cluster development and dynamics have often been discussed using stage or life-cycle models (Belussi & Sedita, 2009; Pouder & John, 1996). The focus of prior research has thereby been on the growth and mature cluster stage, and the mechanisms supporting sustained cluster development (see e.g. Iammarino & McCann, 2006; Martin & Sunley, 2011; Pouder & John, 1996). One central mechanism are so-called self-reinforcing (or ‘positive feedback’) effects, which denote a combination of externalities and learning mechanisms that reduce operating costs

and increase returns on investment for participating organizations (Arthur, 1989; Martin & Sunley, 2006). Examples of those effects include competition-driven acceleration of skill development, innovation and further competition (Porter, 2000); knowledge spillover effects, boundary-less careers and community-building which accelerate learning and entrepreneurial opportunity creation (Almeida & Kogut, 1999; Grabher, 2004; Song, Almeida, & Wu, 2003); alliances between local firms and institutions supporting collaborative innovation and growth (Grabher, 1993; Uzzi, 1997), and agglomeration effects explaining continued local firm investment in the same or related industries (Pouder & John, 1996). Importantly, these self-reinforcing mechanisms may also lead to wage inflation and other diseconomies of agglomeration (Pouder & John, 1996), as well as path dependencies and lock-ins that may hinder cluster adaptation and transformation in response to changing economic and political environments (Grabher, 1993; Martin & Sunley, 2006).

By comparison, however, drivers of initial cluster growth are much less understood (see e.g. Bresnahan et al., 2001). In fact, some scholars would even attribute part of why clusters initially come into being to ‘chance’ (Porter, 2000) or ‘luck’ (Pouder & John, 1996). Notably, a number of factors are often listed that may explain part of initial cluster development, such as availability of labor, favorable infrastructure and policies, connection to markets, and location decisions of foreign firms and returning entrepreneurs (Bresnahan et al., 2001; Saxenian, 1994), but these explanations tend to be rather eclectic. Also, they suffer from causal ambiguity. For example: firm investment is often explained by talent availability, while at the same time, talent availability seems to be stimulated by firm investment (see e.g. Bresnahan et al., 2001). In other words, rather than conceptualizing early formation, the notion of self-reinforcement is brought back in to explain early growth. Yet, we remain to understand what sparks and drives those

reinforcements in the first place. Part of the problem is the lack of theory explaining how the self-reinforcement processes associated with clustering initiate such as the early formation of linkages between early linkages between firms, institutions, and labor markets (Bresnahan et al., 2001), the emergence of early policy and governance efforts (Sydow, Lerch, & Staber, 2010), and early efforts towards stakeholder enrollment become important for subsequent cluster development. Relatedly, how does agency matter in early formation processes? Whereas later on, structural self-reinforcement and path dependencies clearly become relevant, they seem less critical when clusters are still in-the-making, when their future is ill-defined.

This paper develops a theoretical perspective that may enhance our understanding of the complex dynamics involved in early cluster formation. Concretely, in opposition to life-cycle and evolutionary models which are ill-suited to explain early growth, we take a narrative perspective that brings agency back in and that captures the social complexity and ongoing work involved in linking present developments to past events and future prospects (Garud & Giuliani, 2013). Narrative perspectives have recently attracted interest in innovation and entrepreneurship research (Garud, Gehman, & Giuliani, 2014; Navis & Glynn, 2011), as well as in the context of technological and sustainability transitions (Garud & Gehman, 2012). Also, a narrative perspective forgoes the notion of predefined boundaries or predetermined legitimized contexts (see Garud et al., 2014). It thus complements established notions of self-reinforcement and path dependency in explaining cluster dynamics. In particular, scholars have suggested that the employment of narratives may stimulate ‘path creation’, which denotes mindful deviations from established norms (Garud & Karnøe, 2001) and provisional stabilizations of relations and practices (Schüssler, Rüling, & Wittneben, 2013) that balances the need for explorative and exploitative learning (Manning & Sydow, 2011). Narrative path creation thus focuses on the

reciprocal dynamics of structure and agency, as well as relational and temporal aspects in systemic processes. Based on this new theoretical strand, this paper elaborates how narrative processes inform cluster path creation and how, in this process, particular events, policies and linkages become important in stimulating self-reinforcing cluster effects.

This paper makes important contributions to both scholarship and policy-making. First, this paper attempts to provide a more dynamic notion of cluster emergence which acknowledges narratives as a mechanism to address the complex non-linear dynamics of cluster evolution. It thereby takes a more agentic and micro-level perspective on cluster development. Second, we explore conceptually the spatial dimension of path creation, which has not received much attention. Third, the paper has important implications for cluster policies. While emphasizing the importance of various cluster stimulating policies, e.g. resource and infrastructure investments, a narrative perspective further prompts us to think of how communication can build and strengthen connections between potential cluster elements as they unfold over time.

In the following sections, we begin with a review of the cluster concept and discuss the current perspectives and limitations on cluster evolution. Next we introduce and discuss the concept of path creation and narratives as they have been discussed in entrepreneurship, innovation and process studies. Following this we explore the explanatory potential of path creation and narratives as a mechanism to address the cluster appearance. We conclude with a discussion on the implications for future cluster research and policy.

## **CLUSTERS AND CLUSTER DYNAMICS: A BRIEF OVERVIEW**

There has long been an interest in the spatial distribution of entrepreneurship and innovation (see e.g. Breschi & Malerba, 2001). The uneven and seemingly non-random spatial distribution of specialized economic activity underpinning innovation processes was first discussed by Alfred Marshall in his analysis of Great Britain's textile-producing regions. These "industrial districts" as Marshall noted consisted of "large numbers of small businesses of a similar kind in the same locality" (Marshall, 1920, p. 277). Marshall reasoned that this concentration of "specialized activities" creating external economies of scale were the result of local availability of inputs, the presence of a skilled labor force, and knowledge spillovers (Marshall, 1920).

The past few decades have seen a resurgence in both academic and policy driven interest in understanding and harnessing these external economies of scale obtained through co-location of firms. Small and medium size businesses are believed to be a powerful engine for economic development through job creation and innovation (Lalkaka & Shaffer, 1999). However, an increasingly extensive and diverse literature has integrated additional drivers of clustering including the acknowledgement of networks, local characteristics, institutions, and knowledge transfer (Markusen, 1996; Porter, 1990, 1998; Saxenian, 1994).

Development policies, informed through academic insights drawing mostly upon established clusters, have been implemented towards harnessing the beneficial traits believed to accompany economic clustering. However, resource infusions into the identified self-reinforcing elements of existing clusters solicits questions of whether or not those elements actually spark cluster development or are simply the result of cluster emergence. Also, research remains unclear as to the complex dynamics taking place between these elements within established clusters let alone their use as a catalyst for cluster creation. In the following, we briefly discuss theories of

cluster development. Based on that, we discuss key initial conditions for cluster growth and limitations that arise in our understanding when applied to explanations of cluster creation.

Cluster development has typically been explained by two main streams of research. First, biological life-cycle approaches emphasize the change dynamics underpinning the emergence, growth, maturity, decline and renewal (for example see Audretsch & Feldman, 1996). Second, evolutionary perspectives emphasize complex dynamics, positive feedback loops and the notion of path dependence and lock-in (Belussi & Sedita, 2009; Dobusch & Schübler, 2012; Martin, 2010; Martin & Sunley, 2006, 2011).

To begin with, life-cycle research has gained dominance as the preferred approach within cluster research (Martin & Sunley, 2011, p. 5). The life cycle model, as discussed from a biological standpoint, assumes that though external environmental events may influence an entity “the developing entity has within it an underlying form, logic, program or code that regulates the process of change and moves the entity from a given point of departure towards a subsequent end that is already preconfigured in the present state” (Garud & Van de Ven, 2006, p. 208). As Martin and Sunley (2011) note in their review, there are various interpretations of the cluster life-cycle model. One approach attributes the progression of a cluster life-cycle as the result of external industry forces. A second approach attributes the progression of a cluster to internal “autonomous processes” including agglomeration effects (Martin & Sunley, 2011, p. 7). Several limitations have been discussed concerning the life cycle model when applied to clustering and cluster development.

First, as Martin and Sunley note, the applicability of transferring the metaphor of biological organisms to products, technologies, firms, industries and clusters is questionable (2011). Secondly, agency within this view is reduced to an internal automated processes (Garud

& Van de Ven, 2006). Third, the quasi-deterministic idea of cluster growth and eventual decline contradicts the reality that many clusters come into existence and sustain through rather continuous transformation and adaptation. The explanatory power of life-cycle theory is therefore limited in terms of understanding drivers of initial cluster emergence. Additionally, there is little room for tackling the dynamic interplay between actors, institutions, and economic environments.

Moving away from the limitations of life cycle approaches, a growing debate has emerged around evolutionary and co-evolutionary perspectives on cluster emergence (see e.g. (Belussi & Sedita, 2009; Dobusch & Schübler, 2012; Martin, 2010; Martin & Sunley, 2006, 2011). More than life cycle approaches; evolutionary perspectives focus on complex, non-linear dynamic processes involved in cluster emergence, maintenance and change.

Of particular interest in our context is the idea that clusters come into being and sustain around the emergence and stabilization of paths. Paths have been conceptualized as self-reinforcing processes that generate increasing returns (Arthur, 1989), but also lead to lock-ins (or ‘path dependencies’), in terms of quasi-irreversible states of inflexibility (David, 1985). The notion of paths has mainly been employed in research on innovation and technological change (Dobusch & Schübler, 2012; Garud & Van de Ven, 2006; Sydow, Schreyögg, & Koch, 2009; Vergne & Durand, 2010). Recently, this idea has also been applied to understanding the dynamics of clusters (Belussi & Sedita, 2009; Dobusch & Schübler, 2012; Martin, 2010; Martin & Sunley, 2006, 2011).

Central to the idea of paths and path dependencies are self-reinforcing processes or so-called feedback loops (Maruyama, 1963; Masuch, 1985; Senge, 2006; Stacey, 2001). Self-reinforcing (positive feedback) mechanisms have the potential to “lock “actors into evolutionary

paths guided by chance events. Accordingly, path dependencies are also defined as “a process triggered by contingent events, then moved along through positive feedback mechanisms until it results in rigidity or lock-in” (Dobusch & Schüßler, 2012). Once locked in, only “outside shocks” can break actors free (Vergne & Durand, 2010). Accordingly, in the context of cluster development, the notion of path has been employed mainly to capture lock-in situations in clusters (Grabher, 1993; Martin & Sunley, 2006, 2011). Grabher (1993) for example illustrated how the interlocking of strong ties between industry, labor markets and institutions, as well as supporting norms, in the formerly steel industry-focused Ruhr area in Germany constrained cluster renewal as the industry began to decline.

While adding value to life-cycle models, the application of the path concept in cluster context has been rather limited. In particular, three limitations stand out. First, the path concept has been employed metaphorically rather than analytically. While the idea that clusters may become path dependent is compelling, we still lack a more elaborate understanding of the very self-reinforcing processes that lead to path emergence in the first place. In this regard, the tension between ‘positive path effects’ (e.g. agglomeration effects) and ‘negative effects’ (e.g. rigidities) is still not well understood (see e.g. Poudier & John, 1996). Second, and related to this, prior research, with a few exceptions (e.g. Schüssler et al., 2013; Sydow et al., 2009), has not attempted to utilize the richness of the path concept to comprehend processes of cluster emergence and change. In this regard, it remains unclear, for example, how path dependent processes may co-emerge with processes of learning and innovation (Martin & Sunley, 2006, p. 396; 2011). In a way, evolutionary and life-cycle models thus share the inability of explaining cluster transformation and adaptation within changing economic and institutional environments. Arguably, however, the rate of “change” has been increasing - new technologies, markets,

climates, etc. leading to “dynamic and complex internal and external environments” (Schreyögg & Sydow, 2010, p. 1251). It is therefore ever more important – for both scholars and practitioners – to come to grips with how regions respond to such changes. Third, similar to life cycle models, evolutionary approaches have not succeeded in accounting for the role of agency in cluster emergence and maintenance. To some extent, the role of agency seemed ‘less important’ in times when material constraints, such as resource dependencies and sunk costs of physical infrastructures, would largely determine the fate of industrial districts. Nowadays, however, growth industries are much more service-driven and ‘intangible’ in terms of value creation and ‘innovation’. Examples include geographic clusters in the media economy as well as in renewable energies. Whether or not, a cluster ‘exists’ or is ‘growing’ is much more a matter of interpretation. Agency, in terms of deliberate interventions throughout cluster development, can be expected to be much more important.

Next, we introduce a promising new perspective from innovation and entrepreneurship research that may be used to enhance research on cluster dynamics. We refer to this research in terms of the ‘narrative perspective’ on ‘path creation’ (Garud & Karnøe, 2001; Garud, Kumaraswamy, & Karnøe, 2010; Garud & Van de Ven, 2006). This perspective allows a better understanding of the micro-dynamics of path emergence, inherent tensions between path stability and change, and the role of agency in this process. In the next section, we will detail the path creation approach and its relationship with narratives. After that, we seek to apply this perspective to cluster emergence.

## **PATH CREATION AND NARRATIVES**

In order to explore a more complex understanding of cluster development we will borrow the concept of path creation from research on entrepreneurial innovation and innovation processes informing the phenomenon of opportunity emergence (Schumpeter, 1939). Path creation has been defined as agentic events that set in motion “processes that actively shape emerging social practices and artifacts”(Garud & Karnøe, 2001, p. 3). The notion of path creation embraces the interplay of both endogenous and exogenous forces. Through this lens actors do not simply move along with their environment but also create their environment (Garud & Karnøe, 2001). Within this perspective narratives become a central mechanism used to explore the complex dynamics illustrated through the path creation concept (Garud & Karnøe, 2001; Garud et al., 2010).

A narrative perspective draws attention to the relational, temporal and performative efforts of entrepreneurs as they attempt to contextualize and give meaning to innovation efforts (Garud et al., 2010). The relational dimension emphasizes networks between actors that give rise to interactions through narrative among social and material components (Callon, 1986). Entrepreneurial narratives give rise to identity construction (Czarniawska, 1997), social action organization (Garud & Gehman, 2012), and active deliberation, interpretation and creative searches for meaningful activities (prospective and retrospective sense-making) (Brown, Rappert, & Webster, 2000; Weick, 1995). A narrative perspective forgoes the notion of predefined boundaries or predetermined legitimized contexts (Garud et al., 2014). Viewed from such a relational ontology, agency and structure intertwine (Giddens, 1984) as they enable and constrain action (Garud & Giuliani, 2013; Garud et al., 2010).

The temporal facet entails an event based notion of time where activity builds through the temporal unfolding of present exchanges as they layer between past understandings of things and

imagined futures (Ricoeur, 2010). As Hernes & Maitlis (2010) state “every event reconfigures an already established pattern, thus altering its character” (p. 3). Stated another way “Any activity occurs and unfolds within an overall landscape that represents the residue of prior actions” (Garud & Van de Ven, 2006, p. 220). This process ontology characterizes the universe not as a collection of substances but as a complex web of flowing change (Bergson, 1946; James, 1909/1996; Whitehead, 1978). In this sense, firms, institutions, clusters and industries though appearing stable, never truly solidify. In other words, we participate in actor networks with temporal properties.

Lastly, the performative facet refers to the enactments of entrepreneurs. In this sense narratives “serve as triggers for action towards goals that are forever changing” (Garud et al., 2014, p. 1181). As entrepreneurs attempt to actualize the meaning they have given to their entrepreneurial/innovation efforts, narratives serve as the springboard to launch envisioned expectation into reality through action (Callon, 2007; Garud et al., 2014). Innovation process studies focus attention on the motors that drive emergence, development, and implementation of ideas across networks and communities over time (Garud & Giuliani, 2013, p. 776). Innovation processes manifest through continual sequences of conflicting and convergent relational phases between practices and artifacts (Garud & Giuliani, 2013). Actors attempt to infuse meaning into their entrepreneurial efforts as they progress through and build upon relational exchanges waiting for appropriate moments to act and realize options (Garud & Van de Ven, 2006).

In sum, the concept of path creation emanating through narrative contrasts in important ways from traditional life-cycle and evolutionary perspectives with respect to its handling of temporal, relational and performative elements. Within this perspective the social and material are viewed as a network. This network becomes an arena of unfolding interaction and exchange

(Callon, 1986). It is from within this temporal flow of exchanges that narratives emerge. Within this perspective understanding the temporal progression of unfolding events becomes a key element in understanding of phenomenon. It is within the process where the secrets reside. Though process studies vary in their ontological and epistemological roots, understanding the how and why of the emergence, development, growth and/or termination of things, through time, is fundamental to this line of research (Langley, Smallman, Tsoukas, & Van de Ven, 2013). Narratives become a useful mechanism to help us explore and understand these temporal, relational and performative elements.

### **RE-FRAMING CLUSTER EMERGENCE: KEY BUILDING BLOCKS**

In order to apply the notion of path creation along with a narrative perspective on cluster emergence in meaningful ways, we seek to reconsider prior research on cluster emergence in terms of key conceptual building blocks. While these building blocks are often discussed in isolation, we seek to utilize the notion of path creation to integrate them into a theoretical framework for analyzing cluster emergence. The three building blocks we focus on in the following include: early resource conditions; economic and social linkages; and institutional arrangements conducive to entrepreneurial and innovative processes.

First, according to numerous prior studies, one central precursor to cluster emergence are early resource conditions of specific locations. These location specific factors include: natural resources, such as certain minerals or supportive weather conditions (Storper, 2010); the abundance of qualified labor (Porter, 2000); venture capital firms (Grove, 1987); successful firms (Saxenian); research universities (Leslie & Kargon, 1997; Roberts, 1991); etc.(Markusen,

Hall, & Glasmeier, 1986). For example studies focusing on Silicon Valley and Route 128 in Massachusetts often highlight the role that talent pools and research universities played during cluster formation phases (Roberts, 1991). Similarly, ‘good weather’ (along with cheap land) is often cited as an important initial condition for the film production cluster of Hollywood (see e.g. Storper & Christopherson, 1987; Storper & Scott, 2009). However, it is evident that not every location with cheap land, abundant personnel or a research university is home to a cluster (Maryann P Feldman, 1994; Feller, 1990). Luck is often cited to play a role within discussion of early resource condition of local areas (Rauch, 1993), if based on location factors, if all things are equal, why do similar characteristics in multiple locations not evolve clusters within each of those locations? (Pouder & John, 1996; Scott, 1988).

Second, economic and social linkages remain a central element in explaining whether or not regions show properties of a cluster. This is also reflected in many cluster definitions, such as the popular one by Porter, who defined clusters as “Geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate” (Porter, 2000, p. 15). Though the importance of special proximity is important in this view the idea of linkages are of a higher order (see also Giuliani, 2005). The boundaries of the cluster are defined in terms of linkages – more specifically the distance between efficiency (e.g. informational, transactional, etc.) enabling linkages (Porter, 2000). Porter argued that the stronger the linkages with buyers, suppliers and the institutions the more they contribute to efficiency gains and innovation (Porter, 1998, p. 209).

Relatedly, clustering is often considered a ‘collective’ effort of achieving efficiency gains (Schmitz, 1995, 1999) and of overcoming growth constraints (Humphrey & Schmitz, 1996;

Schmitz, 1989). Schmitz (1999, p. 141) in particular discussed under the concept of “collective efficiency” the idea that local external economies and joint action may lead to competitive advantage, whereby both horizontal and vertical ties between local producers and institutions play a key role (see also Schmitz, 1995). Another aspect includes social linkages, in particular professional and creative community ties within clusters that drive idea formation, creativity and innovation (e.g. Grabher, 2004). Thus, supporting and enabling social capital and a local entrepreneurial culture have important implications for cluster development (see Asheim, 2000; Saxenian, 1994).

Beyond providing support, such linkages also enable knowledge flows, in particular through so-called ‘knowledge spillover’. The relationship between clustering and knowledge spillover is described by Marshall when he writes “the mysteries of the trade become no mysteries; but are as it were in the air” (Marshall, 1920, p. 225). Knowledge spillover is said to occur when firm knowledge escapes into the economic system (Arrow, 1962). Spillovers occur through collaboration and career movements (see e.g. Song et al., 2003). They tend to be highly localized (Jaffe, 1989). They are particularly important for spreading tacit knowledge, which is difficult to transmit outside of face to face interactions and thus is said to be “sticky” (Von Hippel, 1994) or “localized” (Nelson & Winter, 2009). It is this sticky nature of tacit knowledge that contributes to the benefits of knowledge spillover from spatial proximity. The reduction of space between actors apparent within clusters has been discussed as an effective environment for fostering knowledge spillover and innovation (Audretsch & Feldman, 1996; Baptista, 2000). As Giuliani notes in his review “learning and incremental innovation are considered highly interwoven activities” by many scholars (2005, p. 274).

Beyond these intra-cluster linkages contributing to knowledge gains endogenous to the cluster authors have begun to explore linkages from within the cluster extending beyond the cluster, or vice versa, and the interplay between endogenous and exogenous linkages/integration (for example see Amin & Thrift, 1992; Giuliani, 2005). In these accounts clusters are seen as “node” of a much larger network (Amin & Thrift, 1992), or within global value chains and production networks (see e.g. Altenburg & Meyer-Stamer, 1999; Humphrey & Schmitz, 2002). These external linkages are seen as important for clusters to not become path dependent (Martin & Sunley, 2006). Knowledge spillover is discussed in terms of its effects on established clusters – why to cluster and the benefits of clustering. However, what we know less about is how these linkages come into being. The linkages themselves enable the self-reinforcement mechanisms of knowledge flow and spillover however, a limitation of current explanations is that they do not sufficiently describe or acknowledge the agency underpinning the founding of these linkages and the agency.

Third, clusters are more likely to emerge based on supporting institutional contexts. Meyer and Rowan (1977) and Zucker (1977) introduced to this discussion the role of “culture and cognition” (Thornton & Ocasio, 2008, p. 100) and the idea that ‘institutional context’ plays a role in shaping the behavior and structure of organizations as they interact with their environment (Meyer & Rowan, 1977). Meyer and Rowan described that the institutional context was made up by the “rules, norms, and ideologies of the wider society” (1983, p. 84). More simply they are the “widespread social understandings that define what it means to be rational” and are “accepted as prescriptions of appropriate conduct”(Greenwood, Oliver, Suddaby, & Sahlin-Andersson, 2008, p. 3). In their quest for legitimacy, through the rationalizing of social

understandings, organizations conform to their environments and as a result tend to become isomorphic (Thornton & Ocasio, 2008).

Enhancing legitimacy and reducing liability of newness through clustering incentivizes new firms to co-locate (Aldrich & Fiol, 1994; Singh, Tucker, & House, 1986) and establish relationship which again has the tendency towards self-reinforcement. This along with the resulting agglomeration of affects from growing numbers of clustered firms maintains the cluster growth (Scott, 1988) and resulting path.

However, our understanding of how not only institutions emerge, but how they can become important for cluster development is still limited. On the one hand, “How can actors envision and enact changes in institutions if their actions, intentions and rationality are all conditioned by the very institutions they wish to change?” (Holm, 1995, p. 398). More importantly for us, how can certain norms, practices, institutional arrangements etc. be enacted to support geographic cluster development?

Next, we apply a narrative perspective to shed light on how early resource conditions, internal and external linkages, and institutional contexts can individually and jointly become important on cluster formation in general, and early cluster emergence in particular.

## **A NARRATIVE PERSPECTIVE ON GEOGRAPHIC CLUSTER FORMATION**

Cluster dynamics and development have predominantly been discussed using life-cycle and path dependent models (see e.g. Belussi & Sedita, 2009; Dobusch & Schüßler, 2012; Martin, 2010; Martin & Sunley, 2006, 2011). Within these frameworks self-reinforcement mechanisms such as knowledge spillover and agglomeration affects are often attributed to cluster development. Much

less understood however, are initial drivers of cluster growth (see e.g. Bresnahan et al., 2001). Often it is the components of those self-reinforcement mechanisms identified within established clusters that are used to help explain cluster emergence. Superimposing attributes of established clusters in explanation of cluster emergence has led to a rather eclectic and causally ambiguous set of ingredients – leading some stakeholder to attribute cluster birth partially due to ‘chance’ (Porter, 2000) or ‘luck’ (Pouder & John, 1996). Part of the problem is the lack of theory explaining how the self-reinforcement processes associated with clustering initiate, such as the early formation of linkages between early linkages between firms, institutions, and labor markets (Bresnahan et al., 2001), the emergence of early policy and governance efforts (Sydow et al., 2010), and early efforts towards stakeholder enrollment enabling favorable resource conditions.

This paper compliments established notions of self-reinforcement in explaining the complex non-linear dynamics of cluster growth. However, as opposed to life-cycle and evolutionary frameworks which struggle to capture early stage growth processes this paper explores a narrative perspective which bring agency and social complexity to the forefront of the cluster emergence processes.

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Narrative path creation focuses on the reciprocal dynamics of structure and agency, as well as relational and temporal aspects in systemic processes. The main departure between a path dependent approach and path creation through narratives centers on their treatment of agency. Ontologically these concept differ (Garud et al., 2010). Where path dependence relies on

accidental events to explain emergent paths, path creation relies on distributed agency brought about through relational processes (Garud et al., 2010, p. 762). See table 1.

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We argue a path creation perspective built upon entrepreneurial narratives can help us explore those events giving rise to the potential manifestation of a cluster. How do the self-reinforcing mechanisms begin – what leads to spillover, conducive resource conditions, branding? Within this view there is a promotional aspect giving rise to these events. There are stories taking place at the ground level planting seeds and storytellers investing in their crop possibly leading to a lush forest. We argue that we must look at the entrepreneurial narratives taking place before the emergence of a novel potentially self-reinforcing process. Introducing narratives and the concept of path creation into discussion surrounding early stage cluster development processes moves us away from attributing existing self-reinforcing mechanisms as the process of their own creation.

Within the narrative approach attention is given to relational, temporal and performative efforts of entrepreneurs as they attempt to contextual and give meaning to innovation efforts (Garud et al., 2010). The relational temporal and performative facets of entrepreneurial narratives underpin all three of the discussed self-reinforcement processes associated with clustering (Resource conditions, linkages and supportive institutional contexts). However, narratives provide insight into those possible initial events which may initiate those macro-self-reinforcement processes – the establishing of linkages and enrollment of stakeholder, initial efforts towards affecting existing resource conditions, and the initial efforts towards branding/legitimizing. See figure 1.

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## **Meaningful Linkages**

Economic and social linkages enabling knowledge spillover remain a central element in explaining whether or not regions show properties of a cluster. The explanatory scope of previous studies suggests that economic and social linkages exist more or less (as manifested by resource exchanges etc.) (see e.g. Giuliani, 2005). The linkages themselves enable the self-reinforcement mechanisms of knowledge flow and spillover however, current explanations do not sufficiently describe or acknowledge agency and the agentic groundwork involved in the founding of these linkages. They do not sufficiently describe or acknowledge how these linkages come into being.

A reinterpretation from a narrative perspective suggests that various inter-linkages (e.g. pre-established ones) are framed as important for new cluster emergence. Enrolled stakeholders, influence the nature of the projected expectation through their framing, creating the potential for new envisioned, or un-envisioned, paths. Let's take, for example, the Home Brew Computer Club which is often cited as having been an important element in the history of silicon valley (Maryann P. Feldman, 2001). Arguably, this institution had not been implemented strategically as a cluster causing self-reinforcing mechanism. The club began as simply a gathering of likeminded actors interested in exchanging the social and material artifacts surrounding their mutual hobby (Lash, 2015). It was perhaps the meaning given to these meetings by the attendees that initially held the process together. Attending was important enough for those that attended the Home Brew Computer Club meetings, to choose to attend.

This suggests that establishing meaningful links becomes an important precursor to self-reinforcing processes. Potentially reinforcing links becomes perhaps a necessary element for self-reinforcing processes to emerge. Thus, whereas self-reinforcing spillover effects become relevant later on in the cluster development process, we propose that narratives happening in multiple, more or less coordinated ways are a necessary preliminary element for sparking initial conditions for these self-reinforcement processes. It is through these multiple and more or less coordinated narratives that the projected expectation flows.

### **Triggering Legitimacy and Resource Conditions**

Our understanding of how not only institutions emerge, but how they can become important for cluster development is still limited. On the one hand, “How can actors envision and enact changes in institutions if their actions, intentions and rationality are all conditioned by the very institutions they wish to change?” (Holm, 1995). More importantly for us, how can certain norms, practices, institutional arrangements etc. be enacted to support geographic cluster development?

The explanatory scope of previous studies suggests that supporting institutional contexts either exists or does not, including more or less ‘governance’ and ‘leadership’. Enhancing legitimacy and reducing liability of newness through clustering incentivizes new firms to co-locate (Aldrich & Fiol, 1994; Singh et al., 1986) and establish relationships which again has the tendency towards self-reinforcement. To some extent, the role of agency seemed ‘less important’ in times when material constraints, such as resource dependencies and sunk costs of physical infrastructures, would largely determine the fate of industrial districts. Nowadays, however, growth industries are much more service-driven and ‘intangible’ in terms of value creation and ‘innovation’. Examples include geographic clusters in the media economy as well as in

renewable energies. Whether or not, a cluster ‘exists’ or is ‘growing’ is much more a matter of interpretation. Agency, in terms of deliberate interventions throughout cluster development, can be expected to be much more important. A reinterpretation from a narrative perspective suggests that norms and industry players are ‘talked’ into importance.

Correspondingly, according to numerous prior studies, one central precursor to cluster emergence are early resource conditions of specific locations. The explanatory scope of previous research suggests regions as being ‘lucky’ to have favorable resource conditions. Again, a reinterpretation from a narrative perspective suggest that resources are framed as important by leading industry and policy actors. Within the initial stages constituting path creation efforts actors/entrepreneurs exist within their present social and material conditions.

A path creation perspective suggests that actors attempt to infuse meaning into their entrepreneurial efforts as they progress through and build upon relational exchanges waiting for appropriate moments to act and realize options value (Garud & Van de Ven, 2006). Initial institutional and material geographic features may hinder the plausibility of the projected expectation. Through the framing of future expectations within a coherent and plausible narrative based on past and present social and material elements actors create the opportunities to enroll stakeholders.

For example, let us consider several of the initial events leading to the rise of the Silicon Valley cluster. Or rather, let us consider several initial events leading to the creation of Stanford University. Several author when discussing the beginning stages of Silicon Valley, credit Stanford University as a main driver for its existence (see e.g. Leslie & Kargon, 1997). However, Stanford University had not always existed. It was not formed from geological processes like the land surrounding it, simply waiting for the cluster to begin. The history of Stanford as presented

through their own website lays out a more emotional tale of its beginnings. It is stated that in 1884 Leland Stanford and his wife, Jane Stanford, lost their son, Leland Jr. to Typhoid fever. Not long after this tragic event the couple, in search of a way to memorialize their son set into motion what would become Stanford University. After six years of effort Stanford University, a tribute to the Stanford's lost son, opened its doors. This simplified account can be framed in multiple ways though arguably the Stanford's proclamation prior to braking ground that "the children of California shall be our children" provides some glimpse into the possible emotional and meaning making motivations propelling and guiding these events into existence (Communications, 2015).

The above example illustrates the possible shortcomings of having a static perspective on legitimacy and resource conditions. The idea that favorable resource conditions or agglomeration affects brought about through legitimacy of the location either exist or do not exist generalizes away their agentic precursors. A narrative perspective of path creation suggests that these processes catalyze as a result of being talked into existence. Arguably, within the initial stages constituting path creation effort it becomes important to properly frame expectations not only to those also able to create plausible narratives but also enrolling actors with the potential to impact both the legitimacy of the effort and also the economic/material elements involved.

In the same way that new technological paths result from a collection of stakeholders (Bijker, Hughes, & Trevor, 1984; Garud & Van de Ven, 1989; Karnøe, 1993; Latour, 1990), applied to the cluster the process of path creation (Garud & Karnøe, 2001) involves multiple actors as well. Cluster producing self-reinforcing spillover effects result from the economic and social linkages between firms, institutions, labor markets, regulators, and other interest groups (Garud & Karnøe, 2001; Garud & Van de Ven, 1989). These groups operating from often

differing frames of reference (Pinch & Bijker, 1984). In this sense, as Garud and Gehman (2012, p. 984) suggest, the market environment rather than being viewed as a “selection environment” becomes a “battlefield”, where the meaning, created through entrepreneurial narratives, ripple through the networked elements comprising the sociotechnical system potentially reconstituting both meaning and structure of the emerging system and subsequent framings (see Callon, 1998; Garud & Gehman, 2012; Stark, 2009).

The successful enrollment of stakeholders creates the opportunity to expand the size, reach and legitimacy of their envisioned expectation. Thus, establishing viable linkages potentially becomes a necessary requirement for the successful diffusion of their ideas and the realization of their envisioned goals. Importantly, this suggests that it is the ability of the entrepreneur to frame the projection with consideration for the existing social and material elements available within their specific network that becomes a precursor for any self-reinforcing processes. We propose then that Cluster generating self-reinforcing mechanisms are more likely to develop within spaces containing a flow of more or less coordinated and plausible narratives based on existing social and material conditions.

## **DISCUSSION AND IMPLICATIONS**

Current evolutionary approaches to understanding early stage cluster growth remain unable to account for where when and how a cluster comes into being. We remain unable to overcome a reliance on the concept of “luck” to help explain how or why a cluster came to be where it came to be. This paper develops a theoretical perspective that may enhance our understanding of the complex dynamics involved in early cluster formation. Concretely, in opposition to life-cycle

and evolutionary models which are ill-suited to explain early growth, we take a narrative perspective of path creation.

Current approaches shed little light on underlying micro-level change drivers associated with cluster emergence and development (Maskell & Malmberg, 2007). Only recently have evolutionary approaches begun to attempt to address the complex dynamic processes involved with cluster development (see e.g. Martin & Sunley, 2006, 2011; Maskell & Malmberg, 2007; Sydow et al., 2009). Yet, we remain to understand what sparks and drives those reinforcements in the first place. Arguably, the rate of ‘change’ has been increasing - new technologies, markets, climates, etc. leading to “dynamic and complex internal and external environments” (Schreyögg & Sydow, 2010, p. 1251). It is therefore ever more important – for both scholars and practitioners – to come to grips with how regions respond to such changes.

We argue a path creation perspective built upon entrepreneurial narratives can help us explore those events giving rise to the potential manifestation of a cluster. Within this view there is a promotional aspect giving rise to these events. There are stories taking place at the ground level and storytellers narrating meaning into existence. We argue that we must look at the entrepreneurial narratives taking place before the emergence of novel potentially self-reinforcing processes. Introducing narratives and the concept of path creation into discussion surrounding early stage cluster development processes moves us away from attributing existing self-reinforcing mechanisms as the process of their own creation.

Within the narrative approach attention is given to relational, temporal and performative efforts of entrepreneurs as they attempt to contextual and give meaning to innovation efforts (Garud et al., 2010). The relational temporal and performative facets of entrepreneurial narratives underpin all three of the discussed self-reinforcement processes associated with

clustering (Spillover, resource conditions, and the legitimacy/branding influencing agglomeration affects). Importantly, a narrative perspective of path creation applied to clustering provides insight into those initial events catalyzing these processes and potentially setting of systemic mutually reinforcing processes giving birth to a system which may evolve into a cluster.

A narrative perspective informing the initial phases of how clusters potentially come to exist does not discount previous discussions suggesting that the plausibility of emerging self-reinforcing mechanisms is impacted by existing resources and the institutional nature of the location. A narrative perspective however, suggests that some places may be more likely to produce clusters due to the relative ease of creating plausible narratives based on existing institutional and resource conditions.

It also suggests that some places may be more likely to produce clusters due to the process with which those narratives diffuse and the path they take. The temporal, relational and performative elements constituting the narratives employed by entrepreneurs as they seek and enroll stakeholders. The framing of future expectations within a coherent and plausible account based on past and existing social and material elements.

This paper makes important contributions to both scholarship and policy-making. As for the former, this paper attempts to provide a more dynamic notion of cluster emergence which acknowledges narratives as a mechanism to address the complex non-linear dynamics of cluster evolution. It complements established notions of self-reinforcement and path dependency in explaining cluster dynamics. Narrative path creation focuses on the reciprocal dynamics of structure and agency, as well as relational and temporal aspects in systemic processes. This paper

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elaborates how narrative processes inform cluster path creation and how framing narratives and strategic linkages become important in stimulating self-reinforcing cluster effects.

As for the latter, this paper suggests more agentic and micro-level catalysts for cluster development. Superimposing attributes of existing clusters within the landscape of non-clustered locations guarantees nothing regarding how actors within those spaces will respond. Thus the plausibility of the emergence of cluster generating self-reinforcing mechanisms is impacted by existing resources and the institutional nature of the location suggesting that some places are more likely to produce clusters due to the ease of creating a plausible/realistic narrative.

## REFERENCES

- Aldrich, H. E., & Fiol, C. M. (1994). Fools rush in? The institutional context of industry creation. *Academy of Management Review*, 19(4), 645-670.
- Almeida, P., & Kogut, B. (1999). Localization of knowledge and the mobility of engineers in regional networks. *Management science*, 45(7), 905-917.
- Altenburg, T., & Meyer-Stamer, J. (1999). How to promote clusters: policy experiences from Latin America. *World Development*, 27(9), 1693-1713.
- Amin, A., & Thrift, N. (1992). Neo-Marshallian Nodes in Global Networks\*. *International journal of urban and regional research*, 16(4), 571-587.
- Arrow, K. (1962). Economic welfare and the allocation of resources for invention The rate and direction of inventive activity: Economic and social factors (pp. 609-626): Nber.
- Arthur, W. B. (1989). Competing technologies, increasing returns, and lock-in by historical events. *The economic journal*, 116-131.
- Asheim, B. T. (2000). Industrial districts: the contributions of Marshall and beyond. *The Oxford handbook of economic geography*, 413-431.
- Audretsch, D. B., & Feldman, M. P. (1996). Innovative clusters and the industry life cycle. *Review of Industrial Organization*, 11(2), 253-273.
- Baptista, R. (2000). Do innovations diffuse faster within geographical clusters? *International Journal of industrial organization*, 18(3), 515-535.
- Belussi, F., & Sedita, S. R. (2009). Life cycle vs. multiple path dependency in industrial districts. *European Planning Studies*, 17(4), 505-528.
- Bergson, H. (1946). *Introduction to metaphysics*: Little, Brown.

Working Paper

- Bijker, W. E., Hughes, T. P., & Trevor, J. (1984). Pinch, eds. 1987. The social construction of technological systems: New directions in the sociology and history of technology: Cambridge, MA: MIT Press.
- Breschi, S., & Malerba, F. (2001). The geography of innovation and economic clustering: some introductory notes. *Industrial and Corporate Change*, 10(4), 817-833.
- Bresnahan, T., Gambardella, A., & Saxenian, A. (2001). Old economy inputs for new economy outcomes: cluster formation in the new Silicon Valleys. *Industrial and Corporate Change*, 10(4), 835-860.
- Brown, N., Rappert, B., & Webster, A. (2000). *Contested futures: A sociology of prospective techno-science*: Ashgate Aldershot.
- Callon, M. (1986). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen. *Power, Action and Belief: A New Sociology of Knowledge*. J. Law. London, Routledge & Kegan.
- Callon, M. (1998). *The laws of the markets*. Sociological review monograph.
- Callon, M. (2007). An essay on the growing contribution of economic markets to the proliferation of the social. *Theory, Culture & Society*, 24(7-8), 139-163.
- Communications, S. O. o. U. (2015). Stanford University History Part 1 of 5 - Birth of the University. Retrieved 13, 2015, from <http://www.stanford.edu/about/history/>
- Czarniawska, B. (1997). *Narrating the organization: Dramas of institutional identity*: University of Chicago Press.
- David, P. A. (1985). Clio and the Economics of QWERTY. *The American economic review*, 332-337.

- Dobusch, L., & Schüßler, E. (2012). Theorizing path dependence: a review of positive feedback mechanisms in technology markets, regional clusters, and organizations. *Industrial and Corporate Change*, dts029.
- Feldman, M. P. (1994). The university and economic development: the case of Johns Hopkins University and Baltimore. *Economic Development Quarterly*, 8(1), 67-76.
- Feldman, M. P. (2001). The Entrepreneurial Event Revisited: Firm Formation in a Regional Context. *Industrial & Corporate Change*, 10(4), 861-891.
- Feller, I. (1990). Universities as engines of R&D-based economic growth: They think they can. *Research Policy*, 19(4), 335-348.
- Garud, R., & Gehman, J. (2012). Metatheoretical perspectives on sustainability journeys: Evolutionary, relational and durational. *Research Policy*, 41(6), 980-995. doi: <http://dx.doi.org/10.1016/j.respol.2011.07.009>
- Garud, R., Gehman, J., & Giuliani, A. P. (2014). Contextualizing entrepreneurial innovation: A narrative perspective. *Research Policy*.
- Garud, R., & Giuliani, A. P. (2013). A narrative perspective on entrepreneurial opportunities. *Academy of Management Review*, 38(1), 157-160.
- Garud, R., & Karnøe, P. (2001). Path creation as a process of mindful deviation. *Path dependence and creation*, 138.
- Garud, R., Kumaraswamy, A., & Karnøe, P. (2010). Path dependence or path creation? *Journal of Management Studies*, 47(4), 760-774.
- Garud, R., & Van de Ven, A. H. (1989). Technological innovation and industry emergence: the case of cochlear implants. *Research on the Management of Innovation*, 489-532.

Working Paper

- Garud, R., & Van de Ven, A. H. (2006). Strategic change processes. *Handbook of strategy and management*, 206-231.
- Giddens, A. (1984). *The constitution of society*. Berkeley: CA: University of California Press.
- Giuliani, E. (2005). Cluster absorptive capacity why do some clusters forge ahead and others lag behind? *European Urban and Regional Studies*, 12(3), 269-288.
- Grabher, G. (1993). *The embedded firm*: London: Routledge.
- Grabher, G. (2004). Temporary architectures of learning: knowledge governance in project ecologies. *Organization Studies*, 25(9), 1491-1514.
- Greenwood, R., Oliver, C., Suddaby, R., & Sahlin-Andersson, K. (2008). *The SAGE handbook of organizational institutionalism*: SAGE Publications Limited.
- Grove, A. (1987). The future of Silicon Valley. *California Management Review*, 29(3), 154-160.
- Hernes, T., & Maitlis, S. (2010). *Process, sensemaking, and organizing*: Oxford University Press.
- Holm, P. (1995). The dynamics of institutionalization: Transformation processes in Norwegian fisheries. *Administrative Science Quarterly*, 398-422.
- Humphrey, J., & Schmitz, H. (1996). The triple C approach to local industrial policy. *World Development*, 24(12), 1859-1877.
- Humphrey, J., & Schmitz, H. (2002). How does insertion in global value chains affect upgrading in industrial clusters? *Regional Studies*, 36(9), 1017-1027.
- Iammarino, S., & McCann, P. (2006). The structure and evolution of industrial clusters: Transactions, technology and knowledge spillovers. *Research Policy*, 35(7), 1018-1036.
- Jaffe, A. B. (1989). Real effects of academic research. *The American economic review*, 957-970.
- James, W. (1909/1996). *A Pluralistic Universe*. Lincoln, NE: University of Nebraska Press.

## Working Paper

- Karnøe, P. (1993). Approaches to innovation in modern wind energy technology: technology policies, science, engineers and craft traditions. Center for Economic Policy Research Publication, 334.
- Lalkaka, R., & Shaffer, D. (1999). Nurturing entrepreneurs, creating enterprises: Technology business incubation in Brazil. Paper presented at the International Conference on Effective Business Development Services.
- Langley, A., Smallman, C., Tsoukas, H., & Van de Ven, A. H. (2013). Process studies of change in organization and management: unveiling temporality, activity, and flow. *Academy of Management Journal*, 56(1), 1-13.
- Lash, B. (2015). Homebrew Computer Club. Memoir of a Homebrew Computer Club Member. from <http://www.bambi.net/bob/homebrew.html>
- Latour, B. (1990). Technology is society made durable. *The Sociological Review*, 38(S1), 103-131.
- Leslie, S., & Kargon, R. (1997). Recreating Silicon Valley. *Business History Review*.
- Lorenzen, M., & Mudambi, R. (2012). Clusters, connectivity and catch-up: Bollywood and Bangalore in the global economy. *Journal of economic geography*, lbs017.
- Manning, S. (2013). New Silicon Valleys or a new species? Commoditization of knowledge work and the rise of knowledge services clusters. *Research Policy*, 42(2), 379-390.
- Manning, S., & Sydow, J. (2011). Projects, paths, and practices: sustaining and leveraging project-based relationships. *Industrial and Corporate Change*, 20(5), 1369-1402.
- Markusen, A. (1996). Sticky places in slippery space: A typology of industrial districts. *Economic Geography*, 72(3), 293.

Working Paper

- Markusen, A., Hall, P., & Glasmeier, A. (1986). *High Tech America: The what, how, where, and why of the sunrise industries*: Allen & Unwin Boston.
- Marshall, A. (1920). *Principles of Economics: An Introductory Volume, Eight Edition*: London: The Macmillan Press.(First edition published 1890).
- Martin, R. (2010). Roepke Lecture in Economic Geography—Rethinking Regional Path Dependence: Beyond Lock-in to Evolution. *Economic Geography*, 86(1), 1-27.
- Martin, R., & Sunley, P. (2006). Path dependence and regional economic evolution. *Journal of economic geography*, 6(4), 395-437.
- Martin, R., & Sunley, P. (2011). Conceptualizing cluster evolution: beyond the life cycle model? *Regional Studies*, 45(10), 1299-1318.
- Maruyama, M. (1963). The second cybernetics: Deviation-amplifying mutual causal processes. *American scientist*, 164-179.
- Maskell, P., & Malmberg, A. (2007). Myopia, knowledge development and cluster evolution. *Journal of economic geography*.
- Masuch, M. (1985). Vicious circles in organizations. *Administrative Science Quarterly*, 14-33.
- Meyer, & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American journal of sociology*, 340-363.
- Meyer, J., & Rowan, B. (1983). The structure of educational organizations. JW Meyer, & Scott WR (Eds.), *Organizational environments. Ritual and rationality*. Beverly Hills: London, New Delhi: Sage publications.
- Navis, C., & Glynn, M. A. (2011). Legitimate Distinctiveness and the Entrepreneurial Identity: Influence on Investor Judgments of New Venture Plausibility. *Academy of Management Review*, 36(3), 479-499. doi: 10.5465/AMR.2011.61031809

Working Paper

- Nelson, R. R., & Winter, S. G. (2009). *An evolutionary theory of economic change*: Harvard University Press.
- Owen-Smith, J., & Powell, W. W. (2004). Knowledge networks as channels and conduits: the effects of spillovers in the Boston biotechnology community. *Organization Science*, 15, 5-21.
- Pinch, T. J., & Bijker, W. E. (1984). The social construction of facts and artefacts: or how the sociology of science and the sociology of technology might benefit each other. *Social studies of science*, 399-441.
- Porter, M. E. (1990). *The Competitive Advantage of Nations*. Harvard Business Review.
- Porter, M. E. (1998). *Clusters and the new economics of competition* (Vol. 76): Harvard Business Review Boston.
- Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, 14(1), 15-34.
- Pouder, R., & John, C. H. S. (1996). Hot spots and blind spots: geographical clusters of firms and innovation. *Academy of Management Review*, 21(4), 1192-1225.
- Rauch, J. E. (1993). *Does History Matter Only When it Matters Little? The Case of City-Industry Location*: National Bureau of Economic Research.
- Ricoeur, P. (2010). *Time and narrative* (Vol. 3): University of Chicago Press.
- Roberts, E. B. (1991). *Entrepreneurs in high technology: Lessons from MIT and beyond*: Oxford University Press New York.
- Saxenian, A. (1994). *Regional advantage: Culture and competition in Silicon Valley and Route 128*, 1994. Harvard University, Cambridge, MA.

- Schmitz, H. (1989). *Flexible specialisation: a new paradigm of small-scale industrialisation?* : Institute of Development Studies Brighton.
- Schmitz, H. (1995). Collective efficiency: Growth path for small-scale industry. *The journal of development studies*, 31(4), 529-566.
- Schmitz, H. (1999). From ascribed to earned trust in exporting clusters. *Journal of International Economics*, 48(1), 139-150.
- Schreyögg, G., & Sydow, J. (2010). Crossroads-organizing for fluidity? Dilemmas of new organizational forms. *Organization Science*, 21(6), 1251-1262.
- Schumpeter, J. A. (1939). *Business cycles (Vol. 1)*: Cambridge Univ Press.
- Schüssler, E., Rüling, C., & Wittneben, B. (2013). On melting summits: The limitations of field-configuring events as catalysts of change in transnational climate policy. *Academy of Management Journal*, amj. 2011.0812.
- Scott, A. J. (1988). *New industrial spaces: Flexible production organization and regional development in North America and Western Europe (Vol. 3)*: Pion Ltd.
- Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*: Random House LLC.
- Singh, J. V., Tucker, D. J., & House, R. J. (1986). Organizational legitimacy and the liability of newness. *Administrative Science Quarterly*, 171-193.
- Song, J., Almeida, P., & Wu, G. (2003). Learning-by-Hiring: When Is Mobility More Likely to Facilitate Interfirm Knowledge Transfer? *Management science*, 49(4), 351-365.
- Stacey, R. D. (2001). *Complex responsive processes in organizations: Learning and knowledge creation*: Psychology Press.

Working Paper

- Stark, D. (2009). *The sense of dissonance. Accounts of Worth in Economic Life*. Princeton and Oxford.
- Storper, M. (2010). Why does a city grow? Specialisation, human capital or institutions? *Urban Studies*.
- Storper, M., & Christopherson, S. (1987). Flexible specialization and regional industrial agglomerations: the case of the US motion picture industry. *Annals of the Association of American Geographers*, 77(1), 104-117.
- Storper, M., & Scott, A. J. (2009). Rethinking human capital, creativity and urban growth. *Journal of economic geography*, lbn052.
- Sydow, J., Lerch, F., & Staber, U. (2010). Planning for Path Dependence? The Case of a Network in the Berlin-Brandenburg Optics Cluster. *Economic Geography*, 86(2), 173-195.
- Sydow, J., Schreyögg, G., & Koch, J. (2009). Organizational path dependence: Opening the black box. *Academy of Management Review*, 34(4), 689-709.
- Thornton, P. H., & Ocasio, W. (2008). Institutional logics *The Sage handbook of organizational institutionalism* (Vol. 840).
- Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly*, 35-67.
- Vergne, J. P., & Durand, R. (2010). The missing link between the theory and empirics of path dependence: conceptual clarification, testability issue, and methodological implications. *Journal of Management Studies*, 47(4), 736-759.
- Von Hippel, E. (1994). "Sticky information" and the locus of problem solving: implications for innovation. *Management science*, 40(4), 429-439.

Working Paper

Weick, K. E. (1995). *Sensemaking in organizations* (Vol. 3): Sage.

Whitehead, A. N. (1978). *Process and Reality* Ed. David Ray Griffin and Donald W. Sherburne.

New York: Free P.

Zaheer, S., Lamin, A., & Subramani, M. (2009). Cluster capabilities or ethnic ties&quest;

Location choice by foreign and domestic entrants in the services offshoring industry in

India. *Journal of International Business Studies*, 40(6), 944-968.

Zucker, L. G. (1977). The role of institutionalization in cultural persistence. *American*

*sociological review*, 726-743.

**TABLE 1****Path Dependence vs. Path Creation**

<b>Dimensions</b>	<b>Path Dependence<sup>a</sup></b>	<b>Path Creation</b>
Initial conditions	Given	Constructed
Contingencies	Exogenous and manifest as unpredictable, non-purposive, and somewhat random events	Emergent and serving as embedded contexts for ongoing action
Self-reinforcing mechanisms	Given	Strategically manipulated by actors
Lock-in	Stickiness to a path or outcome absent exogenous shocks to the system	Provisional stabilizations within a broader structural process
<sup>a</sup> As defined by Vergne and Durand 2010 Source: Garud et al, 2010		

**TABLE 2**

**Reinterpretation of Cluster Emergence Building Blocks from a Narrative Perspective**

<b>Building block of cluster emergence</b>	<b>Explanatory scope of prior studies</b>	<b>Reinterpretation from a narrative perspective</b>
Institutional support	Either exists or does not, including more or less ‘governance’ and ‘leadership’.	Norms and industry players are ‘talked’ into being important.
Early resource conditions	Regions are ‘lucky’ to have favorable resource conditions etc.	Resources are framed as important by leading industry and policy actors.
Initial internal and external linkages	They exist more or less (as manifested by resource exchanges etc.) (see e.g. Giuliani, 2005).	Initial internal and external linkages

**FIGURE 1**

**Narrative Approach to Cluster Emergence**

