Innovating Institutions: Enriching Innovation Systems with Institutional Entrepreneurship

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Abstract

Innovation systems provide an analytical framework to understand the emergence and diffusion of innovations. Innovations are accompanied by the institutionalization of new socio-technical configurations and thus require institutional change. Sustainability transitions, which are increasingly important for policy makers to meet current global challenges, require such institutional change processes. An efficient innovation system is then one that is able to change its own institutions. Widely used innovation system approaches based on either territorial or technological premises are however flawed in their conceptualization of institutional context and embedded agency, which compromises thorough understanding of institutional change processes within these systems. To understand an innovation system in its capacity to change its own institutions, it is then important to create an innovation system theory that properly accounts for embedded agency and subsequently institutional change. To create such a theory, we turn to institutional entrepreneurship literature, which is a fully fledged theory on institutional change. We have performed a systematic literature review of 93 articles on institutional entrepreneurship to gather insights on components of structure and agency within institutional change processes and subsequently properly embed institutional entrepreneurship within the structural context of an innovation system. We found that the main strategies employed by institutional entrepreneurs are dependent on their institutional context (being either emerging or mature organizational fields) and the type of innovation (being either technological, organizational or cognitive/cultural) that takes place. Furthermore, we found institutional entrepreneurship is a collective rather than an individual endeavor, and includes multiple (dispersed) actors in addition to the institutional entrepreneur, whose influence cannot be overlooked in the process of institutional change. Our results contribute to the formulation of an encompassing innovation system theory accounting for embedded agency and institutional change processes. These insights are relevant for policy makers concerned with sustainability transitions, as they can aid in formulating policy to accelerate institutional change processes needed to pursue such transitions.
1. Introduction

Researchers generally agree that innovation cannot be understood as an isolated phenomenon, but rather as taking place within a system (Johnson, 2001). As such, innovation processes can be described taking economic, social, political, organizational, institutional and other factors that influence the development, diffusion and use of innovations into account (Edquist, 1997). Innovation systems in broad terms consist of three main components: actors, networks and institutions (Carlsson & Stankiewicz, 1995; Edquist, 2005; Malerba, 2002).

Since the early 1990’s, several innovation system approaches have been developed. These approaches can essentially be divided into two main categories: building either on a territorial or on a technological/sectoral premise (Carlsson et al., 2002). The national innovation system (e.g. Edquist & Johnson, 1997; Lundvall, 1992; Nelson, 1993) and regional innovation system (e.g. Cooke et al., 2004) are examples of a territorial approach to innovation systems. Such approaches use geographical boundaries as a delineation of the innovation system. Studies in territorial innovation systems empirically take a static or comparative static approach providing a useful framework to compare the innovativeness of nations or regions with one another (Carlsson et al., 2002). However, present national or regional institutions are considered as a given within such approaches. Furthermore, the type and rate of innovation is explained in rather general terms with an over-emphasis on economic growth (David & Foray, 1995) and relatively little attention is paid to the specificities of technological developments and sectors.

System approaches building on a technological or sectoral premise, such as the technological innovation system (e.g. Hughes, 1987; Carlsson & Stankiewicz, 1995; Hekkert et al., 2009) take a technology or sector as a central focus around which the innovation system revolves. This approach has high analytical power providing frameworks for functional and structural analyses (e.g. Bergek et al., 2008). It is however criticized to be inward oriented in the sense that it neglects wider institutional contexts of sectors in which technologies are developed, and to subsequently view the success of an innovation solely as a consequence of the performance of the corresponding system. In doing so it thus has a tendency to pay little attention to the system’s environment that may hinder or stimulate the diffusion of an innovation (Markard & Truffer, 2008).

Seeing as territorial approaches tend to take institutions as a given and technological approaches tend to overlook institutions external to the system, the interpretations and applications of institutional context and its relation to agency within these approaches are compromised. However, main processes identified within innovation systems regard the institutionalization of a new socio-technical configuration (Fuenfschilling & Truffer, 2016) and thus require institutional change spurred by agency within an existing institutional context. Yet, it appears that both categories of innovation systems have not yet successfully incorporated the notion of ‘embedded agency’, i.e. the tension between actors’ free will to change institutions and the extent to which their actions are formed by institutional arrangements (Holm, 1995; Seo and Creed, 2002). Innovation systems have indeed previously been criticized for an inadequate embeddedness of agency (Smith et al., 2010).

However, understanding innovation and institutional change within a pre-given institutional context is important because i) innovation prompts institutions to change as technological or organizational possibilities often conflict with existing institutions, and ii) these new institutions in turn shape the evolution of an innovation in a process of co-evolution. Thus, an encompassing theory of innovation systems should understand a system in its capacity to change its own institutions in response to (technological) innovative opportunities, while accounting for embedded agency.
To develop such an encompassing theory, we turn to institutional entrepreneurship, which is a fully fledged theory of institutional change. Institutional entrepreneurship literature focuses on agents (i.e. institutional entrepreneurs) and their strategies within institutional change processes and additionally pays attention to the influence of several field-level characteristics, or structural context, that influence their abilities and actions (Battilana et al., 2009). Dimaggio (1988) described institutional entrepreneurs as organized actors – with sufficient resources – who identify possibilities for new or transformed institutions that aid in realizing their specific interests. These institutional entrepreneurs then create new systems of meaning by tying together the functioning of disparate sets of institutions (Garud et al., 2002).

Institutional entrepreneurship in this paper then functions as a starting point for analysis to understand the added value of institutional theory insights for innovation scientists. A few scientific studies have previously focused on the link between innovation systems and institutional entrepreneurship (i.e. Drori & Landau, 2011; Hung & Whittington, 2011; Ritvala & Kleymann, 2012; Sotarauta & Pulkinnen, 2011; Sotarauta & Mustikkamäki, 2015) and have revealed a collective and processual nature of institutional entrepreneurship (Sotarauta & Mustikkamäki, 2015). These studies have contributed to the positioning of institutional entrepreneurship within innovation systems, but a more nuanced understanding of actor-inspired institutional change within innovation systems has been called for (Hung & Whittington, 2011; Ritvala & Kleymann, 2012) and there has, to our knowledge, not been a translational step towards theory formation of an innovation system in its capacity to change its own institutions.

The main research question of this paper is then: ‘How can we develop a theory of innovation systems that accounts for embedded agency and institutional change drawing on institutional entrepreneurship?’

Similar to the sectoral innovation system approach (e.g. Malerba & Mani, 2009) we consider innovation systems at a sectoral level (and when necessary consider emerging subfields within these sectors), seeing as innovation takes place within an existing institutionalized sectoral context that technological approaches tend to overlook and territorial approaches struggle to effectively delineate. Institutional sociologists refer to sectors as (organizational) fields within which institutional entrepreneurs try to introduce or react to new technologies and institutional change occurs. Battilana et al. (2009) has described field-level conditions and actor characteristics that influence the actions and capabilities of institutional entrepreneurs that can be used to conceptualize this.

In order to answer the research question we conducted a systematic literature review of 93 articles on institutional entrepreneurship. This provided valuable insights into the current understanding of embedded agency within institutional change processes and the strategies of institutional entrepreneurs therein. From these insights, we formulate several propositions to strengthen innovation system theory.

Our scientific contribution is twofold: primarily we aim to develop a theory of innovation systems in the context of changing institutions drawing on insights from institutional entrepreneurship literature. Secondary, we enrich the theory of institutional entrepreneurship by researching the specificities of innovation and technology induced institutional change (e.g. practical legitimacy, changing regulations etc.).

Furthermore, the development of a thorough theory of innovation systems in the context of changing institutions aids in understanding the structure and agency components in sustainability transitions, which constitutes the societal relevance of this research. Grand societal challenges we face today, such as environmental (e.g. depletion of resources, pollution etc.) and global healthcare (e.g. neglected diseases, low access to medicines etc.) issues, call for
such complex sustainability transitions (Geels, 2011; Markard et al., 2012). Sustainability transitions can be defined as “long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption” (Markard et al., 2012: 956). These transitions inherently bring about institutional change, as institutional arrangements within socio-technical systems need to be altered in order to facilitate sustainable technologies and practices (Farla et al., 2012; Jacobsson & Bergek, 2011; Schaltegger & Wagner, 2011). Understanding processes of institutional change in innovation systems and subsequently how they can be influenced is pivotal for policy makers concerned with sustainability transitions.

2. Theoretical Framework

In order to answer the main question, we build this paper on insights of institutional entrepreneurship and innovation systems literature. Using concepts of both literature streams provides useful tools to include both structural as well as agency components in the institutional change process taking place within innovation systems, as it combines a broad system’s and structural approach applied in innovation systems with an actor focused approach of institutional entrepreneurship.

This is important as the biggest challenge in understanding institutional change is both sufficiently acknowledging the influence of structure as well as agency on the process. The resulting structure-agency debate is described as the most central quarrel dividing institutionalists (Hay & Wincott, 1998; Heugens & Lander, 2009). Throughout the years, attempts have been made to consolidate the concepts of structure and agency. Well known early examples are Giddens’ structuration theory (Giddens, 1991) and Bourdieu’s work on structures, habitus and practice (Bourdieu, 1994).

As Hung and Whittington (2011) described, this persistent unresolved debate leads to studies either neglecting the influence of agency, such as organizational ecology studies (e.g. Ruef, 2000) and complexity theory based studies (e.g. Peterson and Meckler, 2001), or largely overlooking the influence of institutions and emphasizing an inadequately embedded heroic institutional entrepreneur (e.g. Dodd and Anderson, 2007). Applying insights from institutional entrepreneurship literature to the innovation systems approach may contribute to successfully incorporating structure and agency components into one theory and creating a better understanding of embedded agency. Constructing such a theory and framework may lead to a more encompassing understanding of institutional change processes and the role of agents therein. Subsequently this will enable policy makers to better facilitate these actors and to accelerate sustainability transitions.

To get closer to consolidating innovation systems and institutional entrepreneurship insights, the relation that both approaches have with the concepts of structure and agency in institutional change processes are elaborated upon in the following sections.

2.1 Innovation Systems

To understand innovation systems, it is first important to understand what a ‘system’ entails. Systems can be defined as a set of interrelated components working toward a common objective that in the broadest sense consist of components, relationships and attributes (Carlsson et al., 2002). More specifically, in the context of systems of innovation scholars speak of actors, networks and institutions as main components (Edquist, 2005). These three components then additionally possess certain attributes that influence the functioning of the system. Actors can be considered to represent agency within the system, whereas institutions represent a structural context within which the actor operates. Actors – as a generally agreed upon main component of innovation systems – and subsequently agency are then supposedly
accounted for both in technological innovation systems as well as territorial innovation systems.

However, the technological innovation system has been criticized to neglect sectoral institutional contexts (and agents therein) external to the system and simultaneously to suffer from institutional determinism within the delineation of the technological system (Hekkert et al., 2007). This would mean that technological innovation systems overemphasize structural context within the system even though entrepreneurial actions are identified as a component within the approach. This is a persistent critique even though in early stages of innovation system theory the interdependency between actors and institutions has been identified, for example by Hughes (1987), who stated: “Because the components of a technological system interact, their characteristics derive from the system” (Hughes, 1987: 52). This theoretically described co-evolution of actors and institutions within a system methodologically and empirically then forms a significant challenge for researchers to tackle as is illustrated by the critique on technological innovation systems.

In case of territorial innovation systems, similar conclusions can be drawn seeing as national and regional innovation system tend to consider existing institutions as a given and static concept that influences the innovation system (Carlsson et al., 2002), but not necessarily as co-evolving with it. This again indicates an overemphasis on structure as opposed to agency and subsequent institutional change within the system. There is limited knowledge on the dynamic properties of territorial innovation systems, especially with regards to structural evolution (Balzat & Hanusch, 2004). This further complicates comparing developing and developed countries or regions with one another as their learning capacity and thus capability to evolve differs greatly (Viotti, 2002).

However, the introduction of new products, services and/or technologies that lies at the core of an innovation system, often involves institutional change that cannot be properly understood without understanding the components of structure and agency and how they influence each other. Additionally it may be interesting to research if different types of innovation (i.e. technological, organizational or cognitive/cultural) influences the processes of institutional change. Innovation scientists therefore aim to theoretically explain institutional change processes that coincide with organizational or technological innovation (Fagerberg, 2004; e.g. Kukk et al., 2016). In doing so, they aim to include insights from multiple disciplines to form a cross-disciplinary and comprehensive understanding of complex socio-technical and institutional change processes (Fagerberg, 2004; Geels, 2005; Kemp & Loorbach, 2006; Rotmans et al., 2001).

In an effort to achieve this, innovation scientists have started to adopt institutional entrepreneurship as a source of agency within their research. Institutional entrepreneurship has for example been identified as “a form of agency within a national innovation system” (Hung & Whittington, 2011: 526), as an influential factor within regional innovation systems (Sotarauta & Pulkkinen, 2011) and a driving force within technological innovation systems (Bergek et al., 2008). Similarly, institutional entrepreneurs have been identified and positioned as bridging actors between established regime practices and new institutional logics within a multi-level approach of innovation (Tracey et al., 2011).

These studies suggest that innovation theories rooted in system thinking may benefit from properly embedding institutional entrepreneurship within their mainly structuralist theoretical grounds to account for agency within the system. Illustratively, Fuenschilling & Truffer (2016) stated that functions described in the technological innovation system framework – such as knowledge creation and diffusion, market formation, resource mobilization etc. – provide opportunities for institutional work (i.e. a theory closely related to institutional entrepreneurship) to take place.
Simultaneously, innovation systems may provide a useful framework to embed the institutional entrepreneur, without disregarding its agency. A recent article by Kukk et al. (2016) described through a case study how the technological innovation system framework enhances the understanding of institutional change processes in an effort to bridge the gap between institutional entrepreneurship and the innovation system’s approach. The study found that “institutional change can be preceded by a range of innovation system-building activities that are not directly intended to bring about institutional change but are required in order for institutional change to take place” (Kukk et al., 2016: 1558). This indicates that innovation system approaches may also enhance the insights of institutionalists. Subsequently, we go one step further by consolidating insights from both literature streams to construct an encompassing conceptual framework of an innovation system thoroughly explaining processes of institutional change.

2.2 Institutional Entrepreneurship

Institutional entrepreneurship stems from institutional theory, rooted in organizational sociology (Scott, 1987). Institutional theory’s main foundations were first articulated in 1977 by Meyer and Rowan and revolved around the influence of institutional forces (e.g. rule-like frameworks and rational myths (Meyer and Rowan 1977:341)) on organizational structure and change in addition to dominant resource and path dependency theories (Scott, 2008). Over the years, a comprehensive theoretical framework of concepts rooted in institutional theory has been developed.

Traditionally, institutional analysis was built mainly on the notion of structural isomorphism: mechanisms describing why and how organizations become increasingly alike (DiMaggio & Powell, 1983). Within this mindset, institutional change was commonly attributed to exogenous shocks rather than the influence of actors within certain institutional settings (Chen, 2013). This can be interpreted as a structurally determined interpretation of institutional settings. In 1988 however, DiMaggio introduced the ‘institutional entrepreneur’ as a means to reintroduce agency into institutional analysis theories (Battilana et al., 2009). In doing so he explained how certain actors are able to change or shape institutions in spite of a natural tendency towards stasis (Holm, 1995; Seo & Creed, 2002).

Over the past two decades the amount of publications in peer-reviewed journals on institutional entrepreneurship has grown exponentially. This agency-focused theory then faced the main challenge of resolving the structure-agency debate by accounting for the embedded agency of institutional entrepreneurs (Leca et al., 2008). Although the notion of the institutional entrepreneur aimed to reintroduce agency into institutional change processes to counter previous predominantly structuralist views, the main critique on the concept, much like the to this day still alive structure-agency debate, remained a lack of adequate embeddedness of this agency (Delmestri, 2006; Heugens & Lander, 2009; Meyer 2006). Institutional entrepreneurs were according to these critiques at times presented as an heroic ‘Deus Ex Machina’ (Delmestri, 2006). One of the first institutionalists, Meyer, even stated that in his opinion institutional entrepreneurship is not a viable endogenous explanation of institutional change (Meyer, 2006). Such criticism decreases the validity of theories on institutional entrepreneurs.

A systematic literature review by Leca et al. (2008) on institutional entrepreneurship however concluded that more recent research on institutional entrepreneurship “accounts for actors’ institutional embeddedness and acknowledges the institutions’ role as both enablers of and constraints on action” (Leca et al., 2008: 5). This conclusion was mainly drawn because they observed then recent studies started to move away from the classic ‘heroic’ institutional entrepreneur and a corresponding overemphasis on agency, towards individual or collective embedded actors that cannot succeed on their own in initiating institutional change. They even identified a study (Khan et al., 2007) describing ‘anti-heroes’ as instigators of institutional change, albeit unintentionally. The intentionality of institutional entrepreneurs and the
distribution of agency amongst multiple actors were identified as interesting topics for future research, as well as how these aspects are influenced over time (Leca et al., 2008).

The reviewed literature furthermore showed that to account for embeddedness the position of an institutional entrepreneur within a social environment is crucial (Battilana, 2006), as well as awareness of the institutional entrepreneur of other fields and diverse institutional logics (Greenwood & Suddaby, 2006; Leca & Naccache, 2006: in Leca et al., 2008). Leca et al. (2008) furthermore concluded that typologies and variables of context were needed to make research on institutional entrepreneurs more systematic.

This review and its conclusions led to one of the most highly cited conceptual papers on the topic: Battilana et al.’s article (2009) "How actors change institutions: Towards a Theory of Institutional Entrepreneurship". In this paper, the typology of context is further elaborated upon. Related variables are called field-level conditions, which can be both constraining or enabling. Battilana et al. (2009) identify three variables of field-level conditions; jolts and crises, acute field-level problems and degree of heterogeneity and institutionalization. Jolts and crises describe events such as social upheaval, regulatory changes, technological disruption and competitive discontinuity that create room for new ideas as they disturb the existing field-level consensus (Child et al., 2007, Greenwood et al., 2002). Acute field-level problems, such as scarcity of resources, may precipitate crises and may cause institutional entrepreneurs to mitigate to other fields (Durand & McGuire, 2005). Lastly, the presence of multiple institutional orders or alternatives within a field, i.e. the degree of heterogeneity, may trigger institutional entrepreneurship (Clemens & Cook, 1999) while the extent to which these institutions are embedded within the societal order, i.e. the degree of institutionalization, simultaneously influences the capability of the institutional entrepreneur.

Such characteristics of the field may also be closely related to the maturity of the organizational field. Leca et al. (2008) described a recurring division between emerging organizational fields and mature organizational fields as applied by researchers that may be the first step towards a typology. Mature fields and emerging fields are often described to demand different strategies and actions by institutional entrepreneurs to initiate institutional change. Illustratively, two of the most highly cited articles on institutional entrepreneurship are on the emerging field of HIV/AIDS treatment advocacy (Maguire et al., 2004) and the mature field of the five big accounting firms (Greenwood & Suddaby, 2006). However, fragmentation of a field may also be a pivotal contributor to the opportunities and challenges of the institutional entrepreneur (Leca et al., 2008).

We take the field, or sector as referred to in innovation system frameworks, as unit of analysis for innovation systems as we conceptualize them. We then consider institutional change to take place either within a mature organizational field that may include emerging subfields that change the character of the field, or as taking place within emerging organizational fields if such subfields cannot be accommodated within the mature organizational field, thus leading to a novel field.

In addition to these field-level conditions, Battilana et al. (2009) also describe the influence of the actor’s social position and characteristics on their capability to act as institutional entrepreneur. First, the actor’s social position influences the extent to which they have access to specific resources (Lawrence, 1999) and it secondly influences their perception of the field (Bourdieu, 1977). An actor’s social status and congruent legitimacy also influences their ability to initiate institutional change. Differing field-level conditions may explain why sometimes high status actors become institutional entrepreneurs, and why sometimes actors with a low status are more successful (Battilana et al., 2009).

Another important concept is that of multiple embeddedness. Actors that are embedded within multiple fields simultaneously have been theorized to be more likely to become institutional
entrepreneurs (Emirbayer & Mische, 1998; Sewell, 1992) as they are more likely to witness institutional contradictions and alternative institutional orders.

Battilana et al. (2009) furthermore described the strategies that institutional entrepreneurs employ to initiate divergent change (i.e. institutional change) as consisting of the following three main steps: i) developing and articulating a vision, ii) mobilizing allies to support that vision and iii) motivating them to achieve and sustain the vision. For the first step, different forms of framing are described, namely diagnostic (which problem will this institutional change solve?), prognostic (how is this change better than existing institutional arrangements?) and motivational framing (which compelling motivations spur this institutional change?) (Markowitz, 2007). For the second and third step, discourse, rhetorical and narrative strategies are described as well as the importance of resource mobilization.

Battilana et al. (2009) thus provided useful concepts and typologies that aid in accounting for embedded agency of institutional entrepreneurs in processes of institutional change but also indicated that our understanding of this needs to further developed in further research. They believed that the tendency to move towards a view of individual or collective institutional entrepreneurs that are embedded in and try to navigate specific social contexts would contribute to this. How the insights on structural context and types of agency (individual or collective, intentional or unintentional) have evolved in recent years is therefore important to research in order to determine the added value of the theory for innovation scientists working with innovation systems.

3. Methodology

We therefore conducted a systematic literature review of articles on institutional entrepreneurship published after the article of Battilana et al. (2009). We used Web of Science to search for articles published in peer-reviewed journals. First, we performed a topic search using the keywords “institutional entrepreneurship”. This resulted in 369 articles. Figure 1 show that the frequency of publication and citations on the topic of institutional entrepreneurship has rapidly grown, especially since 2009, which illustrates the growing interest in the topic.

![Figure 1. Published items in each year and citations in each year (source: citation report on Web of Science)](image)

Secondly we excluded all articles published in 2009 or earlier, since we are interested to see how literature on institutional entrepreneurship evolved after Battilana et al.’s (2009) article. This left us with 317 articles. Going through these articles, we excluded all articles that were written in another language than English or that only briefly mentioned institutional entrepreneurship without describing either an empirical case or discussing the theory itself. Additionally we excluded book reviews, working papers and editorials.
Lastly, after close reading the articles, four were removed from the dataset due to low relevance or no connection to innovation, e.g. purely sociological articles. These articles were removed since they did not contribute insights relevant for innovation system frameworks and thus did not influence our analysis and results. We were then left with 93 articles. 90 out of these 93 articles contain empirical data, 3 are purely theoretical, conceptual papers.

Seeing as our interest lied mainly in identifying components of structure and agency within the process of institutional entrepreneurship and how this is accounted for in literature we created several relevant codes. To examine the way scholars publishing about institutional entrepreneurship account for structure in their research we coded i) the type of context described within which institutional entrepreneurship unfolded as being either a mature or emerging organizational field and ii) the type of innovation accompanying the process of institutional change, as being either a technology, new organizational form or cognitive/cultural innovation.

To pursue a better understanding of the actors and types of agency involved, we coded i) the described institutional entrepreneur, ii) other actors that are explicitly or implicitly described to influence the institutional change process (e.g. Battilana et al. (2009) mentioned ‘institutional defenders’ as actors working against institutional change) and iii) whether institutional entrepreneurship was described as an individual, collective or dispersed form of agency.

Lastly, for each article we collected the main terminology that described the institutional entrepreneurs' strategic action to get an overview of the different terms and understandings of institutional entrepreneurs' strategies among diverse scholars and how they relate to the coded structural context. Overall emerging trends and concepts within the institutional entrepreneurship literature have also been noted. These insights together contribute to a thorough understanding of institutional change processes whilst accounting for embedded agency within a system, which will subsequently be applied to the innovation system’s perspective to strengthen the corresponding framework.

4. Results

Results are structured in line with our coding. We discuss field level characteristics (i.e. emerging and mature organizational fields and the type of innovation accompanying the institutional change process), and actor characteristics (i.e. the actors that are involved and types the of agency that are described) and relate these observations to described strategies of institutional entrepreneurs.

4.1 Field level characteristics

4.1.1. Emerging and mature organizational fields

As indicated in the theory section, a dichotomy between emerging and mature organizational fields was already observed before 2009 in organization studies literature, which lead us to code the cases described in empirical articles in our dataset accordingly. 42 out of 90 empirical articles describe cases of institutional entrepreneurship within mature organizational fields, 48 in emerging organizational fields, which shows that there is a relatively similar interest amongst scholars in both type of fields. Going through the empirical cases, several main observations concerning emerging and mature institutional context could be distilled.

Emerging organizational fields or institutional contexts are often characterized by a lack of regulations, which poses challenges as well as opportunities for institutional entrepreneurs as it provides room for experimentation but complicates legitimizing the institutional change
as it does not correspond with known and recognized institutions (Jolly & Raven, 2016; Jolly et al., 2016; Lo, 2015; Zhang & White, 2016).

In such a context, institutional entrepreneurs are likely to (indirectly) influence the formulation of regulations, for example by taking part in regulatory hearings and lobbying (Jolly et al., 2016), and to focus on strategies to increase their legitimacy (Zhang & White, 2016). In order to do so, institutional entrepreneurs need to relate the novel institution to existing ones in established (related) organizational fields, to create understanding among their targeted audience. Lo (2015) described this as “a balancing act between isomorphism and differentiation, breadth and boundary maintenance” (Lo, 2015: 1513).

Zhang & White (2016) also identified a role for the government in the creation of legitimacy, as they can create an environment within which experimentation and exploration is considered to be legitimate, i.e. a wider 'legitimacy space'. This may be an important enabling condition for institutional change in emerging institutional contexts, illustrated by Yep (2015) who presented a case-description of grassroots institutional change in the rural parts of Southern China that is failing due to the ad-hoc nature of the experiment and lack of stability, which government policy could perhaps have provided.

An emerging organizational field is also described to heavily depend on the network and interactions of institutional entrepreneurs. For example, Patriotta & Hirsch (2016) describe that in art world innovation the formation of novel, cooperative links between ‘insiders and outsiders’ (i.e. actors that do or do not adhere to an art genre) are the institutional entrepreneur’s main strategy to construct an emerging genre, which is comparable to an emerging organizational field. Insiders are then actors that are embedded in and adhere to an established organizational field (in this case an art genre) and outsiders are actors that are not embedded in that particular organizational field. Creating cooperative links between such insiders and outsiders then provides space for the emergence of novel institutions that are rooted in, but diverge from existing organizational fields.

Qureshi et al. (2016) came to a similar conclusion describing how ‘homophilic’ ties between Chinese social entrepreneurs hindered, and ‘heterophilic’ ties between them enabled the emergence of an emerging organizational field of social entrepreneurialism. This means that Chinese entrepreneurs embedded within a specific organizational field benefit from interaction with actors embedded within different organizational fields and this combination of actors from multiple fields leads to the potential emergence of an emerging organizational field. Additionally, Lee & Hung (2014) describe ‘bridging’ between outsiders and insiders as one of the three main strategies of institutional entrepreneurs in the formalization of the Chinese mobile phone market, in line with the findings of Patriotta & Hirsch (2016). These findings then underwrite the previous hypothesis that multiple embeddedness of institutional entrepreneurs increases their abilities to initiate divergent change (see e.g.: Boxenbaum & Battilana, 2005; Durand & McGuire, 2005) as they are more easily able to bridge actors embedded in diverse organizational fields.

Emerging organizational fields are furthermore often linked to the national contexts of developing and emerging economies (e.g. Jolly et al., 2016; Jolly & Raven, 2016; Lee &Hung, 2014; Yep, 2015) which come with specific opportunities as well as challenges in terms of institutional change. Jolly et al. (2016) posed that institutional entrepreneurs need to exert political, technological and cultural work in order to achieve institutional change and found in a comparative study between the development of the wind-energy sector in Finland and India that institutional entrepreneurs in the latter case had more difficulty in all types of work due to respectively i) a less structured, more corrupt political system, ii) a history with less R&D in wind energy technologies and iii) different priorities (i.e. on social justice and equity issues) in cultural work. Yep (2015) described another example of how an unstable, national environment (i.a. a changing social landscape in China) negatively influenced the process of institu-
In conclusion it then seems that emerging organizational fields urge institutional entrepreneurs to overcome their liability of newness mainly through creating legitimacy by i) influencing the formulation of regulations for example through lobbying, ii) demonstrating relatedness of a novel institution to existing ones in related mature organizational fields to create understanding among regulators and the target audience and iii) building a supportive network with bridges between diverse actors (insiders and outsiders) embedded within differing organizational fields but relating to the same novel vision. The latter two are in line with expectations of earlier scholars that the creation of a common identity is an important step for institutional entrepreneurs in lowly institutionalized fields (Markowitz, 2007; Rao et al., 2000).

Mature organizational fields are generally described to contain a formal regulatory framework and to be highly institutionalized (e.g. Jolly et al., 2016; Thompson et al., 2014). Some mature fields are more rigorously regulated than others, e.g. Kukk et al. (2016) and Sotarauta & Mustikkamäki (2015) describe innovation in the pharmaceutical industry which is a highly regulated organizational field. Rigorous regulations and a high degree of institutionalization creates inertia and resistance to change. This is because existing institutions and (outdated) regulations cause barriers for institutional entrepreneurs to go about things differently and often favor established parties that prosper by the existing institutional status quo (Lakshman & Akhter, 2015). These established parties may exert a variety of incumbent strategies (e.g. lobbying for more regulations), that oppose and hinder institutional change and pose serious challenges for institutional entrepreneurs that then need to counter these opposing forces (described in i.a. Jolly et al., 2016; Prasad et al., 2016; Patriotta & Hirsch, 2016).

In some cases, institutional entrepreneurs acting in mature organizational fields find ways to circumvent existing regulations that hinder institutional change. Elert & Henrekson (2016) call this ‘evasive entrepreneurship’, which they state is an underrated source of innovation. They consider evasive entrepreneurship to be profit-driven business activity using innovations to circumvent existing regulations by exploiting contradictions in the existing institutional framework. Rides-for-hire start-up’s like Lyft and Uber are named as examples of evasive entrepreneurship driven by economic profit.

Van Bockhaven et al. (2015) furthermore describe the power of the ‘underdog’ in processes of institutional change in mature organizational fields. This underdog is in their perception a collective of institutional entrepreneurs, consisting of actors that are non-dominant, yet embedded within a mature institutional context. Such peripheral actors with limited power and often dispersed interests act collectively out of necessity and together are drivers of institutional change. An effective strategy of institutional entrepreneurs is then to build a supportive network of diverse and peripheral actors that together create sufficient pressure to challenge regulations and incumbents. An example of this are patient associations that call for personalized medicine approaches, causing pharmaceutical companies to change their business models. An institutional entrepreneur aiming to facilitate or coordinate such processes should then formulate a vision and goal that such dispersed actors adhere to and provides a motive for them to unite.

In addition to this, there appears to be a higher tendency of studies focusing on market formation when the institutional context is mature. Hu et al. (2016) who describe the formation of a digital ecosystem around the Red Collar Group (a company that provides custom-made suits) and the accompanying organizational transformation, focus on economically driven institutional entrepreneurs. Kukk et al. (2016) who describe the case of Herceptin, a person-
alized cancer treatment, also specifically describe the market formation around this drug that goes hand in hand with technological innovation. This explicit focus on market formation tendency seems to be more prominent in studies on institutional entrepreneurship within mature organizational fields, where studies focusing on emerging organizational fields tend to speak more of legitimacy formation. This indicates that markets exist within organizational fields, and that it is possible for multiple markets to emerge within the same organizational field. Such an emerging market then to an extent benefits from the legitimacy of the mature organizational field within which it is emerging, causing the focus of scholars writing about such processes to shift from legitimacy building strategies to market formation strategies.

Interestingly – since emerging organizational fields are on multiple occasions linked to the context of developing countries – Khan & Hoque (2016) provide an example of institutional entrepreneurship in a developing country but strictly speaking in a mature organizational field. They describe organizational reform in Public Account Committees (PACs) in Bangladesh. PACs represent an organizational form of parliamentary infrastructure that safeguards democratic accountability of the government (Wehner, 2003) and has developed internationally into a mature organizational field. PACs exist in developed countries as well, and Khan & Hoque (2016) investigated how the environment of a developing country influenced the organizational structure of PACs. They found that when internal governance structures were changed, international funders (e.g. the World Bank) unlike in developed countries, had an influence on this in addition to local, senior PAC members. George’s (2014) article on an Indian Public-Private Partnership that brings emergency medical response to remote and rural areas provides another example of institutional entrepreneurship in developing countries in a mature organizational context, i.e. that of the healthcare sector.

This leads us to believe that the maturity of an organizational field or sector that transcends geographical and national borders also depends on geographic location, as some established fields, such as PACs or healthcare sectors, are more advanced and mature in some regions than in others. This becomes a challenge in a globalizing world where developing countries adopt international standards or practices (see e.g.: Guerreiro et al., 2015).

In conclusion, within mature organizational fields we observe more attention directed towards market formation activities and to a lesser but still important extent to legitimacy building by institutional entrepreneurs by i) challenging or circumventing existing regulations not supportive of change, ii) countering actions of incumbents by creating and strengthening supportive networks of dispersed and peripheral actors by iii) formulating a vision resonating with interests and values of target audience.

4.1.2 Type of innovation

Out of 90 empirical articles in our dataset, 52 described an organizational innovation, 32 a technological innovation and 6 a cultural/cognitive innovation. Most articles that describe technological innovation were published in 2015 and 2016. This indicates that, even though institutional entrepreneurship stems from institutional sociology, recently more attention has been allocated towards technological innovation that goes hand in hand with institutional change. Cultural/cognitive innovation was not often explicitly described, but this is due to the fact that often the other two types of innovation implicitly involve cultural and cognitive changes.

Each type of innovation may influence the strategies institutional entrepreneurs exert and the other type of actors that are involved in the institutional change process. In addition to legitimacy building, which is a common denominator in almost all empirical articles regardless of the type of innovation, some general tendencies were identified.
When it comes to organizational innovations, a wide variety of strategies is described in literature ranging from legitimacy building by positioning of the institutional entrepreneur between diverse organizational fields to create networks, mobilizing followers as well as creating visions through discourse strategies and influencing regulations and policy. We did not identify a particular focus.

In studies describing technological innovations, the institutional entrepreneur engages in more hands-on political, cultural and technological work (Jolly et al., 2016) which includes regulating or circumventing regulations, governing, lobbying and researching (e.g. Jolly & Raven, 2016; Elert & Henrikson, 2016; Kukk et al., 2016; Sotarauta & Mustikkamäki, 2015) to accelerate the institutionalization of the technology.

When cultural/cognitive innovation is described – without accompanying technological or organizational innovation – the main actions described by institutional entrepreneurs revolve around discourse strategies such as the efficient use of archetypes in narratives aimed at specific audiences. An example of this is the Tobacco industry creatively appropriating the discourse of ‘the new American woman’, to “empower” women to start smoking (Prasad et al., 2016). Formulating a relatable and compelling vision is then key to initiate cultural or cognitive institutional change., which is in line with the first step of institutional entrepreneurship described by Battilana et al., (2009), for which institutional entrepreneurs can use diagnostic, prognostic and motivational framing.

4.2 Actor characteristics

4.2.1 Type of actors involved

In all described cases in the empirical articles in our dataset, we code the mentioned actors that were involved in and somehow influenced the process of institutional change. Aggregating and categorizing these actors lead to the following classification of actor types, which is our own taxonomy: i) institutional entrepreneurs, ii) institutional defenders, iii) regulators and iv) policy makers.

Institutional entrepreneurs are the actors that initiate divergent changes, i.e. “changes that break the institutional status quo in a field of activity and thereby possibly contribute to transforming existing institutions or creating new ones” (Battilana et al., 2009: 76). They then challenge the existing institutional order. Multiple articles however explicitly describe the actions of opposing forces, often by established actors or incumbents, who Lakshman & Akhter (2015) coined institutional defenders. They describe that institutional defenders use similar strategies as institutional entrepreneurs, namely discursive strategies and influencing and mobilizing institutional actors, but do so to strengthen their own position instead of advocating divergent change. Examples of such ‘incumbent strategies’ are lobbying for more regulations and using media to delegitimize institutional change and influence the public opinion (Jolly et al., 2016; Prasad et al., 2016). 61 out of our 90 empirical articles explicitly, or implicitly described actions of opposing actors that influenced the process of institutional change.

In addition to these two main categories of stimulating and opposing forces, we also identified regulators and policy makers as two often mentioned categories of influential actors. Regulators and policy makers influence the freedom, or legitimacy space (see: Zhang & White, 2016), institutional entrepreneurs have to experiment. Regulators determine the rules institutional entrepreneurs have to adhere to (Elert & Henrikson, 2016; Kukk et al., 2016; Sotarauta & Mustikkamäki, 2015), and policy makers influence the wider context and perception of the institutional change (Prasad et al., 2016; Zhang & White, 2016).

All actors in our taxonomy can then increase or decrease the legitimacy of the institutional change and accelerate or hamper it. To thoroughly understand the process of institutional
change and the role of institutional entrepreneurs therein, the influence of all four types of actors should then be taken into account.

4.2.2. Individual Agency

The traditional notion of the institutional entrepreneur presents an actor as an heroic individual that is able to dis-embed him or herself from his or her institutional context to initiate divergent change (e.g. Dodd & Anderson, 2007). However, as previously stated, this heroic, individual institutional entrepreneur has been criticized for having too much agency and power and being too disconnected to the concept of institutional and embedding context, thus representing a Deus Ex Machina (Delmestri, 2006; Ritvala & Kleymann, 2012).

Nevertheless, after this criticism, more articles have been published that describe an individually acting institutional entrepreneur. Individual institutional entrepreneurs can be represented by multiple single entities, such as a firm or organization (e.g. Hu et al., 2016; Kukk et al., 2016; Zhang & White, 2016) or an individual (e.g. Qureshi et al., 2016). 66 out of our 90 empirical articles describe an individually acting institutional entrepreneur. However, it is important to note that in most cases other actors of influence are described in these articles. Individual agency then resides with the institutional entrepreneur, but the other identified influential actors possess agency too that is part of the institutional change process.

4.2.3. Collective Agency

Multiple articles described institutional entrepreneurship as a collective, rather than an (heroic) individual, endeavor (i.a. Gurses & Ozcan, 2015; Jolly et al., 2016; Krueger, 2016; Sotarauta & Mustikkamäki, 2015; Van Bockhaven et al., 2015), much like the earlier notion that institutional entrepreneurship may require coalitions of actors to “run in packs” (Van de Ven, 1993) and is an emergent, collective process (Aldrich, 2011). 16 out of 93 articles describe collective institutional entrepreneurship explicitly (n.b. frequency increases in later years of publication), 73 describe a collective process but do not mention this explicitly and 4 articles follow the classical approach of describing an individual and heroic institutional entrepreneur.

Collective agency is often described to be uncoordinated (Jolly et al., 2016) and a bottom-up, emerging source of institutional change (Krueger, 2016; Van Bockhaven et al., 2015). Krueger (2016) described that top-down adoption of the institutional change occurs at a later stage in the institutional change process. Institutional entrepreneurship should then not be understood as a linear and planned process, but rather as “a series of interrelated decisions and actions crossing many policy boundaries as well as involving several institutional entrepreneurs” (Sotarauta & Mustikkamäki 2015: 353). This does not mean that the actions of the institutional entrepreneur are (always) unplanned or uncoordinated, but that they may be part of a larger institutional change process that is more complex.

4.2.4. Dispersed Agency

Several studies have also indicated that this collective agency includes so-called dispersed actors. Dispersed actors, or dispersed agency, describes actors that may not have the same goal as the institutional entrepreneur, but influence the institutional change process nonetheless (see: Lakshman & Akhter, 2015; Szkudlarek & Romani, 2016). Dispersed agency is mentioned explicitly in 3 out of the 93 articles, but is implicitly described in 42. We have labeled these actors, that have different interests than the institutional entrepreneur, as institutional defenders when they oppose institutional change, and as regulators and policy makers when they influence the institutional change process in terms of regulations and policy. Furthermore, there may be differences in terms of goals and visions between institutional entrepreneurs that are involved in the same institutional change process.
5 Consolidating innovation systems and institutional entrepreneurship (preliminary)

To construct a theoretical framework describing an innovation system in its capacity to change its own institutions, we need to understand the process of institutional change that accompanies innovation (Fagerberg, 2004). To properly understand such institutional change we need to account for embedded agency within the innovation system (Hung & Whittington, 2011; Ritvala & Kleymann, 2012). Our results of reviewing institutional entrepreneurship literature showed several important insights that need to be taken into account in order to do so.

Firstly an innovation system at the sectoral or field level provides a structural context for institutional change processes, but a distinction should be made between mature and emerging organizational contexts as this influences the strategies of institutional entrepreneurs and subsequently the role of regulators and policy makers. Institutional entrepreneurs may aim to develop emerging sub-fields within a mature organizational fields or they may develop an emerging organization field if the envisioned institutional change cannot be accommodated within existing fields.

We have seen that institutional entrepreneurs within emerging organizational fields focus mainly on overcoming their liability of newness and in order to do so focus on increasing their legitimacy. The emerging organizational context within which they operate challenges them with uncertainty and urge them to relate the institutional change to related mature organizational fields to create understanding among their targeted audience. The lack of institutionalized regulatory framework may lead them to attempt to influence the formulation of regulations through lobbying activities. They furthermore focus largely on the construction of a collaborative and supportive network, creating bridges between actors embedded within diverse organizational fields (insiders and outsiders). Policy makers and regulators appear to play an important role in creating room for experimentation and a wider legitimacy space.

On the other hand, institutional entrepreneurs acting within mature organizational fields are more likely to challenge or circumvent existing regulations that hinder institutional change and focus on countering actions of established parties (i.e. institutional defenders) that benefit from the institutional status quo by building networks of dispersed and peripheral actors and voicing compelling visions to unite these actors. These actions are often understood in terms of market formation strategies. An important side note to these conclusions is that field maturity is not necessarily equal in local contexts.

Secondly, it appears that the type of innovation accompanying the institutional change process also influences the institutional entrepreneurs’ actions. Technological innovation calls for institutional entrepreneurs that are able to engage in technological work in addition to cultural and political work that organizational and cognitive innovations also require.

Thirdly, institutional change should be understood as a process that includes diverse individual actors (institutional entrepreneurs, institutional defenders, policy makers and regulators) that possess various degrees of coordination and shared visions, or lack thereof (i.e. dispersed agency), that co-evolve with the institutional context of the innovation system.

A well-functioning innovation system is then one that facilitates such complex processes by i) correctly identifying involved agents, their influence and interdependency on each other and their institutional context and ii) widening their legitimacy space to facilitate experimentation and thus increasing possibilities for institutional change. Subsequently, this can lead to policy formation accelerating sustainability transitions that are dependent on processes of institutional change.
References


