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The Cultural Embeddedness of Regional Innovation: A Bourdieuan Perspective

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Abstract

Researchers have long acknowledged the importance of culture in the innovation process. However, while culture is well integrated into frameworks such as Regional Innovation Systems, the actual processes through which cultural outlooks influence innovative activities is still poorly understood. Beyond this, culture is frequently viewed in an overly simplified way in which only one cultural attribute (such as ethnicity or geography) is seen as a deterministic force in the innovation process. This chapter provides a sympathetic critique of the ways in which culture is employed in RIS research and suggests that the work of Pierre Bourdieu is useful as an alternative to understand the role of overlapping and often confluent cultural outlooks within regions. This framework views innovation as a bundle of practices that actors employ based on their position within multiple, overlapping 'fields' of power relations and norms. This framework allows for a more nuanced appreciation for the role of culture that acknowledges the role of multiple sources of cultural influence.

1. Introduction

Innovation is a culturally embedded process. Far from the socially sterile view of the linear innovation model in which scientific discoveries made in a university or corporate labs are pushed out to a waiting marketplace, the innovation process is enmeshed in a multitude of overlapping cultural, social, and economic contexts. But while there is general agreement in the literature that culture — be it the culture of a place, an organization, an industry, or a people — matters in the innovation process, there is less consensus about *how* culture matters (Gertler, 1995, Cooke, 2001, Baronet and Riverin, 2010). Culture is often viewed as a monolithic force deterministically influencing the innovation process rather than as a context surrounding innovation practices of individual actors. As a result, current understandings of the innovation process often have no way of explaining deviation from established cultural norms or how new practices and methods are developed. This is particularly true of the Regional Innovation Systems

(RIS) literature, which explicitly includes the importance of local cultures in explaining innovation outcomes but has struggled to describe the exact role these cultures play.

The purpose of this chapter is to offer a sympathetic critique of how culture is used in RIS and other innovation literatures. RIS frameworks use culture as a way to partially explain the uneven geography of innovation and why this unevenness persists in the face of continued public interventions and investments. However, without a more nuanced view of the role of culture, these accounts risk falling into culture determinism in which a region's culture causes innovation to occur (or not occur), robbing actors of their individual agency. A more multiplex view of culture is required, where culture is a context in which different innovation practices materialize, influencing what practices make sense in a given situation rather than causing them to occur. Importantly, this view should acknowledge the role of multiple forms of culture, not just the culture of a place but also that of the organization, the industry or the value chain in which the innovation is occurring.

In order to address these issues, this chapter draws on the work of Pierre Bourdieu, in particular his conceptualization of practice as emerging from the intersection of fields — historically produced norms and power relations — and habitus, actors' internalized dispositions and understandings of those fields. A Bourdieuan approach avoids many of the common pitfalls associated with existing uses of culture, in particular the lack of a process connecting cultural structure with everyday practice and the difficulty of incorporating the role of multiple cultural influences (Spigel, 2013). The following section discusses how the role of culture has been used to explore the uneven geography of innovation, particularly within the RIS literature. While the importance of culture is well understood less progress has been made in understanding the processes linking culture with action and there is the constant problem of how to theorize the role

of overlapping cultural values in the innovation process. To overcome this issue, section 3 introduces the work of Pierre Bourdieu and discusses how it can be used to study the innovation process. The remainder of the chapter explores how a Bourdieuan approach can account for the many overlapping cultural influences affecting actors within a RIS and how it can provide a more detailed and nuanced perspective about the role of culture within the innovation process.

2. Cultures of Innovation and Innovative Cultures

The RIS literature emerged out of a dissatisfaction with existing National Systems of Innovation models that neglected the substantial internal variation of innovative activity within nations (Cooke, 1998, Oinas and Malecki, 2002). Regions, rather than nations, are a particularly important scale to study the innovation process due to the localized nature of knowledge spillovers between co-located firms and universities through processes of interaction and observation (Henry and Pinch, 2000). RIS refer to the actors, policies, institutions and networks that develop within regions supporting the innovation process (Asheim et al., 2011). Strong RIS create environments that encourage innovation within firms by helping facilitate knowledge spillovers between firms and other knowledge producers like universities as well as by facilitating public policies that foster radical knowledge generation and innovation (Cooke et al., 1998). Beyond this, RIS help to address ‘stickiness’ of new innovations by creating a cultural and technical environment that allows for easier communication of complex tacit knowledge between local innovators (Guillaume and Doloreux, 2011).

Cultural outlooks are a crucial part of RIS. They encourage or discourage innovative activities such as collaboration between firms, knowledge spillover through informal networking and labour mobility, and risk taking (Thomas, 2000). Comparative work such as Saxenian (1994), James (2005) and Aoyama (2009) have illustrated how cultural structures develop in

regions and over time and contribute to substantial differences in innovation practices that cannot be explained through corporate strategy or local resources alone. Understanding the role of culture in RIS is crucial for two reasons. First, it acts as an institutional foundation upon which other parts of the RIS, such as networks, policies, and firms, rest upon. Cultural outlooks create a context in which these more material structures develop (Depner and Bathelt, 2005). Second, cultural outlooks are much harder to influence than other factors in an ecosystem such as public policies or the investment environment. Policymakers often have to deal with the existing cultural environment ‘as is’ when trying to create or sustain RIS. This makes understanding how cultures affect the innovation process critical in designing new support policies and programs.

Culture can be conceptualized as a type of institution: a historically produced and durable “accepted, existing pattern of interaction” (Bathelt and Glückler, 2014 p. 1). That is, culture can be viewed as a set of norms, outlooks, and beliefs that influence the types of activities seen as acceptable and commonplace in a given situation. Within regions, these cultures develop over time, most often through the spread of the organizational culture of a dominant local employer (such as an international firm or a leading university) throughout the region through spinouts and movement of workers from the major anchor organization to other firms (Aldrich and Fiol, 1994, Schoenberger, 1997). The consequences of this are most visibly shown in Saxenian’s (1994) *Regional Advantage*, which illustrated how the open culture of universities like Stanford and firms like Hewlett Packard diffused into Silicon Valley's broader culture as opposed to the more closed-off corporate culture of Boston’s Digital Equipment Corporation and its wider technology community. The ability of firms to cooperate and share market and technical knowledge influenced how each region reacted to shifts in the global technology economy in the 1980s, with

Silicon Valley able to take advantage of the burgeoning personal computer market and while firms in Boston were not able to turn their innovative abilities to target new markets.

But while the literature is clear that culture matters, there is less consensus about how cultural outlooks influence the innovation process. There are two dominant theoretical frameworks for connecting cultural beliefs with the innovation process: embeddedness and proximity. Embeddedness refers to the ways in which economic activities are enabled and constrained by their relationships with social systems and actors' personal connections (Granovetter, 1985, Zukin and DiMaggio, 1990). While Granovetter's theory of embeddedness has become one of the most popular concepts in the social sciences, it provides precious little guidance on the processes through which cultural embeddedness influences economic activities such as innovation (Hess, 2004). It lacks a clearly established process to link contexts with actors' individual actions. Granovetter's main argument was that economic activities are embedded in social contexts, but this says little about the ways in which these contexts influence action. James (2007 p. 395) contends that embeddedness is "under-specified" as a concept and does not fully explain the processes that link culture and action. Similarly, much of the embeddedness literature in geography ignores wider arrays of institutional factors that go beyond the local scale and lacks a relational conception (Jones, 2008, Bathelt and Glücker, 2011). Actors do not adjust their practices to conform to their social contexts only due to the fear of sanction nor do they only employ practices that have been sanctioned within the cultural context they are embedded in. Rather, actors develop their practices within a particular social context but still possess the ability to experiment with new actions that they think may be sensible given their goals, resources, and situation.

Within the innovation systems literature, the concept of proximity has emerged as an alternative way of understanding the role of culture in the innovation process. Building on arguments made within the embeddedness literature, culture is seen as a source of ‘proximity’ that allows for easier cooperation and communication between different groups (Boschma, 2005, Capello and Faggian, 2005). People and organizations with ‘close’ cultural outlooks will have an easier time of communicating complex tacit knowledge than those with more distant cultural views, in the same way in which geographically proximate organization will have more effective collaborations than those more geographically distant (Gertler, 2003, Torre and Rallet, 2005). This cultural proximity can be engendered by long term geographic proximity between actors, but satellite offices of an international organization are more likely to share a common culture with each other than they are with nearby firms that come from a different organizational context.

However, cultural proximity is a very narrow and restricted view of one of the most complex social forces in the human experience. Cultural proximity is often modelled as a binary variable that proxies belonging to the same organization or industry. Similarly, shared geography is often seen as evidenced of a shared culture. This misses a great deal of cultural heterogeneity within groups and ignores other sources of shared cultural understanding that can build up over time. More importantly, proximity frameworks offer very little insight into the relationships between cultural outlooks and innovative practices: it can only suggest why inter-firm communication is easier or harder, which itself is a small part of the overall innovation process. Other aspects of the innovation process, such as *why* firms and people might proactively engage with others to acquire new knowledge or take the risks associated with radical innovation, are left unanswered.

One outcome of these weaknesses of existing cultural approaches is the inability to explain the effect of separate but overlapping cultures. Actors are not the product of a single culture: they are influenced by ethnic or religious cultures linked to their upbringing, the organizational culture of their employer, the cultural outlooks embedded in their industry, and the culture of the region they live and work in, to just name a few potential influences. Some of these cultural outlooks might align in what types of innovation practices are seen as normal or acceptable while others might conflict. Neither embeddedness nor proximity frameworks fully explain the effects of this complex overlapping of cultural influences. However, questions of overlapping cultures are crucial in understanding the interactive innovation and learning process, especially as open innovation approaches continue to dominate the R&D strategies of both large and small firms (Gassmann et al., 2010).

Such issues are particularly acute within the RIS literature. Firms in a RIS are often assumed to share a collective local culture by virtue of their shared geography (Baronet and Riverin, 2010). Firms and actors must adapt to this culture if they are to successfully integrate into the region's collaborative networks. Culture heterogeneity is frequently ignored, with one factor such as ethnicity or location often used as the sole indicator of shared cultural beliefs (Hsu and Saxenian, 2000, Raghuram and Strange, 2001). However, our lived experience tells us this is not the case. Firms in different industries within the same region might have different orientations towards collaboration and risk due to their organizational culture or industrial norms (e.g. banking vs technology). Similarly, we would also expect to see cultural differences between startups and more established firms, especially if those startups spun out from larger companies in response to management conflicts (Klepper, 2010). Cultural conflicts between university and industry researchers are often observed despite their close physical proximity in research parks

(D'Este and Patel, 2007). Cultural differences can lead to conflict within RIS that act as barriers to innovation. However, at the same time these differences can introduce a heterogeneity of practice that can help drive radical innovations and new solutions.

The innovation systems literature has done comparatively little to integrate more complex views of culture into their theoretical frameworks or empirical investigations. Culture is often treated as a single dummy variable for the sake of methodological parsimony and there has been limited investigation into the complex relationships between actors with differing cultural background or outlooks. This obscures the complex dynamics that occur when actors transverse multiple cultures, such as a local culture tied to the place where they live, the organizational culture tied to their workplace, and the sectorial culture tied to the industry they are a part of. This is more than an inconsequential detail: few if any actors involved in the highly socialized innovation process exist in a single cultural context detached from all other influences. Existing approaches to culture neglect these other cultural influences and provide little guidance to how we should understand their interaction. As a result, there is a need for a more nuanced approach to culture that embraces its heterogeneous and overlapping nature and that can explain how its complex structure influences innovation strategies and practices in a way that goes beyond a simple supportive/non-supportive cultural binary.

3. Bourdieuan Alternatives to Regional Culture

3.1 Bourdieu's Sociology of Practice

Given these issues, there is a need for an alternative explanation that can account for the role of multiple cultures in the innovation process. The work of Pierre Bourdieu is a particularly useful framework to explore these issues. Bourdieu developed a sociology of practice that examined the origins of the everyday actions people employ in pursuit of their goals (Bourdieu,

1977, Bourdieu, 1990). These practices emerge from the intersection of the rules of the social systems those actors inhabit and the actors' own internalized understanding of how those rules apply to them (Bourdieu and Wacquant, 1992). Innovative actors employ practices they believe make sense given their goals and knowledge of their social context. Social structures like culture do not determine what practices can be performed or cause actions to occur but instead create an environment in which actors can employ a near-infinite variety of practices in pursuit of their goals.

From this perspective, innovation can be conceptualized as a bundle of practices that encompass how individuals develop knowledge within organizations, absorb outside knowledge through both developing formal partnerships and through informal social networks, and how they recombine this knowledge to develop new market insights and technologies¹. These practices take place in fields, ordered systems of social relations and power hierarchies (Bourdieu, 1977). Fields represent a practical sense of what practices are both sensible and possible. Bourdieu (1990) frequently compared fields to the rules of game such as football: it has both formal rules (the length of a match) and informal rules (what is seen as poor sportsmanship). Within these rules players can employ a near infinite array of practices in pursuit of their (literal) goals.

Actors' practices are oriented around capital, which Bourdieu (1986) defined broadly as any type of labour appropriated on an individual basis. This includes traditional economic capital (income or profits), social capital (resources in a social network), cultural capital (knowledge of social rules), and symbolic capital (regard for certain professions or social positions). The values

¹ Bourdieu's work focusses specifically at individual rather than organizational practices. Organizational practices, such as innovation strategies, are the outcome of individual practices and decisions that are made within the context of an organizational field.

of these capitals are not fixed: their values depend on the structure of the field they are acquired and used within. While the main goal in a firm may be to increase their economic capital through increased sales or efficiency by innovating, individual actors may engage in innovative practices due to the importance of building social capital through networking with others as a way to acquire knowledge and increase their future career prospects or might want the symbolic capital of being associated with the development of a world leading technology or product, both of which increase their standing in the community. Depending on the nature of the fields an actor operates within, the symbolic capital of working with a 'cool' startup on a cutting edge technology might be more valuable than the economic capital of getting higher pay at a larger firm (Neff, 2012).

The rules and social hierarchies of a field are understood through an individual's habitus: their internalized knowledge of and disposition towards the fields they operate within (Swartz, 1997). An actor develops an implicit understanding of the rules of a field through their habitus, allowing them to decide what types of practices are likely to be successful given their goals and position within the field. An individual's habitus reflects his or her position within a field, so that: "tastes and dispositions structure the individual's subjective actions and experience." (Hallett, 2003 p. 130) This leads to different forms of practices appearing sensible to actors with different habitus. While a field may have objective rules, these rules are not understood in the same way by actors with different dispositions and backgrounds, leading to divergent practices and goals.

To date there has been little integration of Bourdieu's sociology of practice into the innovation literature. With a few exceptions such as Geels (2004), innovation scholars have largely drawn on Bourdieu's work on social capital rather than his broader work on practice.

However, there has been significant interest in Bourdieu by organizational (Battilana, 2006, Emirbayer and Johnson, 2008, Swartz, 2008) and entrepreneurship scholars (de Clercq and Voronov, 2009a, Karataş-Özkan, 2011, Pret et al., 2015). Much of this research has investigated how norms of legitimacy are developed within fields: actors who are seen as legitimate are more able to gather and employ the resources they need to accomplish their goals (de Clercq and Voronov, 2009b, de Clercq and Hoing, 2011). Within this framework, culture can be understood as the stabilized patterns of practice that develop through actors' habitus-based understanding of the fields they operate within (Spigel, 2013). Culture represents the dominant understandings of a field within a particular group or region and the types of practices normalized within it. In particular, culture captures the stabilized understandings of the rules of a field within actors' habitus. While actors can and do violate the rules of a field, these violations go against the 'sensibilities' of the culture and therefore reduce violators' legitimacy in the eyes of others, making it harder for them to acquire the resources they need to start and grow the firm. Culture can therefore be described as a process through which actors develop a practical understanding of what types of practices make sense given their knowledge of a field and their habitus-informed goals.

3.2 Fields of Innovation

The actors involved in the innovation process — technologists, managers, researchers, and customers to name a few — are embedded in multiple overlapping fields and have different habitus through which they understand the often conflicting rules and structures of these fields (Fligstein, 2001). These fields and habitus will affect the innovation practices actors employ inside and outside of their jobs. Innovative actors are affected by several different fields, such as:

- The organizational field — the norms and goals of the firm or organization they work for, including reward structures, corporate missions, and organizational culture.

- Sectorial field — the norms and power relations in the market or technology sector (e.g. telecommunications or consumer software), including career expectations, job mobility, and paths to market and firm exit.
- The local field — norms and outlooks associated with the community in which the actor lives and works, such as attitudes to work and family, risk taking, and entrepreneurship.
- Ethnic/national/personal fields — beliefs about risk, reward, and career goals developed within the structure of an actor's personal heritage and background, such as their ethnic culture, religious upbringing, or educational experience.

Each field has its own set of norms that affect the values of different forms of capital within them and normalize different types of practices and outlooks, contributing to the development of different types of innovative practices. For example, a researcher in a university and a technologist in an international firm may both inhabit the same local field whose structure seemingly encourages deep networking and knowledge sharing, such as a place like Silicon Valley or Boston. But their position within their different organizational fields will influence their relationships towards innovative practices such as networking. The university researcher might avoid networking with other local researchers because she believes it will do little to advance her pursuit of the capital she is most concerned with: the symbolic capital of high ranking publications based on original research. The technologist might see the value of open communication but not believe that networking will contribute to the form of capital he is most concerned about: his department's profit margin and the promotion tied to it. Thus, even in a local field whose structure seems to encourage open communication and knowledge sharing, actors may choose contradictory practices due to the influence of other fields. The practices an actor employs will depend on how they interpret the conflicting norms of the fields affecting them and the types of capital they are most interested in accumulating based on their habitus-informed understanding of these fields.

These choices are not dictated by a single field but emerge organically from an actor's understanding of their position within multiple fields.

Innovation practices emerge from an actor's habitus-based understanding of how they fit into the overlapping array of fields they work within. This is usually a non-conscious process where actors employ the practices that make sense to them given their own personal goals (which are developed within the context of these overlapping fields) and what types of practices are seen as legitimate, common, or sensible given their current context. Actors can, of course, make strategic decisions to improve their own position within the field by developing calculated new practices and approaches. But even this decision is made within the context of their position within multiple fields: while changing jobs to move up a corporate hierarchy might be normalized in a sectorial field it may be seen as illegitimate and disloyal in a local field that has been historically dominated by a single major employer. In order to balance the often competing demands of these fields, an actor must be "...a virtuoso [who can] play on all the resources inherent in the ambiguities and uncertainties of behaviour and situation in order to produce the actions appropriate to each case" (Bourdieu, 1977 p. 8). Practices are not dictated by the structure or 'culture' of a field; rather their interactions create contexts where certain types of practices seem to be better suited for given situations.

From this perspective it becomes clear that a single point of similarity such as being in the same region is not enough to assume that actors have same attitudes towards innovation practices. The influence of other organizational, sectorial, or personal fields will temper the effects of the local field. Rather, actors develop their practices within the context of multiple, overlapping and often conflicting fields. However, at the same time it is necessary to acknowledge the importance of the local field. Actors are embedded in this field as part of

their everyday life; unlike their organizational or sectorial field they do not leave the local field when they leave work at night. The local field is likely to have the strongest impact on innovation practices for actors deeply embedded in it.

The organizational fields of firms that develop within the region will be heavily influenced by the structures and rules local fields as will the habitus of actors who are raised and educated in it. This is because the organizations founders will have developed their habitus in the local field, affecting their practices and outlooks as they develop a corporate culture. Indeed, entire sectorial fields can be shaped by the local field in which they originally developed, as evidenced by the continued cultural connections between the computer technology sector with Silicon Valley's culture. However, at the same time the local field can be influenced by the organizational of dominant employers or the ethnic/national fields the dominant populations, such as how Detroit's local field developed in conjunction with the organizational field of firms like Ford and General Motors (Klepper, 2007).

The local field can be thought of as a 'lens' through which actors understand other organizational and sectorial fields. While actors are influenced by all types of fields, they must meet the rules of the local fields if they are to be seen as legitimate actors on a day-to-day basis with others who are influenced by the local field. As illustrated in Figure 1, the local field acts as a 'lens' through which actors understand other fields and develop their practices. While non-local fields have their own unique rules and norms, how these rules are implemented are heavily influenced by the structures of the local field due to the fact that the actor is constantly embedded in the local field and their habitus has developed around it. This is particularly true of those who grew up and were educated in that field, but even

newcomers must quickly adapt to the structure of the local field if they are to succeed within it. However, the precise influence of the local field vis-a-vis other fields depends on the actors' position within them: an innovator who does not plan on remaining long in a region (for instance, an executive who expects to be quickly transferred out to another role) will not need to adjust their practices to meet the exceptions of a local field as much as someone who expects to spend their life in that region.

*****Figure 1 here****

For example, many entrepreneurs form their entrepreneurial identity by interpreting an idealized vision of Silicon Valley through their own local characteristics (Gill and Larson, 2014). This idealized view of Silicon Valley entrepreneurship can be seen as the structures and norms of the field of technology entrepreneurship. This field is interpreted through the lens of an actor's locally developed habitus and translated into practices. Because actors' habitus are developed within their local field, their responses to the rules and structures of non-local fields is coloured by the practices that make sense locally.

James' (2005, 2007) study of technology innovation in Salt Lake City is an instructive example of this process. Many technology firms in the region are either founded or dominated by Mormon workers, whose religion discourages many practices commonly associated with the technology industry, such as working late and copious consumption of caffeine and alcohol. These Mormon workers must find a balance between the norms and customs of the local field (and the personal field of their religion) and the broader field of the technology, whose structure often conflicts with this local field. Similarly, when outside firms open offices in the region to tap its skilled labour force or when non-Mormon workers join firms whose organizational field is dominated by Mormon norms, managers must find a

way to balance the competing norms of their organizational field with the local one.

However, at the same time Mormon workers deeply embedded in the local field will have to adjust their own practices if they work for an outside firm whose organizational field normalizes practices like drinking after work or late nights at the office. Successful actors in this situation will be able to improvise new practices to achieve their goals based on their habitus-based understandings of the multiple fields they experience, such as substituting networking in bars for networking at church events in order to achieve the same knowledge flow found in other regions. Actors without a good habitus-based understanding of the local field (such as newcomers to the region) might encounter difficulties if they try to employ the same innovation practices that worked in a place like Silicon Valley or Denver. They will have to experiment with new practices that make sense both within their pre-existing organizational field as well as the new local field.

From this perspective the local field (or any field) does not determine innovation practices. Instead, practices are created through actors' habitus-based understanding of the fields they operate within. The local field plays an important role in how the rules of other fields are understood due to its overriding importance in actors' day-to-day lives. However, the importance of the local field will vary based on how embedded an actor is in it and the power of that field. Actors who are new to the local field or who are only temporarily inside of it (for example, a manager transferred in from another location) will not be heavily influenced by it. This may lead to conflict if their practices violate local norms as their habitus is not attended to the unwritten rules and expectants of the local field. However, if they continue to engage with the local field they will eventually learn the contours of the local field and their habitus will adjust accordingly.

4. Conclusion: Fields, Cultures, and Regional Innovation Systems

Regional innovation systems depend on a coherent local culture that encourages the knowledge sharing and cooperation that underlie successful innovation. However, this local culture cannot be thought of as homogenous: different organizational or sectorial structures might clash with the local culture that has developed over time. This can lead to conflicts between actors within these different organizational about their engagement with their local RIS. This cultural conflict should not be seen as simply an attribute of underperforming RIS; every RIS will have a diverse array of cultural influences affecting different actors and firms. However, current models of culture within economic geography and innovation studies have difficulty explaining how these cultural conflicts influence the innovative activities of actors. Regional culture is too often cast a deterministic force that *causes* innovation to occur and a resource that firms can access simply by locating an office within a region. Most importantly, it is difficult to conceptualize how actors develop their innovative practices within the context of multiple, overlapping cultural influences. As a result, the role of culture within the RIS literature is underdeveloped. There has been little discussion about the relationship between local cultural systems and the organizational cultures of firms and industrial culture son industries. However, these potential interactions must be understood in order to develop effective ecosystem policies that can build on the complex structures of local cultural outlooks.

A Bourdieuan perspective provides a more nuanced approach to this complex situation. The activities underlying regional innovation systems can be understood as discreet practices carried out by actors as part of their day to day lives. Actors choose practices not because cultural or organizational rules dictate them but because carrying out those practices make

sense given their habitus-based understanding of the multiple fields they are embedded within. This allows more individual agency within innovation systems, with actors developing new practices and strategies based on their individual circumstances. However, this is not to ignore the methodological challenges of a Bourdieuan approach. Its practice-based approach makes it difficult to use standard measures of innovation such as patents or R&D investments, instead requiring qualitative methods that seek to identify the discreet practices underlying innovative activities and the rationales behind them. But, as shown in the burgeoning Bourdieuan entrepreneurship literature, this work has the potential to help integrate a practice and process-based perspective into innovation studies.

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Figure 1: Relationships between local and non-local fields