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The Role of Trust in Regional Development

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The Role of Trust in Regional Development

Markus Grillitsch¹ and Magnus Nilsson²

Abstract

Regional development is a dynamic process where relatively stable periods are interrupted by phases of more rapid transformation and disruption. Such dynamics are heavily influenced by the scope and nature of knowledge networks. Trust is a key mechanism influencing the mobilization of networks for learning and innovation and thereby an important factor for understanding regional development. This paper sets out to unpack the role of trust in regional development by advancing a differentiated view that sheds light on why, when, and how trust affects regional development dynamics in a positive or negative way. Avenues for future research are identified.

Keywords: Regional dynamics, trust, networks, path-dependency, path emergence, lock-in

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1 Introduction

Regions have to adapt to changes in the economic, technological, and environmental landscape. This has always been the case but is a particularly pressing need when regional economies face deep structural changes such as the diffusion of artificial intelligence, the shifting of power and influence towards emerging economies, or responses to global environmental concerns such as CO₂ emissions and climate change. In such periods, the future of regions depends on introducing path-breaking innovations in terms of for example new technologies, fundamental changes of production and consumption processes and patterns, or the reorientation towards new economic activities.

Such radical change processes where regions have to break with existing development paths pose important challenges. In this paper, we contextualize regions as territorial contexts for social and economic transactions (Boschma, 2004) where a region may provide the context for several regional development paths unfolding simultaneously (Martin and Sunley, 2006). In the long run, development paths display cyclical patterns, even though these do not necessarily follow the stylized trajectories invoked in the product, cluster, or industry life-cycle models (Tripl et al., 2015). However, there is widespread agreement that regional paths substantially change over time as concerns production and innovation processes as well as structural conditions such as knowledge bases and networks (Ter Wal and Boschma, 2011; Fornahl and Hassink, 2017). How regional paths change, to what extent new opportunities are identified and grasped, and the scope of agency of regional actors in the wake of landscape changes relates to the depth and scope of networks and ties (Tripl et al., 2017; Bathelt et al., 2004; Grillitsch and Sotarauta, 2018).

One way networks differ within and between regions – and one that has substantial impact on the nature of knowledge transfer, learning dynamics, innovation and regional path formation – is in the degree of embeddedness and level of trust. Embeddedness is based on the assertion that any type of exchange within or between groups takes place in a historical and geographical context, and that actors are influenced by their position in a network and the nature of the ties (Granovetter, 1985). Embeddedness reduces uncertainty and thereby facilitates transactions and the transfer of knowledge and information (Gulati, 1998). A distinction is typically made between two aspects of embeddedness (Rost, 2011). Structural embeddedness refers to the position of actors in a network – emphasizing the virtues of open

network structures for generating valuable knowledge and new insights (Burt, 1992). Relational embeddedness captures the strength of ties between actors – emphasizing the benefits of strong, trust-based ties in closed networks for exchange of complex tacit knowledge (Coleman, 1988). Trust is thus a key mechanism impacting regional development dynamics, and the conditions for and implications from trust formation influence the avenues for continuous development and new path emergence. While trust is considered a key explanatory mechanism in economic geography and regional studies, there are few attempts to more directly address how trust is formed and how different types of trust influence regional development – in positive and negative ways (Murphy, 2006; Staber, 2007; Hess, 2004; Nilsson, 2019; Mathews and Stokes, 2013).

In this paper, we advance a differentiated view on trust in relation to regional development. We argue that the role of trust for regional development is conditional i) to the phase of regional path development (section 2), i.e. whether the focus lies on growing regional specializations or on path emergence, and ii) to how actors are relationally and structurally embedded in networks (section 3). In order to develop the argument, we unpack trust based on insights from organizational studies and psychology (section 4). As our focus is on growing specializations versus the emergence of new paths, we distinguish conceptually between initial, still fragile trust and gradually developed deep trust. We disentangle the antecedents of initial and gradual trust as a basis of our discussion how these two types of trust affect the growth of regional specializations and the emergence of new development paths (section 5). We conclude the paper with some remarks about the implications for further research in economic geography and regional development.

2 Regional development dynamics

A region is neither a unit that grows or declines nor a mere container of socio-economic processes. A region is a functional territorial context within which social and economic actions are taken (Boschma, 2004). The territorial context is relevant as it frames social and economic actions as regards what is possible, feasible, or desired given available natural assets and resources, built infrastructure and material assets, individual skills and knowledge, as well as region-specific institutions (Maskell and Malmberg, 1999). These regional contexts are functional as they encompass, on the one hand how social and economic actions are related

to regional preconditions and on the other hand, how social and economic actions themselves are intertwined in traded and untraded interdependencies (Storper, 1995) in systems of production and innovation. These functional interdependencies are the source of path-dependencies in regions.

Regional path-dependencies do not, however, imply that regions are necessarily characterized by a single specific industrial path. In fact, in most regions, several different industries are anchored. For example, in the northern Swedish mining region of Kiruna, there are additional industrial paths in space and tourism. Obviously, these three industries draw on very different regional assets, knowledge bases, and are embedded in distinct extra-regional networks and institutions. As Martin and Sunley (2006, p. 412) put it “different industries within a region may be subject to quite different sources/mechanisms of path dependence, some resource based, others subject to particular externalities of localization, some tied to the inertia of large sunk costs of physical or infrastructural capital, still others subject to technological ‘lock-in’, and so on”.

Functional interdependencies give rise to localization and urbanization economies. The localization argument relates to the benefits of industrial specialization and goes back to Marshall (1920, p. 271) who argues that “[w]hen an industry has thus chosen a locality for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighbourhood to one another”. Industrial specialisation should, however, not be understood as collocation of firms in one specific industry but as interrelated activities in a particular location that promote learning, innovation and competitiveness in a particular field, often crossing sectoral boundaries (Grillitsch et al., 2018). This is captured in Porter’s (1998: , p. 78) definition of clusters: “Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. [...] Clusters also often extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies, or common inputs”.

Urbanization economies capture the effects of industrial diversity in a region on the innovativeness, and competitiveness of firms (Florida, 2003; Glaeser et al., 1992; Jacobs, 1969). Industrial diversity has two important effects on regional industrial growth dynamics.

First, it reduces the dependence on one specific industry, as pointed out already by Marshall (1920: , p. 157): “A district which is dependent chiefly on one industry is liable to extreme depression, in case of a falling-off in the demand for its produce, or of a failure in the supply of the raw material which it uses. This evil again is in a great measure avoided by those large towns or large industrial districts in which several distinct industries are strongly developed.” Frenken et al. (2007) called this the portfolio effect of diverse cities.

Second, diversity can also stimulate learning and innovation. There are two sources for learning based on related and unrelated variety (Frenken et al., 2007). The literature on relatedness argues that similarities in market or technological knowledge facilitate learning, innovation, and firm diversification into related industries (Content and Frenken, 2016). However, it has also been questioned whether such related diversification may not exhaust its potential at some point to promote new regional growth paths. Grillitsch et al. (2018) draw attention to unrelated knowledge combinations as unexplored potential for new industrial path development. Unrelated knowledge combinations are underpinning radical innovation processes (Strambach and Klement, 2012) and firms combining different types of knowledge tend to be more innovative (Tödting and Grillitsch, 2015; Grillitsch et al., 2016) and grow faster (Grillitsch et al., 2019).

These traded and untraded interdependencies within and between regional development paths are not static but change over time. The growth of regional specializations is characterised by building up such interdependencies. The literature on cluster evolution suggests that this involves developing skills and capabilities supporting the new specialisation, as well as structuring production and innovation networks (Ter Wal and Boschma, 2011; Menzel and Fornahl, 2010). Hence, there is a process from a point when networks are diffuse, which implies that it is not yet clear which actors will take central roles in the development of the regional path, to a point where the activities of a large number of actors become coordinated in networks. Our main interest in this phase of growing regional specializations is the role of trust in the process of structuring networks.

Eventually, however, regional specializations may be under pressure due to changes in technologies and markets. In such situations, renewal and the development of new regional paths are essential if income opportunities, jobs, and welfare are to be maintained in the region. When a regional specialization matures the established traded and untraded

interdependencies turn into negative lock-ins. Grabher (1993) identified three forms of lock-in: Cognitive lock-in relates to a homogeneous knowledge base and similar world views, which make it difficult to perceive and react to changes in technologies, markets, and institutions. Functional lock-in relates to input-output dependencies, such as the difficulty to replace key suppliers or clients. Finally, political and institutional lock-in refers to coalitions of elites to sustain existing development paths.

The development of new regional paths requires identifying, accessing, and appropriating new knowledge and resources. In diversified regions, this may be possible within the region. However, often extra-regional linkages outside established production and/or innovation networks are required. Hence, the role of trust will be different in the process of new path emergence as compared to growing existing specializations. Trust developed in existing networks is of less use, potentially even counterproductive for establishing new development paths, and trust needs to be build up to new partners.

In summary, we are interested in the role of trust in facilitating network dynamics that i) underpin the growth of regional specializations, and ii) promote the emergence of new paths once existing specializations have lost their momentum. In order to go beyond existing discussions on trust in regional development, we first discuss the difference between relational and structural embeddedness and then unpack processes of trust generation and maintenance based on literature in organizational studies and psychology. This paper thus focus not only on the generative dimension of trust – one that is often overemphasized in the literature (Sayer, 2002) - but also on the potentially detrimental effects of trust for the renewal of regional paths and the formation of new paths.

3 Relational and structural embeddedness

The role of trust in regional development is conditional to the phase of development of regional paths as well as to how actors are embedded in trust-based networks, which is discussed in this section. Two key dimensions influencing such embeddedness are the relational closeness between actors and the structural configuration of networks. This is discussed in terms of relational and structural embeddedness (Rost, 2011; Rowley et al., 2000; Gulati, 1998). The former refers to the strength of ties (Granovetter, 1983; Granovetter, 1985) and often emphasizes the benefits of strong ties (Coleman, 1988) – i.e. a cohesion perspective.

The latter focuses on the density of and position within networks, distinguishing between dense and sparse networks – i.e. a positional perspective. The role of boundary spanners, brokers and gatekeepers for enabling actors in sparse networks to access and utilize valuable and non-redundant knowledge and information is often emphasized (Adler and Kwon, 2002; Burt, 1992).

Relational embeddedness refers to the emergence of effective norms that promote trust and thereby strengthen social capital (Adler and Kwon, 2002; Rost, 2011). Coleman (1988), a main proponent of this view, argues that, in a closed network structure, actors are more willing to share tacit and sensitive knowledge due to solidarity benefits associated with strong, trust-based ties (Hansen, 1999; Tsai and Ghoshal, 1998). The very value of social capital is in Coleman's view largely a matter of the formation of trust, especially within closed groups of actors:

“Just as physical capital and human capital facilitate productive activity, social capital does as well. For example, a group within which there is extensive trustworthiness and extensive trust is able to accomplish much more than a comparable group without that trustworthiness and trust.” (Coleman, 1988: , p 101)

In contrast, structural embeddedness goes beyond the direct ties and focuses on the way in which the structural position in a network generates informational value. It acknowledges that information travels through the structure of the network itself and not only through proximate ties in networks (Gulati, 1998). Network structure and position are central for innovation as it influences both the transfer and content of exchange. The structural embeddedness perspective is often associated with Burt's (1992) work on structural holes and especially the propositions that networks rich in structural holes (i) offer flows of less redundant information making actors better informed of new opportunities as well as market and technological development; and (ii) allow entrepreneurial behavior (Rost, 2011).

This would infer that the structural dimension of networks is particularly important in the emergence of new regional paths while relational embeddedness is central in the growth of regional specializations. However, even if it may appear on first sight that there is a tradeoff between relational and structural embeddedness, evidence suggests that these two types of

embeddedness rather are complementary (Rost, 2011; Rowley et al., 2000). Viewing the two as complementary infers that the solidarity benefits of relational embeddedness can be combined with the information benefits associated with sparse networks. Hansen (1999), for example, found that while weak relational ties between different groups of actors facilitated the search for non-redundant knowledge and information, such ties impeded the transfer of complex knowledge and information. Investigating the complementarity of structural and relational embeddedness, Rost (2011: p.588) finds that “...weak network architectures have no value without strong ties, whereas strong ties have some value without weak network architectures but are leveraged by this type of structure.”

4 Unpacking trust

We aim to explain the way in which structural and relational embeddedness interact in situations of regional specialization and path formation respectively. In doing so, the concept of trust is instrumental. Trust is essentially the willingness to accept vulnerability based on the positive expectation on the behavior of others (Rousseau et al., 1998). It is a facilitator of exchange relationships and networks, especially when it comes to knowledge transfer between individuals and organizations. Trust is considered a more dynamic complement or even substitute for contractual agreements (Woolthuis et al., 2005)¹ and thus plays a central role in regional innovation systems, where knowledge spillovers and transfer between organizations is central (Asheim et al., 2016; Doloreux and Parto, 2005; Cooke, 1998). Placing trust at the center of analysis – and trust formation being something that is greatly helped by repeated and frequent face-to-face interaction, the relationship between collocation and innovation is better understood (Nilsson and Mattes, 2015). In our analysis, we also discuss the dark side of trust in terms of circumscribing opportunities for new path development.

Within the trust literature, a fundamental distinction directly relevant to regional development paths is that of trust between actors with no previous exchange history and trust that develops and deepens through repeated exchange over time – i.e. initial vis-à-vis gradual trust. Initial and gradual trust differ both in terms of their antecedents and in terms of their

¹ The relationship between trust and contracts is subject to academic debate. Within transaction-cost economics, contractual agreements are seen as a form of trust – often referred to as deterrence-based trust. Viewing trust as absence of uncertainty, contractual agreements that reduce uncertainty and limit the scope and opportunity of malfeasance create trust (Woolthuis et al., 2005; Williamson, 1993).

resilience and depth. The strength or depth of trust is closely linked to social exchange over time between actors (Mayer et al., 1995; Kramer, 1999).

4.1 Initial, fragile trust

Initial trust between actors with no first-hand experience of each other is based on perceived similarities, favorable exchange conditions, referrals, and familiarity (McKnight and Chervany, 2006; McKnight et al., 1998). Conceptually, the antecedents to initial trust can be split into three groups: [i] cognitive cues and first impressions, [ii] institutional factors, and [iii] situational conditions. Table 1 provides an overview of the antecedents to initial trust formation (cf. Nilsson, 2019).

Cognitive cues and first-impressions refer to perceived similarities between actors, perceived trustworthiness of actors because of certain attributes, and reputational inference. Perceived similarity, simply put, has to do with the fact that individuals tend to trust others who appear similar to themselves in terms of, for example, cultural background, norms and attitudes (Gargiulo and Ertug, 2006; Levin et al., 2006). In absence of firsthand experience of a trustee, perceived similarity reduces uncertainty and facilitates exchange. Another antecedent related to cognitive cues and first impressions is stereotyping, which refers to trust in an actor because his/her belonging to a trusted group (Crisp and Jarvenpaa, 2013; Williams, 2001). An example is an actor with no apparent competing interests in an exchange – for examples academics and university researchers involved in technological development. A third type of initial trust antecedent related to cognitive cues and first impressions is labelled reputational inference; i.e. when an actor is recommended by a trusted third party. This entails both perceived similarity in terms of belonging to the same social/professional network (Burt and Knez, 1995) and a direct recommendation as to trustworthiness (Gulati, 1998).

Institutional and situational antecedents refer to a belief in the integrity of institutions and situational conditions as well as familiarity with these conditions (Bachmann and Inkpen, 2011; Nooteboom, 2006). In line with this, institutional trust antecedents are grouped into structural assurance belief (i.e. that institutional conditions such as formal laws and regulation as well as culture, norms and values will penalize malicious behavior and thereby deter from opportunism) and situational normality belief (i.e. perceived familiar and shared rules of the game). Similarly, situational conditions are related to, on the one hand, deterring and inducing

conditions (e.g. perceived shared interests that reduce risk of opportunism and increase the perceived potential for knowledge exchange) and on the other hand situational similarity and stability (i.e. perceived familiarity with situational conditions) (McKnight et al., 1998).

Table 1: Antecedents to initial trust formation

Basis	Antecedents	Explanation	Key references
Cognitive cues and first impressions	<i>In-group categorization - perceived similarity in terms of...</i>	- Shared culture, norms, attitudes - Shared communities - Shared social networks	(Gargiulo and Ertug, 2006; Jones, 1991; Levin et al., 2006)
	<i>Stereotyping</i>	Trustee belonging to a trusted group (e.g. scientists)	(Williams, 2001; Crisp and Jarvenpaa, 2013)
	<i>Reputational inference</i>	Reputation and third party referrals	(McKnight and Chervany, 2006; Das and Teng, 1998)
Institutional factors	<i>Structural assurance belief</i>	- Trust in the system and that institutions will enforce opportunism	(Bachmann and Inkpen, 2011; McKnight et al., 1998; Möllering, 2006; Shapiro, 1987; Zucker, 1986)
	<i>Situational normality belief</i>	- Familiar/shared rules of the game, both formal and informal based on e.g. shared knowledge base and communication	ibid
Situational conditions	<i>Deterring and inducing conditions</i>	Inducing factors - e.g. Perceived shared interests and other trust-promoting conditions	(Gargiulo and Ertug, 2006; Ring and van de Ven, 1992)
		Facilitating/deterring conditions – e.g. joint networks entail potential for deterrence as opportunism infer social sanctions	ibid
	<i>Situational similarity</i>	Perceived potential for successful communication based on familiarity with situational conditions	(Lewis and Weigert, 1985)

Source: own compilation

While initial trust is conducive for initiating collaboration, it is limited in terms of its strength/robustness. Initial trust is described as ‘fragile’ as it easily dissolves following minor infractions or disagreements between trustee and trustor. In situations where more complex and sensitive knowledge and information is exchanged or in situations of high uncertainty, a deeper level of trust is required.

4.2 Gradual, deep trust

In contrast to fragile/shallow trust, robust/deep trust develops gradually from the experiences of direct exchange over time (Ring, 1996; Molm et al., 2009). There are two types of gradual trust antecedents (see Table 2): [i] cognition based (rational) antecedents and [ii] affect based (emotional) antecedents (Lewis and Weigert, 1985; McAllister, 1995). Cognition-based antecedents refer to experience-based rational beliefs about the trustee’s competence and ability, reliability, integrity and benevolence (Mayer et al., 1995; Usoro et al., 2007). Affect-

based antecedents refer to trust that is based on identification and empathy with the trustee (McAllister, 1995). Repeated and frequent social exchange between actors is a basis for both cognition and affect-based trust. While face-to-face interaction is not a necessary condition to develop deep trust, it has repeatedly been showed that face-to-face exchange facilitates the formation of deep trust – not least in terms of the speed by which it is established (Naquin and Paulson, 2003). A key reason for this is that face-to-face situations enables communication of more complex and rich meanings (Turner, 2002; Nilsson, 2019).

Table 2: Antecedents to gradual trust formation

Basis	Antecedents	Explanation	Key references
GRADUAL TRUST			
Cognition-based: Experience-based rational belief about trustee's...	...competence and ability	Experience of social interaction	(Mayer et al., 1995; Usoro et al., 2007; Ring, 1996)
	...reliability	Experience of social interaction	Ibid
	...benevolence and integrity	Experience of social interaction	ibid
Affect-based: Experience-based emotions and concern for and identification with the trustee (affective)	Feelings of empathy towards trustee	Experience of social interaction	(Bigley and Pearce, 1998; Droege et al., 2003)
	Identification with the trustee	Experience of social interaction	(Kramer, 1999)

Source: Own Compilation

Deep trust is thus to a considerable extent an outcome of shared understanding, identification and rapport between individuals within and across organizations (Droege et al., 2003; Ring, 1996). Once established, deep trust has proven surprisingly resilient/robust over time – even in extended periods without direct exchange between actors (Nilsson and Mattes, 2015). Relationships backed by deep trust allow for effective and efficient exchange of information and knowledge, especially of a sensitive and/or complex nature. However, while trust in many cases has a virtuous effect on collaboration, knowledge spillovers and innovation, there are also potential negative outcomes (cf. the discussion of Krackhardt, 1992: on the role of strong and weak ties; Granovetter, 1983). In particular, affect-based deep trust can be detrimental in terms of creating lock-in, which we will discuss in detail in section 5.

5 A space and time sensitive view on trust in regional development

As elaborated earlier, a fundamental tension exists between the need for openness and renewal of regions and gradual strengthening of relationships within existing regional paths. In this chapter, we elaborate as to why trust is an important factor for explaining how regional paths evolve against the backdrop of such a tension. We discuss the role of initial, fragile trust and gradually developed deep trust for the growth of regional specializations as well as for the emergence of new regional paths.

5.1 Trust in the growth of regional specializations

A central process in the evolution of regional industries is the emergence of (untraded) interdependencies that support regional specializations (Storper, 1995). This refers to building and strengthening networks, relationships and shared practices with actors (local as well as non-local) that provide inputs, develop skills and capabilities, and exploit opportunities within a specific field. As an industrial path has formed in a region, its evolution into a strong specialization requires the formation of networks for knowledge sharing and learning (Ter Wal and Boschma, 2011). This typically coincides with the alignment of regional actors in terms of a shared knowledge base that further facilitates interactions (Menzel and Fornahl, 2010). These processes lead over time to strong traded and untraded interdependencies, structured networks, and a shared framing for interaction, and consequently to a high degree of structural and relational embeddedness. Also, in the growth phase of regional industries, emphasis is largely on the exploration and exploitation of resources and competencies within a given path rather than exploring new industrial trajectories.

5.1.1 The role of initial – still fragile trust in the growth of regional specializations

Initial trust is necessary to develop new networks and can be relevant for growing regional specializations despite the fact that networks tend to become more structured, rigid and hierarchical over time. Initial trust is essential for new actors as well as firms that aim at extending their markets globally because such firms often need to forge new ties. Hence, to the extent that the growth of regional specializations is driven by the entrance of new firms or firms that need to extend their networks globally, initial trust will be of great significance.

The region can, as a functional territorial context framing interactions and behavior, play an important role in facilitating initial trust. A shared regional cultural background and sense of regional identity associated with for example industrial districts (Becattini, 2002) provide a basis for initial trust antecedents in the form of cognitive cues and first impressions. This is often complemented with trust-promoting institutional factors such as being subject to the same legal and regulatory system – shared formal and informal rules of the game – within a region (Gertler, 2004). In addition to this, cluster organizations and other local policy initiatives have traditionally focused on creating situational conditions that promote initial trust such as various events to connect local companies. An example of this is the industrial district of Gnosjö in Sweden, where the acceptance of new actors is largely tied to cues such as belonging to the religious community/church and/or other associations tied to the local identity (e.g. engagement in sports association, Lions etc.).

However, regions can also provide cognitive cues that promote initial trust in long-distance relationships. For instance, being located in Silicon Valley may be a signal of trustworthiness for an ICT firm (i.e. stereotyping). In that way, branding of places can play an important role in the growth of regional specializations. Another example is the participation of local support organizations (e.g. cluster organizations) in global events (e.g. fairs) thereby providing local firms with an arena in which they may benefit from situational trust in relation to new actors external to the region.

5.1.2 The role of gradually developed deep trust in the growth of regional specializations

In the growth of regional industries the existence and evolution of deep trust is important for developing the relational embeddedness required to enter into close collaborations, aligning production networks and sharing both sensitive and complex knowledge. Deep trust facilitates the speed and effectiveness of knowledge transfer, thereby promoting incremental innovations along an existing industrial trajectory. Deep trust develops gradually through interactions over time. The existing development trajectory provides the frame for such interactions. Considering that regional paths are typically embedded in global production and innovation networks (Henderson et al., 2002; Asheim and Isaksen, 2002; Cooke, 2012), these interactions can be both local and global and thereby provide opportunities of developing deep trust in networks at different spatial scales. However, due to the time-geography of individuals (Malmberg and Maskell, 2006) and social, cultural and institutional embedding

(Gertler, 2004) regions provide a context that promotes the gradual development of deep trust within a field of specialization.

For instance, Grillitsch and Asheim (2016) analyze the case of More and Romsdal, a semi-peripheral region in Norway, which is known for its leading cluster in the maritime industry. According to the authors, the regional firms excel in high-speed incremental innovations due to informal networks among the cluster firms, a high level of trust, flat hierarchies empowering workers, and an entrepreneurial attitude. This is an example of deep trust, which positively affects knowledge exchange because actors are more willing to share useful knowledge, listen, and absorb others' knowledge, thus reducing transaction costs associated with knowledge transfer.

5.2 Trust in the emergence of new regional paths

Once regional specializations have matured, there is a risk of becoming locked into a way of thinking and working that inhibits necessary renewal and makes the regional industry sensitive to changes in the competitive environment (Hassink, 2010; Tödtling and Trippl, 2004). When the competitive environment changes and previously successful business models fail, regions need to renew their economic basis, which requires networks that can provide non-redundant information. From a structural perspective, this means that networks within existing specializations are problematic while networks across social structures (e.g. sectors, industries, professions) – in network theory so-called structural holes (Burt, 1992) – can provide important new impulses (Grillitsch, 2018).

5.2.1 The role of initial – still fragile trust in the emergence of new regional paths

In order to source novel and non-redundant knowledge and build relational ties with new actors, the role of initial trust formation is of central importance. The antecedents to initial trust formation are, however, also a source for path-dependence. This is because the antecedents to initial trust are to a larger extent given in relation to groups and contexts the actors are familiar with, i.e. within given development paths or within the region, than in relation to groups, contexts, or networks that are unfamiliar to the actors. However, it is the unfamiliar contexts, which offer the largest learning potential as knowledge will be novel and non-redundant as compared to knowledge provided in existing networks (Granovetter, 1973). Consequently, without active efforts to venture into new networks, there is a considerable

risk that new linkages provide access to similar (redundant) knowledge and information. Conversely, actors who attempt to establish relationships with completely new partners from outside the existing networks and communities will face the problem that typical similarity-based antecedents of initial trust are missing. In such situations, boundary spanners have a central role in acting as conduits of initial trust between unrelated actors (by means of third-party referrals).

The region can in this case play an important role. On the one hand, initial trust may be higher for actors that are located in the same region. This can be due to cognitive cues, such as a shared culture, and institutional factors, such as shared formal and informal rules of the game. In addition, initial trust is facilitated when the exchange takes place under familiar situational conditions; e.g. tackling problems that affect a local community. Interestingly, Trägårdh et al. (2013) find that even in an overall high-trust society like Sweden, there are significant differences in to what extent individuals trust others in their community or municipality, a property they refer to as localized trust. Laursen et al. (2012) find that such localized trust positively affect innovation performance of firms in Italy. In that way, being part of the same region may help to develop new ties. However, this will only help in terms of new path development if the region offers heterogeneity in their knowledge and industrial base. Otherwise, region-related antecedents of initial trust are reinforcing lock-ins.

Initial trust is thus a source of lock-in particularly in homogeneous, often small, regions in terms of inhabitants, firms, and jobs (Westlund and Kobayashi, 2013). Openness for exogenous sources of knowledge is essential for new path development in such regions (Trippel et al., 2017; Fitjar and Rodríguez-Pose, 2011). Having said this, it may entail substantial investment (time and money) for actors in small peripheral regions to develop new non-redundant network ties because antecedents for initial trust are mostly absent. The location an actor holds (e.g. in a well-known and prestigious location like metropolitan regions or knowledge areas like Boston or Silicon Valley) may provide cognitive cues in the form of stereotypes and reputational spillovers that substantiate initial trust formation. However, actors located in peripheral regions (e.g. in developing countries) will typically not benefit from such initial trust antecedents. In the latter case, there is a need for targeted and often collective action to realize, non-redundant external network. For instance, regional stakeholders may work on situations that provide initial trust for their local actors. This may

be a representation in national associations, a participating in national or global events, establishing links with universities (e.g. by partly funding professorships), etc. A key role is also played by boundary spanners that can act as brokers and/or third party referrals for tie formation (Burt and Knez, 1995). These are individuals (or collectives) closely involved in inter-organizational relationships that, because of their exchange-history and existing ties can contribute to the formation of initial trust between actors (Gulati and Sytch, 2008).

5.2.2 The role of gradually developed deep trust in the emergence of new regional paths

Repeated interactions and resulting deep trust increase cohesion within the network. Strong cohesion leads to pressures to conform to shared norms and ways of acting which reduces the capacity to absorb and process novel and dissonant information (Nelson, 1989). Dense regional networks (high structural embeddedness) with strong ties (high relational embeddedness) thus benefit from cohesion, ease of interaction and mutual trust but on the other hand also run the risk of inertia and cognitive lock-in. It is important, however, to differentiate between the two forms of deep trust because they have different implications for the nature of the ties and openness to form new connections. Cognition-based trust captures beliefs about the trustee's competence, ability and benevolence – i.e. a rational assessment of an exchange partner. Conversely, gradually developed affect-based trust (typically seen as the deepest form of trust) pivots on identification with and emotive bonds between trustor and trustee (Coleman, 1988). While strong ties characterized by affect-based trust enables a very high degree of openness and transparency as well as exchange-efficiency, it also present the greatest risk of lock-in.

When regional networks are dense and loaded with affect-based trust, the 'cost' of breaking with partners and engaging with new actors from other fields and regions may be high, and not only financial (e.g. changing a supplier may require an initial investment) but also social (e.g. broken friendships and socially enforced punishments at the personal level). This may lead to a situation where actors choose to work together even though more suitable partners would be available. This is a key dimension of 'the dark side of trust' (Gargiulo and Ertug, 2006; Skinner et al., 2014). Such structural and relational embeddedness of networks is particularly prominent in small regions, where the risk of inward looking and structurally closed networks is highest (Westlund and Kobayashi, 2013). This promotes lock-in caused by the circulation of redundant information and knowledge.

Yet, deep trust is not necessarily a problem for the development of new regional growth paths, which is explained by the difference between structural and relational embeddedness. While the growth of industries coincides with the alignment of production and innovation networks (Ter Wal and Boschma, 2011; Nelson, 1994), this does not preclude that some actors have networks between for instance industries or professions. In fact, innovative entrepreneurs are by definition actors that combine knowledge and resources in new ways (Schumpeter, 1911), and thereby tap unused potential between various production or innovation networks. The ability to do so will consequently depend on the innovative entrepreneur's networks and positions between rather than within social structures (Grillitsch, 2018), which allows the entrepreneur to valorize structural holes (Burt, 1992). This ties in with Nooteboom's (2013: p.108) observation that "[a] higher level of trust and, more widely, an increased ability to collaborate, enables one to operate at a larger cognitive distance and thereby generate more innovative potential. That is, I think, the crux of the relation between trust and innovation."

Under the condition that a region has a heterogeneous knowledge and industrial structure, regions benefit from trust-based networks between structures. Regions offer the advantage as opposed to extra-regional networks that trust-based relationships may come about due to social interactions that are not directly linked to the economic actions within an existing industrial path. Individuals may have built deep-trust based relationships in various arenas cutting across industrial specializations, for instance related to education, recreation and leisure, or various local communities (Grillitsch, 2018). Clearly, this is only an advantage if knowledge heterogeneity exists in the region. Otherwise, it is more likely that this form of relational embeddedness in the region contributes to the lock-in mentioned above.

6 Conclusions

The main contribution of this paper is to advance a differentiated view on trust in regional development. In short, we argue that the two types of trust, gradually developed deep trust and fragile, initial trust vary in their degree and type of influence in different phases of regional development. Deep trust is instrumental in the growth of regional specializations, as it promotes incremental innovation and related knowledge flows along an established development trajectory. However, closed networks characterized by deep affect-based trust

also infer potential risks of negative lock-in and redundancies that are detrimental for the emergence of new regional development path. Such lock-in can be moderated by boundary spanners who, by means of deep trust relationships, bridge so-called structural holes, thereby link unrelated industries, sectors, and knowledge bases, and promote access to non-redundant information, a process that additionally benefits from a location in a heterogeneous regional context. By linking actors in sparse networks, boundary spanners provide antecedents for initial trust formation (in the form of reputational inference and creation of shared social and professional networks). Emergence of new regional development paths depend on the formation of new networks, emphasizing the importance of antecedent conditions for initial trust formation. However, this does not necessarily lead to non-redundant information because the antecedents of initial trust, which largely pivot on perceived similarities, stability and familiarity, may invoke path-dependency. This is particularly a risk in in specialized and homogeneous regions.

While a differentiated view on trust increases complexity, it also fosters a more nuanced understanding of regional path development, which has important implications for further research. In geography, trust has been identified as a central explanatory factor for regional development. However, there has been a tendency of adopting a too simplistic view on trust, for instance presuming a pervasive positive influence of trust (Sayer, 2002) and lacking conceptualizations of how trust is formed in the first place and how different forms of trust influence regional development positively or negatively (Murphy, 2006; Staber, 2007; Hess, 2004; Nilsson, 2019; Mathews and Stokes, 2013). By introducing insights from trust research within social psychology and organization studies, we argue that such a simplistic view provides an insufficient understanding of regional dynamics.

This paper illustrates the necessity of acknowledging that the effect of trust differs between phases of regional path development and in different regional contexts. Whilst the distinction between initial and gradual trust has direct implications for understanding knowledge exchange and learning as well as network formation and potential lock-ins, it is virtually overlooked in both conceptual and empirical research within economic geography and regional studies. The two types of trust are strongly linked to the challenges in different phases of regional path development but vary in terms of antecedents and consequences. Some often ignored aspects of the discussion – for example that deep trust can in some circumstances be

a resource for non-redundant information (e.g. if held by boundary spanners) and that initial trust can be a source of lock-in (because its antecedents foster new networks mainly in familiar contexts) – need to be taken into account. Finally, as trust influence network formation often in a tacit manner (i.e. actors may not be aware of what makes them trust another actor), it is a question to what extent and how actors work around the ‘dark side’ of trust (Molina-Morales et al., 2011). In other words, considering these aspects, what are the strategies and policy options to mobilize positive aspects of trust while limiting the problematic ones?

The arguments put forth in this paper call for further empirical research within economic and human geography. One promising avenue is to apply a comparative case study methodology to understand how the effects of the different forms of trust are conditioned by regional contexts and dynamics. For example, in the context of specialized regions, how do deep trust ties in relationally embedded networks play together and potentially complement or obstruct initial trust in new tie formation, and how this affects regional path development? Conversely, what is the role of deep gradually developed and initial still fragile trust in the emergence phase of new regional paths in different types of regions?

Another avenue for research is to investigate in depth the two sides of trust in terms of their effect on regional development paths. For instance, to what extent and under what conditions is the generative influence of deep trust on facilitating efficient and effective knowledge transfer related to detrimental effects on innovation and inflow of non-redundant knowledge and information that may be associated with lock-in and inertia in a regional industry (the “dark side of trust”)? Another question is to what extent initial trust has a dark side, i.e. to what extent and when do the antecedents of initial trust formation create path dependence? How do the generative and problematic aspects of deep and initial trust interrelate?

A third research avenue pivots on implications for regional development policy. Given the lack of a differentiated view on trust in the literature on regional development, a question is to what extent regional actors are aware of how trust influences their actions, potentially leading to unintended and undesired consequences. Furthermore, are there strategies for dealing with the dark side of trust at the level of policy makers, firms, universities, or other regional stakeholders? How policy actions and organizational strategies influence and are influenced by trust induced lock-ins in contexts where the involved actors aim towards the development of new regional paths?

The above empirical research avenues are mainly associated with intensive research designs that aim at an in-depth understanding of key mechanisms and relationships by means of qualitative data analysis such as (comparative) case studies at the level of organizations, regions and industries. Quantitative empirical research on trust at the regional or network level poses specific challenges in terms of operationalization, measurements and availability of data. These difficulties are further exacerbated if the aim is to adopt a differentiated view on trust where different forms and antecedents are related to regional development dynamics. Having said this, there are some interesting attempts to, by the use of primary data collection, measure levels of trust at in regions (Trägårdh et al., 2013; Laursen et al., 2012). Notwithstanding the constraints of quantitative methods to measure and analyze the formation or role of trust in regional development dynamics, it would be interesting to investigate conditionalities such as how effects of local trust on regional development depend on the heterogeneity of regional industrial structures.

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