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Bypassing Structural Shortcomings: Innovative Firms in Peripheral Regions

Martin Graffenberger

1 Introduction

This chapter investigates the innovation activities of two low-tech manufacturing firms located in South Estonia and the Erzgebirgskreis in Saxony (Germany). These settings, facing population decline, relative economic stagnation and a geographical outside location, are referred to as peripheral regions in the context of this chapter. The conceptual point of departure relates to the question of how firm-internal capacities and network linkages drive firm innovation, coexist and operate as mechanisms to circumvent the structural shortcomings of regional settings. Informed by dominant theoretical debates in economic geography and innovation studies peripheral regions are widely perceived as lacking the potential for sophisticated firm innovation. Departing from the concept of agglomeration advantages (van

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der Panne 2004), the understanding is that a critical mass of relevant actors and resources drive firm innovation. Thus, dense metropolitan regions in which diverse actors and heterogeneous functions concentrate provide the most conducive conditions for innovation (Tödtling and Tripl 2005). They constitute productive arenas for face-to-face interaction and thereby for the exchange of spatially sticky tacit knowledge (Gertler 2003). These perspectives emphasise distinctive agglomeration arguments within the debate on knowledge, innovation and space (Ibert 2007), thereby implicitly and explicitly portraying larger city regions as innovation hotspots (Florida et al. 2017). Nonetheless, recent scholarship affirms that innovative firms also reside in peripheral regions (e.g. Rodríguez-Pose and Fitjar 2013; Grillitsch and Nilsson 2015), suggesting their capacity to bypass thin regional environments and to moderate the additional complexities they might induce. This chapter presents two in-depth investigations of innovation projects ('zooming in') and links their particular findings to the wider empirical basis of the research project ('zooming out'). Thereby, this chapter adds to emerging accounts on innovation in peripheral settings and provides insights that allow us to better understand how firms located in peripheral regions pursue and organise innovation activities.

2 Conceptualising Firm Innovation

Baregheh et al. (2009, 1334) define innovation as the 'multi-stage processes whereby organisations transform ideas into new/improved products, services and processes'. Departing from this definition, three theoretical building blocks constitute the understanding of innovation adopted in this chapter and will be briefly outlined in the following paragraphs: process orientation, knowledge foundation and interaction. The two latter aspects form the basis for a more elaborate conceptual discussion that informs the chapter's analytical perspectives (Fig. 1).

The process nature of innovation involves a particular evolutionary understanding. Innovation is directed by the state-of-the art in respective fields and builds, to varying degrees, on existing capacities

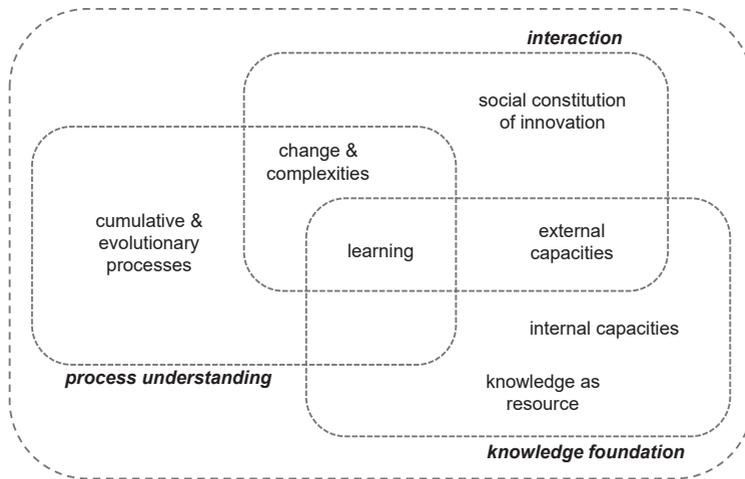


Fig. 1 Conceptualising firm innovation (own elaboration)

and awareness levels of the organisations and individuals involved. Consequently, organisations build capacities and progress in their respective markets by pursuing innovation activities (Fagerberg 2006).

Innovation-centred debates in economic geography highlight the critical role knowledge takes on in associated transformation processes. This knowledge foundation relates to learning processes which are considered key for successful innovation (Gilly and Torre 2000). The shift towards an increasingly knowledge-based economy (Lundvall and Johnson 1994) corroborates the function of knowledge as the central resource and in particular the premium assigned to highly contextualised tacit knowledge (Gertler 2003). This knowledge grounded nature of innovation is driven by resources and capacities internal and external to firms (Edquist 2006).

Acquisition of external capacities links up with the interactive nature of innovation. Confronted with increasing complexities, innovation does typically not happen in isolation (Fagerberg 2006; Shearmur 2012). Interaction is pivotal for successful innovation as it provides

access to external resources that help to moderate associated complexities (Nonaka 1994). Furthermore, interactivity provides a lens to consider innovation as social, cultural and relational practice (Malecki and Tootle 1996; Welz 2003). The following sections provide a brief conceptual discussion by linking these theoretical building blocks to the notions of firm-internal capacities and networks.

2.1 Internal Capacities

The critical role of firm-internal capacities for knowledge creation, learning and innovation is frequently emphasised (e.g. Edquist 2006). It is widely accepted that firm competitiveness is significantly driven by internal resources and how they are coordinated (Taylor and Asheim 2001). Firms can be perceived as unique bundles of resources such as technological capabilities, production experiences and organisational routines, specific human resources or the existing customer base which collectively ensure competitiveness (Foss 1997; Flåten et al. 2015). Thus, firms become generators and processors of knowledge that draw capacities from embedded learning and the particular routines that shape the distinct characteristics of firms' knowledge bases (Taylor and Asheim 2001). Concerning the focus of this contribution on firms operating from peripheral, i.e. structurally challenging regional settings, it can be argued that firm-internal resources are of great importance for maintaining innovative capacity, as firms cannot rely so much on rich and diverse resources available locally.

However, while substantially driving innovation, firm-internal capacities alone are not sufficient. Relations for instance to suppliers and customers, research and educational institutions, state agencies and chambers are considered central mechanisms through which firms access external resources and expertise. Yet, the capacity of firms to recognise and internalise external knowledge from different sources and localities is understood to rely on their internal capacities (Cohen and Levinthal 1990).

2.2 Networks

Firm networks can be broadly defined as ‘nodes and links connecting these nodes, in order to facilitate interactions among agents’ (Johansson and Quigley 2003, 165). Networks are constituted by complex interactions amongst individuals and organisations and considered resources-rich arrangements (Copus and Skuras 2006). Networks provide central means to access external knowledge and mediate complexities, thereby becoming fundamental aspects of innovation-related practices (Rammert 1997; Fitjar and Rodríguez-Posé 2016). Malecki and Tootle (1996) suggest a pragmatic distinction between trade networks, concerned with formalised exchange of goods and services, and knowledge networks, constituted by flows of information and knowledge. Knowledge-intensive and learning-oriented linkages between partners are in particular understood to ground on high degrees of reciprocity and trust and, thus, to induce mutually active partnership (Ozman 2009). Although distinctions between different types of network ties appear analytically useful, trade and knowledge related links might overlap in reality. Firms are embedded into various overlapping and mutually influencing contexts which surface as multi-layered relations and interactions of various kinds. It is therefore proposed to perceive networks systemically, as coordinated and ongoing sets of economic and non-economic relations (Dubois 2013). This understanding implies an inherently dynamic and fluid nature of networks: new links between actors evolve, existing links reproduce, alter or might disappear over time (Ter Wal and Boschma 2009).

Network perspectives allow us to shed light on how actors interact in and with their various environments and, importantly, how actors construct their specific environment(s) needed for innovation (Jakobsen and Lorentzen 2015). This chapter explores the linkages and networks firms from peripheral regions mobilise as part of their innovation endeavours. For these firms, networks are considered potential means to compensate for structural shortcomings of regional settings such as lacking agglomeration advantages (Johansson and Quigley 2003). Thereby, networks offer an approach to extend the role of geographical proximity and actor

co-location, prominently inscribed in influential conceptions of dynamic regional economies (Moulaert and Sekia 2003), with spatially less restrictive perspectives. This chapter does not deny the potentially easing role of co-location and face-to-face interaction for knowledge creation and innovation. However, it is increasingly recognised that actor proximity can also be organised temporarily or virtually without compromising interaction quality (Torre 2008; Maskell 2014). More recently it also has been suggested that the interaction requirements of firms differ and that firms with lower interaction needs might choose to reside outside dense city regions (Shearmur and Doloreux 2016).

3 Methods and Data

This chapter mostly draws on interviews with firm representatives. Inspired by the innovation biographies approach (Butzin and Widmaier 2016) interviews explored concrete innovation projects. Interviews with individuals from the management level (CEOs, technical managers, etc.) grant access to information on decision-making and strategic considerations. To ensure direct observation, interviews were conducted in the workplace of respondents. Descriptions provided by interviewees were enriched and validated by triangulating data from media coverage and internet sources. The empirical material was used to reconstruct central elements and assertive dynamics of investigated innovation projects.

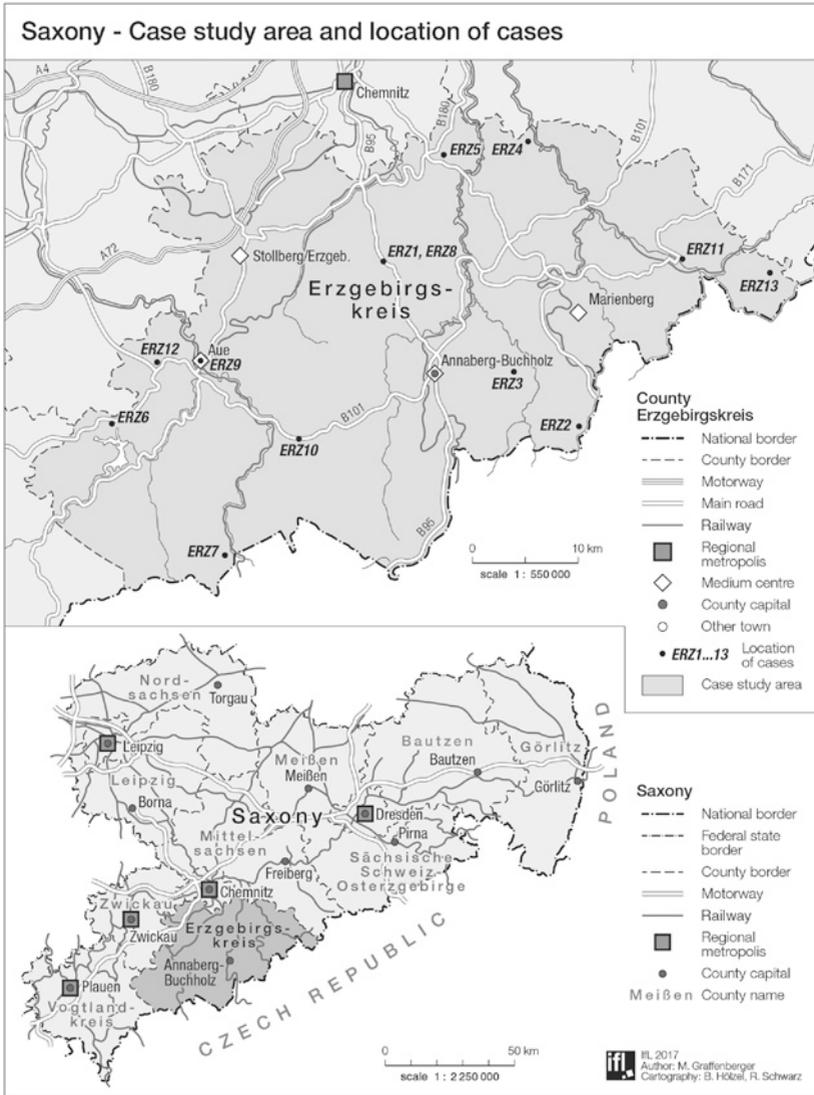
The analytical proceedings of this study rely on a multiple-case approach (Yin 2014), i.e. detailed investigations which shed light on the main phenomenon of interest (innovation) and the specific contexts in which this phenomenon occurs. Studying multiple cases in-depth allows us to detect similarities and differences, reduces the risk of chance associations, and thereby increases the scope for analytical generalisation (Eisenhardt 1989). Following an embedded case design, this chapter integrates the unit of specific innovation projects as well as the firm level. Variation sampling was used to construct a heterogeneous sample of different types of innovative firms located in differently structured peripheral settings, potentially allowing to draw conclusions beyond the contingencies adhering to individual cases.

4 Research Contexts: Regional Starting Points and Low-Tech Manufacturing

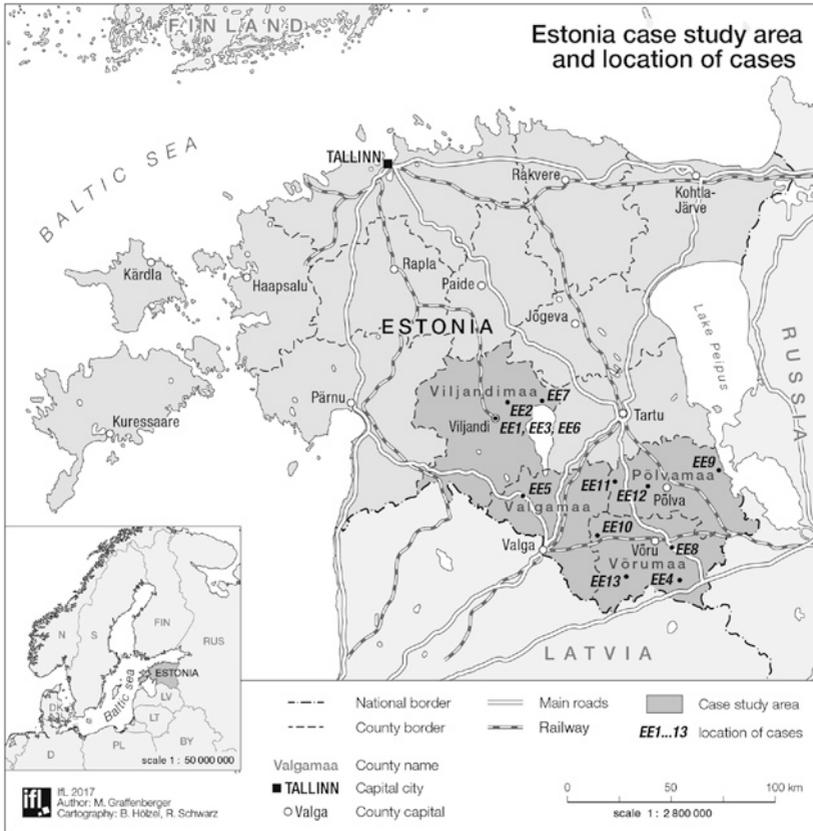
The cases investigated as part of this chapter are located in different regional contexts, the Erzgebirgskreis in Saxony (Germany) and South Estonia.¹ Maps 1 and 2 provide overviews on the case study regions and the location of cases. Although differently structured the study regions share, with reference to their respective macro contexts, exposure to socio-economic challenges such as population decline, relative economic stagnation and a geographical outside location (see Table 1). Following Kühn et al. (2016), such challenges are considered indications of ongoing peripheralisation processes.

Both study regions are characterised by long traditions of manufacturing industries which continue to provide a major economic base. The significance of manufacturing corresponds to a relatively low importance of service sectors. Most relevant manufacturing activities in the Erzgebirgskreis, formerly an important mining region, are metal production and processing, mechanical and electrical engineering as well as food processing. Case 1 in Sect. 5.1 illustrates an innovation project by a shaving equipment manufacturer. It relates to the historical legacy of the brush-making industry within this part of the Erzgebirge, which can be traced back to the eighteenth century. During its peak in the nineteenth and twentieth century, the region hosted multiple brush manufacturers, including small family businesses and large manufacturers. Up until today, a number of companies active in brush- and broom-making reside within the region. Structurally important industries in South Estonia are wood processing, furniture manufacturing, electronics and the food sector. Additionally, forestry and agriculture retain importance in South Estonia with its share in value added exceeding 14%. Case 2 in Sect. 5.1 presents an innovation project implemented by a company from the food sector.

Given the importance of manufacturing activities in both study regions, the sectoral focus is on innovation in low-tech and medium low-tech (LMT) manufacturing. Although not necessarily on top of innovation policy agendas, LMT manufacturing continues to have substantial economic importance and is, e.g. through buyer-supplier



Map 1 Case study area and location of cases in the Erzgebirgskreis



Map 2 Case study areas and location of cases in South Estonia

relations, highly interwoven with high-tech industries (Hansen and Winther 2011). Due to the characteristics of innovation in LMT manufacturing, e.g. generation of incremental rather than disruptive innovation, focus on experienced-based knowledge rather than science and R&D (Hirsch-Kreinsen 2008), the innovation capacities of LMT sectors appear ‘overlooked and possibly misjudged’ (ibid., 12). Explicitly focusing on innovation in LMT manufacturing, the chapter addresses existing sectoral biases in innovation studies and provides insights into the innovation dynamics of activities that bear economic relevance for many peripheral regions.

Table 1 Socio-economic characteristics of study regions

	GDP per capita (% of reference unit)		Population development (2000–2015, in %)	Population/population density (2015)
	2000	2014		
Estonia	100	100	–5.8	1,315,900/30
Harjumaa (incl. Tallinn)	149	143	7.7	576,300/133
Põlvamaa	56	44	–12.2	28,200/14
Võrumaa	57	57	–15.2	33,000/14
Valgamaa	54	51	–15.0	30,500/15
Viljandimaa	59	66	–18.8	47,900/14
Saxony	100	100	–7.7	4,084,900/220
Dresden (city)	146	128	13.8	543,800
Görlitz (county)	75	92	–19.5	260,000/123
Erzgebirgskreis	77	76	–16.7	347,700/190

5 Firm Strategies and Practices

This section presents detailed insights from two information rich cases studied as part of a wider research project. Case 1 from the Erzgebirgskreis draws on interaction with numerous external partners while the Estonian case exhibits just a few external linkages. Although both firms show differences along demographic indicators (see Table 2), associated knowledge bases and regional settings, the subsequent analysis reveals a number of similar mechanisms mobilised for innovation as well as implicit and explicit strategies to bypass certain shortcomings. Section 5.2 provides a discussion of the specific cases, and zooms out to draw a more comprehensive picture of findings by selectively referring to further cases investigated as part of wider research.

5.1 Zooming In: Detailed Case Explorations

5.1.1 Case 1: MÜHLE²

The company behind the MÜHLE brand was established in 1945 in the village of Hundshübel in the western part of today's Erzgebirgskreis. After expropriation in 1972, the firm was re-privatised in 1990. At the time of the interview MÜHLE, initially manufacturing shaving brushes but now producing a comprehensive range of shaving accessories, had 73 employees, annual sales of approx. 12.5 million EUR and an export ratio of 70%.

Design quality, sustainability, manual production, family ownership and a high in-house production depth are portrayed as MÜHLE's main features and as crucial elements for maintaining its leading market position. Over the past 7–8 years, MÜHLE has experienced a period of dynamic growth during which turnover trebled. These dynamics are, amongst others, linked to the strategy of gradually expanding in-house production depth and the exploitation of new marketing potentials offered by the internet. Accordingly, MÜHLE extensively uses online marketing channels and social media.

Table 2 Characteristics of case firms

Cases ^a	NACE code	Project	Study area	Year est.	Employees	Sales (t€)	Export ratio
MÜHLE	32910: manufacture of brooms and brushes	Development of new product range	Erzgebirgskreis	1945	73	12,500	>70%
OSKAR	10131: manufacture of other food products	Development of 'green label' series	South Estonia	1992	≈ 100	7,300	0

^aOn Map 1 MÜHLE is indicated as ERZ6 and OSKAR is indicated as EE2 on Map 2



Picture 1 MÜHLE premises in Hundshübel (picture by author)



Picture 2 Illustration of MÜHLE's product range (courtesy by MÜHLE)

Developing a New Product Range

The CEO and co-owner depicts the innovation activities of the company as a 'marathon' during which various processes require coordination: e.g. monitoring and identification of market potentials and technological solutions, elaboration and implementation of design specifications, etc. Typically, innovation within MÜHLE draws on

extensive monitoring and research activities in technology and design related fields, without necessarily having a precise product idea in mind. This case study investigates the development of a new product range. The origins of this innovation project can be traced back to long-term technology monitoring activities, lasting for 5–6 years. This monitoring was driven by intentions to reduce production costs and to widen sales opportunities by implementing new technology solutions. Metal injection moulding (MIM) replaced conventional machining methods in the manufacturing process of stainless steel parts, resulting in substantial cost reductions. Although MIM technology itself is long established, it is rarely applied for delicate design-oriented items—such as safety razors and shaving brushes. Accordingly, only a few companies master the complex technology for such specific applications.

After identifying the leading company in the field, based in Baden-Württemberg, MÜHLE engaged in a loose but mutually very open and rather long-lasting technical consultation process, involving repeated on-site visits and telephone communication. At this early stage, practical consulting with the leading player was considered crucial regarding learning about the technology and thereby identifying its potentials:

They showed me what is doable with the technology regarding decorative applications and I realised that this is indeed something future-oriented for us, potentially affecting wider parts of our product range. (Interview, Hundshübel, 9 February 2017)

Subsequently, it was decided to integrate MIM into the development of a new, stainless steel-based product range. In this context, an important decision by MÜHLE was to collaborate with a known local partner experienced in injection moulding—although using rather conventional plastics-based applications—to anchor the new technology within the region. This decision was guided by the rationale that being geographically close and familiar eases the handling of associated complexities and upcoming issues:

We were very interested to establish the technology with a partner from the region [...]. Although they didn't know the specific method, they were very interested, and we decided to go ahead together. [...] Because I see the potential for our wider product range, I thought it is good to proceed with a local partner. We know each other and we have short ways. (Interview, Hundshübel, 9 February 2017)

Collaborating with this local partner involved close coordination to find solutions for upcoming technical issues. During this process, the local technology partner further consulted with external actors. Based on continuous efforts of adapting the technology to the specific requirements needed, these joint activities induced successive learning, ultimately facilitating the launch of the new series in autumn 2016. Even though, due to some persistent technical issues, production started in 'homeopathic quantities'. At some point in the process of better understanding and adapting MIM technology, specifications for the new product series were elaborated. At this stage an industrial designer from Meißen (Saxony) with whom MÜHLE has an established and trusted relation, joined the development, closely liaising with both MÜHLE and the technology partner. The designer's contribution to the development concerned elaboration of the industrial design, thereby bringing in specific capacities such as CAD and 3D design applications. Coordination of these technological and design-related features between the different partners is described as a complementary 'ping-pong' game, suggesting frequent and iterative exchange, eased by familiarity and rather short distances between the partners. Thereby MÜHLE's goal to not only progress technologically but at the same time to create products with specific usability features were realised. Besides these central partners, the development further involved a supplier of birch bark. This material was perceived as a valuable component to create holistically innovative products, combining new technologies, new materials and a distinct, progressive design. The final partner, a manufacturer of specialised sand-blasting equipment based in the Chemnitz region, got involved in the surface finishing stage in the production process. Instead of outsourcing the finishing process to this partner, MÜHLE,

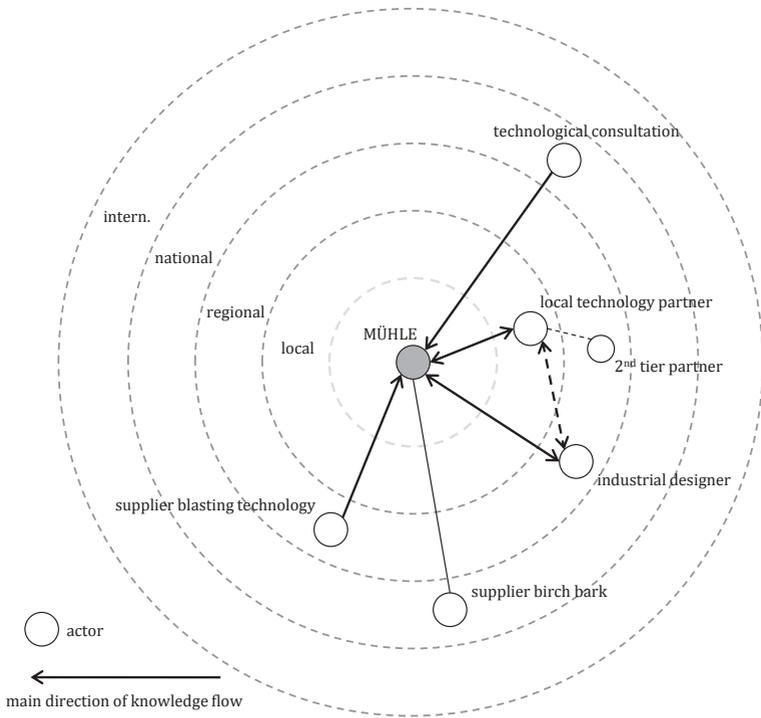


Fig. 2 Network map of MÜHLE's development

after consulting with the supplier, came to a financial arrangement to integrate the technology within the firm, thereby further expanding its specific in-house production depth. Figure 2 provides an ego-centred network map.³

Firm-Level Strategies

Going beyond this specific innovation process, the MÜHLE case provides additional insights in terms of wider firm strategies to bypass shortcomings of the regional environment. The interviewee links such shortcomings mainly to the notion of physical distance to larger cities/main markets, considered central for marketing activities but also as sources of design-related inspiration:

If our production were in Leipzig or Berlin, a lot more would be feasible in terms of co-operations, we would have more buzz in our showroom, we could host cultural events in our production facilities. This is more difficult here. (Interview, Hundshübel, 9 February 2017)

To compensate for these specific shortcomings MÜHLE has adopted a number of strategies related to widening the firm network. Firstly, comprehensive activities in terms of virtual and (social) media marketing were started (including an online shop, presences on Facebook and Instagram, a dedicated (printed) company magazine). Secondly, as a major piece of its marketing strategy MÜHLE opened a flagship store in Berlin in 2014, constituting in itself a significant organisational innovation by which market distance was reduced and the firm network expanded:

With the flagship store in Berlin we can reach people a lot easier and present as well as transport our brand very differently. (Interview, Hundshübel, 9 February 2017)

Additionally, high levels of mobility and membership in initiatives—such as the ‘Association of German Manufactories’ or the ‘German Design Council’—ensure co-presence and exchange with relevant actors, customers and suppliers, as well as the influx of inspiration and ideas from various fields. At the same time, however, MÜHLE’s location in the Erzgebirge plays a crucial role for brand identity and authenticity, succinctly expressed by the interviewee:

for me, MÜHLE only works here in the Erzgebirge, separating the two is somewhat unthinkable. (Interview, Hundshübel, 9 February 2017)

5.1.2 Case 2: OSKAR⁴

OSKAR, a meat processing company, was established in 1992 in the village of Saarepeedi in Viljandi County. OSKAR has around 100 employees and its sales of approx. 7.3 million EUR are exclusively



Picture 3 OSKAR premises in Saarepeedi (picture by author)

generated in Estonia. OSKAR is a small player in the highly competitive and de-regulated Estonian meat market which is largely dominated by Finnish companies/brands. Despite its small size, OSKAR is market leader in multiple product categories and has in the past frequently acted as a *'pioneer'*, by introducing new products in niches that were eventually adopted by competitors and thereby diffused more widely. A recent strategic re-orientation has been a focus on high-priced products, resulting in substantially increased sales, while processed quantities remained stable. According to the interviewees, OSKAR further differentiates itself from competitors in a number of ways, e.g. by rejecting controversial technologies (such as MSM⁵) or by manufacturing products with high meat contents.

Development of 'Green Label' Products

The term 'green label' refers to a product assortment which does not contain artificial additives ('E-free'), first launched in 2009.⁶ The development was mainly driven by two intertwined factors: first, fierce competition in the Estonian meat market, which was facilitated for instance by using MSM technology to achieve lower prices, and, second, by having a public discourse on more healthy and natural nutrition. Within this field of tension products free of artificial additives were identified as a potential niche and considered a 'logical' progression for OSKAR,

as the technological pre-requisites for such products closely aligned with OSKAR's manufacturing practices:

As we have never used MSM raw material, our products have anyway a high meat content. Which is what you need to produce E-free products. If you have too much fat, water or starch there is no way to keep the product in one piece. [...]. So removing E-numbers from products was a logical next step for us. (Interview, Saarepeedi, 14 January 2016)

Lacking specialised technological knowledge, OSKAR needed to acquire external technological knowledge, in particular natural substitutes for artificial additives and recipes for their application to kick-start development. Consequently, OSKAR went through an iterative consultancy process with different European suppliers, finally acquiring technology from a leading firm based in Germany. Key to successful product development was combining the technological tools acquired with internal practical knowledge and experiences, in particular of OSKAR's food technologists. Rather than acquiring a ready-to-use technology, substantial adaptations were necessary to meet the desired product specifications regarding taste, texture and visual appearance:

We had to accommodate components and recipes to our conditions, and sometimes we got different results. So we had to find ways to get good results. [...]. We had to combine their knowledge and our knowledge. [...]. We were testing every day to find out which compounds work. The components are not always working as sales representatives say, so you have to test and test all over again, which is time-consuming and expensive. (Interview, Saarepeedi, 14 January 2016)

This iterative firm-internal process took about six months, at the end of which the first product was finalised. Subsequently, the 'green label' assortment gradually expanded, with each of the individual products requiring specific iterative circles. Product development was followed by marketing activities, including elaboration of suitable packaging, creation of the indicative 'green label' and, importantly, the process of building trust and authenticity with consumers:

There was a certain discussion with our first product, also from the media. They didn't understand the E-free products. [...]. It was hard for us to get the customers to trust our product, it maybe took a year until people accepted the concept. (Interview, Saarepeedi, 14 January 2016)

The launch of a 'green label' product assortment coincided with a gathering of the Estonian meat industry, during which products were presented. According to anecdotal evidence provided by the interviewees, competitors mostly reacted with incomprehension. However, this reaction illustrates the way OSKAR moved away from conventional industry practices, thereby opening a particular market niche. As the interviewees report, by now most competitors have introduced their own E-free product ranges. Figure 3 provides another ego-centred network map.

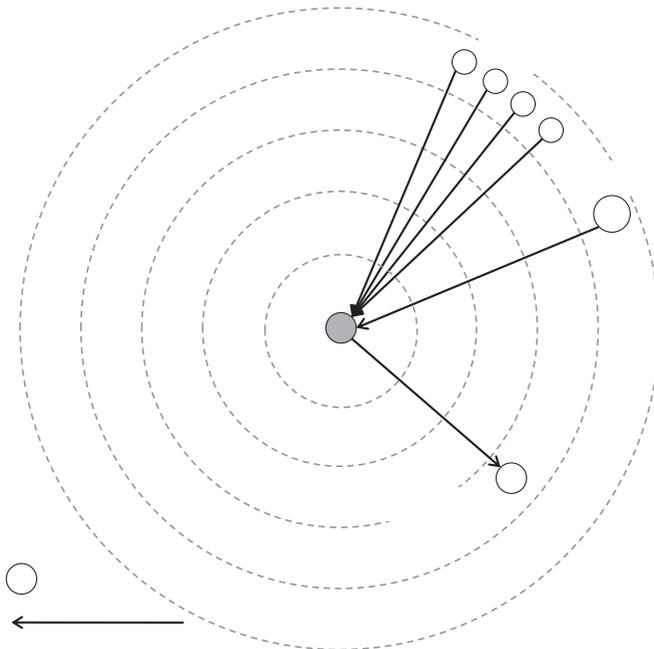


Fig. 3 Network map of OSKAR's 'green label' development

Firm-Level Strategies

The 'green label' project illustrates the importance of firm-internal, practical expertise for effective assimilation of externally acquired knowledge. Going beyond the development outlined above, the importance of internal expertise is also evident at the wider firm level. In addition to emphasising the importance of specialised food technologists for product development, OSKAR's range of internal capacities also relates, for instance, to the construction of specific manufacturing equipment by technicians. These highlight the comprehensive in-house manufacturing depth available to OSKAR:

We even build our equipment. We have excellent guys in-house who produce equipment for new technologies. Thereby we can test at a small scale and then make larger equipment for producing larger quantities later on. (Interview, Saarepeedi, 14 January 2016)

Being exclusively active in the Estonian market, distance to its primary market Tallinn is described as somewhat problematic and associated with high transaction costs. At the same time, it is crucial to be visible on the Estonian market, despite having only limited resources for marketing. In this respect OSKAR's participation in national trade fairs (food and non-food related) and organising supermarket demos and tastings allows the firm to generate visibility and partially bridge the distances to main markets:

Trade fairs in Estonia are a good place for us to get in touch with end-consumers. There are lots of experts but also normal people who are simply interested in what we show. [...]. The main reason for us to go to fairs is to catch the end-consumer. (Interview, Saarepeedi, 14 January 2016)

5.2 Zooming Out: Discussion and Cross-Case Reflections

The illustration of two innovation projects of firms from different peripheral contexts underpins the importance of (i) network linkages to external partners to acquire knowledge/expertise and (ii) firm-internal

capacities. Both appear as decisive and intertwined mechanisms that facilitate firms' innovation endeavours. Each of the cases presented reflects different facets on how this coupling might operate. MÜHLE mostly draws on acquiring specific technological expertise through purposefully built relations and further mobilises existing linkages to integrate this expertise into the firm. While internal capacities facilitate this integration process, network mechanisms prevail. In developing 'green label' products, OSKAR primarily utilises internal practice-based expertise to adapt externally acquired knowledge to its specific requirements. This coupling can be understood along the lines of Cohen and Levinthal's (1990, 128) conception of absorptive capacity which posits the capability of firms to 'recognise the value of new, external information, assimilate it, and apply it to commercial ends' as a critical innovation resource.

Considering the larger set of cases investigated as part of the wider research affirms the importance of diverse in-house production and experience-based capacities (e.g. ERZ1, ERZ2, ERZ3, ERZ7 | EE1, EE5, EE10) as well as their strategic expansion (e.g. ERZ3, ERZ13 | EE11) for maintaining competitiveness and innovation potential. For instance, ERZ2, a case manufacturer, maintains departments for model construction, mould making and a sewing unit—which, collectively, ensure a high level of in-house production capacities and, thereby, increase the firm's readiness to handle emerging requests flexibly. In addition to expanding technological capabilities as illustrated by the MÜHLE case, in-house production can further expand by internalising the preparation of technical drawings rather than buying them in as external services (EE11), or by establishing of new distribution channels directly targeting end-customers (e.g. ERZ3, ERZ13). Maintaining extensive and further diversifying in-house production capacities enhances flexibility and reduces dependency on external partners. Thereby, firms build self-sufficiency which complements the acquisition of innovation relevant knowledge from external and extra-regional sources. Thus, building internal capacities along various dimensions can be considered a strategy of firms from peripheral regions to compensate for lacking relevant knowledge available regionally, which, at the same time, reduces firms' interaction

requirements. These indications confirm recent research by Flåten et al. (2015) who argue that strong internal capacities, built by workplace-learning, constitute central factors for the competitiveness of firms in 'thin' Norwegian regions. Consequently, this research contributes to a more nuanced understanding of the factors that shape the innovation capacity of firms from peripheral regions active in LMT manufacturing: the firms investigated as part of this study tend to rely on diverse and multifaceted internal capabilities, coupled with multi-scalar external linkages—including local and non-local contacts. These observations deviate from the seemingly established norm on how innovation in contemporary knowledge economies is organised, i.e. by focusing on core-competencies and knowledge sourcing from local partners (Flåten et al. 2015). Nevertheless, as this research illustrates, these practices induce organisational learning—which in MÜHLE's case, by anchoring technological capacities within the region, expands to a distinct regional and inter-organisational dimension.

Focusing on the wider firm level reveals mechanisms by which firms manage distances to primary markets or knowledge sources. Such mechanisms operate for instance by establishing permanent outposts in relevant hotspots, or the generation of temporary co-presence via high levels of mobility and trade fair participation. Following Maskell's (2014) conceptualisation, MÜHLE's flagship store can, while being primarily a particular marketing tool, be understood as a '*listening post*'. Such an observatory, strategically established as a subsidiary in one of the most relevant hotspots for MÜHLE (Berlin), offers the potential to identify relevant knowledge and informal information (e.g. specific demands, trends, perceptions, etc.) directly from consumers and industry players. It thereby contributes to the identification of relevant market developments. While such a flagship store certainly represents a special example, the importance of trade and consumer fairs is frequently referred to across cases. Besides their role regarding marketing, fairs are widely considered arenas to make contact and to source relevant knowledge (e.g. ERZ2, ERZ9, ERZ12 | EE1, EE3, EE4, EE7). For instance, during trade fairs, ERZ2, ERZ9 and EE4 established initial contacts with actors which, subsequently, became pivotal for

innovation projects as either initiators (ERZ2, ERZ9) or collaboration partners (EE4). Therefore, it can be assumed that the peculiar ecology of such settings offers firms productive means to overcome distance and to benefit from organised and temporary centrality.

6 Conclusions and Implications

The empirical material presented in this chapter demonstrates that in order to maintain innovation capacity and competitiveness firms operating from peripheral regions benefit from a twin strategy. This strategy is composed of (i) building internal capacities such as in-house production depth and absorptive capacity and (ii) sourcing knowledge and expertise at different scales through established as well as newly built networks. These strategies, implicitly and explicitly, work as mechanisms to bypass some of the structural shortcomings of peripheral regions. These mechanisms emerge as directive principles, although their coupling and balancing varies between and is contingent upon individual cases and the characteristics of projects and firms.

Expanding firm-internal capacities and associated knowledge bases increases the demand of firms for qualified labour and specific human resources. Therefore, in the long run this particular strategy might result in rising pressures to find adequate personnel. Especially when considering the challenging demographic developments (ageing, continued out-migration, etc.) many peripheral regions currently are and will be confronted with in the future. A substantial number of firms as well as regional development actors interviewed as part of the wider research indicate pressures arising from tensed local labour markets—and the issue of recruiting qualified staff is likely to gain even more relevance in the future. To satisfy demand, it will be most important for firms to build attractiveness and visibility—regarding both soft aspects such as employability as well as hard (e.g. monetary) incentives. Building long-term visibility and attractiveness within and beyond regions requires coordinated strategies involving private actors, intermediaries such as economic promotion agencies, business chambers and associations as well as educational institutions. Facilitating such coordination processes

needs to be a priority of and should be further encouraged by regional decision takers and policymakers.

This research echoes previous studies (e.g. North and Smallbone 2006; Townsend et al. 2016) which emphasise the importance of access to high-quality information and telecommunication technologies (ICTs) for businesses located in peripheral regions. Increasingly digitalised economies rely on powerful ICT infrastructure for networking and marketing, standard working routines and upcoming shifts related to automation and data exchange (e.g. industry 4.0). Thus, if adopted, the provision of high-performance (digital) infrastructures can effectively support businesses from peripheral regions to access wider resources, enlarge networks, expand their reach and ultimately to mitigate isolation and distance (Townsend et al. 2016). Yet, peripheral regions are frequently excluded from access to high-capacity ICTs and ‘discriminated against by investments in the telecommunication infrastructure because of the relatively low and dispersed nature of demand’ (North and Smallbone 2006, 52), fuelling the digital divide in technology landscapes (Townsend et al. 2016). Many firms consulted in this research use tools such as online procurement and marketing, social media and sophisticated virtual communication/co-development practices as part of their daily business and strategic innovation routines. However, firms from the Erzgebirgskreis in Germany, in particular, perceive the state of their ICT landscape as a distinct ‘*anachronism*’ and an inhibiting factor for competitiveness and business development. Thus, in the context of ongoing peripheralisation processes, this chapter argues that the provision of spatially inclusive access to high-performance ICT must be considered a major component of (national) infrastructural as well as regional development policy.

Finally, Faulconbridge’s (2017) reflection on relational policy approaches offers valuable links in light of the previously presented findings. This study corroborates the role of actor mobility and the multi-scalar organisation of networks in the innovation activities of firms from peripheral regions. It can therefore be suggested that regional development and innovation policy should strive for measures that promote both local/regional as well as (inter)national connections—rather than pursuing local innovation and the promotion of localised

networks as guiding imperatives of relational policy. Policy initiatives that take into account the mobility of innovators and encourage firms from peripheral regions to participate in (in)formal networks, trade fairs and industry conventions etc., can effectively support the formation of multi-scalar relations, allowing firms to exchange/acquire innovation-relevant expertise from a broad and dispersed range of actors. Instruments that support for instance trade fair participation, currently maintained by funding agencies in both Saxony and Estonia, could be further strengthened, but need, at the same time, better promotion to become more widely recognised amongst potential beneficiaries: firms from peripheral regions.

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Notes

1. In this study, South Estonia is referred to as the area consisting of the counties Põlvamaa, Võrumaa, Valgamaa and Viljandimaa.
2. This account is grounded on one interview with MÜHLE’s co-owner, mainly responsible for product development. Quotes were translated from German. For validation purposes, this section was cross-checked by the interviewee.
3. Read clockwise starting at 12:00 hours, the network maps in Figs. 2 and 3 capture the order in which the networks evolved.
4. This account is grounded on a joint interview with the company’s CEO and its chief technologist.
5. MSM (mechanically separated meat) is a method by which leftover meat scraps are harvested using mechanical tools to remove remaining pieces of meat from animal carcasses. MSM does not count towards the meat content of final products.
6. OSKAR markets these products using a ‘green label’, which is prominently positioned in green on the product’s packaging. The label says ‘E-vaba’ (translated as ‘E-free’), indicating the product is free of such substances

as artificial colouring agents, preservatives, emulsifiers, stabilisers, flavour enhancers, etc. which, if used, must be indicated as 'E-codes' on conventional products. 'Green label' is a marketing tool by OSKAR and does not have official recognition by Estonian regulative bodies.

Recommendations for Further Readings

- Bathelt, Harald, and Johannes Glückler. 2011. *The Relational Economy: Geographies of Knowing and Learning*, 1st ed. Oxford: Oxford University Press.
- Butzin, Anna, Dieter Rehfeld, and Brigitta Widmaier. 2012. *Innovationsbiographien: Räumliche und Sektorale Dynamik*, vol. 1. Baden-Baden: Nomos.
- Ibert, Oliver, Felix C. Müller, and Axel Stein. 2014. *Produktive Differenzen. Eine Dynamische Netzwerkanalyse von Innovationsprozessen*. Bielefeld: Transcript.
- Shearmur, Richard, Christophe Carrincazeaux, and David Doloreux, eds. 2016. *Handbook on the Geographies of Innovation*. Cheltenham: Edward Elgar.
- Yin, Robert K. 2014. *Case Study Research: Design and Methods*, 5th ed. London: Sage.

References

- Baregheh, Anahita, Jennifer Rowley, and Sally Sambrook. 2009. "Towards a Multidisciplinary Definition of Innovation." *Management Decision* 47 (8): 1323–39. <https://doi.org/10.1108/00251740910984578>.
- Butzin, Anna, and Brigitta Widmaier. 2016. "Exploring Territorial Knowledge Dynamics Through Innovation Biographies." *Regional Studies* 50 (2): 220–32. <https://doi.org/10.1080/00343404.2014.1001353>.
- Cohen, Wesley M., and Daniel A. Levinthal. 1990. "Absorptive Capacity: A New Perspective on Learning and Innovation." *Administrative Science Quarterly* 35 (1): 128–52. <https://doi.org/10.2307/2393553>.
- Copus, Andrew, and Dimitris Skuras. 2006. "Business Networks and Innovation in Selected Lagging Areas of the European Union: A Spatial

- Perspective.” *European Planning Studies* 14 (1): 79–93. <https://doi.org/10.1080/09654310500339885>.
- Dubois, Alexandre. 2013. “Managing Distance: Small Firm Networks at the Geographic Margins.” PhD diss., Stockholm University.
- Edquist, Charles. 2006. “Systems of Innovation: Perspectives and Challenges.” In *The Oxford Handbook of Innovation*, edited by Jan Fagerberg, David C. Mowery, and Richard R. Nelson, 181–208. Oxford: Oxford University Press.
- Eisenhardt, Kathleen M. 1989. “Building Theories from Case Study Research.” *The Academy of Management Review* 14 (4): 532–50. <https://doi.org/10.2307/258557>.
- Fagerberg, Jan. 2006. “Innovation: A Guide to the Literature.” In *The Oxford Handbook of Innovation*, edited by Jan Fagerberg, David C. Mowery, and Richard R. Nelson, 1–26. Oxford: Oxford University Press.
- Faulconbridge, James R. 2017. “Relational Geographies of Knowledge and Innovation.” In *The Elgar Companion to Innovation and Knowledge Creation*, edited by Harald Bathelt, Patrick Cohendet, Sebastian Henn, and Laurent Simon, 671–84. Cheltenham: Edward Elgar.
- Fitjar, Rune Dahl, and Andrés Rodríguez-Pose. 2016. “Nothing Is in the Air.” *Growth and Change* 48 (1): 22–39. <https://doi.org/10.1111/grow.12161>.
- Flåten, Bjørn-Tore, Arne Isaksen, and James Karlsen. 2015. “Competitive Firms in Thin Regions in Norway: The Importance of Workplace Learning.” *Norsk Geografisk Tidsskrift* 69 (2): 102–11. <https://doi.org/10.180/00291951.2015.1016875>.
- Florida, Richard, Patrick Adler, and Charlotta Mellander. 2017. “The City as Innovation Machine.” *Regional Studies* 51 (1): 86–96. <https://doi.org/10.1080/00343404.2016.1255324>.
- Foss, Nicolai J. 1997. *Resources, Firms and Strategies: A Reader in the Resource-Based Perspective*. Oxford: Oxford University Press.
- Gertler, Meric S. 2003. “Tacit Knowledge and the Economic Geography of Context, or the Undefinable Tacitness of Being (There).” *Journal of Economic Geography* 3 (1): 75–99. <https://doi.org/10.1093/jeg/3.1.75>.
- Gilly, Jean-Pierre, and André Torre. 2000. “Proximity Relations: Elements for an Analytical Framework.” In *Industrial Networks and Proximity*, edited by Milford B. Green and Rod B. McNaughton, 1–16. Aldershot: Ashgate.
- Grillitsch, Markus, and Magnus Nilsson. 2015. “Innovation in Peripheral Regions: Do Collaborations Compensate for a Lack of Local Knowledge

- Spillovers?" *The Annals of Regional Science* 54 (1): 299–321. <https://doi.org/10.1007/s00168-014-0655-8>.
- Hansen, Teis, and Lars Winther. 2011. "Innovation, Regional Development and Relations Between High- and Low-Tech Industries." *European Urban and Regional Studies* 18 (3): 321–39. <https://doi.org/10.1177/0969776411403990>.
- Hirsch-Kreinsen, Hartmut. 2008. "Low—Technology': A Forgotten Sector in Innovation Policy." *Journal of Technology Management & Innovation* 3 (3): 11–20. <https://doi.org/10.4067/S0718-27242008000100002>.
- Ibert, Oliver. 2007. "Towards a Geography of Knowledge Creation: The Ambivalences Between 'Knowledge as an Object' and 'Knowing in Practice'." *Regional Studies* 41 (1): 103–14. <https://doi.org/10.1080/00343400601120346>.
- Jakobsen, Stig-Erik, and Torbjørn Lorentzen. 2015. "Between Bonding and Bridging: Regional Differences in Innovative Collaboration in Norway." *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography* 69 (2): 80–89. <https://doi.org/10.1080/00291951.2015.1016550>.
- Johansson, Börje, and John M. Quigley. 2003. "Agglomeration and Networks in Spatial Economies." *Papers in Regional Science* 83 (1): 165–76. <https://doi.org/10.1007/s10110-003-0181-z>.
- Kühn, Manfred, Matthias Bernt, and Laura Colini. 2016. "Power, Politics and Peripheralization: Two Eastern German Cities." *European Urban and Regional Studies* 24 (3): 258–73. <https://doi.org/10.1177/09697764166637207>.
- Lundvall, Bengt-åke, and Björn Johnson. 1994. "The Learning Economy." *Journal of Industry Studies* 1 (2): 23–42. <https://doi.org/10.1080/13662719400000002>.
- Malecki, Edward J., and Deborah M. Tootle. 1996. "The Role of Networks in Small Firm Competitiveness." *International Journal of Technology Management* 11 (1): 43–57.
- Maskell, Peter. 2014. "Accessing Remote Knowledge—The Roles of Trade Fairs, Pipelines, Crowdsourcing and Listening Posts." *Journal of Economic Geography* 14 (5): 883–902. <https://doi.org/10.1093/jeg/lbu002>.
- Moulaert, Frank, and Farid Sekia. 2003. "Territorial Innovation Models: A Critical Survey." *Regional Studies* 37 (3): 289–302. <https://doi.org/10.1080/0034340032000065442>.
- Nonaka, Ikujiro. 1994. "A Dynamic Theory of Organizational Knowledge Creation." *Organization Science* 5 (1): 14–37. <https://doi.org/10.1287/orsc.5.1.14>.
- North, David, and David Smallbone. 2006. "Developing Entrepreneurship and Enterprise in Europe's Peripheral Rural Areas: Some Issues Facing

- Policy-Makers.” *European Planning Studies* 14 (1): 41–60. <https://doi.org/10.1080/09654310500339125>.
- Ozman, M. 2009. “Inter-Firm Networks and Innovation: A Survey of Literature.” *Economics of Innovation and New Technology* 18 (1): 39–67. <https://doi.org/10.1080/10438590701660095>.
- Rammert, Werner. 1997. “Innovation im Netz: Neue Zeiten für technische Innovationen: heterogen verteilt und interaktiv vernetzt.” *Soziale Welt* 48 (4): 397–415.
- Rodríguez-Pose, Andrés, and Rune Dahl Fitjar. 2013. “Buzz, Archipelago Economies and the Future of Intermediate and Peripheral Areas in a Spiky World.” *European Planning Studies* 21 (3): 355–72. <https://doi.org/10.1080/09654313.2012.716246>.
- Shearmur, Richard. 2012. “Are Cities the Font of Innovation? A Critical Review of the Literature on Cities and Innovation.” *Cities* 29 (2): 9–18. <https://doi.org/10.1016/j.cities.2012.06.008>.
- Shearmur, Richard, and David Doloreux. 2016. “How Open Innovation Processes Vary Between Urban and Remote Environments: Slow Innovators, Market-Sourced Information and Frequency of Interaction.” *Entrepreneurship & Regional Development* 28 (5–6): 337–57. <https://doi.org/10.1080/08985626.2016.1154984>.
- Taylor, Michael, and Bjørn Asheim. 2001. “The Concept of the Firm in Economic Geography.” *Economic Geography* 77 (4): 315–28. <https://doi.org/10.1111/j.1944-8287.2001.tb00167.x>.
- Ter Wal, Anne L. J., and Ron A. Boschma. 2009. “Applying Social Network Analysis in Economic Geography: Framing Some Key Analytic Issues.” *The Annals of Regional Science* 43 (3): 739–56. <https://doi.org/10.1007/s00168-008-0258-3>.
- Tödtling, Franz, and Michaela Tripl. 2005. “One Size Fits All?: Towards a Differentiated Regional Innovation Policy Approach.” *Research Policy* 34 (8): 1203–19, *Special Issue: Regionalization of Innovation Policy*. <https://doi.org/10.1016/j.respol.2005.01.018>.
- Torre, André. 2008. “On the Role Played by Temporary Geographical Proximity in Knowledge Transmission.” *Regional Studies* 42 (6): 869–89. <https://doi.org/10.1080/00343400801922814>.
- Townsend, Leanne, Claire Wallace, Alison Smart, and Timothy Norman. 2016. “Building Virtual Bridges: How Rural Micro-Enterprises Develop Social Capital in Online and Face-to-Face Settings.” *Sociologia Ruralis* 56 (1): 29–47. <https://doi.org/10.1111/soru.12068>.

- van der Panne, Gerben. 2004. "Agglomeration Externalities: Marshall Versus Jacobs." *Journal of Evolutionary Economics* 14 (5): 593–604. <https://doi.org/10.1007/s00191-004-0232-x>.
- Welz, Gisela. 2003. "The Cultural Swirl: Anthropological Perspectives on Innovation." *Global Networks* 3 (3): 255–70. <https://doi.org/10.1111/1471-0374.00061>.
- Yin, Robert K. 2014. *Case Study Research: Design and Methods*, 5th ed. London: Sage.

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