



Open Region: Creating and exploiting opportunities for innovation at the regional scale

European Urban and Regional Studies
2018, Vol. 25(2) 187–205

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DOI: 10.1177/0969776417705942

journals.sagepub.com/home/eur



Suntje Schmidt

Leibniz Institute for Research on Society and Space (IRS), Germany; Humboldt-Universität zu Berlin, Germany

Felix C Müller

Leibniz Institute for Research on Society and Space (IRS), Germany

Oliver Ibert

Leibniz Institute for Research on Society and Space (IRS), Germany; Freie Universität Berlin, Germany

Verena Brinks

Leibniz Institute for Research on Society and Space (IRS), Germany

Abstract

The starting point of the article is the observation of an increasing convergence of regional development and innovation policies. These policies are heavily influenced by territorial innovation models that have been extensively revised since they first came about over 30 years ago. Yet, more recent trends towards digitalisation and conceptual advances towards a time-spatial perspective on innovation processes require a more fundamental re-thinking of the nexus of development, innovation policies and territoriality. This paper therefore aims to advance an agenda for reconceptualising region-based innovation policies beyond the assumptions of territoriality implicit in territorial innovations models and related policy schemes. “Open Region” is a heuristic way of thinking about proactive policy measures for redesigning the dialectic interplay between territorial openness and closure. These measures, in essence, aim at creating and exploiting opportunities for innovation within a region by mobilising external expertise and establishing local anchors for innovation. Finally, we address the limitations of applicability and discuss incentives for regional actors to embark on Open Region strategies. The suggested measures can work together, yet it is also possible to utilise them in an eclectic manner or to selectively recombine them in order to address different local conditions.

Keywords

Innovation policies, open innovation, innovation processes, regional development, territories

Introduction

Over recent decades, there has been an intense debate about the convergence of regional development and innovation policies. Promising regional development

Corresponding author:

Suntje Schmidt, Dynamics of Economic Spaces, Research Department, Leibniz Institute for Research on Society and Space (IRS), Flakenstraße 28-31, 15537 Erkner, Germany.
Email: suntje.schmidt@leibniz-irs.de

policies have increasingly seen the promotion of innovation as an indispensable component of regional development. At the same time, policies seeking to promote innovation increasingly find application at the regional level. For about 30 years, “territorial innovation models” (TIMs) (Crevoisier, 2014; Moulaert and Sekia, 2003) have formed the conceptual intersection for this convergence. The cluster model (Breschi, 2007; Maskell and Malmberg, 2007; Porter, 1990, 1998) and the regional systems of innovation (RISs) approach (Asheim and Gertler, 2005; Braczyk et al., 1998; Cooke, 1992, 2001) have evolved into the most influential conceptual foundations for this policy field. Since they first emerged, these approaches have undergone extensive revisions, above all because of the increasing importance of knowledge and innovation in the economy (Bathelt et al., 2004; Cooke, 2001; Martin and Trippel, 2015; Maskell, 2001; Maskell et al., 2004; Plum and Hassink, 2011). Lately, we are witnessing a more radical shift that has been characterised as one “from cluster to process” (Ibert et al., 2015). Respective studies no longer restrict their analysis to more or less innovative regions, but instead trace how innovations unfold through time and space.

Apart from new conceptual perspectives, we are also witnessing the emergence of new empirical topics in the literature. Firstly, digital technologies have vastly extended the range and scope of communication (Bathelt and Truri, 2011; Cairncross, 1998; Grabher and Ibert, 2014) and have expanded possibilities for interacting across larger physical distances. Secondly, knowledge from the demand side is increasingly valued as a contribution to innovation processes. More and more firms pursue “open innovation” (Chesbrough, 2003) strategies and seek to integrate consumers into corporate innovation processes (Grabher et al., 2008; Von Hippel, 2005).

In this paper, we tie in with these recent trends in the academic literature on the spatiality of innovation. In combination, these reconceptualisations and new empirical topics point to a more fundamental structural change that requires a partial re-thinking of the nexus of development, innovation policies and territoriality. In this article, we introduce the notion of “Open Region” to explore the impact of these most recent trends on regional innovation policies. We

understand Open Region as a heuristic: as opposed to a closed theory or framework, “heuristic” here denotes a more modest and pragmatic approach to discover useful policy measures with a particular fit to the depicted new trends. The spectrum of measures presented here is not intended to be comprehensive. Rather, it is explicitly open to extensions and refinements. The guiding questions of the Open Region heuristic are as follows: how can policy makers position regions vis-à-vis innovation processes that transcend territorial boundaries, and how can they manage the dialectics of opening and closure in a beneficial way while fostering spaces of innovation?

The aim of this paper is to explore the general utility of the Open Region heuristic for future policies. Thus, this paper is not a classical empirical one. Instead, it is forward-looking, seeking to set an agenda for future empirical research and the conceptualisations of policies. However, the Open Region heuristic is not primarily deduced from theory but instead has been inspired by more than a decade of empirical fieldwork on innovation processes from a spatial perspective by the authors of this paper, individually, jointly and in collaboration with others (Brinks and Ibert, 2015; Grabher et al., 2008; Grabher and Ibert, 2014; Ibert, 2010; Ibert and Müller, 2015; Müller and Ibert, 2015; Schmidt, 2015; Schmidt et al., 2014). The heuristic also takes into account empirical analyses of more recent policies that are widely discussed in the literature and has been developed in close dialogue with practitioners in the field (see the Acknowledgements).

In the subsequent section, we review the recent literature in economic geography and beyond to lay out the conceptual basis of our Open Region heuristic and to highlight the most important recent conceptual advancements that challenge the present state of regional innovation policies. In the third section we present the Open Region heuristic as a possible new policy agenda for territories to productively engage with innovation processes. This section is organised along a four-field matrix combining two dimensions of policy principles (*creating* and *exploiting* opportunities for innovation and *mobilising* and *anchoring* innovation), which we deem relevant for future policies (see table 1). Finally, we discuss incentives for regional actors to embark on

Table 1. The Open Region heuristic: overview of principles and measures.

	Mobilising expertise	Anchoring innovation
Creating opportunities	<ul style="list-style-type: none"> • Foster professional mobility • Establish regional events • Diversify the notion of individual entrepreneurship • Unlock regional organisations 	<ul style="list-style-type: none"> • Reframe regional problems as opportunities • Leverage user perspectives • Nurture open creative labs • Support regional mentorship
Exploiting opportunities	<ul style="list-style-type: none"> • Develop a region into a node of brain circulation • Take advantage of virtual platforms 	<ul style="list-style-type: none"> • Scout for and attract innovations initiated elsewhere • Let go stuck innovations

Source: own design.

Open Region policies and some pragmatic limitations of this approach.

The conceptual basis of Open Region

Establishing territorial innovation models: Focalising localised learning

During the late 1970s and early 1980s a plethora of TIMs emerged. These models explored the territorial dimension of innovation and sought to explain why innovative capabilities are distributed in space so unevenly and why some regions are much more successful at modernising their economies than others (overviews in Crevoisier, 2014; Moulaert and Sekia, 2003). Initially, territorial differences in innovation performance had been theorised with respect to differences between nation states (e.g. Freeman, 1995; Lundvall, 1998; Porter, 1990). However, inspired by conceptual thinking from the industrial district accounts (e.g., Becattini et al., 1990) and the literature on innovative milieus (e.g. Camagni, 1991), and informed by empirical investigations of leading and lagging regions, it soon became clear that differences between nation states have little explanatory power regarding different degrees of innovation, whereas differences between regions do. Hence, attention soon shifted from the national to the regional scale (Asheim and Isaksen, 1997; Cooke, 1992, 2001; Porter, 1998).

Of all TIMs, the cluster concept and that of RISs probably had (and still have) the strongest impact on policy makers. Both concepts have a slightly different focus. Cluster theory is mainly concerned with the

competitiveness of firms and regions, while the literature on systems of innovation is strictly focused on innovation from the very outset (Edquist, 2001). However, there is considerable overlap between both strands of the literature, as the cluster literature quickly grew more concerned with innovation as the main driver of competitiveness (Malmberg and Maskell, 2002; Porter, 1998).

The RISs represent an analytical, comparative approach. Contributors explicitly refrain from conceptualising an abstract, ideal typical model of innovative territories (Edquist, 2001). The notion of “system” provides a rather generic framework (consisting of actors, relations between them and institutions) to empirically grasp concrete regional settings of innovation practices. Along these lines, relevant data can be collected to assess regions’ innovative capabilities. Against the backdrop of data on the regions’ innovative output (e.g. number of patents submitted per year), meaningful comparisons between more and less successful territories can be made. Promising policy measures can be deduced from such comparisons between structural properties of the respective innovation systems, hinting at their effectiveness and efficiency (Asheim et al., 2011).

Cluster thinking, by contrast, represents a more prescriptive approach (Ebbekink and Lagendijk, 2013). The key to economic prosperity, according to this argument, lies mainly in a territorial concentration of a critical mass of specialised firms belonging to the same industry, supported by further firms belonging to related industries and by public organisations, such as universities or research facilities (Delgado et al., 2016). The relationship between cluster firms is at the

same time cooperative (in the vertical dimension of the value chain) and competitive (in the horizontal dimension) (Malmberg and Maskell, 2002). Firms are thus not only “inspired” by their local suppliers and sophisticated customers, but also “spurred” towards innovation by rivals and competitors. Finally, firms are embedded in an institutional set-up that is suited to the area of regional specialisation. The respective institutions are constantly adapted to the changing requirements of the leading sector in the cluster. From a long-term and dynamic lifecycle perspective (e.g. Fornahl et al., 2015), learning institutions (Heidenreich, 2005) are required to prevent an over-specialisation on obsolete technologies that may lead to regional lock-ins (Grabher, 1993; Hassink, 2005).

Geographical proximity between participants is regarded as key to sustaining the competitive edge, according to the systems of innovation and cluster literature. Firstly, this allows for efficient and effective communication between cooperating partners with complementary assets. In particular, face-to-face interactions (Storper and Venables, 2004) are seen as critical when it comes to sharing tacit knowledge and to building trustful alliances for innovation. As transaction costs increase with the intensity of the interaction, co-located firms have a considerable advantage compared to firms that are isolated in their territory. Secondly, clusters are seen as productive due to the possibilities of unintended and coincidental forms of knowledge sharing (Schmidt, 2015). Such knowledge spillovers take place more easily between co-located firms of the same cluster as the firms’ knowledge assets are more perceptible and accessible to neighbouring firms, while expertise can be easily compared due to a similar sectoral specialisation and a shared institutional context and physical environment (Martin and Sunley, 2007; Porter, 1990). Labour market mobility of high-skilled workers within a cluster or a RIS additionally intensifies the circulation of knowledge and expertise among firms within the respective regions (Angel, 2000).

Modifying territorial innovation models: Highlighting interaction within and across territorial boundaries

The strong emphasis on the territorial dimension of innovation and related notions of localised learning

have spurred criticism for evoking a picture of regions as “islands of innovation” (Amin and Cohendet, 2004). Taking up this critique, succeeding contributors have increasingly paid attention to relations beyond regional boundaries. For instance, RISs were modified after it was realised that possibilities for influencing innovation processes at the regional level alone had been unduly emphasised (Bathelt, 2003). Hence, the embeddedness of regions within multi-scalar architectures became an issue of scholarly debate (Fromhold-Eisebith, 2007).

Similarly, empirical findings provoked reconceptualisations of the cluster model by showing that highly innovative firms in successful clusters are not only locally embedded, but also globally connected to leading firms in other regions (Chaminade and Plechero, 2015; Wolfe and Gertler, 2004). As a consequence, practices of localised learning, referred to as “local buzz”, were complemented with a kind of global connectivity labelled “global pipelines” (Bathelt et al., 2004; Maskell et al., 2006). In further specifying the notion of global pipelines, manifold forms of “temporary co-presence” (Torre, 2008) were explored that are used to realise interactions across distance (Bathelt and Henn, 2014; Maskell, 2014).

By going beyond forms of interaction confined to a certain space and time, the relational character of innovation gradually became a prominent research topic. Starting with early works by members of the “French Proximity School” (e.g. Torre and Gilly, 2000), different dimensions of relational proximity have been unfolded, such as institutional, organisational or cognitive proximity (Balland et al., 2015; Boschma, 2005; Knoben and Oerlemans, 2006; Mattes, 2012). The resulting typologies have been utilised as follows.

- To determine the ideal degree of distance within single proximity dimensions: For instance, the “inverted U-shape” curve describes the optimal mix of cognitive proximity and distance (Boschma, 2005; Nooteboom, 2000).
- To theorise about the substitutability of different proximity dimensions. For example, within a multinational firm organisational proximity might help bridge physical distance between branch offices (Hansen, 2014).

- To explore dynamic changes within individual dimensions of proximity (Balland et al., 2015).
- To analyse the dynamic interaction between different proximity dimensions (Ibert and Müller, 2015; Menzel, 2015). For instance, “pioneer user” relations might be described as blending cognitive distance with interest proximity (Ibert and Müller, 2015).

The possibilities of technologically mediated interaction have been similarly described as facilitating virtual proximity (Morgan, 2004). Virtual interaction is increasingly seen as instrumental to bridging physical distance in all kinds of practices (Müller and Ibert, 2015). Instead of being a mere deficient substitute for face-to-face interactions in the physical co-presence, virtual interaction is increasingly valued as a distinct form of social interaction with unique affordances and limitations (Bathelt and Truri, 2011; Grabher and Ibert, 2014).

Finally, the spectrum of actors contributing to innovation processes has grown considerably. In particular, the relevant contributions to innovation by users have gained attention. While early territorial models acknowledged their relevance in general (e.g. “sophisticated demand”, Porter, 1998), users and customers were not afforded a prominent role in them. Furthermore, they have mainly been understood as “smart neighbours” (Grabher et al., 2008). As such, they were only addressed explicitly when being part of a territorial innovation system.

Challenging territorial innovation models: Contesting regional innovation policies

TIMs, RISs and the cluster approach, in particular (Lazzeretti et al., 2014), have influenced regional policy-making tremendously. With the help of the RIS approach, policy measures can be derived from and formulated on the basis of a systematic comparison of successful and less successful regions. The concept can be integrated into rather pragmatic strategies for gradually enhancing the innovativeness of regions (Doloreux and Parto, 2005). “Cluster policies” (Martin and Sunley, 2003), in contrast, are more prescriptive in nature. The core

of cluster-based regional policies consists in actively promoting industry-related specialisations, including strengthening the corresponding regional innovation system (Wolfe, 2009) and investing in regional areas of expertise.

Related regional innovation policies have provoked widespread critique. Policies related to the RIS approach, for instance, have been criticised for predominantly influencing the institutional dimension of regions, while somewhat neglecting to change the nature and quality of relations between actors (Doloreux and Parto, 2005). Furthermore, as formal institutions are easier to observe than informal ones, comparative analyses between regions often lack a close examination of implicit rules and shared habits of thought (Gössling and Rutten, 2007). This cultural dimension of regions thus remains untapped by policy makers. Finally, RISs have been widely perceived as providing a static snapshot of the respective region under investigation. Debates about dynamics within systems of innovation have emerged only very recently (Tödtling and Trippel, 2013).

Criticism of policies related to the systems of innovation approach concern mainly methodological questions and issues of policy implementation. In contrast, cluster policies have provoked a more fundamental critique, due to their more prescriptive and standardised character of cluster strategies leads to a proliferation of “Silicon Somewheres” (Ebbekink and Lagendijk, 2013; Hospers, 2005), while highlighting the newness and utility of clusters as a more market-oriented approach. Others stress the “fuzziness” of the approach, which renders it adaptable to the situation-specific needs of policy makers – but also bears the risk of encouraging arbitrary interventions and political game playing (Benneworth et al., 2003; Burfitt and Macneill, 2008; Taylor, 2010). The cluster concept therefore appealed to policy makers due to its emphasis on inter-local capacities and potentials, despite a growing internationalisation of markets and an increasing global division of labour (Meyer-Stamer, 2009; Rehfeld, 2009). The effectiveness of such policies, however, is fiercely disputed (Atherton, 2003; Wolfe, 2008).

There is now a growing consensus that new clusters cannot be built from scratch (Palazuelos, 2005), but Feldman and Francis (2004) assign a facilitating, enabling and potential-fostering role to policy makers. They also highlight the need to provide orientation for stakeholders and to encourage their regional involvement, while being sensitive to local contexts and cluster development phases. Hospers et al. (2009), on the other hand, urge policy makers simply not to obstruct clusters should they emerge by themselves. Newer approaches, including the concept of “smart specialisation” (European Commission, 2013; Foray, 2015), promote creative and innovative recombinations of existent regional capabilities for addressing European and global challenges. However, deciding on such promising regional capacities, like all cluster-specialisation policies, requires policy makers to have an understanding of future developments (Hospers, 2005). The dominant policy rationale in cluster policy (Laranja et al., 2008) is still “cluster building” (Ebbekink and Lagendijk, 2013), with cluster structures predating the desired innovative and competitive outcome. Alternatively, Ebbekink and Lagendijk (2013) suggest a rationale of “policy leverage”, in which ways of achieving the overarching goal of regional economic development are derived in a more open manner, based on stakeholders’ needs and political opportunities. This resonates with ideas that cluster policies should be devised and evaluated openly and discursively, empowering and engaging regional stakeholders in their specific needs (Diez, 2001; Gausdal, 2008; Reid, 2010).

De-focalising territorial innovation models: From cluster to process

Most recently, economic geographers have started to reflect on the spatiality of innovation without taking a territorial dimension for granted ex ante (Rutten and Boekema, 2013). In essence, this new stream of research has caused a conceptual shift from a research focus on innovative territories to a time-spatial analysis of innovative processes (see several recent special issues, e.g. in *Growth and Change* on “Geographies of Innovation and Production Systems” (Rutten and Overå, 2014), in *Geoforum* on “From Cluster to Process” (Ibert et al., 2015) and in *Regional Studies*

on “From ‘TIMs’ to ‘Territorial Knowledge Dynamics’ (Jeannerat and Crevoisier, 2016)).

When reconstructing complex processes of innovation from the initial idea to the practical manifestation (which can but must not be a market entry), it becomes clear that the resources required to realise an innovation are usually socially distributed and spatially dispersed (Baraldi and Strömsten, 2009; Hermelin et al., 2014; Moodysson et al., 2008). Therefore, the conditions necessary for innovations are only exceptionally found in a single location (Hansen, 2014; Stein, 2014). Depending on the phase of an innovation process, different kinds of search logics for resources apply. For example, during early innovation phases, novel ideas are still fuzzy and therefore knowledge gaps cannot yet be exactly specified. Hence, related search processes are not yet focused and inspiration for novel solutions mainly derive from problematic and perplexing situations (Stark, 2009). In early phases, actors thus rely more heavily on locally accessible resources. As a novel idea matures, it becomes clearer what specific kind of expertise will be necessary to realise it and therefore search processes become more targeted. The arising networks become increasingly specialised and grow broader in terms of spatial reach (Ibert and Müller, 2015).

In the discourse on user-driven innovation, the shift from clusters to processes revealed that corporate innovation is tied to sophisticated demand not only when the customer is co-located to the firm. Manifold forms of direct interaction between producers and users in temporary co-presence, often at sites of usage and consumption, but also practices of observing interaction among customers on online forums, constitute a geography of innovation that is much more transient and mobile than accounts of territorial innovation suggest. Furthermore, users not only contribute to corporate innovation, but also often play an active part in shaping innovation. In other words, the Schumpeterian momentum can shift from the producer to the user (Brinks and Ibert, 2015; Grabher et al., 2008). More generally, the traditional form of orchestrated, patent-protected, science-driven and extrinsically motivated innovation referred to as “push-innovation” is increasingly complemented by novel forms of community-driven, problem-oriented and intrinsically motivated practices of knowledge

sharing, denoted “pull-innovation” (Hagel et al., 2010). The latter practices of innovation strongly rely on the technological affordances provided by the Internet.

Finally, the procedural characteristics of innovation point to the limitations of focusing on the conducive function of proximity solely. Likewise, it might be useful to systematically think about the productive aspects of relational and physical distance for innovation, since creativity unfolds in the process of overcoming or productively dealing with distance (see also Grabher and Ibert, 2014; Ibert, 2010; Stark, 2009).

Taken together, the conceptual shifts, recent criticism and new research topics discussed in the literature suggest that the time has come to reconsider the nexus between regional development and innovation policies more fundamentally. With this paper, we seek to initiate such reconsideration by proposing a heuristic framework for possible policy measures that we denote Open Region. In our view, it seems more productive to think about the mobile, trans-territorial, temporary and inherently unpredictable nature of innovation in a structured way, rather than yet again adapting, diversifying and broadening TIMs to a degree that would render them unrecognisable.

The Open Region heuristic

We suggest the Open Region heuristic *as a structured way of thinking about regional innovation policies in an open-ended fashion*. It is a *flexible, yet systematic, framework designed to help policy makers devise future innovation policy measures*. We suggest unfolding the Open Region heuristic based on two characteristics of innovation processes.

Firstly, innovations have to be conceived as unruly processes driven by serendipity, unlikely encounters and surprising turnarounds. In retrospect, these processes can be characterised as recombining spatially and socially distributed resources and expertise in an unforeseen way. As such, they cannot be fully planned, directly controlled or harnessed by policy makers. What policy makers can do, however, is to shape opportunities for innovation within their sphere of influence. We therefore distinguish between two possible modes of engagement with innovation

processes: (1) *creating* innovation opportunities without controlling the outcome and (2) *exploiting* innovation opportunities regardless of their origin.

Secondly, as detailed above, innovation processes are increasingly conceived as being mobile (with shifting centres of activities), multi-local (with activities occurring simultaneously at several sites) and collaborative (with participants collaborating across physical distances). Regional policy makers, in contrast, are and remain tied to their territories, be it at the local, regional, federal state, national or even supra-national scale. Even in the case of “soft spaces” (Allmendinger et al., 2014; Haughton and Allmendinger, 2008), a policy framework in which resources, actors and networks are brought together temporarily to form a space for addressing a certain challenge, the involved policy makers remain tied to their territories. Hence, policy makers who wish to engage meaningfully with innovation processes at the regional level have to deal with the practical problem that not all smart people involved in innovation (Chesbrough, 2003) are located within the respective territory. The challenge to retain some of the value created in the region despite the socially, organisationally and spatially dispersed forms of knowledge sharing is twofold: it becomes important (1) to *mobilise* expertise (Crevoisier and Jeannerat, 2009) located outside the region and (2) to *anchor* innovations in the respective territories (Crevoisier, 2016; Dahlström and James, 2014). Table 1 provides an overview of how these principles work together and which measures can be related to them.

The following sections illustrate the Open Region heuristic with suggestions for innovation policies that we substantiate by referring to existing policies and approaches that we encountered in our fieldwork, in conversation with practitioners and in empirical accounts provided by others. While these empirical illustrations cannot “prove” the validity of the heuristic in a classical sense, they do suggest its feasibility, as most of the depicted measures are already being applied in certain regions.

Creating regional opportunities

Policy makers cannot immediately influence innovation. However, they can affect opportunity structures

conductive to innovations in their sphere of influence. In this section, we discuss possible strategies and related policy measures that can potentially increase the likelihood of innovative processes occurring within a particular region.

Creating experiences of “dissonance” in a region. Innovations can be understood as “wicked problems” in which “problem understanding and problem solution are concomitant to each other” (Rittel and Webber, 1973). In this line of reasoning, “problems” are nothing given, but something social actors have to recognise by actively interrogating perplexing situations (Stark, 2009). Innovative solutions, in other words, typically arise in response to and in interaction with perceived problems (Ibert and Müller, 2015). Regional policies in the Open Region framework thus seek to create such perplexing situations in order for regional actors to experience and explore relevant problems. It is known from the sociology of organisations that novel problem definitions emerge through processes of framing and reframing (Hargadon and Bechky, 2006). This can happen if a certain issue is viewed from several perspectives at a given moment. For instance, novel problem definitions often emerge at the intersection of overlapping practices, knowledge domains or scientific disciplines (Galison, 1997). In such cases, individuals can no longer rely on entrenched routines and have to develop new terminologies to create a shared understanding of the situation. In short, new problem definitions arise in response to dissonance (competing and only partly compatible interpretations) and thus can be harnessed by organisations that “embrace dissonance” (Stark, 2009). In a similar vein, we suggest that regional innovation policies may (as they often do) stimulate a multiplicity of perspectives on concrete practical problems.

Foster professional mobility. Embracing dissonance at the regional level could be achieved by fostering individual mobility. Spatial mobility is valued for provoking chance encounters, inspiring individuals and confronting them with unfamiliar perspectives on given problems. This is well-known from academia and the arts (Jöns, 2009). Spatial mobility and chance encounters are less common, however,

in the context of regional innovation policies. To give regional actors the possibility of experiencing unfamiliar routines, work practices and cognitive frames, classical outreach-and-return schemes could be added to the repertoire of regional innovation policies. Temporary stays abroad can enhance the capabilities of employees of regional organisations to reframe well-known problems or to learn about hitherto inaccessible solutions to regional problems. In contrast to existing forms of travel grants, however, these measures for creating temporary situations of strangeness should target not only academics and artists, but also creative professionals in a very broad sense, be it hardware engineers or waste disposal experts. To stimulate the individual mobility of experts in the opposite direction, regional organisations could be encouraged to launch “guest” programmes.

Establish regional events. Singular or cyclically recurrent events are another group of measures that allows to experience dissonance in a region. Trade fairs, competitions and award ceremonies bring together globally dispersed experts on a specific field (such as a research discipline, an art genre or a lifestyle sport) in one place for a limited time period. Events can be viewed as randomly facilitating personal encounters and moments of mutual inspiration (Bathelt and Gibson, 2015). To further boost the experience of dissonance, professional events should welcome the wider public and enthusiastic “non-experts”. Furthermore, several events could take place simultaneously. For instance, a music festival could be combined with an academic conference on the music industry, to provide opportunities for encounters between business representatives, business experts and musicians.

Diversify the notion of individual entrepreneurship. In addition, mobilising regional expertise could be achieved through funding schemes that target innovative individuals rather than organisations. This idea has already been tried, for example in the context of the EXIST programme by the German Federal Ministry of Education and Research (www.exist.de), which helps individual academics to become start-up entrepreneurs. However, many

potential innovators do not have the ambition to found a firm, yet might still want to work on their innovative project (Franke and Shah, 2003). In addition to start-up grants, innovative individuals could also benefit from more flexible measures. A temporary leave of absence or an “innovation sabbatical” may represent an alternative way for encouraging potential innovators to pursue their ideas. The results could either flow back to that individual’s former organisation or evolve into independent products. Such initiatives may appeal to older employees, as this approach allows them to apply their know-how without entirely sacrificing the security of their careers. Organisations within a region could further foster inventive projects by encouraging their employees’ own initiatives through institutional settings, such as “projects inside”. Finally, funding schemes for entrepreneurs could also target non-academics. More flexible legal frameworks for secondary part-time work, for instance, would allow people from all kinds of backgrounds to advance professional projects that are driven by their enthusiasm but are not yet profitable. Such hybrid occupations provide an opportunity to experiment with professional or entrepreneurial roles outside of one’s main occupation.

Unlock regional organisations. Mobilising innovation does not solely come down to the spatial movement of individuals, but also to movements of individuals between different institutional and organisational contexts. Unbureaucratic support schemes for staff exchanges across institutional and organisational boundaries as well as policies that promote (and safeguard) more flexible career paths and hybrid professional roles (Brown and Hesketh, 2004; Khapova et al., 2007) can create additional regional opportunities for embracing dissonance. Regional policy makers could develop funding schemes that provide incentives for closed organisations to open up to unusual users, such as employees, administrators, students, pupils, artisans and enthusiasts (Agarwal and Shah, 2014; Franke and Shah, 2003; Von Hippel, 2005), offering them opportunities to interact with more established knowledge workers, such as scientists and engineers. Such measures provide learning opportunities for new users, who gain

access to hitherto inaccessible equipment and technology, and for regular researchers, who can apply their expertise to unfamiliar problems and learn from unacquainted work routines pursued by external users. Such policy measures have been pioneered by the European Union’s “Science Link” flagship project, which invites commercial users to utilise public large-scale research infrastructures (such as a particle accelerator) in the Baltic Sea region for research and development purposes (Minniberger and Ibert, 2013; <https://www.science-link.eu/>, accessed 11 December 2015).

It is important to note that experiencing dissonance, of course, does not automatically lead to innovation. Furthermore, such measures may also create frustration, friction, conflict and increased uncertainty. Therefore, policy measures that encourage embracing dissonance should also include safety nets to mollify the destructive aspects of dissonance. One simple way of making the inevitable uncertainty more tolerable lies in ensuring that interventions remain temporary.

Creating and promoting sites of experimentation in a region. At their early stage, novel ideas are typically highly vulnerable as they remain immature and untested. For new ideas to blossom, it is necessary to find a place where they can be tried and tested. We understand such places as “sites of experimentation” in a literal sense of adequate physical-material settings and in a more metaphorical sense of institutional protection, flexibility and accessible resources. Protection is required, as overly early pressures to succeed and fundamental critique may destroy an idea before it has had a chance to reveal its full potential. Resources are important to enable further experimentation and to gauge the viability of an idea. Sites of experimentation provide shelter for novel ideas in a region and, as such, provide an opportunity to anchor innovative ideas in a region (Crevoisier, 2016; Dahlström and James, 2014).

Reframe regional problems as opportunities. A precise problem definition provides the basis of many innovations. Against this background, region-specific liabilities can turn into generative assets (Grabher and Stark, 1997). Such constellations pose

challenges that require novel responses, which are desirable for the region and – more importantly – also beyond. Regional manifestations of climate change or demographic shrinkage, for instance, represent potential problems of this kind. Furthermore, such constellations offer unique opportunities for anchoring possible future solutions to a problem within a region. As every problem is to some extent situated in a local and historical context, it is hardly possible to grasp it without interrogating the geographical context as well. As a consequence, regions and other territories can “inscribe” themselves into the problem definitions underlying innovative solutions. This sensitivity of innovations to spatial contexts yields an opportunity for regional actors to reap the benefit from an innovation by positioning themselves as a widely accepted reference point in more general discourses.

Leverage user perspectives. Policy makers can enhance regional actors’ reflexivity and their ability to express themselves, perceive others and to frame existing “regional problems” in ways that render them relevant to all. Furthermore, measures to leverage users’ perspectives on regional problems might be a particularly promising avenue. We define users broadly here as all those who routinely apply particular solutions or technologies to problems. Users may be doctors, commuters, business people or even private gardeners. Due to their particular perspective on the region they will be likely to frame problems differently compared to professional planners and policy makers. The creation of a local, user-driven wireless network, along with new customised technological devices in the Dutch town of Leiden (Van Oost et al., 2008) can serve as an example for a regionally anchored innovation that was initiated, designed and maintained by a local user community who adapted available solutions to their own regional needs and context. Close interaction between providers and users, co-creating problem definitions and solutions, as well as jointly tinkering and experimenting with prototypes, usually occurs in real world settings. This implies that any place where knowledge practices are performed at a high level can turn into a site of experimentation. For instance, apart from providing health services,

a district hospital may also evolve into a site of experimentation where doctors, nurses, patient representatives and developers of healthcare technology co-create new solutions (Grabher et al., 2008).

Nurture open creative labs. In recent years, there has been a tremendous upsurge of a plethora of variously named open creative labs (e.g. Fab Labs, Maker Spaces, Coworking Spaces). Open creative labs offer temporary access to equipment, material, expertise and sometimes professional advice to all kinds of users and are purposefully designed to stimulate individual and collective creativity (e.g. Brinks, 2013; Capdevila, 2015; Merkel, 2015; Schmidt et al., 2014). Most crucially and in contrast to more established research contexts, knowledge creation is driven by the users’ interests, practical needs and (variously framed) problems in open creative labs. Lab providers range from corporate organisations (e.g. Telekom or Microsoft) to civil foundations (e.g. Waag Society in Amsterdam), universities and cities (e.g. Stockholm’s Open Lab was founded by the Karolinska Institute, Stockholm University and the city of Stockholm, among others) or associations of individuals (Schmidt et al., 2014). From a policy point of view, such open labs significantly broaden the set of possible regional anchors. So far, open creative labs have started to emerge without political backing and seem to call for rather indirect political interventions. To foster the emergence of labs, for instance, it is helpful to retain unused land for temporary uses and to offer publicly owned real estate or buildings to the most innovative endeavours rather than the highest bid. These sites for experimentation may thus benefit from policies seeking to carefully develop urban diversity.

Support regional mentorship. Mentorship might be conducive for establishing sites of experimentation in a region (see, for instance, the notion of the “civic entrepreneur” by Ebbekink and Lagendijk, 2013). Mentors are regional actors who occupy leading positions in organisations and/or the wider institutional context. They are not necessarily innovators themselves, but have the authority and the will to create a supportive and protective environment for innovative agents within their sphere of influence

(Ibert and Müller, 2015). They decide who gets access to organisations (and who does not), and offer guidance and support to promising entrepreneurial personalities. Mentorship relates to all types of sites of experimentation mentioned above. Regional mentoring programmes can therefore be an important ingredient for supporting regional innovation activities across all kinds of institutional environments.

Exploiting opportunities

In the Open Region heuristic, regions are not understood as arenas within which innovation processes unfold. Rather, we see them as potential starting points, transit stations or destinations (preliminary or final) of innovation processes. A region can thus benefit from an innovation even if it originated elsewhere, and it becomes increasingly important to recognise and exploit opportunities presenting themselves beyond the boundaries of the region.

Drawing on expertise from outside the region. In a global knowledge-based economy, personal mobility is inevitable for establishing careers. In this light, the idea that regions should try to primarily retain talent for avoiding “brain drain” becomes increasingly pointless. Furthermore, each person leaving a region also creates an opportunity to establish additional external contacts (Agrawal et al., 2006).

Develop a region into a node of brain circulation. Even lagging regions could benefit from developing into nodes of global, overlapping streams of “brain circulation” (Saxenian, 2005). This basic idea can be transformed into a set of policy instruments seeking to actively manage the contacts to regional alumni (Rérat and Jeannerat, 2014). For instance, selected émigrés can be appointed regional ambassadors. As such, they can promote their home region to others at diverse places and at the same time remain accessible as external partners for upcoming regional projects. Furthermore, they could broker relationships for regional actors in remote regions (Rérat and Jeannerat, 2014). Finally, returnee programmes could function as integral elements of regional innovation programmes. Returnees do not only import hitherto inaccessible resources, ideas and social

contacts into the region, but additionally create new regional opportunities for innovation (Klagge and Klein-Hitpaß, 2010). Returnee programmes could be complemented by a “welcome centre”, as has been pioneered by the German region of South Lower Saxony (www.allianz-fuer-die-region.de/welcome-center.html). These are administrative units to support, consult and assist specialists from abroad who wish to relocate to the region.

Take advantage of virtual platforms. Internet-mediated interaction and collaboration provide additional opportunities for regional actors to tap into external knowledge pools and to mobilise external resources and expertise. Online interaction, rather than simply substituting for traditional forms of face-to-face encounters, has unique and complementary qualities. Online communities, for instance, have shown remarkable capabilities of self-organising complex forms of collaboration (Grabher and Ibert, 2014). Typically, online interaction is organised through platforms (Langley and Leyshon, 2016). These socio-technical mediators match supplying and demanding parties, shape the limitations and possibilities of interaction, and define the scope of topics. Social media sites, virtual marketplaces, crowdsourcing sites, firm-hosted developer platforms and online forums are typical examples for such platforms. In order to take advantage of virtual platforms, regional actors have to learn how to use them. Nowadays, at the regional scale, the Internet is primarily framed as an infrastructural task and is discussed narrowly in terms of access and bandwidth. Yet, we argue for regional digitalisation approaches to be considered in a more complex and reflective way. Regional businesses, public service providers and user communities, for instance, can benefit from utilising virtual platforms or even establish them as an exclusive niche in a reflexive and strategic manner, for example, for optimising access to external knowledge, utilising open access resources and expanding the impact of their problem perceptions and implemented solutions by communicating them in online communities. However, such benefits rely on competences and knowledge about the possible pitfalls and restrictions of online collaboration that most policy

makers lack. Hence, prescriptive top-down strategies cannot work. Rather, it becomes necessary to organise processes of collaborative exploration and learning at the regional scale and, thus, to involve additional expertise and stakeholders in the policy process (e.g. hackers or platform developers).

Positioning regions in dynamic and spatially dispersed constellations of innovation. In order to position a region in mobile and multi-sited innovation processes, we perceive the ability to (temporarily) anchor, but also let innovative ideas go as virtues of regional innovation policy. Regional anchoring, however, is possible most likely only partially and transiently. In other words, regions can be positioned either as a transit station in more long-term development processes and/or as a regional branch of globally organised, multi-sited innovation processes.

Scout for and attract innovations initiated elsewhere. Anchoring innovations in their final development phase in a region requires active scouting for innovations developed elsewhere (Martin-Rios and Parga-Dans, 2015). Dead ends, partial failures and re-contextualisation are frequent occurrences in innovation processes. However, temporarily paused innovation processes have the advantage that key learning stages have already been completed. They thus constitute significant opportunities for regions to invite promising innovation activities halted elsewhere to relocate. Along this logic, the city of Amsterdam, for instance, seeks to take advantage of the national start-up scheme, which issues one year residential visas to ambitious international entrepreneurs who decide to relocate their business to a city in the Netherlands (www.iamsterdam.com). Another possible, albeit rarely implemented approach, consists of identifying incomplete or faltered innovations and to grant them a second chance, for example, by competitions that discover and attract promising ideas to the region. The “start-up-city Hannover” (www.startupcityhannover.de) competition, for instance, awards prizes worth over 100,000 Euros to attract start-ups to relocate to the region, and exemplifies such a policy measure. Regional venture capitalists play a key role here. They cannot only provide finances for such competitions but also contribute crucial expertise on

how to assess the market potentials of such immature business ventures.

Let innovation processes go if they become stuck. One of the most challenging and counter-intuitive tasks for policy makers is to let innovative entrepreneurs relocate (or even encourage them to do so) if they do not find specialised collaboration partners and/or market entry points in the region. Fostering distant search processes bears the risk that companies and entrepreneurial teams will leave the region for good, thus creating a perception of loss. Yet, beyond the general fact that this mobility is advantageous to the innovation in question, indirect regional benefits are still attainable. Entrepreneurs can, for example, be encouraged to return home after a period of learning and gathering experience by using outreach and return programmes (see above). Long-established small- and medium-sized enterprises (SMEs), however, are unlikely to relocate entirely in such an event. In the long run, the region will benefit from their advanced competitive status acquired through successfully implementing an innovation elsewhere. High-tech accelerators (Hochberg, 2016) are recent examples of regional anchors that combine the logics of attracting innovations initiated elsewhere and letting innovations that have hit a dead-end relocate elsewhere. They are regional transit stations for innovations par excellence.

Limitations, incentives and pragmatic considerations

Taken together, the measures depicted and systematised above suggest new ways of designing and implementing policy programmes to foster innovation at the regional scale. On the one hand, Open Region policies seek to disburden policy makers from over-ambitious goals. Participating in and contributing to innovation is far less demanding as a region than aspiring to become the world-leading cluster in one of the few growth sectors. On the other hand, however, we take seriously the unruliness and limited accessibility of innovation, which pose formidable practical challenges for both regional policy makers and private actors. In this section, we seek to identify possible incentives for regional actors to

devise Open Region policies, and discuss practical limitations to such policies.

In the Open Region framework, public and private regional actors are expected to think beyond traditional (e.g. organisational and administrative) boundaries, even though these boundaries exist and will continue to persist, of course, for good reasons. Re-assessing the dialectics of openness and closure of such boundaries is not without risks: private firms are in danger of revealing business secrets when sharing knowledge openly with others, while public administrators are in danger of spending public funds on activities outside their own territory. Despite these dangers, what possible *incentives* exist for regional private and public actors to pursue Open Region policies?

Open Region measures seek to exploit monetary and non-monetary values of innovations (Nickerson et al., 2007; Pike, 2009). Monetary values gained from innovations can be regionally “captured” if individual and collective regional actors gain interests in emergent innovations (e.g. in the form of licenses or royalties) in return for their contributions or if they are directly compensated for their efforts in joint ventures. Monetary values, in other words, can be kept within the region even if larger parts of the profit are earned elsewhere (Shearmur and Bonnet, 2011). More indirect forms of monetary rewards can be generated if regional firms increase their competitiveness by participating in innovations. Again, this effect can occur for innovations that are marketed within or outside the region.

In addition, regions may also acquire non-monetary rewards from participating in innovations. For instance, regional actors can influence the course of an idea development. The potential benefit is that regional problem perceptions are reflected in newly developed solutions and innovations might provide superior solutions to problems that matter in a region. Furthermore, regional actors may gain reputational benefits if they manage to imprint their specific “brand” on an innovation and succeed in being perceived as a contributor to an innovation (“authorship”, Crevoisier, 2016).

Open Region policies must be neatly integrated in multi-level governance arrangements in which different scales have to work together. For instance,

start-up visas granted in the context of the place-based innovation policies in the Amsterdam region are issued by the national state and not by local administrations. The same example illustrates that successful policies often need to integrate different sectoral logics too. In this case, the success of innovation policies depends on priorities set in the field of immigration laws. Education, science, economic and urban development, technological and infrastructural policies represent additional sectoral logics that need to be integrated in situation-specific and problem-driven ways in order to benefit from the presented measures. While multi-scalar and cross-sectoral governance is challenging for certain, today it is no longer entirely untried.

Far less experience, however, exists with policy measures seeking to integrate laypersons and users in innovation processes. Open Region policies might therefore fail due to policy makers’ lack of expertise in organising trans-disciplinary collaboration. Other measures require advanced expertise on digital technologies. Yet, policy makers tend to lack know-how in this field, as do many SMEs. Finally, measures requiring advanced knowledge for assessing business ventures in premature development phases tend to over-strain public authorities. Yet, it seems possible to integrate formats and processes into the regional policy agenda (such as competitions to identify promising ideas) that can substitute for individual expertise with a structured selection process. Furthermore, civil society and private actors, such as hackers or venture capital experts, who so far have not played a decisive role in regional policies, could be enlisted to provide assistance for developing contemporary regional innovation policies.

On the whole, considerable obstacles to Open Region policies remain, even though none are insurmountable.

Conclusions

In this paper, we developed Open Region as a heuristic for devising regional innovation policies. The heuristic acknowledges and appreciates the fact that policy makers are tied to territories in terms of responsibilities and spheres of influence. For the purpose of innovation policies, however, policy

makers are confronted with processes that are inherently mobile and multi-local and frequently transcend territorial boundaries. Regions, hence, can no longer be regarded as arenas for innovation, but rather either as starting points, transit stations or (preliminary) termini of innovation processes. Most likely, one and the same region will serve for all three stages, although for different innovation processes. Similar to open innovation practices in companies, the Open Region logic is more about governing the dialectics of openness and closure in a reflexive manner, rather than completely dissolving boundaries. Territorial and organisational boundaries, rather than strictly separating the inside from the outside, should instead be understood as permeable membranes, which at the same time enable, direct and limit interaction.

The Open Region heuristic addresses the territoriality of policy intervention in innovation processes in a novel way by seriously asking how innovations can be influenced by regional actors and how regions can benefit from such interventions. Open Region therefore presents proactive and reflective measures that systematically create and exploit opportunities for innovation within regions, seeking to mobilise expertise for innovation activities and to anchor innovations in regions (see Table 1). The Open Region heuristic provides ideas for how regions can engage with innovation processes, how they can position themselves vis-à-vis innovation dynamics and how they can attract and retain monetary and non-monetary values from innovation. Most policy measures suggested in this paper avoid direct policy interventions. Rather, they focus on facilitating action, stimulating learning, attracting talent, mediating ideas or developing social capital (Tödtling et al., 2006).

The Open Region heuristic does make some omissions. While it has been inspired from empirical work conducted in several research projects and from dialogues with practitioners from different policy fields, references to empirical data are yet little more than illustrations testifying the viability of Open Region policies. Additional empirical work is required to further substantiate the validity, effectiveness and usefulness of the heuristic. More systematic desktop research, for instance, would help to

identify more elements to extend the spectrum of possible interventions identified so far. Further qualitative explorative research would help to identify new elements or detect more mature variants of already known measures. Finally, focus group discussions with selected practitioners from politics, administrations, academia, economy and civil society could lead to interventions not yet implemented in practice. Such measures could either expand the spectrum of already discovered measures or even extend the heuristic by additional dimensions.

We do not consider the heuristic a “one size fits all” (Tödtling and Trippel, 2005) approach. We regard Open Region policies as useful and reasonable for all kinds of regions and as an alternative for but also an addition to more established policies. Hence, the presented heuristic is no prescriptive model. Instead, we invite regions engaging in innovation processes to select from the heuristic according to their particular needs, conditions and resources. The aim of this paper was to unfold the general idea of an Open Region. A differentiated discussion about which Open Region measures and combinations of measures are most conducive for what type of region was beyond the scope of this paper and has to be postponed for the future.

Acknowledgements

The first draft of this paper was discussed in a workshop with practitioners from the fields of innovation and regional policies, industry experts and academic advisors. Special thanks therefore go to workshop participants Daniel Brückner, Ulrich Dewald, Till Meyer, Stefan Jaroch, Hugues Jeannerat, Alexander Kleibrink, Manuel Ott, Sebastian Olma, Thomas Schildhauer, Jörg Kleuver, Hans-Peter Hiepe and Maria Rosaria Seminara. Our thanks extend to Katja Hillmann, Max Lobeck and Heike Pirk for supporting the organisation of the workshop. We received further supportive comments from Dan and Shiri Breznitz, Peter Eulenhöfer, Robert Hassink, Sebastian Henn, Heiderose Kilper, Diego Rolando Mahecha Capach, Eileen Schuldt and David Wolfe. We would like to extend our gratitude to all discussants and commentators of the following sessions and workshops where we presented the Open Region heuristic: “Colloquium of Human Geography”, University of Jena, 13 July 2015; “10th Regional Innovation Policies Conference”, 15–16 October 2015, Karlsruhe; “Innovation Policy Lab Speaker Series – Frontiers of Research in Global Innovation”, 1 March 2016, University of Toronto;

“Beyond clusters: New Perspective on regional innovation policy”, 19 May 2016, 41st IRS Regional Talk, Erkner; “19th Uddevalla Symposium 2016”, 30 June–2 July 2016, London; “1st SMARTER conference on Smart Specialisation and territorial development”, 29–30 September 2016, European Commission, Sevilla; “Expert Talk: Developing a German innovation concept ‘Structural Change’”, German Ministry of Education and Research, 14 October 2016, Berlin. Finally, we thank the reviewers and the editor for their very valuable comments.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This paper is based to a large extend on three successive institutionally funded lead projects conducted between 2010 and 2018 at the Leibniz Institute for Research on Society and Space (IRS). As a member of the Leibniz-Association, the IRS is funded by the Federal Republic of Germany as well as the Federal State of Brandenburg.

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