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Revisiting the role of policy in regional innovation systems

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Introduction

The continued interest of academics and policy makers alike in understanding and replicating the vibrancy of innovation hotspots such as Silicon Valley has given rise to an extensive body of research into regional innovation dynamics, the drivers and preconditions for knowledge driven economic development and - inspired by these insights - the tools policy-makers might use to drive, support or enhance these processes. However, transplanting conceptual insights into policy has arguably been met with variable success.

In this chapter we review scholarly thinking about regional systems, regional path creation and resilience, and about the roles of public policy in all this, in order to understand how and where policy prescriptions have come from and what the prospects are for better prescriptions in the future. We believe that a better understanding of the development of places and the potential for policy to aid in that development requires a better understanding of policy interventions and policy processes as they play out in the development of places. In what follows, we identify some shortcomings in existing approaches and the elements of an alternative approach that might be better suited to developing such an understanding. This chapter thus proceeds as follows. After a brief section introducing the role of institutions and policy in regional innovation system views, we then outline recent approaches seeking to understand the dynamics of transformation of regional economies and their associated policy implications. The chapter then moves on to

discuss the role of policy in regional path creation and argues for a need to better incorporate the role of social agency in relation to processes of change, including institutionalisation. The final section presents some conclusions and reflections.

Institutional views of regional innovation systems

From the 1990s, concepts like clusters, learning regions and regional systems of innovation (RSI) have foregrounded the role of regions as engines of innovation and growth. These insights were informed by detailed studies of a number of European industrial regions felt to be operating as innovation systems, that is “geographically defined, administratively supported arrangements of innovative networks and institutions” (Cooke and Schienstock, 2000, p. 273). Economic success in these places was felt to be underpinned not only by the presence of a network of supporting institutions and a significant concentration of firms, but also by the degree of ‘embeddedness’ and ‘institutional thickness’ of the resulting whole (Amin and Thrift, 1995) and by a high degree of shared social and cultural values, or relational assets (Doloreux, 2002). Spatial proximity was seen as a prerequisite to the development of these relational assets (Cooke and Morgan, 1998).

Indeed, research on regional innovation dynamics has exerted a great deal of influence on public policy¹. This is partly explained by the ‘fuzziness’ (see Markusen, 1999) of key concepts such as cluster or regional innovation system and the subsequent interpretive flexibility of these terms, which makes them attractive ‘boundary objects’ around which actors with very different understandings and interests can nonetheless come together (Uyarra and Flanagan, 2010). However, there is also an underlying prescriptive bias in much of the source literature, which is prone to collapsing “levels of abstraction into simple narratives to render them digestible for politicians and policy-makers” (Morgan, 2004, p. 873) and to

¹ A good example of the use of the RIS literature in policy is the European Commission funded Regional Innovation Strategies (RIS) initiative, which since the 1990s and during the 2000s, aimed to building innovation capacity in less favoured regions by improving the institutional conditions and strategic policy capacity in participant regions (Oughton et al., 2002).

overstating the capacity for policy action at the regional level.

The 'canonical' or institutional interpretation of RSI has been criticized for a closed view of systems that assumed that more or less fixed boundaries could be set around the system and that actors and their activities/functions in the system could be unproblematically identified and acted upon by public policy (Uyarra, 2010). Regional innovation system thinking, in particular, often comes with an assumption not only that regional-level interventions can in principle enhance the 'systemness' of the system but also that in practice the necessary resources, capacity and levers are likely to be available at the regional level (Uyarra and Flanagan, 2010). RSI inspired policies thus often exhibit an "autarkic vision of innovation, confined to the regional boundaries" (Nauwelaers, 2011, p. 479). Yet regions are no more closed policy systems than they are closed innovation systems, and an awareness of the levers available to policy makers at different levels of governance is key to enabling more realistic and better targeted policy actions. Elsewhere (Uyarra and Flanagan, 2010), we studied the policy mix for innovation in the Northwest of England, where innovation patterns in the region were mainly affected by the impact on the region of past and present national science and innovation policies and – perhaps to an even greater degree - by other national policies such as health, energy and defence to the point where the modest regional innovation policy efforts of the time were in large part about dealing with the consequences of such impacts.

Moreover, by focusing on the study of successful regions, economic geographers tended to over-emphasize the importance of strong local embeddedness and 'institutional thickness' and provide a static depiction of successful regions without a deeper consideration of how sectors, actors and institutions emerge and transform over time. The "institutional turn" (Amin and Thrift, 1995) focused on how inherited institutional frameworks shaped the ability of places to respond to the pressures of globalization. But institutions are geographically and sectorally context-specific, meaning that similar arrangements may lead to different outcomes in different settings and, vice versa, that very different institutional contexts may

yield similar economic results (Rodríguez-Pose, 2013). Further, institutions evolve over time and may contribute towards inertia and lock-in (Grabher, 1993). For these reasons it is likely to be risky to uncritically compare 'systems' or seek to draw simple policy lessons from other systems. However, despite frequent exhortations about the need for adapted and context-sensitive policies, the mimetic adoption of recipes that seem to have worked elsewhere remains all too common.

Evolutionary economic geography views of regional path dependence

Reacting to the limitations of previous approaches, more recent contributions to the geography of innovation, particularly by scholars within the evolutionary economic geography school (see e.g. Boschma and Martin (2010), provide a re-interpretation of regional innovation systems, trying to understand how certain regions are able to renew and sustain growth whilst others decline. Drawing on insights from evolutionary biology, complexity theory, and network science, evolutionary economic geographers attempt to link the micro-economic behaviour of agents (firms, individuals) that operate in territorial contexts with the spatial evolution of industries and networks at the meso-level of the economy.

Evolutionary interpretations have revisited traditional ideas of path dependency in order to understand processes of regional evolution and lock-in. Hanning et al (2013) situates the debate on regional path dependence along two dimensions, namely the emphasis on industrial continuity in path dependence (as opposed to greater locational freedom of new industries), and the extent to which external shocks are needed to establish new paths. Evolutionary economic geography approaches consider that the uneven geography of new path formation is best understood by seeing regional path dependence as a branching process of industrial development triggered by endogenous processes of structural change as opposed to exogenously-driven or 'accidental' shocks. Empirical research on 'related variety' and regional branching indeed suggests that countries and regions are more likely to branch out (diversify) into technologically related industries than into any new

industry (Frenken et al., 2007; Neffke et al., 2011). Knowledge transfer from old to new sectors is in turn enabled by locally embedded mechanisms, including spin-off processes, firm diversification, mobility of employees or the formation of innovation networks (Boschma and Frenken, 2011). This has parallels with views on industrial policy emphasizing the role of entrepreneurial discovery (Hausmann and Rodrik, 2003).

Evolutionary geographers, particularly the so-called 'Dutch school', focus on local processes of reproduction of firm-level routines leading to unintended, aggregated effects at the meso level, informed by Nelson and Winter's (1982) evolutionary theory of the firm. They suggest a divide between institutional economic geography and evolutionary economic geography, arguing that institutions are 'orthogonal' to organisational routines (Boschma and Frenken, 2009). Other views, by contrast, see this division as artificial (Essletzbichler, 2010), suggesting the need to restate the role of institutions and social agency (MacKinnon et al., 2009) and acknowledge not just the influence of disembodied economic forces in path creation but by knowledgeable agents (Simmie, 2012; Simmie et al., 2014) 'mindfully deviating' (Garup and Karnoe, 2001) from existing social practices and artefacts.

For instance Martin and Sunley (2006) propose a dynamic "path as process" view, understood as "an ongoing, never ending interplay of path dependence, path creation and path destruction that occurs as actors in different arenas reproduce, mindfully deviate from, and transform existing socio-economic-technological structures, socioeconomic practices and development paths" (Martin and Sunley 2006, p.408). Dynamic "path as process" views of path creation allow for a wider repertoire of options in the evolution of technologies, industries and regional economies. Martin and Sunley (2006) propose several such scenarios of path development and renewal (or 'de-locking'), including the upgrading of a mature path, diversification through exploiting synergies between an existing path and a new one, and new path creation.

Policy implications of evolutionary approaches

In contrast with the literature on regional innovation systems and other territorial innovation models, evolutionary approaches do not offer strong policy prescriptions. Work on related variety (Frenken et al. 2007) suggests the importance of related diversification for region's ability to adapt to changing conditions and grow. A key policy implication is therefore that relatedness should be fostered, since the presence of industries that are technologically related in a region should increase the likelihood of the emergence of new growth paths. According to Boschma and Giannelle (2014) such policies should include instruments that favour entrepreneurship, with a focus on experienced entrepreneurs, labour mobility (particularly between related industries) and collaborative networks with partners in different - but related - industries.

Cooke (2013) similarly proposes policies promoting 'transversality', that is the active identification of 'structural holes' between disparate but related knowledge fields and effective policies that can enable relatedness and exploration of the 'adjacent possible' through knowledge recombination. This implies a shift in policies from narrowly conceived clusters to regional innovation platforms, defined as "regional resource configurations based on the past development trajectories but presenting the future potential to produce competitive advantage" (Harmaakorpi, 2006). It has been suggested that platform policies offer greater potential for innovation than traditionally conceived 'one size fits all' cluster policies, since they encourage cross-fertilization of different ideas and practices among firms in the same or different industries (Cooke, 2012). Platform policies to support related variety are also a core component of the Constructive Regional Advantage (CRA) policy model (see also European Commission 2006; Asheim et al., 2011). CRA underlines that innovation is strongly shaped by the specific knowledge base of activities and their combinations in regions and emphasizes the importance of tailor-made policies that support industries based on their degree of technological relatedness with other industries in the region, in order to favour new

recombinations and new variety in the region.

This emphasis on transversality and relatedness resonates with recent approaches to cluster policy that call for a more ‘surgical’ type of intervention (Crespo et al, 2014), more centered on network renewal (Todtling and Trippel, 2004) and better attuned to the life cycle of clusters (Menzel and Fornahl 2009). Abetted by methodological advances in the understanding of the dynamics of networks, geographers have proposed a more fine-grained understanding of the evolving configurations of industrial networks and their influence on the performance and resilience of regional economies (Giuliani, 2007). Over time, network formation mechanisms such as closure and preferential attachment mean that clusters tend to evolve from loose structures into more highly connected ones, dominated by a few hubs and oligopolistic organizations. In other words, clusters may improve their degree of *adaptation* to regional conditions at the expense of reduced *adaptability* to future economic shocks (Grabher and Stark, 1997). This process of concentration and specialization eventually leads to cognitive and functional lock-ins (Grabher, 1993). Whereas traditional cluster policies tended to assume that “networks are good, more networks are better” (Freel, 2003, p. 766), Crespo et al (2013) argue that cluster interventions require bridging strategies between the core and periphery of nodes, in order to allow for new and disruptive ideas that can favour resilience.

The smart specialisation approach recently advocated by the European Commission (2012) combines some of these insights² and places the focus on the identification by regional policy-makers of existing or potential competitive advantages, from which they can diversify. However, how to identify these priorities and how exactly such smart specialisation should be pursued in practice (Landabaso, 2014) remains

² While related, there are considerable differences between the CRA and the smart specialization approaches (Boschma, 2014). For instance the CRA concept places greater emphasis on the importance of relatedness and has a more explicit geographical focus compared to smart specialisation. Secondly, while both concepts support public intervention, smart specialization takes a more operational approach to policy in terms of in defining specific forms of intervention.

the focus of considerable debate. Smart specialisations is, in the words of Foray et al. (2011:1), “a policy running ahead of theory”, very quickly becoming influential in the policy world despite lacking both a sound base of empirical work and well developed policy instruments to support its implementation (Foray et al., 2011).

Towards an evolutionary view of policy in path creation

We have described how insights from evolutionary economic geography, underpinned by concepts of path dependency and industry evolution, have provided more dynamic interpretations of regional systems and led to more a nuanced policy discourse about adaptive, place-based and ‘outward looking’ interventions. Evolutionary approaches also acknowledge that there are limits to policy action, in terms of the degrees of freedom policy makers have to influence the future development of regions in an evolutionary context (Lambooy and Boschma, 2001).

However despite this progress, consideration of policy still tends to be confined to the normative question of policy implications (Wohlgemuth, 2002) as described in the previous section. Policy is rarely seen as embedded in and shaping the creation of new paths. The recent focus on firm-led regional branching approaches has tended to neglect the role of institutions in general, and the role of policy in path creation (Dawley, 2014; Morgan, 2013; Uyarra and Flanagan, 2013). This, according to Essletzbichler (2010; p. 187), risks providing a “rather impoverished treatment of space”. McKinnon et al (2009) further argue there is a need to reassert place-specific institutional environments and arrangements within and beyond firms, including “deliberate intervention through public institutions such as the state” and to situate evolutionary concepts within a broader geographical political economy. For Martin and Sunley (2010) place is important not just as a result of entrepreneurial variety generation but also in terms of processes of collective support (including policy support) and the selection and emergence of new trajectories.

Essletzbichler (2010) distinguishes between regions as selection units and as multi-scalar selection environments. Regional actors and their networks, as well as institutions, form part of the regional selection environment and can act to constrain (or enable) choices at the local scale. This involves the possibility of path creation being the product or by-product of purposive action by economic agents (Sydow et al., 2010) consciously or inadvertently contributing to shaping the selection environment (Essletzbichler 2010). In this multi-scalar view, upward and downward causation operate simultaneously, in that evolution at one geographical scale is linked and influenced, but not determined, by evolution at other scales (Essletzbichler, 2010; Uyarra and Flanagan, 2010).

For instance Dawley (2014) examines the way in which local institutional agents in the North East of England shaped their position and relationships within multi-scalar institutional environments and frameworks and their key role in identifying, harnessing, and matching regional assets to new market opportunities in offshore wind as part of path creation. Fornahl et al (2012) similarly describes how policy makers in Bremen deliberately tried to influence the framework conditions to enable path creation and development in the offshore wind sector. Uyarra and Gee (2013) trace a process of system transformation of a metropolitan waste management system, where a policy entrepreneur influenced framework conditions in terms of institutional incentive structures, social perceptions and regulatory frameworks at local and national scale to favour the selection of alternative, more sustainable technological solution that would shift existing paths.

These examples point out to the importance of acknowledging that strategic or deliberate action can influence conditions for path creation and development (Dawley, 2014; Essletzbichler, 2010; Simmie, 2012) and incorporating this into a broader understanding of agency and entrepreneurial discovery processes in regional innovation. The role of the state in path development may be particularly relevant when we consider peripheral regions that have long been the focus of

state-led policies to support institutional change (Dawley, 2014), where the state has played a strong role in industry emergence by acting as first client or user of a new technology, and in the development of industries around niche environmental technologies that heavily rely on public sector incentives (Mazzucato, 2013; Morgan, 2013; Simmie, 2012).

Studies on environmental technologies and sustainable sociotechnical transitions indeed show that markets for environmental technologies are highly dependent on government intervention and that “the transformation of socio-technical systems to more sustainable states is more policy induced than market driven” (Gee and Uyarra, 2013, p. 1175). Many such studies adopt a technology innovation systems approach, which identifies a series of functions associated with the development and diffusion of a new technology (Bergek et al., 2008). This approach emphasises the importance of enabling, through policy intervention, an institutional context that is supportive of the emergence of clean technology industries, including specific interventions that address systemic failures or perceived gaps in terms of the activities performed in the system. These frameworks have been used to complement evolutionary economic geography analysis on the role of territory-specific institutions in the emergence of particular industries (see for instance the Martin and Coenen (2014) study on the biofuel cluster in Southern Sweden).

However these technology system approaches remain problematic with respect to institutions and policy. Besides the implicit or explicit functionalism (also common to many systems of innovation and varieties of capitalism approaches) in which institutions and arrangements are treated as if they evolved and exist in order to perform a systemic function, these perspectives favour a linear and mechanistic view of policy in which gaps in the system are automatically mapped onto policy interventions, and where implementation is viewed as unproblematic. Morgan (2013, p. 337) for instance notes a tendency of these approaches to make heroic assumptions about “the state as competent and benign actor in the innovation process” and thus downplay the multiple pitfalls and “perils of state-led path

creation”.

By not acknowledging the gap between institutions and policies and the way they may be interpreted and/or implemented (a gap which often determines whether policies fail or succeed) such views exclude the possibility of agency and political conflict in public policy (Streek and Thelen, 2005). It is important, then, not to ignore the “messy policy realities that can disrupt proposed policy solutions to market or system failures, and prevent innovation-based growth” (Mastroeni et al., 2013, p. 3). For instance, while it is implicitly assumed that earlier generation EU regional innovation policies failed to fully deliver their objectives because the rationales informing the policies were misguided (namely that they were too inward looking or too supply-driven or not sufficiently adaptive to changing conditions), the more fundamental issues are the challenges of implementation (Uyarra and Flanagan, 2013) and the risk of capture by political elites (Morgan, 2013b; McCann and Ortega-Argilés, 2013).

Perhaps unsurprisingly, a recent meta-evaluation of innovation instruments (Edler et al., 2013) demonstrated that there is no convincing evidence that any of the classes of innovation policy instrument considered ‘works’ consistently, from time to time and from place to place. In the case of cluster policy, Uyarra and Ramlogan (2012) found wide differences in policy outcomes, resulting from different objectives, instrument choice and implementation styles associated with the intervention, but also context specific institutional configurations and policy path dependencies. Thus, in considering the influence of a particular policy, the choice of instruments and their associated ideas or theoretical rationales may be less important than other factors such as specific design features (e.g. duration, level of support, target group), modes of implementation, policy styles and actor constellations, and how these work together in a ‘mix’ over time (Flanagan et al., 2011; Magro and Wilson, 2013). All of this implies that the design, implementation and evaluation of public policies are far more challenging than much of the literature implies (Morgan, 2013).

And whilst we use innovation policy as a convenient shorthand to refer to policy interventions influencing innovation, strictly speaking the idea of “innovation policy” makes little sense. Firstly, ‘policy’ actually refers to multiple, interacting and often conflicting *policies* operating at multiple levels and in multiple domains and involving many actors, not all of them state actors. Secondly, innovation is not a policy goal, but rather a potential means to the achievement of many different goals of public policy (and of course innovation processes also create multiple problems that public policies may be expected to address) (Flanagan and Uyarra, 2013).

Martin (2013) uses an analogy between the use of a mix of instruments in innovation policy and the combination of prescription drugs. He notes that drugs, particularly if a range of them are prescribed for a variety of medical problems, interact with one another and with the underlying medical problem in a highly complex matter. As a result the overall ‘drug mix’ may be far from optimum, with a drug for one medical problem potentially counteracting the effect of a drug aimed at treating another. Such interactions may also accumulate over time as new drugs are introduced into the treatment regime.

To Martin’s analogy we would add that the same drug will elicit different responses from different individual patients depending on their physiology, diet, lifestyle and other environmental factors. Decisions about the efficacy of drugs are made on the basis of averaging across the range of different responses exhibited during trials. And a pharmaceutical compound is a highly standardised intervention – each dose is (or should be) chemically identical. This is certainly not true of most policy instruments, which are inherently social technologies with a high degree of interpretive flexibility, not least in implementation.

Policy path dependency and institutional change

Boschma and Gianelle (2013; p.10) note how the industrial history of regions

“shapes opportunities but also sets limits to what can be achieved by regional smart specialisation policy”. But it is not just the industrial history but also the policy history of a region that shapes what can be achieved, and one will make little sense without the context of the other. Public policies are adopted not on a tabula rasa but in a context of pre-existing policy mixes and institutional frameworks which have been shaped through successive policy changes (Uyarra, 2010). Past policy decisions clearly constrain the range of options available for current decision makers (Kay, 2006) and there is a tendency for certain kinds of policy instruments and the organisations they create to become institutionalised over time (Flanagan et al, 2011). For instance Valdaliso et al (2014) note that the implementation of smart specialisation strategies “may be shaped by - or even be in conflict with - pre-existing strategies and/or policy mixes, or by the historical legacy of former strategies and policies”. They reflect on the implementation of smart specialisation strategies in the Basque Country in Spain and how their development necessarily involves building from a series of existing policies and organisations. These include the landscape of support actors and structures built over several decades for the promotion of regional competitiveness, which exhibit considerable inertia resulting from past successes and now pose important challenges for the region (see also Morgan (2013).

Certainly it is not just economic institutions but also political ones that are subject to increasing returns and path dependency (Pierson, 2000). Legacies of the past thus limit the range of options and constrain the degrees of freedom for action. However, policy path dependence does not preclude change. Going beyond the idea of policy continuity vis a vis disruptive change, Streeck and Thelen (2005) identify three incremental yet transformative institutional change mechanisms: displacement, layering and conversion. According to this view, institutions are not rigid constraints only disrupted by episodic shocks; they evolve and are shaped by how actors (not just rule makers but also rule takers) use them, which allows room for agency and change. As Streeck and Thelen (2005, p. 12) note, theories of

institutional change may at the same time be theories of policy change, for policies can have the characteristics of institutions in as much as they are rules for actors that “can and need to be implemented and that are legitimate in that they will if necessary be enforced”.

This view of institutional change draws attention to the difference between institutions and behaviour in terms of authority, obligation and enforcement and therefore allows for greater degree of ‘play’ in terms of the rules that actors are expected to follow, opening up opportunities for strategic action by actors which can be a source of change. As Lawson notes (2003), there is an ontological difference between institutions and the practices they govern, shape or constrain. Not all rules will be followed in all cases. There may be differences in interpretation, which can lead to diverse implementation, unintended effects of actions and learning processes, as well as deliberate strategies to change, circumvent or deviate from existing rules (Streeck and Thelen, 2005). A multiplicity of actors, actor types, and governance levels therefore contribute to shaping policy. Viewed in this way, the agency of actors in path creation must therefore be acknowledged not just in relation to innovation processes but also in relation to processes shaping policy problems and solutions. This includes the consideration of the multiple roles that actors can play in policy change, e.g. as beneficiaries, implementation agents, or policy entrepreneurs (Flanagan et al., 2011).

Garud and Karnøe (2001) portray agency as distributed across a multiplicity of actors with different interpretive frameworks being involved in different ways at different stages and embedded in networks and emerging technological pathways. Agency in policy is similarly distributed, indeed making and implementing policy is rarely the preserve of a single actor or group of actors, instead it is distributed across a multiplicity of actors across different levels, all engaged in a collective process of negotiation and compromise. Policy agency is also embedded - it is part of the system it is trying to influence, rather than the work of a single, overseeing policy maker somehow operating outside of the system (Flanagan *et al.* 2011).

Garud and Karnøe (2003) contrast the strategy of adaptation and gradual transformation adopted by early pioneers of wind turbines in Denmark, which they label “bricolage” with the failed “breakthrough” strategy adopted by NASA-led US wind power researchers, who attempted to generate new technologies by radical innovation. Much policy development resembles this strategy of bricolage - or as Lindblom (1959) put it “muddling through”. For instance Ebbekink and Lagendijk (2013) argue that cluster policy tends to be a strategy of “muddling through” namely a succession of incremental changes based on trial-and-error in circumstances of very incomplete understanding. Thus policy processes and entrepreneurial processes of discovery and innovation have similar evolutionary dynamics. Priorities, rationales and instruments change over time and all actors learn over time – not just adaptive policy-makers but also implementers, targets and beneficiaries.

Conclusions – putting the policy into evolutionary economic geography

The aim of this chapter has been to provide a review and assessment of recent discussions on territorial innovation processes from the perspective of policy design and implementation. We described how ideas of regional innovation systems have over time incorporated more dynamic accounts of path dependence and path creation. Indeed, in recent years they have come to be seen as complex adaptive systems, with researchers employing a whole set of new terms to understand regional processes of emergence, variety, relatedness, path dependence and co-evolution.

RIS inspired policies have undergone a parallel evolution, with earlier manifestations of regional innovation policies and strategies that were *de facto* national policies writ small, to strategies directed at promoting bottom up experimentation, to the more recent emphasis on smart specialisation and on inter as well as intra regional connectedness.

We argue however that the role of agency in policy processes and institutional change is still underplayed in processes of path creation and path development.

There is a need for a middle ground between the narrow firm-led regional branching approaches and the heroic view of policy actors endowed with all the necessary oversight and competences to address any gaps in the system.

Garup et al (2010) suggest that a focus on agency requires a “narrative approach” able to follow the actors and study processes in real time, an approach that avoids thinking of any sequence of events as inevitable - that is, avoiding ‘retrospective distortion’. Similarly, Flanagan et al (2011) have called for rich policy histories akin to the rich empirical case studies of innovations from which empirical innovation studies emerged.

Compelling narratives abound of regional transformations and transitions, depicting knowledge relationships and contextual setting surrounding an innovation over time and space but such narratives are incomplete without consideration of the agency of actors within the system with respect to policy and the role of policy dynamics over time in path creation, path dependence, lock in and de-locking. This requires a consideration of places as selection environments embedded in national and global contexts that can be purposively shaped by economic and political activities and mechanisms of a wide range of actors. Policy is, in a sense, the outcome of distributed discovery processes in the same way as we think of innovation as the outcome of a process of entrepreneurial discovery, with similar dynamics. Better understanding these dynamics, and in particular the roles played by systemic actors as policy entrepreneurs, implementers, targets and beneficiaries of policy action, and the role of political motivations as well as economic ones, should be high on the research agenda of evolutionary economic geographers and regional innovation scholars.

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