

Evolutionary Approaches to Local and Regional Development Policy

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Forthcoming in Pike, A., Rodriguez-Pose, A., Tomaney, J. (2010) *Handbook of Local and Regional Development*. London: Routledge.

1. Introduction

Local and regional development policies are affected by policy-related theoretical concepts and they, in turn, are influenced by meta-theoretical paradigms or turns in academic writing. In the economic geography and regional planning literature, for instance, there has been a cultural turn, a learning turn, a relational turn and most recently an evolutionary turn (Scott 2000), the latter being this chapter's main focus. It aims first at presenting some key evolutionary notes (Boschma and Frenken 2007; Martin and Sunley 2006; Boschma and Martin 2009) and their relevance to local and regional development policy.

Innovation has become the key focus of local and regional development policies due to the increasing importance both of the knowledge economy in general and of the regional level with regard to diffusion-oriented innovation support policies (Amin 1999; Cooke and Morgan 1998; Asheim et al. 2003; Asheim et al. 2006b; Fritsch and Stephan 2005; Klaerding et al. 2009, Boschma 2008). The regional level is more and more seen as the level that offers the greatest prospect for devising governance structures to foster learning in the knowledge-based economy, due to four mechanisms, namely knowledge spill-overs, spin-offs, intra-regional labour mobility and networks (Cooke and Morgan 1998; Boschma 2008). Partly supported by national and supranational support programmes and encouraged by strong institutional set-ups found in successful regional economies such as Silicon Valley in the USA, Baden-Württemberg in Germany and Emilia-Romagna in Italy, many regions in industrialised countries have been setting up science parks, technopoles, technological financial aid schemes, innovation support agencies, community colleges and initiatives to support clustering of industries since the second half of the 1980s. The central aim of these policies is to support regional endogenous potential by encouraging the diffusion of new technologies. Since the mid-1990s, these policies have been influenced by theoretical and conceptual ideas, such as regional innovation systems (Cooke et al. 2004), the learning region (Morgan 1997) and clusters (Enright 2003). These concepts originated in industrialised countries, but have recently become also important for developing and emerging economies, particularly concerning regional innovation systems (Lundvall et al. 2006;

Cooke et al. 2004; Cooke & Memedovic 2003) and clusters (Schmitz & Nadvi 1999; Schmitz 2004).

However, recently it has been increasingly doubted whether lessons can be learned from successful regional economies in order to create Silicon Somewheres (Hospers 2006; Hassink and Lagendijk 2001). Furthermore, the scale issue, that is the role of the regional level vis-à-vis the national and supranational level in supporting innovations, have been critically evaluated recently (Fromhold-Eisebith 2007; Uyarra 2009). Finally, complaints have become louder about regional innovation policies becoming too standardised (Tödtling and Trippl 2005; Visser and Atzema 2008).

In this chapter we will argue that the evolutionary perspective positively contributes to local and regional development policies by introducing some key explanatory notes, such as path dependence, lock-ins and co-evolution. Moreover, it has a positive and refining influence on existing concepts that is regional innovation systems and clusters, in particular. In the following first some key evolutionary notes will be presented in Section 2. In Section 3, three policy-related concepts, namely the learning region, regional innovation systems and clusters, will be discussed from an evolutionary perspective, whereas conclusions are drawn in Section 4.

2. Evolutionary thinking and local and regional development policy

Recently not only many economic geographers have introduced evolutionary thinking into their discipline (Boschma and Frenken 2007; Boschma and Martin 2009; Schamp 2000; Martin and Sunley 2006; Frenken 2007), also in other disciplines, such as economics, planning and sociology, this has been the case (Frenken 2007). In contrast to neoclassical theory, this school takes history and geography seriously by recognizing the importance of place-specific elements and processes to explain broader spatial patterns of technology evolution. Evolutionary economic geography deals with “the processes by which the economic landscape — the spatial organization of economic production, distribution and consumption — is transformed over time” (Boschma and Martin 2007: 539). From evolutionary thinking the following notes are essential to local and regional development policy: path dependence, lock-ins, path creation, related variety and co-evolution. These concepts can potentially explain why it is that some regional economies loose dynamism and others not.

“A path-dependent process or system is one whose outcome evolves as a consequence of the process’s or system’s own history” (Martin and Sunley 2006: 399). Closely related to the discussion around path dependence and regional evolution is the issue of *lock-ins* hindering necessary restructuring processes in regional economies (Martin and Sunley 2006; Grabher 1993; Hassink 2009). Grabher (1993) has defined these obstacles as three kinds of lock-ins, which together can be referred to as regional lock-ins. First, a functional lock-in refers to hierarchical, close inter-firm relationships, particularly between large enterprises and small and medium-sized suppliers, which may eliminate

the need for suppliers to develop critical boundary spanning functions, such as research and development and marketing. Secondly, a cognitive lock-in is regarded as a common world-view or mindset that might confuse secular trends with cyclical downturns. Thirdly and closely related to cognitive lock-ins is the notion of political lock-ins that might come up in a production cluster (Grabher 1993). Political lock-ins are thick institutional tissues aiming at preserving existing traditional industrial structures and therefore unnecessarily slowing down industrial restructuring and indirectly hampering the development of indigenous potential and creativity.

The evolutionary perspective also contributes to the understanding of the emergence of new industries in a spatial perspective. The theoretical concepts of windows of locational opportunity and new industrial spaces both stress the locational freedom of newly emerging industries, whereas path creation emphasizes the inter-dependence between paths and hence less locational freedom. These concepts are highly relevant for local and local and regional development policies, as they can support policy-makers in predicting where new industries might emerge (Martin and Sunley 2006).

Moreover, the evolutionary perspective contributes to thinking about the relationship between specialisation vs. diversification and regional economic growth and stability (Frenken et al. 2007; Martin and Sunley 2006; Essletzbichler 2007). On the one hand, variety is seen as a source of regional knowledge spillovers, measured by *related variety* within sectors. On the other hand, in the case of *unrelated variety*, variety is seen as a portfolio protecting a region from external shocks. According to Martin and Sunley (2006: 421) “there is a trade-off between specialization and a short-lived burst of fast regional growth on the one hand, and diversity and continual regional adaptability on the other”.

Another key note derived from evolutionary thinking is that of *co-evolution*, which can be applied in theorising about local and regional development policy. In a co-evolutionary perspective, it is not only firms and industries, but also local and regional innovation policy, and in a broader sense the institutional environment of firms and industries, that affect the dynamism of regional economies (Nelson 1994; Murmann 2003).

3. Theoretical concepts seen from an evolutionary perspective

In addition to the relevance of some key notes from the evolutionary approach, evolutionary thinking has also influenced other, sometimes older theoretical concepts with a strong relevance for local and regional innovation policy. In the following we will deal with arguably the most relevant concepts (for an extensive overview of these so-called territorial innovation models, see Moulaert and Sekia 2003).

3.1 Learning regions

Of the recently born offspring of the family of territorial innovation models, the learning region concept seems to be most focused on overcoming and

avoiding regional lock-ins (Schamp 2000; OECD 2001; Boschma and Lambooy 1999b; Morgan 1997). Although there are several definitions and perspectives, most scholars consider learning regions as a regional innovation strategy in which a broad set of innovation-related regional actors (politicians, policy-makers, chambers of commerce, trade unions, higher education institutes, public research establishments and companies) are strongly, but flexibly connected with each other, and who stick to the following set of "policy principles" (OECD 2001):

- carefully co-ordinating supply of and demand for skilled individuals
- developing a framework for improving organisational learning, which is not only focused on high-tech sectors, but on all sectors that have the potential to develop high levels of innovative capacity
- carefully identifying resources in the region that could impede economic development (lock-ins)
- positively responding to changes from outside, particularly where this involves unlearning
- developing mechanisms for co-ordinating both across departmental and governance (regional, national, supranational) responsibilities
- developing strategies to foster appropriate forms of social capital and tacit knowledge that are positive to learning and innovation
- continuously evaluating relationships between participation in individual learning, innovation and labour market changes
- fostering redundancy and variety of industries and networks
- ensuring the participation of large groups of society in devising and implementing strategies

These characteristics of a learning region, however, only describe the method of working and the attitude of regional economic policy-makers. The concrete contents of the innovation policy need to vary according to the economic profile and demand in individual regions (Tödting and Trippi 2005).

Furthermore, partly based on the learning region concept, the EU has started a new generation of regional policies (Landabaso et al. 2001), which aim at improving the institutional capacity for innovation of less-favoured regions. These, in turn, should lead to higher absorption capacity for innovation funds from national and European governments.

Recently, however, critical voices on the learning region have become louder (Hassink 2007; Cooke 2005). Particularly, its fuzziness, its normative character, its strong overlapping with other similar concepts and its squeezed position between national innovation systems and global production networks have been criticised. Evolutionary thinking around path dependence and lock-ins has been an important impetus for the emergence of the learning region, but it has not contributed much to refining and improving this criticised concept.

3.2 Regional innovation systems

The basis of regional innovation systems (RIS) are regional networks and interdependencies between firms and organisations such as research institutes, financial service providers, technology transfer agencies or regional governments as well as institutions in terms of norms, rules, routines and conventions (Cooke et al. 1998). The systemic dimension of RIS results from the coupling of three subsystems (Cooke et al. 1997) leading to synergy effects of enhanced regional innovation capacities (Edquist 2001). The first subsystem of finance refers to the availability of regional budgets and capacities to control and manage regional infrastructures. The cultural setting of regions constitutes the second subsystem and defines the milieu within which the knowledge networks are embedded. Interactive learning is identified as the third subsystem and represents the core element of RIS as new knowledge is created and exploited. By defining more or less favourable conditions of these subsystems the RIS approach becomes particularly relevant for regional innovation policies. Several EU programs already adapt to the idea of RIS (Landabaso et al. 2001).

Cooke et al. (1998) argue that regional policy interventions appear to be most effective when regions display characteristics such as high financial autonomy and control of infrastructures, high political competences and dense knowledge networks which have been observed for the case of Baden-Württemberg. At the same time, though, there is no best-practice or one-size-fits-all model of RIS. Instead tailor-made policy measures are required according to specific regional arrangements (Tödtling and Trippel 2005; Boschma 2008). For instance, 'globalised' and 'dirigiste' RIS such as Singapore seem less integrated into regional networks. In contrast, business relations at the national and global scale as well as multinational corporations play key roles for promoting innovation (Cooke 2004).

The RIS approach relates to the evolutionary thinking in two ways (see also Uyarra 2009; Iammarino 2005): first of all, it is a dynamic approach. By drawing on different case studies Cooke (2004) illustrates that RIS change over time: regions such as Catalonia can be classified in different RIS typologies during the years of 1995 till 2005. Secondly, we argue that it clearly refers to the identified key notes of path dependence, co-evolution and lock-ins.

The notion of *path dependence* can be identified in the definitions of the central elements of RIS, namely region and innovation. Both are considered to evolve over time and thus, follow specific trajectories. According to Cooke et al. (1997, 1998) *regions* are continuously formed by unique political, cultural and economic processes leading to inner cohesiveness, homogeneity and shared regional identity. They display institutions and organisations which are understood as results of search and selection mechanisms for specific economic problems (Cooke et al. 1998; Boschma 2008). However, different empirical definitions regarding spatial boundaries of regions and RIS, respectively, make it difficult to provide clear policy advises (Doloreux and Parto 2005). Also, some authors question the assumed independence of

regional systems from national influences which seem to be predominant (Bathelt and Depner 2003).

Also, *innovations* are understood as inherently *path dependent* because they are conceptualized as social and evolutionary processes which are characterized by constant learning and accumulation of knowledge (Cooke et al. 1998). Innovations are generated through feedback loops and thereby, refer to knowledge which has been gathered in the past. Hence, innovative outcomes and technological standards within a region crucially depend on previous knowledge trajectories.

Besides the idea of path dependence the RIS approach emphasises *co-evolutionary processes*. Cooke et al. (1998) argue for mutual interdependencies between institutions, organisations and firms. On the one hand, organisations and firms are claimed to be embedded in institutional settings which regulate economic interactions. On the other hand, organisations and firms impact upon institutions in two ways: they are able to both, reinforce institutions by reproducing established behaviour and to introduce new sets of practices which challenge the existing institutional context. Due to multiple systemic intra- and inter-regional linkages RIS are potentially flexible and capable of adjustments. However, institutions and organisations are seen as rather reluctant to changes and transformations can turn out to be a slow and longsome process (Boschma 2008).

This represents a crucial turning point for regional development as *lock-in* situations are likely to appear. In this case, institutional and organisational set-ups of regions do not match the demands of new markets or technologies any longer (Boschma and Lambooy 1999a). Both, the co-evolution of institutions and organisations and their relative stabilities become problematic for regional growth because they reinforce an economic or technological path which is already out-dated. The RIS approach, therefore, is well suited to analyse regional lock-ins because they result from strong systemic relations between the institutional, organisational and policy levels (Cooke et al. 1998). Because of these relations policy measures to combat lock-ins have to simultaneously consider changes within the economic and institutional environment. Tödtling and Trippel (2005) suggest, for instance, the creation of knowledge networks including new industries and technologies as well as renewing the educational and scientific infrastructures of the region. Boschma (2008) argues to diversify and broaden the regional economic base to allow for multiple development paths which are not selective towards particular regions or sectors. To achieve highly flexible institutions and organisations RIS should, similar to the learning region approach, also promote rather loose systemic relations and a culture that supports openness and willingness to change (Cooke et al. 1998).

3.3. Clusters

According to Porter (2000: 16) clusters can be defined as “a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities”. In recent years they have become the target for policy-makers and a key concept in

supporting innovativeness and competitiveness initiated at several spatial levels (supranational, national, regional) (see for instance Porter 2000; Asheim et al. 2006a; Borrás and Tsagdis 2008; OECD 2007). Clusters, therefore, like learning regions and RIS, seem to be an empirical and theoretical basis for newly oriented regional development policies based on innovation.

Martin and Sunley (2003), however, are very critical about the ambiguities and identification problems surrounding the cluster concept. In fact, the concept bears many characteristics of what Markusen (1999) has coined a fuzzy concept, which is characterised by both lacking conceptual clarity, rigour in the presentation of evidence and clear methodology and difficulties to operationalise. An important criticism of clusters concerns the fact that the literature strongly focuses on how clusters function, whereas their evolutionary development is disregarded, i.e. how clusters actually become clusters, how and why they decline, and how they shift into new fields (see Brenner 2004; Lorenzen 2005; Staber 2009). Existing studies on the emergence of clusters (e.g. Klepper 2007; Fornahl et al. 2009) tend to suggest that the processes responsible for the functioning of a cluster cannot explain its emergence. In addition to this, examples of declining clusters (Hassink 2009; Hassink and Shin 2005) illustrate that the economic advantages that stem from cluster dynamics are not permanent. In fact, the decline of clusters seems to be caused by factors that were advantages in the past (Martin and Sunley 2006).

A reaction to this criticism is the recently emerging literature on cluster life cycles, with clear links to key evolutionary notes such as path dependence, lock-ins and path creation (Menzel and Fornahl 2007; Press 2006). It considers the stage of the cluster in its life cycle and recommends adapting policies to the position of the cluster in its life cycle. By doing this the cluster is put in an evolutionary perspective. The life cycle of clusters goes from emerging to mature and declining stages, albeit not in a deterministic way (Figure 1, see also Lorenzen 2005; Enright 2003). Menzel and Fornahl (2007: 3) highlight the difference between industrial and cluster life cycle and its consequences for local peculiarities and hence fine-tuned policies: “Comparisons of clustered and non-clustered companies during the industry life cycle highlight additional differences: clustered companies outperform non-clustered companies at the beginning of the life cycle and have a worse performance at its end ... This shows that the cluster life cycle is more than just a local representation of the industry life cycle and is prone to local peculiarities”. In a next step Menzel and Fornahl (2007: 35-36) describe the different stages and the particular policy consequences of these stages in development: “During the emergent phase, the companies are too heterogeneous to make use of synergies, while they are too close in the declining stage to endogenously maintain their diversity. ... During the emergence of the cluster, the goal must be to focus the often thematically scattered companies on particular points. These focal points generate first synergies within the cluster and enable it to enter the growth stage. After the growing stage, the intention must be to steadily maintain a certain heterogeneity of the cluster to avoid a decline and to enable new growth

paths. Measures to enforce these strategies are, for example, the selective promotion of start-ups that either lead to a widening of the thematic boundaries of the cluster or to its focussing, depending on the stage of the cluster” (Menzel and Fornahl 2007: 35-36). Clusters can display long-term growth if they retain their knowledge diversity (Saxenian 1994) and benefit from related variety to other industries. There are also examples of clusters renewing themselves and entering new growth phases (Tripl and Tödtling 2008). Clusters are therefore able to enter new life cycles in other industries and leave a maturing industry if they manage to go through processes of renewal and transformation (Figure 1).

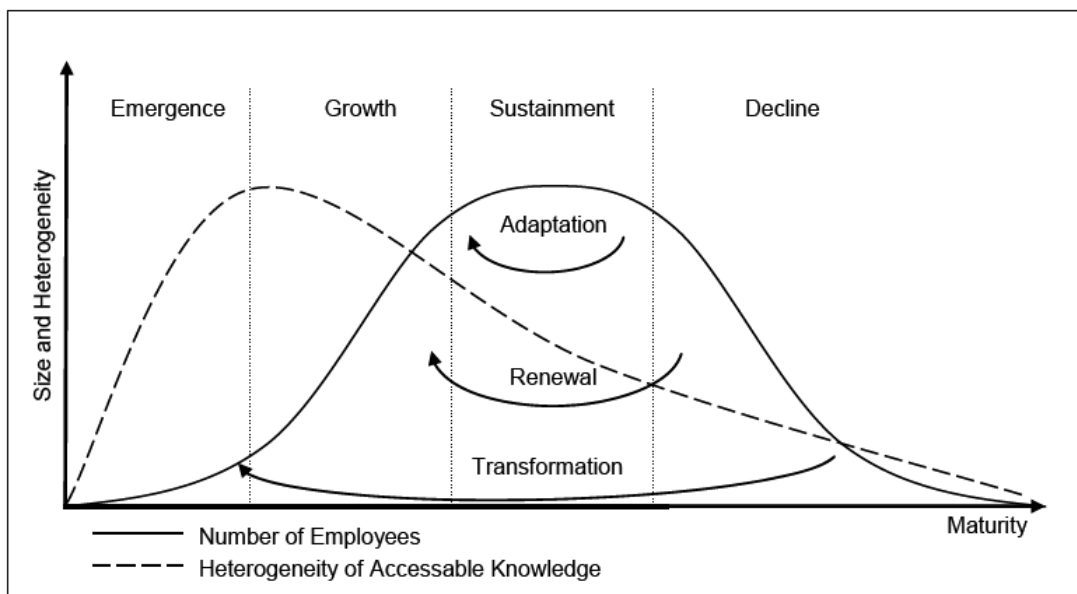


Figure 1: Interaction between size and heterogeneity of clusters over the life cycle (Source: Menzel and Fornahl 2007).

4. Conclusions

This chapter has shown that the recent evolutionary perspective contributes to local and regional innovation policy in two ways. First, it introduces new notes that are highly relevant to local and regional economic development policies, such as path dependence, lock-ins, path creation, related variety and co-evolution. Secondly, it has had a positive and refining influence on existing concepts of local and regional economic policy, particularly on regional innovation systems, by considering the evolutionary development of regional innovation systems through time, and on clusters, by extending this concept with the policy-relevant life cycle approach. Critical issues, however, can be seen in its limited empirical testing and the relegation of the political economy and agency of institutions within and beyond the firm in the evolutionary approach (MacKinnon et al. 2009). Furthermore, given the embryonic stage of evolutionary thinking in local and regional studies, there is still much room to "further incorporate aspects related to policy formation and evolution, as opposed to the present tendency to 'black box' policy processes" and "to develop a more sophisticated and nuanced understanding of the dynamics

and limits of policy making and policy actors, and the increased complexity of policy making in a situation of multi-level, multi-actor governance” (Uyarra 2009).

One of the key influences of the evolutionary perspective on local and regional development policies is that they cannot be based on the principle of one size fits all or one best practice (Tödtling and Tripl 2005; Visser and Atzema 2008). These policies, instead, should reflect the different conditions and problems of the respective regional economies and innovation systems. A too strong focus on the existing regional industrial base, however, might lead to negative path dependence and lock-ins. Therefore, “the paradox of regional policy holds that it can be very effective and successful in conserving economic activity by means of evolutionary policies, yet it has difficulty triggering, or even opposes new economic activity necessary for long-term development” (Boschma and Frenken 2007: 16). Evolutionary local and regional development policies should focus both on related variety in order “to broaden and diversify the regional economic base” and, at the same time, on “building on region-specific resources and extra-regional connections” (Boschma 2008: 328).

Further reading

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