

# Chapter 12

## Territorial Innovation Models: Which Consequences in Terms of Policy Design for Peripheral Regions? A Portuguese Perspective



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### 12.1 Introduction

In the last three decades, innovation has become broadly understood “to include product, process and organizational innovation in the firm as well as social and institutional innovation at the level of an industry, region and nation” (Morgan 1997: 492) and is a critical dimension in the analysis of territorial development.

As innovation processes have inherently a strong territorial and social matrix, then it must be emphasized the progressively prominence that an enlarged set of features now assume in the production of knowledge for innovation, namely the informal contacts and the flows of tacit knowledge amongst the different type of actors, their conventional rules and cultural patterns (Storper and Scott 1995), their relational capital and their social capital, on the sense proposed by Putnam (1993: 35): “features of social organization, such as networks, norms and trust that facilitate coordination and co-operation for mutual benefit”. There has been a shift towards the understanding of the innovation process as a socially built mechanism based on the accumulation of knowledge (codified or tacit) through a continuous and collaborative learning course (Lawson and Lorenz 1999; Tura and Harmaakorpi 2005). Accordingly, Maskell and Malmberg (1999: 20) argue that, more than ever before, territorial competitiveness is now concerned with “knowledge creation and with the development of localized capabilities that promote learning processes”.

In this sense, the dynamics of innovation is based on resources that are place-specific; so, regionally based complexes of innovation and production are increasingly the privileged instruments to harness and recreate knowledge and intelligence.

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The accumulated knowledge that production systems develop because they are incorporated in locally based institutions and, in a generally non-mobile workforce, tend to prolong competitive advantages, however, while proximity does matter, what really seems critical for the upgrading of the competitive edge of localized production systems and resource creation is in fact organizational proximity (Fujita and Krugman 2004; Asheim and Coenen 2005; Carlsson 2005; Shearmur 2011). It is therefore important to recognize that “knowledge transmission and collective learning may be nurtured by cultural, institutional and geographical proximities often in combination” (Keeble and Wilkinson 1999: 300).

So, on the last three decades, there has clearly been a change of paradigm on the perception of the relation between industrial dynamics and regional development: long-term regional competitiveness and sustainability has less to do with cost-efficiency and more to do with the ability of firms and institutions to innovate, or, in broader terms, to upgrade their knowledge base.

The academic discussion about the dialectics innovation-territory remains mostly at the abstract and theoretical level. As a result, a significant operationalization of key concepts is needed in order to enhance the empirical investigation (Moulaert and Sekia 2003). The repercussions of this problematic on least favored regions have seldom been analyzed. Usually, the analysis is focused on urban-metropolitan areas on medium to high-tech sectors. The knowledge provided by the approaches that analyse the dialectics innovation-territory is very enriching and gives new insights about possible policy interventions in peripheral regions.

## 12.2 Innovation and Territory: The Analytical Framework

It is claimed that regional dynamics produce idiosyncratic interdependences amid the regional stakeholders that develop into a specific economic and technological course. Some theoretical and methodological frameworks converge on this perspective, namely the *Industrial District* approach, the *Innovative Milieu* paradigm, the *Learning Region* approach and the *Regional Innovation Systems* model.

The concept of industrial district, affiliated on a Marshallian analysis of socio-economic organization and on the notion of agglomeration externalities, is noticeably rooted on the research about the *Third Italy* and authors like Bagnasco, Garofoli and Becattini. The concept is related to a high concentration of horizontally integrated, specialized and autonomous SMEs, each one related to a distinct stage of manufacture. These small enterprises cooperate actively to create a wide sort of differentiated goods that are sold on customer-oriented, disjointed and varied global markets. The local economies often take advantage of the information exchange made possible by the progress of localized producer-user networks, following the flattening of vertical integration within firms (Torre and Wallet 2014).

The following factors are highlighted as the factual sources of regional dynamics and competitiveness, as Cappello (1996: 488) refers: “entrepreneurship, production flexibility, district economies and the presence of some *collective agents* capable of

acting as a catalyst for the mobilization of the indigenous potential (a local bank, wholesalers, local industrial associations, etc.)”. This local complex of firms is densely inter-connected by a social division of labor (Morrison 2008). Storper (1995) accentuates the role of localized *untraded interdependencies* (labor market, local conventions, etc.).

In 1985, the Groupe de Recherche Européen sur les Milieux Innovateurs (GREMI) proposed a theoretical approach founded on the decrease of transaction costs, but also on the innovative dynamics resulting from territorial externalities. The approach is grounded on the existence of innovation network that vertebrate the territories, simultaneously cause and effect of the collective and interactive nature of the innovation process.

Maillat (1998: 124) establishes a useful distinction: “the innovative *milieu* is not a specific category of localized production system but a cognitive set . . . (it) corresponds to a territorialized, outwardly open complex, that is, open to technological and market environment, which incorporates and masters know-how, rules and relational capital.” Innovation is understood as the incorporation of information and resources by the territory, therefore largely exceeding the simplistic meaning of innovation as a purely technological output.

This constitutes the most interesting value-added in comparison to the industrial district model: innovation intrinsically has both a territorial and institutional dimension. The promotion of local and regional synergies is the driver of the innovative milieu—in other words, the territory is understood simultaneously as cause and consequence of the stakeholders’ cooperative behaviors and their learning dynamics.

The *Learning Region* approach accompanied the innovative milieu model, proposing a similar perspective and widening its ambit to the ICT challenges and opportunities. This approach has been worked principally by Scandinavian (Lundvall, Asheim, Isaksen) Welsh (Cooke and Morgan), concentrating on two analytical dimensions:

- on the one hand, the strengthening of the relational perspective: as the innovation dynamics requires continues access to flows of data, information and knowledge, the capability to innovate requires a networking strategy;
- on the other hand, it highlights the increasing significance of processes of information and knowledge creation, dissemination and absorption; it is now almost a refrain the very often quoted Lundvall’s (1992) statement that “knowledge is the most fundamental resource and learning the most important process” and thereby the territory must adopt a framework conducive to knowledge production and learning.

As Ferrão (1997) proposes, the learning region approach emphasizes the centrality of the collective learning mechanisms while levers of regional competitiveness and sustainability. Overall, the learning region and the innovative milieu approaches possess clear similarities, the former being visibly a semantic derivation of the approach that seems more elaborated and structured. That is the motive why on Table 12.1 there is no difference concerning these two approaches (Santos 2009).

**Table 12.1** Industrial district, innovative milieu/learning region and regional innovation system: a synthesis. Source: Santos (2009)

	Industrial district	Innovative milieu/ learning region	Regional innovation system
Emergence	Spontaneous; as local productive system	Spontaneous/induced; as cognitive entity	Induced; as organizational entity
Predominant culture	Industrial atmosphere	Entrepreneurial culture	Scientific and entrepreneurial culture
Productive system	Industrial; productive specialization; specialization in line with a sectoral division of labor; SMEs; vertically disintegrated; self-centered	Industrial and tertiary; diversification of production in terms of intra-industry division of labor; large and SMEs; quasi-vertical integration; open	Industrial and tertiary; diversification of production from the standpoint of intra-industry division of labor; large and SMEs; quasi-vertical integration; open
Non-mercantile relations among the firms	High intensity of extra-productive exchanges; informal inter-personal networks of information flows; strong horizontal and vertical mobility of labor	High intensity of extra-productive exchanges; diversity of non-market formal relations	High intensity of extra-productive exchanges; diversity of non-market formal relations
External relations	Open to the outside world through suppliers and clients	Open to the outside; insertion on the international circuits of information and knowledge transfer	Strong opening to the outside; insertion on the international circuits of information and knowledge transfer
Reticular structures	Compacts; networks without a strategic center	Compacts; networks with leader enterprises or with pivot enterprises	Networks with pivot enterprises or institutions (university, ...)
Logics	Communitarian; of survival; to avoid that the regional economies act as mere spaces of localization of exogenous investments	Of partnership; creation of collective learning mechanisms as instruments of the competitive renewal of the productive basis	Of partnership; institutional architecture as a lever of the territorial competitiveness; promotion of the innovation potential
Dominant forms of knowledge	Tacit; contextual	Codified; global	Codified; global
Dominant forms of learning	<i>By doing, by using, by interacting</i>	<i>By doing, by interacting, by networking</i>	<i>By searching, by networking</i>
Dominant modalities of innovation	Incremental; adaptive of the product and of the process	Incremental and radical— <i>first of its kind</i> ; of the product, of the process and organizational	Incremental and radical— <i>first of its kind</i> ; of the product, of the process and organizational

(continued)

**Table 12.1** (continued)

	Industrial district	Innovative milieu/ learning region	Regional innovation system
Growth dynamics	Competition-emulation-cooperation; based on an enlarged social mobilization; entrepreneurial risk socially supported	Competition-cooperation; induced by the activation of knowledge flows; entrepreneurial risk institutionally supported	Cross-fertilization; highly induced by the institutional universe; dynamic adjustment between the entrepreneurial and the institutional spheres
Potential risks	Socio-technological lock-in; barriers to the entrance of new players; growth of firm "hierarchisation" phenomenon; deviant behaviors	Technological and relational lock-in; exit barriers	Technological and relational lock-in; exit barriers: Institutional sclerosis

Innovation is the product of multi-level networking of flows of information and knowledge (Cooke 1996; Morgan 1997; Cooke et al. 2005; Tura and Harmaakorpi 2005; Cooke 2008). In a knowledge-intensive territory, intellectual competencies replace physical labor as the critical dimension of value creation and tool for increased competitive advantage.

A comprehensive meaning of the innovation system comprises not only R&D institutions but also the productive fabric, its institutional and governance base, its financial configuration and its educational and training facilities. Such a system can therefore be defined as a specific format of organization and regulation of the stakeholders' relations through the innovative and co-creative dynamics. Different territories can display distinct or idiosyncratic systems of innovation which depart from the national norm and in turn be different from other regions (Bair 2008; Balland et al. 2015).

Thus, it appears convenient to distinguish two diverse configurations of regional innovation systems, as Asheim et al. suggest:

on the one hand, we find innovation systems that are parts of a regionalized national innovation system, i.e. parts of the production structure and the institutional infrastructure located in a region but functionally integrated in, or equivalent to, national (or international) innovation systems, which is based on a top-down, linear model of innovation. On the other hand, we can identify innovation systems constituted by the parts of the production structure and institutional set-up that is territorially integrated or embedded within a particular region, and built up by a bottom-up, interactive innovation model.

It seems important to examine the innovation dynamics through this bottom-up, territorial methodological angle, as suggested by the innovative *milieu*, the learning regions or the regional systems conceptual models (Cooke 1996; Asheim et al. 2011), a complementary lens of the functional and sectoral methodology, allowing to capture the flows and the mode interaction occurs at territorial level.

The pluralism of interpretations of innovation dynamics converges, however, on the understanding of the importance of the collective learning processes, networking and governance. More profound and lasting effects of increased competitiveness can only be obtained if innovation becomes systemic in a region—that is, if it assumes a territorial innovation system configuration.

This debate about the nature of innovation and its implications at a territorial level has led to the gradual recognition that innovation is neither a one-way diffusion process, nor a clear-cut factor-impact relationship between the creative innovative entrepreneur and the firm, but a process and/or a system.

## 12.3 The Portuguese Context: A Brief Overview

Some research studies conducted in different areas of Portugal, such as the Península of Setúbal (Almeida 1994), the district of Aveiro (CEC 1997), Alcanena (Nicolau 2001), the Northern region (Mota Campos and Silva 1997), the Urban Arch of the Interior Centre of Portugal (an area involving the municipalities of Castelo Branco, Fundão, Covilhã and Belmonte, about the textile-clothing industry) (Santos 2012), the Pinhal Interior Sul (a rural area on the Centro Region, around the firms of the wood *filière*) (Santos and Simões 2008) and on different digital regions (Simões 2008) have been underlining the weak interactiveness amongst the territorial stakeholders, an unfavorable context that largely constrains the regional innovation potential.

### 12.3.1 A Highly Concentrated National Innovation System

The Portuguese S&T system is comparatively weak in European terms. The percentage of R&D expenditure in GDP in 2013 was only 1.33%, being the responsibility of universities and other public research institutions (57.7%). The industry has been augmenting its weight very quickly, mainly in technological intensive activities, the bulk of R&D expenditures at this level being concentrated in a small number of sectors and companies (Table 12.2).

There are a vast number of R&D institutions with a good scientific status and very qualified human resources, however, the mechanisms of knowledge transfer to industry still lack effectiveness and continuity.

It is worth adding that the Portuguese S&T system is territorially very asymmetric (Table 12.3), with a disproportionate concentration of resourced in the Lisbon region.

In Portugal, there is neither a regional R&D policy nor a R&D regional policy. In fact, it is centrally formulated and implemented, especially with the strategic aim of attaining higher standards of scientific recognition. It is not surprising, that, in these circumstances, its profile is not very market-oriented. Being essentially fixed at national level, this public policy strengthens vertical hierarchical links and

**Table 12.2** Portuguese S&T system: key indicators. Source: Eurostat (2015)

	Research and development expenditures by sectors of performance (% of GDP, 2013)	Gross domestic expenditure on R&D (GERD) by source of funds (% of total GERD Business enterprise sector, 2012)	Research and development personnel, by sectors of performance Head count (% of the labour force, all sectors, 2012)	Employment in high- and medium-high-technology manufacturing sectors (Share of total employment, %, 2014)	Patent applications to the European Patent Office (EPO) (number of applications per million inhabitants, 2014)	Human resources in science and technology as a share of labour force—Total (% of total, 2014)
Portugal	1.33	42.3	0.88	3.00	10.40	33.0
EU 28	2.03	48.1	1.12	5.70	111.74	44.4

**Table 12.3** S&T indicators by NUTS 2. Source: Eurostat (2015)

	Human resources in science and technology (HRST), by NUTS 2 region (% of economically active population, 2015)	Employment in high-tech sectors (high-tech manufacturing and high-tech knowledge-intensive services), by NUTS 2 region (% of total employment, 2012)	Patent applications to the EPO by priority year, by NUTS 2 region (number of applications per million of inhabitants, 2012)	Total intramural R&D expenditure (GERD), by NUTS 2 region (% of GDP, 2013)	Researchers, all sectors, by NUTS 2 regions (% of total employment, 2012)
Norte	27.5	1.53	23.74	1.42	0.79
Centro	27.3	1.32	15.64	1.30	0.80
Lisboa	42.6	4.18	32.44	1.67	1.64
Alentejo	26.2	2.39	6.73	0.45	0.30
Algarve	24.6	2.10	1.50	0.37	0.40

centralism instead of acting as catalyst of territorially-based innovation dynamics. This way, the R&D policy in Portugal has been an instrument for accentuating growing disparities among the territories.

Nonetheless, it should also be remarked that the geographic dissemination of the R&D organizations, on the orbit of the universities of Porto, Minho, Aveiro and Coimbra, constitutes a solid enabling reason for promoting a regional innovation strategies. The localization of the research infrastructure between university and industry shows a noteworthy concentration in the more developed and higher density territories of North and Centre regions and should be considered a 'plus' for the formulation of regional innovation strategies.

### ***12.3.2 The Mismatch Between the Knowledge Production Sphere and the Economic Sphere***

The overall regional innovation system is defined by an unquestionable gap between knowledge production, namely the S&T system, and the productive sector. The S&T infrastructure has been acting according to an endogenous logic and, in doing so, does not match the entrepreneurial evolving demand. On the other hand, a vast number of SME entrepreneurs have low-level educational profiles. Typically, companies do not have enough qualified human resources to establish dialogue channels with universities and research centers. This situation combined with the preponderance of traditional and low-tech industries that still rely on scale and volume strategies rather than on innovation and differentiation results in a weakly structured demand-pull. The vast majority of SMEs habitually require a knowledge that is frequently under the codified S&T expertise of the academia.

Three programming periods of the co-funded EU support, already comprising competitiveness and innovation objectives, have only produced superficial organizational outputs in targeted Objective 1 territories (Figueiredo 2007), failing to form a closer cooperation amongst regional innovation agents.

In an effort to minimize the fissure between academia and the productive sector, some innovation-related agencies were launched, such as the Innovation Agency. However, these interface organisations mainly belong to the national innovation system which has a vertical and highly hierarchical orientation that hinders the creation of horizontal co-operative compartments among the territorial actors, stifling any possible synergies.

### ***12.3.3 A Misconception of Innovation***

Above all, companies adopt a competitive position based mainly on incremental and tangible products and process innovations where the top strategic priority is to improve production processes, productivity levels, and logistic channels, whilst decreasing labour intensity.



Enterprises have, in general, been adopting *fordist* strategies based on the search for decreased product prices. Tangible process innovations are the real *leitmotiv* of their market approach and positioning while other, more intangible categories of innovation—such as organizational and commercial innovations—fulfill only a minor role. This is a direct effect of the misconception of innovation amongst a large number of entrepreneurs as they assimilate modernization, founded on the renovation of capital goods with innovation.

So, there is an increased awareness about the need to change the basis for the competitive advantage of Portuguese less favored regions. RD&I competences focused on the integration of strategic are still new, lacking capillarity to be disseminated and absorbed by the traditional industries that vertebrate low density peripheral areas of Portugal (Simões 2008; Simões and Santos 2008).

### ***12.3.4 A Deficit of Regionally Embedded Innovation Networks***

Usually, the most important corporate and institutional partners alongside the value chain are not situated in peripheral territories. Subsequently, the innovative effort is not regionally embedded and it does not contribute for the densification of the territorial networking. As a result, firms remain uninformed of the local and regional updated knowledge transfer flows. Thus, it is difficult, in this context, to affirm that there are dynamic and aware territorial innovation systems, since they are virtually non-existent at a regional scale and also because the national innovation system is nearly absent from the genuine necessities of this set of enterprises. Codified S&T knowledge is shared through informal regionally-based networks, in which information circulates and is socialized. The firms' partners along the value chain are usually not in the regions and the innovation dynamics is not regionally embedded. The vast majority of the productive fabric seldom establishes other links outside the commercial partners of suppliers and clients.

So, besides their dimensional handicap, as the vast majority of the Portuguese enterprises are small to medium-sizes, the critical blockage is their (self-)segregation, not to be associated to the multi-channel flows, to the global world, the so-called loneliness syndrome.

In a convergent way, what might be called a collective learning process is not institutionalized because although an entrepreneurial culture exists that is based on empirical knowledge accumulated over generations, companies and institutional actors ultimately follow individualistic paths that do not enrich the local and regional environments in which they operate—in other words, it is not regionally established what might be called a true culture of contact.

In practice, regional innovation systems in Portugal are therefore non-existent or, not being so distrustful, embryonic. There are entrepreneurial and institutional stakeholders, there is institutional thickness (Amin and Thrift 1994), but there is a lack of a strategic collective dynamics, thickness is not converted into capability.

## 12.4 Redesigning Public Policies Conducive to Innovation

The focus of this section is on the problems faced by peripheral regions in overcoming comparative disadvantages in regards to their innovative capacity, as well as the public policies that can be promoted to reduce these handicaps.

Until about three decades ago, innovation policy in peripheral areas was often only understood as a supply-side dysfunction, in accordance with the prevailing paradigm of the linear model of innovation. Government policies, according to this framework, were usually designed to support the production of knowledge, for example, by providing incentives for R&D activities.

Garnise and Rees (1997: 2) state that “for the less favored areas of Europe and elsewhere, the relative lack of economic dynamism is rooted in very limited learning abilities of their innovation systems.” The main focus of public intervention in this field should therefore be oriented in promoting processes for interactive learning involving all the different regional actors.

Corroborating this statement, Morgan (1997: 501) adds: “I would suggest that this is precisely what innovate on peripheral regions means, working with what exists, by inauspicious it may be, or appear, in an effort to break the traditional institutional inertia in the public and private sectors, fostering inter-networks that engage in collective process of interactive learning, cementing confidence capital.”

Thus, a regional differentiation strategy becomes crucial to make better use of these specific territorial resources, for example, the existing cognitive stock, which is to serve as a baseline for new paths of upgrading and diversification, or even another perspective, the technology transfer system, which should be improved with regard to the specific needs of low-tech SMEs, since often the profile of demand for S&T factors is not adequately answered by the traditional technology and knowledge transfer institutions (Tödting and Trippel 2005; Hauser et al. 2007; Prange 2008).

In this format and content, the current innovation policy, as shown on Table 12.4, stresses the urgency of adaptation to different territorial idiosyncrasies. It also gets closer to the characteristic approach of modern regional policies that puts the focus on collective learning processes and institutional innovation instead of almost exclusively on the provision of infrastructure (Henderson and Morgan 1999: 19), and in attracting international mobile investment. This approach works to address the causes, not simply the symptoms of structural “backwardness” (as they were traditionally termed) of some territorial spaces. In fact, core of the strategy relies, to a large extent, on fighting the innovation gap that is characteristic of peripheral and structurally weak regions. In this sense, it can be said that this innovation policy, evolving from S&T policies, incorporates an increasingly important regional dimension and encompasses the promotion of modern innovation dynamics. Moreover, at the operational level, and even at the level of the respective conceptual framework, there is a notorious approaching trend, and even sometimes fusion, between these two *twin* policies that value above all the so-called development *software*, electing, as intervention priorities, the cognitive, intangible, organizational and institutional dimensions (Maillat 1998; Evangelista et al. 2002; Shearmur 2011).

**Table 12.4** From science policy to innovation policy—a synthesis. Source: Adapted from Santos (2003)

	Science policy	Science and technology policy	Technology policy	Innovation policy
Period	Post 1st world war till the 1960s	From the 1960s to the 1970s	From the 1970s to the 1980s	End of the 1980s/beginning of the 1990s
Conceptual framework	<i>Science-push</i> model; logics of the activities dictated by the scientific community	<i>Science-push</i> model; growing attention to the information diffusion and transfer mechanisms	<i>Science-push</i> and <i>demand-pull</i> models; Increasing concern with the applicability of the scientific knowledge	Innovation interactive model; innovation systems; new paradigms of territorial development (Milieux Innovateurs, intelligent regions, regional innovation systems); institutionalization of the EU innovation policy
Objectives	To increase the knowledge levels; to promote the growth of the driving industries of the 2nd industrial revolution.	To increment the projection of the scientific research on socio and economic development; to support the constitution of firms with international dimension.	Absolute priority to technological applications; Modernization of the business world based on new technologies of information and communication; special focus on high-tech sectors.	Promotion of collective learning mechanisms; Creating positive agglomeration externalities; Adjustment of the dynamics of supply and demand of innovation factors; Strengthening endogenous innovation dynamics; Fertilization of industrial know-how with tertiary know-how; Coverage of high, medium and low-tech sectors.
Instruments	Promotion of public R&D activities; Creation of laboratories and academic science centers	Implementation of sectorial technological centers, technical and professional centers and information and dissemination platforms	Creation of S&T parks and of technopoles; Reconfiguration of laboratories and R&D centers in order to favor the production of applied technology; Tax and financial incentives for the adoption of best-practices	Promotion of business and institutional cooperation networks; Establishment of intermediation platforms between the business and the S&T actors; Regionalization of the research function; Tax and financial incentives to promote innovation entrepreneurial potential; Establishment of auditors' networks especially dedicated to the objectification of the technological needs of SMEs

In this sense, territorial revitalization policies cannot simply be distributive or *end of the line* repairing tools to minimize the crises affecting these regions. It is important that this new territorial development configuration does not narrow the material base on which the logic of local and regional development is anchored. They should instead be broad spectrum policies that, without losing the strategic aim of their interventions, may produce a mix that allows territories to reposition as protagonists of their own future: they should be understood as open to the world and accepting the inevitability of globalization either as a threaten and, mainly, as an opportunity; and they also must be understood as promoters of all initiatives that represent local and endogenous dimensions, focusing on territorial differentiation strategies (Santos and Caseiro 2015).

There is an understanding that the structural handicaps and constraints of the innovation dynamics in peripheral regions are generally less associated with the production of strategic information and knowledge and more related to processes that influence their dissemination and absorption by regional actors (Santos 2000). In these circumstances, it is crucial to provide aid mechanisms to minimize or solve these structural bottlenecks and to create opportunities for these regions to use strategic information to support innovation. It is also increasingly a false evidence, as argued by Veltz (1996: 194), “the idea of a technological progress, exogenous to the economic universe, that presents itself as a quasi-public good.” This new generation of policies was developed try to address this broad spectrum of business actors who had not yet properly perceived the need to base the respective competitive strategies on innovation as a differentiating factor. The intervention focus is then strategically put on SMEs alert to innovation dimensions, trying to promote a set of technological and organizational externalities that can be absorbed by these companies based on an approach *from below*, as suggested by Capello (2014).

Henderson and Morgan (1999), call this new generation of territorial policy of *regional experimentalism*, thus encouraging exploratory dimensions and learning opportunities (*learning by experimenting*), seeing it mainly as a tool to develop social capital amongst various stakeholders involved—from the establishment of permanent channels of dialogue, the implementation of common projects that lead to the strengthening of trust and reciprocity ties, the growing interaction between the public and private sectors, the implementing institutions with functions brokering (bridging Initiatives), particularly in the field of entrepreneurially relevant information and knowledge transfer and incubation of innovative companies, promoting a network of supply of strategic business support services specifically targeted to the real needs of the productive sector, etc.—Maillat (1998: 16) argues this strategy is nothing but an attempt to play with the effect of territorial proximity, coupling industrial and tertiary knowledge.

Innovation policy understood this way abandons the casuistic attempts to promote and enhance technology transfer channels and stimulate the regional *milieu*. The core question, then, is whether less prosperous regions that have production bases considered less innovative and competitive at the international level can meet the necessary conditions to upgrade their social and cognitive capital. Landabaso’s

(2003:16) cautious words are an important consideration here—they warn that it is necessary to adapt the innovation policy strategies at the various territorial contexts “as the innovation process does not follow the principles of chemistry: the mixture in each region required to produce a “reaction” (that is, to maximize the impact of innovation in the development) is different.”

The most successful regions are those which are characterized by the ability of firms and institutions for adopting voluntary learning dynamics—in products, processes and organizational structures—and to adapt to the pressures induced by market dynamics (Henderson 2000; Santos 2009; Camagni 2014). Political intervention emphasis should, accordingly, move from the enterprise level (micro) to the level of the *milieu* itself (meso), since it is assumed that it is precisely the innovative territorially embedded dynamics, not necessarily each firm taken individually, which is responsible for the regional innovation upgrading process (Table 12.5). This assumption has implicit the recognition of the importance of externalities in the processes of innovation and diffusion, which seems justification enough to undertake public intervention, without which firms, especially SMEs, cannot fully develop all their innovation potentials. Thus, this constitutes its added-value in relation to the traditional industrial policies.

Following this line of reasoning, Pires et al. (2000: 1) importantly note that “innovation policies must have the fundamental mission of promoting the competitiveness of the productive system in a context of globalization of economic relations and the acquisition of competitive advantages resulting from the ability to innovate.” In peripheral and depressed economies, innovation policy faces a double challenge: on one hand, upgrading the competitive profile of the companies associated with the most representative sectors of the different industrialization models of those territories and, on the other hand, of contributing to the emergence of new vectors of productive specialization, trying linkages to new and more demanding activities in

**Table 12.5** Traditional industrial policies *versus* innovation policies. Source: Adapted from OECD (2011)

Traditional industrial policies	Modern innovation policies
Knowledge understood as a public good	Institutional and entrepreneurial empowerment as a learning process
Focus on technological innovation (product and process)	Broad spectrum of innovative production (hard and soft, including also organizational, market and social innovations)
Focus on high-tech firms	Inclusive logics, encompassing medium and low-tech firms and traditional sectors
Based on R&D institutions	Strategically focused on firms and, mainly, on the socioeconomic <i>milieu</i>
Knowledge diffusion as the main instrument	Stimulation of the absorption capability of firms and on networking promotion
Competitive advantages	Differential advantages; built advantages

S&T inputs, and also to provide a real increase of technical knowledge (OECD 2011; Santos 2012; McCann and Ortega-Argilés 2016). It thus includes a development framework that may help to diversify the economic profile of those territories, which are often too narrow and fragile.

One of the chronic handicaps that typifies these regions is related to the fact that their technological patterns are characterized by a S&T system in the public sector (universities, R&D laboratories, etc.) that is over-represented relative to the effort developed by the private sector. This implies normally consequences on the direction of research activities that are carried out that in these contexts, guided mainly by internal academic logic, more directed to stages upstream, towards focusing on the fundamental and applied research, moving away from the market needs (Santos 2003; Koschatzky 2003).

The creation of bridging platforms between the academic and the business communities, triple helix cooperative tools, as well as the regionalization of research, are strategies that aim to stimulate the local and regional *milieux* by building up sustainable territorial innovation systems (Figueiredo 2007; Cooke 2008; Santos and Simões 2014).

In this context, the instrumental focus should avoid the multiplication of wrong strategies, as argued by Landabaso (2003). In the recent past, public funds were injected in less-developed regions in an effort to promote the entry of more ‘science’ in the S&T system, which, by the fact that the latter is disconnected from the profile of the industrial fabric, could not find a translation into increasing regional innovation outputs, not reflecting that effort on corporate and territorial competitiveness. This is what Landabaso warned against.

In remote areas with fragile economic structures, the reorganization of traditional industrial sectors clearly constitutes one of the main challenges that innovation policy needs to equate. In this case, the establishment of mechanisms leading to the externalization of the firms RD&I must be considered (Legendijk 2011). Moreover, one of the core problems that is crucial to attack is related to the fact that these depressed territorial areas are typically affected by very limited learning abilities that are the real cause of their economic anemia and, accordingly, the main focus of intervention public should be based on the promotion of enlarged, inclusive and collective learning dynamics, of catching-up and of institutional reorganization (Cooke 2007; Simões et al. 2008; Laranja 2009).

This new set of policy instruments, requires a high degree of decentralization in their design, delivery and management, as well as a consensual and cooperative work among the various actors involved. They should not being founded on large scales or in infrastructural projects and should consider the need for clear, territorial leadership without which it seems difficult to bring together the various rationales into play (OECD 2013). This suggests, of course, that an increase in regional capability for innovation inevitably involves new forms of organization and institutional partnership to help improve the structural competitiveness of the companies (Cooke et al. 2005; Santos and Simões 2014). If we agree that the intervention by the authorities should give priority to the implementation and strengthening of a

relational culture, then policies have to comply with the existing overall network architecture and its specific territorial assets rather than focus more on punctual and atomized actions (Borrás and Edquist 2013). The strategic aim directed towards the reinforcement of the mechanisms for horizontal coordination and partnership, as well as interface management, avoiding political intervention supported in sectoral logics or fragmented actions.

It is in this light that is worth quoting the words of Morgan (1997: 501) when he says that “to innovate in peripheral areas means precisely work with what exists, even if it is not especially auspicious, in an effort to break the traditional institutional and corporate inertia, promoting inter-cooperation networks, involving actors in a dynamic of shared learning and feeding the reciprocal relations of trust.” This captures the greatest challenge territorial innovation policy faces in peripheral areas with structural development problems.

## 12.5 Conclusion

Today, there is a general acknowledgement that previous efforts increase investment in peripheral regions with structural development problems have not succeeded. Sharper, more wide-ranging approaches to creating territorial competitiveness are necessary. It is important to consider that integrating less-developed regions into the global knowledge economy has not yet been at a priority of regional development policies.

Territorial competitiveness has become a serious concern, mostly now that the pace of structural adjustment induced by the global economy is imposing new profiles of regional performance. Thus, the promotion of territorially embedded innovation systems appears to be a major challenge. For structural territorial competitiveness, sustainability has less to do with cost-efficiency and more to do with the capability to adapt to global dynamics and assume innovative strategies.

In peripheral territories, more attention should be put on the formulation and implementation of territorial innovation policies, and these policies should avoid the traditional sectoral supply-side approach (from above) as well as the orthodox instruments of some innovation policies. Innovation-led territorial policies should focus on catalyzing the relational and cooperative culture and on the mobilization of key stakeholders in collective learning dynamics.

The core of territorial innovation policies should concentrate on the stimulation of the whole regional *milieu*. In this way, a territorially embedded innovation policy should constitute a means of establishing a learning framework for all partners involved in the construction of a collective socio-economic trajectory. The remaining, fundamental question is how territories can organize themselves to further enhance policy innovations. This is the main challenge for many peripheral regions and a critical assessment must be done to determine the best course of action.

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