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**Lessons from Learning Regions:
Policymaking in an Evolutionary
Context**

Research Memorandum 2002-34

Faculteit der Economische Wetenschappen
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Amsterdam



**Lessons from Learning Regions:
Policymaking in an Evolutionary
Context**

Research Memorandum 2002-34

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This paper serves to **clarify** conditions that **hamper** the learning capability of regional (local) actors and to **identify how** this capability **can** be improved, given a number of distinct evolutionary constraints. First, we **discuss** policymaking in an evolutionary context. This is followed by an **analysis** of circumstances that **hamper** the design of learning **policies** by governments, including shortages in conceptualisation and empirical research of the learning region paradigm. The focus of the paper then moves to some broad lessons that **can** be **drawn** at the **strategic level** and at the project **level** for regional (urban) policymakers. **Finally**, the paper **discusses** the dilemma of incremental change versus system change **• or co-evolution** versus **co-revolution** • to improve the learning capability of regions **or** cities.

Learning capability, learning regions (cities), networks, policy design, evolutionary development

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INTRODUCTION

Since the early 1990s **concepts** of learning regions, smart cities, **creative** cities, etc. have **received** increased attention among regional economists, **economic** geographers and regional policymakers. This development marks the recognition that **factors** determining **economic** growth of regions (cities) are increasingly intangible, like institutions and culture, and increasingly mobile, like **capital**, **codified** knowledge, and partly **human capital**. It **also** marks the recognition that innovation by **companies** is not a linear process, running from invention and commercialisation to market introduction, but a **cyclic** and **interactive** process within networks of **many** different actors. In this view on **innovation** emphasis is increasingly put on diversity of the networks and boundary-spanning activity of the network actors.

The attention for learning regions **also** reflects the awareness that improving the regional **economy** is a medium- to long-term process, particularly a process based on the **willingness** and consensus among regional actors involved. Learning in this context not only **means** to adapt to new circumstances, like a stronger competition, but **also** to reflect critically on the own institutions and learning **processes**. In **policies** for learning regions, a **crucial place** is given to learning in regional (local) networks. In an ideal situation, these networks consists of loosely **coupled** relations that enable openness and integration, and **create** perspectives for **action**. Thus, the quality of the relations matters. In a negative case, networks become **conservative** and inward-oriented preventing **any action**, or they become subject to confusion leading to high transaction **costs** and **inefficient** adaptation (see **also** NIJKAMP et al., 2002).

Seminal work underlying the learning regions paradigm was done by AYDALOT (1986), CAMAGNI (1991), MAILLAT (1991), and some others, while the paradigm was fertilised from different **angles** in regional studies, like studies of national innovation systems, studies of regional technology complexes, including knowledge spillovers, Post Fordism and clusters, studies on local institutions in global **markets**, and studies of regional technology

policy (e.g. MORGAN, 1997; COOKE, 1998). **First**, the focus was relatively narrow in investigating innovative behaviour of companies in a network setting. Later, the focus has broadened to include sustainability as a leading value alongside innovation and competitiveness (e.g. MASKELL and MALMBERG, 1999; GEENHUIZEN and RATTI, 2001). This broadening **also** increased the complexity in understanding learning regions, **creative cities**, etc.

Despite its popularity, the paradigm of learning regions has remained **poorly** conceptualised, and **poorly** tested in empirical studies. This **holds** for innovation by companies and for policy learning by regional (local) actors, and is one of the **main** reasons why current policymaking faces **difficulties** in drawing **lessons from** learning regions. A poor conceptualisation is **also** true for the development of learning regions over **time** (e.g. BOEKEMA et al., 2000). A conceptual framework that **can** be used, is given by evolutionary economics. We adopt this framework in this paper, because it **allows** for explanation of qualitative change, **radical** uncertainty, and variation between organisations and technology, and **provides** notions for understanding policymaking under **such** circumstances (SAVIOTTI, 1997; BERGH and FETCHENHAUER, 2001).

This paper serves to **clarify** conditions under which the learning capability of regional (local) actors is hampered and under which conditions this capability **can** be improved. Accordingly, the paper is **structured** into **six** parts. Following this introduction, there is a brief discussion of evolutionary conditions that set limits to policymaking (**section 2**). This is followed by an outline of critical conditions for learning and **difficulties** in the design of learning **policies (section 3)**, particularly shortages in conceptualisation and empirical research of the learning regions paradigm (**section 4**). In a **fifth** part, broad lessons are drawn for improving the design of **policies** to enhance the capability to **learn**, addressed to regional

(urban) policymaking organisations (section 5). The paper concludes with the dilemma of incremental change versus system change to improve the learning capability (section 6).

With **regard** to the territorial unit of analysis we take both regions and (smaller) metropolitan **areas** into consideration, and avoid to link exclusively with localised production systems. As the perspective of this paper is on policymaking, it is necessary to realise that most localised production systems do not coincide with regional **or** urban policymaking units.

POLICYMAKING IN AN EVOLUTIONARY CONTEXT

According to modern evolutionary views on **social** phenomena, **all** organisations – be it governments, **companies**, **non-profit** institutions, etc. – suffer from bounded rationality in their adaptation to external **changes**. Bounded rationality **rests** on the inability of actors to **collect all** relevant information and to **process** this information adequately in a **decision-making process**. For governments this limited rationality **causes** in **fact** a limited potential for policymaking. In this context, it is increasingly acknowledged that there is **co-evolution** of regional (local) governments together with the organisations in their territory (BERGH and FETCHENHAUER, 2001). Governments and **policies** change as a part of and in interaction with these organisations. A **second** point is that most learning **leads** to incremental adjustment of organisations. **Such** patterns are reinforced by the phenomenon of sunk **costs** and the related phenomenon of increased returns. Thus, if **once** one route (investment, strategy **or** policy) has been taken, it is **less likely** that alternative routes are adopted, even if these are theoretically more **attractive**. Learning is thus strongly path-dependent (GRABHER, 1993; ARTHUR, 1994). **Only** in a few cases, learning **leads** to the use of untried possibilities and completely novel behaviour causing a new development trajectory. An ideal situation that prevents path-dependency **would** be one in which regional (urban) actors are permanently critical on their own institutions and institutional arrangements underlying learning, and

continuously feed back (forward) to preserve this attitude. This capability is **also** named adaptability (e.g. **BENZ** and **FÜRST**, 2002) or, alternatively, resilience (see **REGGIANI** and **NIJKAMP**, 2002).

Given bounded rationality and path-dependency as “**rules**”, the **efficiency** of regional (urban) policymaking as independent (top-down) **steering** seems relatively **small**. This awareness has led to a greater reluctance in imposing policymaking and has favoured the introduction of participatory forms of policymaking and **steering** on networks. In this context, the evolutionary idea of self-organisation has been forwarded. In self-organisation actors adapt themselves autonomously to new situations, including their networks. Accordingly, new types of policymaking acknowledge the **importance** of interdependent networks, voluntary **co-operation** of relevant network actors, and new **process** design that matches with **specific** situations and **needs** for flexibility (**BRUIJN** and **HEUVELHOF**, 2000).

DIFFICULTIES IN DESIGNING LEARNING POLICIES

Learning forms a **basic** element in evolutionary views on regional (urban) development, because it **provides** the input for adaptation of actors and networks to **changes** in their external environment, **such** as an increased competition **from** other regions **or** a **collapse** of a dominant industrial activity. Learning **can** be created using different sources, **such** as trial and error, repetition, borrowing from others (copying), and reflection on own routines (**MASKELL** and **MALMBERG**, 1999; **HASSINK** and **LAGENDIJK**, 2001). In order to be **effective** and not **stuck** in path-dependency **or** lock-in situations, learning by regional (urban) governments, **companies** and other organisations **needs** to satisfy various critical conditions, as displayed in Table 1 (e.g. **SENGE**, 1994; **HEALY**, 1997; **HERTOG** and **HUIZENGA**, 1997; **MORGAN**, 1997; **JIN** and **STOUGH**, 1998). One of these conditions is trust between the actors in a network. Trust **can** be seen as the **mutual** confidence that no party in an exchange **will** exploit

the vulnerability of the other, and as **such** it facilitates a smooth information flow and **co-**operation within the network. Trust is **often** mentioned together with reciprocity, the **latter** meaning the **mutual** understanding that a given **action will** be returned in kind. Two other conditions are openness and integration; these determine the way new information is gained, handled and absorbed in the organisation, e.g. using system **thinking** in understanding problems and using critical reflection on the own performance and underlying institutions, eventually leading to institutional change. **Openness** and integration **can only** be achieved if the learning networks are loosely **coupled**. This **means** that **each** network **actor can** adapt to a certain degree without affecting the entire network. It **also means** the maintenance of different individual capacities in the network, which reinforces the sensing power towards the external environment and potentials to **generate** novel solutions (e.g. GRABHER and STARK, 1997; BRUIJN and HEUVELHOF, 2000).

[tab | about here]

If we focus on the learning capability of regions (cities) including the above conditions, it **can** be concluded that the design of learning **policies** by regional (urban) governments is comprehensive and complex by **nature**. A number of **factors can** be advanced to explain this situation (MORGAN, 1997; JIN and STOUGH, 1998; GEENHUIZEN and NIJKAMP, 1998, 1999; BENZ and FÜRST, 2002). These **will** now concisely be presented here.

First, we witness **often** a **multi-actor situation** in policymaking. *The* qualification of a multi-actor situation refers to the **fact** that **many** different actors are involved in the learning system, like universities and **higher** educational institutes, research institutes, consultant **firms** and **think** tanks, supplier **firms**, customers, transfer **institutes**, brokers in network **contacts**, **venture** capital **firms**, and various governments. These actors **often** have diverse and

sometimes conflicting interests, whereas some of them perform different roles simultaneously. Complexity from the multi-actor situation is the more true if the learning is concerned with sustainability issues. A general trend is also the move of actors to participate in an increasing number of networks to support their different roles (e.g. ETZKOVITZ, 2002). To increase efficiency in learning these networks tend to be non-hierarchical and highly open in external relationships. In such a situation it is rather difficult and time-consuming for policymakers to identify the most relevant networks, to create consensus, commitment and reciprocity, and to gain sufficient support for particular policy decisions.

In the past few years, we have seen a gradual change in the context and orientation of learning, contributing to complexity. There has been a shift from hierarchical, disciplinary and division of labour-based knowledge production to a mode in which research problems are set across disciplinary boundaries, with a strong focus on application and with new benchmark criteria such as flexibility and response time (GIBBONS et al., 1994; NOWOTNY et al., 2001). At the same time, the number of actors involved is increasing outside universities and established research centres, with a growing emphasis on teams (consortia) working on a temporary (project) basis. Particularly in the case of science, there is also a higher democratic content and an increasing need for legitimating and public responsibility of science. As a consequence of all this, there is a trend for knowledge creation to become more volatile within fast shifting network configurations, and to become more uncertain and complex.

Complexity in policymaking also follows from the specific policy (management) framework of learning, because it is multilevel and (preferably) multi-sector. Multilevel means that (policy) decisions are taken at different spatial levels, from local to global, leading to situations in which decisions at higher levels influence conditions at lower levels. A multilevel situation also means the impact from policies in adjacent regions (cities) at the same level. A multi-sector situation means the need for involvement of many different sectors

(departments) in an integrated policymaking for learning, including e.g. education, housing policy, labour market policy, telecommunication policy, town planning and architecture, and policy for arts and culture. **However**, it is difficult to satisfy this need, because policymaking institutes are **traditionally** organised on a mono-disciplinary basis and policymakers have **often** a mono-disciplinary background, **such** that their problem **perception** and frame of reference are somewhat biased (one-sided) which **hampers** an integrated system approach. It is **also difficult** in these circumstances to **create** conditions that favour **reflective openness** among regional (urban) actors, including policymakers themselves.

A **further** complicating factor in policymaking is the **fact** that, despite the **many** actors involved and despite a serious situation, there is **seldom a "problem owner"** for the **task** of improving learning capability. This **means** that there is no **clearly** defined **actor** to push the issue of learning into the policy arena in a **systematic** and coherent way. As a **result**, a sense of urgency which is needed to **activate** actors and have them committed to improve the situation, is **often** missing. Moreover, learning **policies** have a "handicap" in the policy arena because they only **yield** results in the medium- to long-term. Thus, **when** seeking support for learning **policies**, there **tends** to be competition **from** those socio-economic **policies** that **yield** immediate and **clearly** visible **results**, like job creation **schemes** and physical **infrastructure** improvement.

A **final** point that **needs** to **be** mentioned is that policymaking for learning is hampered by a shortage of conceptual and empirical knowledge derived **from solid** research. The knowledge that is available is **often fragmentary** and misses a systemic view. Although particular policy strategies **can cope** with uncertainty **from** a shortage of system knowledge, policymaking organisations themselves are **often** not **sufficiently** equipped (**staffed**) to adopt **such** strategies. The knowledge gaps **will be discussed** in the next **section**.

SHORTAGES IN CONCEPTUALISATION AND EMPIRICAL RESEARCH

Despite the popularity of the learning regions paradigm, various key processes of this paradigm are **poorly** conceptualised. We **mention** the most important of them. The **crucial** mode of learning in the paradigm is conceived of as localised learning with transfer of **tacit** knowledge and maintenance of trustful relationships as key processes. Localised learning is, **however, poorly** conceptualised in terms of the need for proximity and the relation with learning over distance. There is **also** no differentiation between types of learning involved, e.g. technological and organisational (e.g. **OINAS**, 2001). **Also**, conceptualisations of **how** learning networks develop over **time** are sparse, in terms of e.g. openness, network **co-operation**, innovative output and sustainable development. There **may** be weakly learning regions, not yet **successful** in innovation and sustainability, but improving in the next future; and there **may** be regions that have learned **successfully** in the recent past but are now **captured** in negative processes that **cause** a decrease of innovation and sustainability; **however**, the **dynamic** aspect of learning and its influence on **economic** performance of regions (cities) over **time** have been **modelled only** in a few cases. **After** some **initial** attempts (e.g. **BRAMANTI** and SENN, 1997; CAMAGNI and RABELOTTI, 1997; **RATTI**, 1997), modelling of long-term development of regions from a learning perspective is now increasing (e.g. BERTUGLIA et al., 1999; ACS et al., 2002; REGGIANI and NIJKAMP, 2002). **However**, conceptualisations of the way localised learning **contributes** to a stronger competitiveness (performance) of **companies** at the **micro level** and of **how** regional (local) networks **contribute** to a better policy learning and better performance of regions (cities) remain sparse (**BENZ** and FÜRST, 2002).

With **regard** to empirical research, there is a shortage of studies that **allow** for comparison and empirical testing. There are **many** good case-studies of regions but few **comparative** studies based on a common research design, e.g. including similar types of regions, similar **definitions** and indicators, similar **time-periods**, etc. With similar types of

regions we **mean** regions endowed with broadly similar natural resources, with comparable levels of urbanisation, etc. There is **also** a shortage of **causal** modelling approaches in empirical research. This **means** that **many** causal **factors** are forwarded as relevant for learning and **innovation**, but their relative **importance** remains obscure. A point that worries is that some empirical research suggests the **absence** of localised relations **where** these could be expected, while other research **indicates** a reduced viability of companies located in close proximity of other companies (e.g. STABER, 2001). Results like these could have been used to approach the learning region as a differentiated phenomenon, but attempts to **such** an approach are sparse to date.

The above circumstances not only **cause** a limited system understanding (**cause** and effect relationships), but **also** a modest and perhaps biased problem diagnosis in policymaking for learning and a limited insight into adequate policy measures given particular system conditions. In addition to a shortage of conceptual and empirical testing, a few important **areas** have been largely overlooked, i.e. the **role** of “soft” **aspects** of **infrastructures** and the role of **financial** systems. In the remaining **section** we **will** briefly illustrate why these **areas** **deserve** more attention in studies of learning regions.

It is a **basic** assumption of **much** regional **economic** analysis that the competitiveness of the regional (urban) **economy** depends partly on **infrastructures** located in the area and connecting that area with the larger world. **However, from** the viewpoint of learning sparse attention has been paid to the design and management of **infrastructures** and innovative developments in these **aspects** that support the regional **economy**. Learning and innovative solutions, like new network **concepts**, a robust legislation and flexible arrangements, are necessary because of important new trends, including **convergence** of **infrastructures**, e.g. of transportation systems and information **infrastructure**; an increased use of information technology (IT) in **all** layers of conventional **infrastructures**, like of water, energy and waste

removal; a re-positioning of public and private **roles** leading to new organisational patterns and application of new modes of competition and regulatory arrangements; the need for flexibility, and adaptability of infrastructures, and **■** for a limited number of infrastructures **■** a trend for decentralised operation like in energy provision and waste water treatment (THISSEN and HERDER, 2002). In a learning region's approach the application of innovative design and management (operational and **strategic**) of infrastructures would be questioned, including factors that **hamper** and factors that enhance the application of innovations. In addition, the question would be raised as to **how** innovative design and management of infrastructures **contribute** to a better performance of regions (cities).

In various studies of learning regions, the financial sector is briefly **discussed** as part of the regional innovation system (e.g. **BRAMANTI** and SENN, 1997; BRACZYK et al. 1998). There are only a few studies in which the focus is explicitly on the **financial** sector as a key factor in innovation in a regional context (e.g. LERNER, 2001; ANTONELLI and QUERE, 2002; POWELL et al., 2002). In the **latter** studies it is acknowledged that in **many** high-technology **fields** learning activity includes long-lasting and **very** expensive development and testing programs, like for new (smart) materials, biotechnology, and laser technology. Accordingly, financial actors are as important as **scientific** actors and play prominent **roles** in the relevant networks. Due to the **fact** that high-risk investment is involved, financial actors learn and **innovate** in dealing with high risks, both inside the organisation and in interaction with their clients. **Such processes may** lead to a **redesign** of **financial products** like **venture capital** and services surrounding initial public offerings (**IPO's**). On the other hand, **financial markets** play a key **role** as filters and screeners of newly established **companies** and new business ideas. Loans, initial public offerings, etc. are only provided if specialised experts have expressed a positive assessment on the **venture**. From a learning region's perspective,

relevant questions would **address** the match between supply and **demand** of **financial** services, including implications for the performance of high-technology companies.

LESSONS FOR POLICYMAKING TO INCREASE THE LEARNING CAPABILITY

Although it is **very popular** to **discuss** learning regions, studies of policymaking for learning regions are sparse. Their number is **however** increasing, e.g. based on experiences in the European **Union** innovation programmes (Regional **Innovation** Strategy, Regional Innovation and Technology Transfer Strategies and **Infrastructures**). The lessons to be presented here are drawn from a variety of sources, i.e. **comparative** regional studies (e.g. **HASSINK** and **LAGENDIJK**, 2001; **LANDABASSO** and **MOUTON**, 2003), **from** historical analysis (e.g. **HALL**, 2000) and **from** case studies of individual companies (e.g. **SENGE**, 1994; **HERTOG** and **HUIZENGA**, 1997).

One lesson **tells** US that not **all** favourable conditions **can** be shaped by **policies**. For example, **almost** all **creative** cities in history were undergoing rapid and **radical economic** and **social** transformation, introducing new forms of organisation and production. Another salient feature is the steady flow of migrants from adjacent **areas**, but **also from** a distance bringing **cultural** diversity and new **competence** into the city (**HALL**, 2000).

Other lessons can be addressed to policymakers because they have a **role** to play. The lessons that **call** for policymaking on the **strategic level** and for certain **roles** for regional (urban) governments are summarised in Table 2. As previously mentioned, at this stage of the research it is impossible to give a rating of **importance** to the different critical conditions. Further, it **needs** to be realised that governments as **parts** of the learning networks **can shift** **roles** and exchange them with private actors in the network. As an example we take the critical conditions of the networks to preserve openness and integration, i.e. autonomy, loose coupling, heterogene@ and equality of actors in the networks. **Such structural** conditions

cannot be brought about automatically and overnight. It **requires** the consistent management of networks over a **considerable** period of **time**. Managers of networks are **often** found in intermediary organisations like the chamber of **commerce**, or in universities. **However**, if the territorial **size** of the networks coincide with regional or **urban** administrations it stands to reason that government agencies perform the **role** of network managers, like in Germany the regional **districts** (BENZ and FÜRST, 2002). What seems **exclusive** for government agencies are **roles** that ensure that learning networks function effectively and remain oriented to publicly endorsed goals.

[Tab 2 here]

Different from the past, the success of **policies** cannot be evaluated **merely** in terms of goals achieved, **cost** efficiency, etc. **Behaviourally** and **process-oriented** criteria need to be added to measure other desirable policy outcomes, like the strengthening of the regional research and technology development, and the creation of a bottom-up and transparent policymaking **process**.

On the *project level* we **may** identify measures that enhance **creative** thinking and, if innovative solutions are found, to **provide action** perspectives. Measures that enhance creativity include to add a number of **creative** people (unconventional thinkers) to the organisation, to put a high premium on creativity, and to add some staff members oriented towards new trends in the outside **world** ("gatekeepers"). Serendipity **may** be promoted by arranging the meeting of people that normally do not see **each** other (e.g. arts and science). On a more practical **level** serendipity **may** be stimulated by daily management styles that enable to pose questions like: why is this development a success and the other not, and what **happens** if we turn a routine upside down (like starting with the end and starting broad instead of

narrow), and what **happens** if the organisational **structure** changes fundamentally, like from **vertical** to horizontal, and from **linear** to **circular**?

A **further** set of measures **follows from** the need to support action-oriented networks that are committed to bring innovative ideas towards reality. There are different **models** for supporting **such** networks outside the command-and-control regulatory tradition (**RIP** et al, 1995). We **may** briefly introduce two of them that matches with the critical conditions on **the strategic level**, i.e. **strategic niche** management (SNM) and public entrepreneurship networks (PEN) (e.g. LAWS et al., 2001). The **former** has a focus on the development of a viable technology and questions what protection is necessary from the government to foster experimentation that yields **technologies** with viable **prospects** in the market. Thus, it takes the market as an evolutionary environment. The PEN model has a **stronger** focus on societal learning and the development **process** itself, and views the government as a direct participant in this **process** using different **roles**. In addition, PEN **focuses** on the ecology of **roles**, like a **pioneer** and mediator, supporting the development network.

We **may** conclude with the observation that the above lessons for policymaking reflect the critical conditions for learning, as indicated in Table 1. It is geared towards the creation of **commitment**, consensus, and trust, to openness and integration and it is action-oriented. In **fact**, it is far away from **traditional**, command-and-control types of policymaking. **After all** the **latter** types of policymaking would not have **matched** with the networks that are favourable to **learning**.

FROM CO-EVOLUTION TO CO-REVOLUTION?

It is a policy dilemma whether the above conditions need to be brought about **incrementally** or as a set of **radical**, long-term and comprehensive system changes, in other words, a system innovation. This dilemma is particularly true for regions (cities) that learn at low **levels** but

fail to improve, and for regions that **learn** at good **levels** but tend to **fall** back. Bringing about a system innovation requires, **however, specific** kinds of policymaking, i.e. transition management. In transition management, various key characteristics of the learning system need to be profoundly transformed. Therefore it **needs** a long-term view, dealing with concomitant uncertainty, and a high degree of integration between the different policy **areas** and concomitant measures (e.g. **ROTMANS**, 2002). In current policy relationships in Europe and North **America** it is not possible to impose system **changes from** above because of resistance **from** actors that prefer to preserve the current situation, and because of **lack** of knowledge of the system. **Rather**, a series of experiments on long-term perspectives **may** be **carried out**, from which the most promising **ones** are **selected** in a bottom-up **process** in order to be realised partly driven by self-organisation (e.g. **STACEY**, 1992). What seems important is that policy measures precisely impact on those networks actors (**factors**) that **reverse** unfavourable **processes** and **accelerate** favourable developments, in other words to prevent a downturn and **accelerate** an **upturn** in learning and concomitant innovation.

Aside from a **lack** of knowledge about turning points, we face a **couple** of practical obstacles. First, the staff of regional (local) policy agencies **needs** to be **qualified** for **such** activities, which is **often** not the case. Secondly, innovative experiments do not fit the current policy culture which is based on goal-efficiency and accountability. These obstacles perfectly **indicate** the need for policymaking agencies to quickly become a learning organisation by themselves. In addition, there are research questions that need to be **clarified** urgently. These questions **can** be summarised as **follows**. What **causes** a **reversal** of trends in learning systems and **how can** this be identified? **How can once** achieved adaptability (resilience) be preserved? Which policy options are available to enhance a desirable **reversal** of trends • preventing a downturn, causing an **upturn** • and to enhance desirable acceleration, preferably within the context of modern network-based policymaking? What counter **forces may** be expected

aiming at prevention (delay) of systemic change? What are wise strategies to “fight” the actors involved, e.g. **can such** actors be incorporated in the transition process in a positive way? What is the role of the public and the private sector in “co-revolution”?

We cannot be **conclusive** about what is the best for a region; there is no best **practice**, but a number of good **practices**. What the **latter** have in common and what **contributes** to **many** of the previously indicated strategies and operational measures is a key **role** for **Human Resource Management** at the regional (urban) **level**. Qualification of **staff** and high professional levels are crucial in bringing about system **changes** using experimentation and certain degrees of **self-organisation**. These are **also** crucial in causing a sufficient **level** of creativity and alertness in the daily operations of policymaking organisations. Thus, **Human Resource Management** does not **merely mean** to increase educational levels. For policymaking organisations it **also** includes changing the mind-sets, e.g. improving **lateral** thinking to cross organisational boundaries, increasing abilities to signal new trends, to deal with uncertainty in a **creative** way, and to act as a process manager of transition. It seems that co-revolution in improving learning capability is **still** far away from most current situations, not at least because of the **huge** educational **tasks**, the **still** weak **structural** position of learning **policies**, and the **many** questions that need to be **clarified**.

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Table 1 Critical conditions for learning in a network (“ideal” situation)

Conditions	Explanation
Consensus and Commitment	Actors involved have a sense of a mission , and support shared ambitions and visions
Trust	Trust is basic for information exchange and co-operation
Openness	There is communication and absorption of new information There is reflective openness to critically view own performance, learning and underlying institutions Situations are being created that facilitate serendipity
Integration	There is interactive learning in and between networks Problems are viewed through system thinking, including modelling but also experimentation and evaluation
Action-orientation	The new knowledge is applied through action

Table 2 Lessons at the **strategic level** of policymaking and concomitant government roles

Conditions for Learning	Critical Conditions on the Strategic Level	Potential Roles of Regional (Urban) Governments
Consensus and Commitment Trust	Bottom-up approaches Existence of trust Reliance on self-organisation Policy design under amendment (participation)	Animator to increase consensus and commitment Catalyst of new missions and shared ambitions Creator of trust Facilitator of participation in policy design
Openness and Integration	Autonomous networks Loosely coupled networks Heterogeneity of participants Open (egalitarian) structures Conditions to increase serendipity Conditions to prevent path dependency	Network manager to improve network structures Mediator to connect networks Gatekeeper of new trends Watcher of system dynamics Facilitator of serendipity Facilitator of sensing processes and monitoring (reflective openness)
Action-orientation	Conditions to link innovations with action	Catalyst of action Facilitator of action-networks
General	Conditions that improve efficiency and preserve orientation to public goals	Monitoring to ensure efficiency Monitoring to ensure orientation