Myopia, knowledge development and cluster evolution

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Abstract

This article aims to show how processes of knowledge development and their institutional underpinnings make up the core of evolutionary economic geography. We argue that micro level concepts—notably innovation, selection and retention—provide insights that can be helpful also when investigating evolutionary processes of knowledge creation at the aggregate levels of cities, regions or nations. We investigate the linkage between drivers, mechanisms and barriers to knowledge creation and acquisition at the micro-level, and the development over time and across spatial settings of higher-order phenomena of localized institutions and other capabilities. We apply this distinction on the analysis of the rise, growth, decline and possible rejuvenation of spatial clusters of similar and complementary economic activity.

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Many worlds might have been botched and bungled, throughout an eternity, ere this system was struck out: Much labour lost: Many fruitless trials made: and a slow but continued improvement carried on during infinite ages in the art of world-making.

Hume 1779

1. Introduction

Spatial locations possess varying capabilities that influence their economic development prospects. Such capabilities often date back in history as combinations of natural endowments and the effects of previous human activity. In this sense a geographical location—be it a city, a region or a nation—can be thought of as having a memory that direct the path of subsequent development. Over time, particular choices, themselves framed by past decisions, open up new strands of economic development, but preclude others (Arrow, 1962). The downside tends to be expressed in terms of lock-in to a fated path where development is constrained within a progressively narrower range of

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possibilities that ultimately leads to stagnation or decline when confronted with radical technological shifts or wider market changes (Arthur, 1989; Liebowitz and Margolis, 1995).

The overall objective of this article is to demonstrate how processes of knowledge evolution and their institutional underpinnings make up the core of evolutionary economic geography. More specifically we have three aims. The first is to show how micro level action provides insights needed when investigating evolutionary processes of knowledge creation in a spatial setting. The second aim of the article is to analyze how macro level institutional dynamics form development paths at the aggregate level of cities, regions or nations. The third aim is to use such micro and macro level evolutionary insights to develop an explanatory scheme by which we can review and reinterpret the coming into existence and further evolution of spatial clusters of similar and complementary firms and industries (Richardson, 1972).

The article, in consequence, is structured as follows. Next, in Section 2, we take a closer look at the drivers, mechanisms and barriers to knowledge creation and acquisition at the micro level. We use the notion of myopia to illustrate how cognitive frameworks and their spatial settings give rise to mechanisms that guide individual action in general and knowledge creation in particular into specific paths. In the subsequent section we engage with the emergence and possible transformation of territorially different nuances of general market institutions and other higher-order concepts of localized capabilities and their role for knowledge creation. In Section 4, we apply the approach developed in earlier sections on the specific case of clusters. In the final section the argument is summarized in a five broad conclusions.

2. Micro-level foundations for knowledge creation: routines and myopic search

If we accept Loasby’s inference that ‘knowledge is organization imposed on phenomena’ (2000, 14), we may envision days long past with very little knowledge. Or as Williamson would have put it: in the beginning there were only unsolved problems. Robinson Crusoe must indeed have faced countless challenges when he, according to Daniel Defoe’s (1719) admired narrative, ‘lived Eight and Twenty years, all alone in an uninhabited island...having been cast on Shore by Shipwreck wherein all the Men perished but himself’. Whether such challenges could be met and turned into opportunities depended at least in part on Crusoe’s ability to learn how best to utilize the resources available, including his own time and effort. Through endless struggles and sequences of trial-and-error he acquired skills and identified solutions that enabled him to survive and even thrive in what was described as his ‘kingdom and prison’. With the arrival of Man Friday a division of labor emerged, as did institutions

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1 The rapidly growing literature within evolutionary economic geography (see Boschma and Frenken, 2006 or Martin and Sunley, 2006 for overviews) has added significantly to our understanding of regional economic development but it only seldom specifies underlying micro-level processes that include individuals or firms with incentives, which, when acted upon, could account for the development under scrutiny (Agassi, 1960; Coleman, 1986, 1990; Frenken and Boschma, 2007).

2 Brian Loasby (1994) has pointed out that Williamson’s famous dictum: ‘In the beginning there were markets’ (1983, 20) should not be taken as a statement about the actual historical progression of economic life in the real world economy, but merely as the point of departure for a chain of arguments about the organization of the economy.
that helped to structure the perception of events and the selection of procedures to deal with them.

The fact that questions concerning the evolution of knowledge are dealt with in a type of literature that is by no means above suspicion does not mean that they lack importance or should be avoided in serious contexts. On the contrary, it is now well established how learning from experience, by trial and error or by repetition (Arrow, 1962; Scribner, 1986), give rise to incremental improvements that can accumulate over time, and gradually result in new and better ways of doing things (Thorndike and Rock, 1934; Boldrin and Scheinkman, 1988). Over time, some novel ways are rejected when the results are confronted with reality, while others function comparatively well and gradually become embedded in one or more routines, defined broadly as reciprocated interpretations and typifications including all regular and predictable behavioral patterns of individuals or firms (Levitt and March, 1988). Building routines means encoding incentives and constrains of the particular setting (Coriat and Dosi, 1998) into individuals' habituated action to a point beyond rational decision making or deliberate choice (Cohen and Squire, 1980; Winter, 2006).

A strong and coherent array of routines means economizing on finding facts, processing information and getting things done by simplifying the every-day tasks of making decisions (Penrose, 1959; Simon, 1982; Heiner, 1983). Even intentional knowledge creation by intelligent, self-interested individuals becomes path-dependent as today’s routines are related to yesterday’s learning routines and knowledge (Hayek, 1960; Arthur, 1994). Such evolutionary processes of social or technical innovation, selection, and retention often produce what Spender (1996) has labeled ‘automatic knowledge’: the possessors know little or nothing of its origin or how they have come to know it, but ‘it’s here’ and ‘it works’.

Experience alone holds no assurance of any local or general increase in the stock of knowledge, however. Stagnation may indeed be a stable condition and the ‘solutions to some surprisingly simple technical problems appear to have eluded producers despite centuries of repetitive activity’ (Young, 1993, 444). In a similar vein Kirzner (1979, 145) once pointed out how: ‘[i]gnorance of knowledge that might be spontaneously, undeliberately absorbed can (...) never be explained in terms of anything other than itself. Such ignorance is simply there. It cannot be accounted for on the grounds of high search and learning costs, since no searching or learning is needed at all even, to repeat, at zero cost...’. Wrong conclusions may, furthermore, be drawn by misinterpretation of the facts at hand though some faults correct themselves: ‘someone who believes poisonous berries to be nutritious may soon discover the mistake (though perhaps too late for any personal benefit)’ (Loasby, 1991, 28). Other erroneous deductions, sometimes based on extremely narrow samples, can become widely dispersed, because everyone believes that others have made the sufficient validation, and no lethal or instantaneous consequences prove them wrong.

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3 Actually, with its more than thousand editions or translations Defoe’s ‘faction’ has recently been applauded as ‘...the most influential economic ‘myth’ to have been created...in the 17th and 18th centuries’ (Mathias, 2007, 17) but its impact extends even longer.

4 Becker (2004) provides an overview of the literature on routines, which are sometimes seen to play the roles in society that genes play in biological (Darwinian) evolutionary theory (Nelson and Winter, 1982. See also Veblen, 1898; Andersen, 1994). Rosenberg (1994) argues strongly against such transference.

5 The sequence is a common social science substitute for the initial Darwinian terms of mutation, selection and transmission, cf. Essletzbichler and Rigby, 2007 or Glückler, 2007.
Even if individuals and firms get it right it does not always stay that way. Circumstances change and routines once outstanding may gradually get outdated. But a strong track record tends to beget routines of extraordinary durability. They are retained and sometimes even aggressively defended by actors with strong vested interests long after changes in the external conditions have made them redundant (Demsetz, 1988). It is, in addition, always difficult to unlearn successful habits of the past, also in cases where it is obvious to everyone concerned that they hinder future success (Hedberg, 1981). Lack of unlearning often goes hand in hand with a marked resistance towards new ideas and a cumbersome bureaucratic inertia especially when operating on previously generous markets. Firms may thus occasionally find themselves in lock-in situations for extended periods, until some internal entrepreneur, unrestrained by the dominant disposition, breaks the spell by introducing new ways of doing things.

These observations, trivial as they are, provide a useful warning that no valid understanding of evolutionary processes can be determined without an explicit recognition of the specific drivers and constraints that guide individual action in general and knowledge creation in particular. Some such drivers and constraints may be found at the macro-level of market developments and broad institutional regimes (to be dealt with in next section) while other derive from processes at the micro-level.

Our general understanding of the behavioral drivers and constraints at the micro-level has been much advanced by experiments performed by cognitive psychologists especially concerning human judgment and decision-making under uncertainty. Tversky and Kahneman (1974) demonstrated the existence of a ‘cognitive quirk’ whereby people systematically use simplified or ‘bounded’ models of rationality (Simon, 1947) with suboptimal or even erroneous outcomes. People chose options that reach a satisfactory level on most decision criteria or fulfill only the most important set of requirements. The resulting rough-and-ready practices may have value that goes beyond cutting information processing costs, as real-life situations quite commonly involve consecutive series of problems with solutions that in some important ways are analogous if not similar to processes already encountered. But even in situations where such streaks are less likely to occur will people in general rely on ‘a limited number of heuristic principles which reduce the complex tasks of assessing probabilities or predicting values to simpler judgmental operations’ (Tversky and Kahneman, 1974, 35).

Based on this line of research we can now identify a general set of biases in individuals’ combinatorial search among the often immeasurable opportunities in their external environment. Bounded rationality, sometimes reinforced by attributes of problem architectures and misaligned incentives, make individuals concentrate their search on a restricted range of potential alternatives (March, 1991; Ocasio, 1997). Routines, inaccessible to the actor, further limit the field. Local, exploitive search, i.e. looking for answers close to already existing solutions while utilizing existing routines, is preferred even in situations when the possible higher search costs of following many different paths simultaneously or pursuing a more global search strategy is more than balanced by the potential benefits of acquiring a broad variety of knowledge inputs (Tversky, 1972; Jensen and Meckling, 1976; Simon, 1987).

This functionally myopic behavior has an interesting corresponding spatial aspect (Levinthal and March, 1993). The concept of localized learning (Maskell and
Malmberg, 1999; Malmberg and Maskell, 2006) has been coined to demonstrate how some processes of interactive knowledge creation, acquisition and exchange tend to be if not exclusively so at least in certain respects local in character. Despite modern developments in transport and communications technology that make long-distance interaction easier and cheaper, certain types of information and knowledge exchange continue to require regular and direct face-to-face contact (Storper and Venables, 2004; cf. Goffman, 1967). Everything else being equal, knowledge search and exchange processes will be less costly and smoother, the shorter the physical distance between the participants. Also social affinity, cultural community and cognitive proximity tend to follow from spatial proximity (Gertler, 1995). In this, sense processes of localized learning that are inherent in the everyday life of people working—and living—in any local setting.

There are also processes of information exchange that need not be related to the conscious activities of firms, but are rather to be seen as unintended side effects of such undertakings. Such knowledge spill-overs have been referred to as local buzz (Storper and Venables, 2004; Bathelt et al., 2004). The argument is that each place will be characterized by a certain information and communication ecology created by numerous face-to-face contacts among people and firms who congregate there (Grabher, 2002). Actors continuously contribute to and benefit from the diffusion of information, gossip and news by just ‘being there’ (Gertler, 2003). The continuous updates of information and intended or unanticipated learning processes in organized or accidental meetings, lead to the routinized application of similar interpretative schemes and mutual understanding of new knowledge and technologies. Vicarious localized learning processes allegedly lead to direct search processes into local, isomorphic paths (Levitt and March, 1988). By deliberately investing in building pipelines to distant communities and by augmenting their absorptive capacity some firms attempt to increase the variety of routines available to them and escape the potential lock-in stemming from myopic search procedures (Furman, 2003; Ahuja and Katila, 2004).

The micro-level constraints dealt with above have significant consequences for theory. Incorporating functional and/or spatial myopia as a basic behavioral assumption implies departing from mainstream economic conjectures of rationalization, global maximization and equilibria. As Tversky and Kahneman (1987) put it: ‘the deviations of actual behaviour from the normative model are too widespread to be ignored, too systematic to be dismissed as random error, and too fundamental to be accommodated by relaxing the normative system’. Evolution is not a maximizing process that leads to some global optimum. Myopia implies disequilibrium and heterogeneity. No single best practice may be at hand. Even deliberate piecemeal alterations may not always represent a gradual calibration towards perfection, neither for the actors themselves nor for the collective entity to which they may belong, whether a household, a firm or a regional or national economy.

In Section 4 we will return to the issue of whether certain types of socio-spatial settings, notably clusters, have characteristics that may, at least in part, help compensate for the negative aspects of myopia and perhaps even turn them into advantages instead. But before doing so, we will turn to the macro-level phenomena of
institutions and institutional change, and how they contribute to the path dependent development at the aggregate level of cities, regions and nations.

3. Higher-order processes affecting knowledge creation: the role of institutions

The economic system evolves as the decisions made in one period of time generate systematic alterations in the corresponding decisions for the succeeding period (Kirzner, 1973), even without changes in the basic data of the market. The routines that intelligent self-interested individuals or firms develop will determine the distribution of specific actions selected within the range of possibilities that become available at any given time (Nelson and Winter, 1982; Dosi, 1990). They extend the limits to growth by establishing an interpretive framework for selection and converting new ideas into a usable form (Weitzman, 1998). However, it should not be ignored that ‘the beneficence of the play of self-interest only exists because that play is not free, but is confined to certain directions by our great social institutions...’ as Cannan (1896, 176) once emphasized. What individual self-interest dictates as a course of action in any particular case thus depends on the total set or pattern of institutions (Cannan, 1896; Loasby, 2000).

Following North (1994), institutions can be conceived as resilient humanly devised constraints that structure interaction in society. These constraints may be regulative (e.g. formal rules, laws, constitutions); normative (e.g. norms of behavior, conventions, self-imposed codes of conduct); or cultural-cognitive (e.g. creating interpretive frameworks by which meaning is established and shaped), which together help create incentives and guidelines for action (Scott, 2003). It is commonly recognized that institutions do not come into existence once and for all. On the contrary they are undergoing continual modifications to adjust them to the circumstances of time and place, so that the restraints imposed on individual action are continually changing.

Institutions can be thought of at different levels of aggregation. At the most aggregate level, and in a broad historic perspective, the steady increase in knowledge on which our society now depends, is based on a set of institutions, often jointly referred to as capitalism, that are the communal product of careful deliberation and conscious effort, but also influenced by unanticipated outcomes. In Hayek’s (1945, 528) words: ‘...man has been able to develop that division of labor on which our civilization is based because he happened to stumble upon a method which made it possible’, i.e. the price mechanism that enabled coordination of knowledge dispersed among firms and across markets. The common set of market economy institutions provide individuals with incentives to experiment with ‘new combinations’ (Schumpeter, 1934, 66) of existing knowledge, while occasionally adding a novel idea or two. In other words: they jointly create an encouraging environment for the whole evolutionary sequence of innovation, selection and retention.

6 In the so-called Arrow–Debreu (1954) definition, commonly adopted in mainstream economics, markets are perceived as sequences of events of exchange. In an evolutionary perspective it seems more appropriate to follow Loasby (1994) who, among others, argues that markets are institutional settings where events of exchange take place.
The perhaps most significant consequence of market economy institutions is the way they allow for divergent interpretations of potentially successful behavior and the continued coexistence of dissimilar approaches at the micro-level (Marshall, 1890). This is neither to be avoided nor regretted as it ‘is of the essence of competition that the participants hold uncertain and divergent beliefs about their chances of success’ (Richardson, 1975, 359). The resulting variation in individual responses to shared challenges and opportunities in the environments provide material for a continuing process of selection and interactive knowledge creation.

At the less aggregate level of nations, regions or cities, variations may appear in the general institutions of the experimenting market economy. Initially random and insignificant territorial nuances in institutional repertoires deepen over time in response to the requirements of existing economic configurations and thereby, in turn, create a particularly favorable environment for attracting newcomers engaged in precisely those specific kinds of activity (Maskell et al., 1998). Little by little are distinctive and resilient institutional combinations established along national, regional or local lines (Whitley, 1995; 1999; Lundvall and Maskell, 2000; Hall and Soskice 2001). The national, regional and local scale will normally display only partly overlapping institutional repertoires but the general process of alignment over time between institutional set-up and economic structure is equally important at each scale (Gertler, 2001).

An interesting aspect of institutions in general is that they tend to work by limiting or even preventing the exploration of excluded possibilities (Loasby, 2000). Excluding possibilities carries unknown opportunity costs just as the sophistication of a particular knowledge base may prevent the performance of disparate activities deemed attractive at later stages. The historically evolved institutional repertoire can thus sometimes get whole countries, regions or cities locked into specific, initially successful, ways of doing things that later external events convert into shackles, which inhibit or block further progress (Elbaum and Lazonick, 1986). At this aggregate level competition is not to be relied on to ensure rejuvenation. Some nations, regions or cities instead depopulate or accept, however reluctantly, a continuous decline in investment levels, consumption and standards of living, while others acknowledge that some collective action is required and struggle to develop deliberate policies often aimed at emulating the institutional structure of more successful peers (Czarniawska and Joerges, 1996). Many studies have shown how new ideas, organizational forms or legislative practices travel across space while undergoing modifications or ‘translations’ to fit the new setting (Czarniawska and Joerges, 1996; Scott, 2003). Investments in increased mobility or extending relational systems might make ideas travel more readily but the crucial point is the extent to which such alien ideas can be absorbed into the national, regional or local institutional setup and, by becoming part thereof, revitalize it and help break the lock-in.

It must, however, be admitted that we know preciously little about what determines institutional absorptive capacity and why the institutional set-up of nations, regions or cities on the downhill slope sometimes remains unaffected through extended periods of time in spite of seemingly infinite opportunities for external inspiration from more successful peers. In particular, the literature offers limited insight into precisely how to successfully import unfamiliar institutions deemed superior. Very few contributions throughout the social sciences highlight the fundamental question of how obsolete but
well-established institutions can be intentionally transformed at the micro-level of individual action.\(^7\)

There are probably several reasons for this lacuna, but the most obvious is, perhaps, an inherent logical problem. Ingrained institutions, by definition, function behind the back, so to speak, of the individual actor by confining his or her actions and by guiding their mindset into certain ways of thinking. But if an institution makes certain actions seem natural and self-evident for the individuals constrained by them, then how can these same people, by an act of will, ever step outside an innate institution and change it? There exist, in this way, an obvious theoretical blind spot in relating institutional change to micro behavior.

A similar theoretical gap concerns the link connecting institutional change to broader external events like major shifts in technologies or consumer needs. We are still mainly in the dark when attempting to explain why cities, regions or nations sometimes successfully manage to reinvent vital parts of their institutional structure to accommodate external shocks, while sometimes they do not. It is somewhat discomforting that the same factors—relating to knowledge, routines and institutions—tend to be used to explain both success and failure. Until today, economic geographers, as well as their close cousins in the neighboring economic and social sciences, have been only partly successful when it comes to identifying—let alone predicting—the branching points when we should expect successful specialization of cities, regions or nations to turn into negative lock-in.\(^8\)

At one point in time, we may establish as a fact that e.g. a specific form of industrial relations or some other institutional arrangement is a major cause of the industrial growth and dynamism of a city, region or nation, like in Baden-Württemberg or for that matter Japan during the 1980s,\(^9\) only to discover 10 years later that the very same institutional arrangement is seen to create inertia and be a major factor in preventing the industry of the region from successfully meeting the challenge posed by the emergence of new competitors elsewhere. Both these analyses may of course be correct, but there is a risk of getting stuck in a functionalist type of explanation that may end up very close to circular reasoning: the cities, regions or nations that do well are those that are equipped with the appropriate institutional—or other—structure deemed important, while the definition of an appropriate or even superior institutional structure is the one found in the territories that performs well.

The problems of how to build an empirically justified theoretical understanding of institutional dynamics at the level of cities, regions or nations in relation to individual

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7 A notable exception is a recent two-country case study where Boxenbaum and Gond (2006) meticulously follow, in a real-time, the process of institutional transfer step-by-step, and identify five micro strategies (labeled filtering, rerouting, stowing, defusing and coupling) that actors applied during the process.

8 Recent evolutionary and history friendly modeling have, however, attempted to address precisely this shortcoming (i.e. Press 2006).

9 See Herrigel (1996a, 1996b) for authoritative analyzes of the Baden-Württemberg case. Imai et al. (1986) attribute an important part of Japan’s economic success in the 1980s to the ability to unlearn former organizational or institutional rigidities through the acceptance of managerial declarations of a state of emergency or crisis, which allegedly make radical changes easier to swallow. One must then wonder what it was that prevented the use of this magnificent managerial tool in the 1990s—when the Japanese economy was indeed in a state of crisis.
agency on the one hand, and external shocks on the other, remain interesting challenges
to evolutionary economic geography.

4. Spatial patterns of knowledge creation: an evolutionary
approach to the cluster life cycle

Having identified myopia as a key micro level constraint in knowledge development,
and pinpointed institutional adjustment—or lack of adjustment—as a key factor in
directing knowledge processes at the aggregate level of cities, region or nations, we will,
in this section, apply these concepts on a paradigmatic economic geographical case: that
of the rise, growth, decline and possible rejuvenation of spatial clusters of similar and
complementary economic activity.

The use of the cluster concept and related models in academic and policy circles has
grown immensely over the last decade. The pandemic diffusion of the concept has made
it increasingly vague and indeed fuzzy (Malmberg and Maskell, 2002; Malmberg and
Power, 2006; Maskell and Kebir, 2006). If there is such an entity as ‘spatial clustering/
agglomeration theory’ today, it consists of a mix of ideas originating more than a
century ago (Marshall, 1890; Weber, 1909), further developed in the post-war period
within the regional science tradition (Alonso, 1964) and given new input since the early
1990s though the engagement by economists (notably Krugman, 1991), business
strategists (notably Porter, 1990) and economic geographers (see Malmberg and
Maskell, 2002 for overview).

In some contexts, it might be important to make distinctions between different forms
of industrial districts (whether Marshallian/Italian style, hub-and-spoke type, satellite
platform or state anchored) or Porterian clusters, as defined when first introduced in the
early 1990 or as subsequently redefined (Porter, 1990; Markusen, 1996; Porter, 1998).
For the purpose of this article, however, it suffices to apply the simplest of cluster
definitions: a cluster is a spatial agglomeration of firms with similar and complementary
competencies (Richardson, 1972).

The mechanisms behind spatial clustering identified in traditional cluster theory and
the factors in most contemporary models all take their point of departure in the concept
of agglomeration, or localization economies (Maskell, 2001). These bodies of thought
identify forces that give permanent advantages to firms with similar or complementary
competencies when located in a spatial agglomeration. The advantages include, among
other things, lower transaction costs, access to a pool of skilled labor, shared costs for
specialized infrastructures, and access to knowledge arriving from the outside world
through the cluster’s global pipelines (Bathelt et al., 2004).

An evolutionary approach will supplement analyses of localization economies by
placing the argument in a sequence that emphasizes how clusters originate, develop and
decline. Clusters do indeed often follow an evolutionary path, where stages of infancy
are succeeded by a growth phase, followed in turn by increasing maturity and
subsequent stages of stagnation or decline. In this sequence they often, but not always,
follow the life-cycle of the dominant industry quite closely (Audretsch and Feldmann,
1996; Buenstorf and Klepper, 2005). A stylized version of a ‘cluster life cycle’ can be
described as follows.

The origin of clusters remains largely obscure, in the sense that it is almost impossible
to determine ex ante where a cluster in the making will take root. Sometimes it is
obvious that the pre-existence of certain physical factors, e.g. a localized supply of energy or some raw material, triggered the initial location of an industrial activity in a place that would later on develop into a fully-fledged cluster. More often, though, they start out in a particular location more or less by chance and can therefore not be predetermined. It is often possible to trace the roots of cluster ex post, of course, by means of genealogical analysis. ‘It all started’ when this or that pioneering entrepreneur at some point in time did start this or that type of economic activity, even though it is not really possible to explain why this happened in one particular place and not in another, apart from the banal fact that most new firms start at the place of birth or residence of the founder. While the incident that actually triggers the clustering process often remains in haze the subsequent stages are easier to account for, and once an activity has taken root at a particular place, several mechanisms come into play at the micro level of explicit agency.

Myopia as discussed earlier helps explain why a potential entrepreneur will decide to start a business similar or complementary to what already exists locally. The entrepreneurs’ (myopic) cognitive limitations reinforce standard economic incentives. Firms with similar competencies are attracted because collocation implies economizing on locational search costs: the prior local existence of one or more successful firms in an industry proves that no obvious or obscure locational factor makes the area less suitable for that specific kind of economic activity. Collocation furthermore enables latecomers to piggyback on pioneering firms’ investments in labor market development, infrastructure adjustments and institution building. Firms with complementary competencies are, in turn, attracted by the commercial possibilities of increased local demand or the opening of new local sources of supply. A chain of cumulative causation (Veblen, 1898; Myrdal, 1957) can be set in motion where the vertical expansion of the cluster through attraction of firms with complementary competencies adds to the initial attractiveness of the cluster along the horizontal dimension of firms with similar competencies.

The decisions made by the firms have a parallel at the level of individual workers as most talented wannabes of an industry will tend to flock around the hotspots where firms in this line of business agglomerate. But over time, some employees will leave the incumbent firms to start their own business while utilizing firm-specific routines learnt before the spin-off. Particularly successful routines would thus not only provide parent firms with above-average chances of survival but, consequentially, also enable numerous spin-offs, each endowed with inherited and previously tried-out routines. Through rounds of selection and intensified local rivalry (Porter, 1990) the spin-offs help create stable clusters with firms that through generations that can come to dominate an industry nationally or even across the globe (Klepper, 2002; Dahl et al., 2003, 2005; Buenstorf and Klepper, 2005; Thompson and Klepper, 2005; Boschma and Wenting, 2007).

The assertion that clusters are essentially the result of myopic behavior should not be taken to indicate that clusters cannot for a while be efficient, or indeed competitive, spatio-organizational forms. On the contrary, clusters represent a possibility to circumscribe some of the potential problems stemming from corporate myopia. If functional and spatial myopia is indeed a human condition, those actors lucky

10 Krugman’s first engagement with economic geography starts out with a famous example of this (Krugman, 1990).
enough to find world-class solutions and global best practices in their backyard gain advantages over those who do not. In this way, a set of decisions and actions, partly framed by the cognitive and other constraints of the actors involved, can combine to create an aggregate structure that turns out to be not just economically sustainable but indeed globally successful. But, as shown in previous sections, the success also carries with it the seeds of future destruction as the evolutionary process of selecting temporarily best practices accumulate to isomorphic pressures that gradually reduce existing variety in routines. Lack of variety combined with spatial myopia leads to an insular mind-set that, in turn, enable local actors to ignore signs of needed readjustment. However, the potentially most damaging long-term consequences may be avoided as long as at least some of the collated firms actively invest in building absorptive capacities and pipelines to external knowledge pools with dissimilar routines or institutional patterns. Pending lock-ins are replaced by rejuvenation processes through the activities of externally connected and absorptive local firms that ensure variety and create fresh impulses for horizontal learning.

In addition to micro-level processes, a cluster’s life cycle account would also include higher-order processes at the level of the cluster taken as a whole. These include, e.g. the creation of supportive institutions, local culture and the establishment of the place as a brand of the dominant local industries. Such factors reinforce the specialization of the cluster, and by doing so they set the frame for the kind of activities that might be possible to perform in the future in that area.

The evolutionary chain of cumulative causation favors industrial specialization and territorial differentiation in dominant routines and institutional repertoires that help explain why no competitive cluster—or city or region or nation for that matter—can remain a Jack-of-all-trades. At the same time, both specialization and differentiation come at a cost. On the one hand there are beneficial effects of deepening the knowledge-base and developing routines that work well within a particular field. On the other hand clusters also run the risk of getting locked-in if external events render the knowledge-base obsolete; the dominant routines dysfunctional; or the institutional set-up inflexible (Cornwall and Cornwall, 2001).

In essence, an evolutionary approach thus directs our attention to the mechanisms by which a patterns of spatial clustering would emerge through the actions of myopic prospective entrepreneurs, grow through the gradual build-up of well-adjusted routines and institutions, and face threats of decline as a result of over-specialization, leading to reduced variety, a narrowing down of knowledge bases and the rise of inertia. The standard accounts of permanent localization economies—the cluster existence arguments—are in this way placed in an evolutionary sequence (Maskell and Kebir, 2006).

5. Evolutionary economic geography: conclusions and challenges

The argument forwarded in this article can be summarized in five bold points.

First, by way of introduction, we argued that an explicit recognition of the specific drivers and constraints guiding individual action could improve our understanding of aggregate processes also at the levels of cities, regions or nations.

Second, we showed how evolutionary processes of social or technical innovation, selection, and retention lead to the gradual build-up of routines that allow actors to
economize on fact-finding and information processing. A strong and coherent array of
routines simplifies the every-day tasks of making decisions. At the same time, there are
cognitive constraints at the micro level. Limited cognitive abilities make individuals
prefer local, exploitive search, in two different ways. They tend to look for solutions
close to already existing routines, but they also tend to concentrate their search in their
spatial vicinity. The incorporation of functional and/or spatial myopia as a basic
behavioral assumption implies departing from mainstream economic conjectures of
rationalization, global maximization and equilibria. Thus, seen from a micro-level
perspective, evolutionary economic geography is essentially aiming at understanding
processes and consequences of myopic disequilibrium dynamics in spatial settings.

Third, leaving the micro level phenomena and turning to the level of markets and
institutional regimes, we maintained that a dominant institutional set-up, once
established, would tend to attract those firms and individuals most compatible with
it. National, regional or local institutions gradually develop over time in response to the
special requirements of the presently dominating industry and lead to further
specialization by creating a favorable environment for similar and complementalry
economic activity. Thus, at the aggregate level of cities, regions or nations, evolutionary
economic geography can be argued to have as its main object of study the inertia and
path dependence caused by the development, reproduction and transformation of
territorially specific routines and institutions.

Fourth, we asserted that the adoption of an evolutionary approach might enhance
our understanding of the birth, growth and decline of clusters. Myopia is held to
explain why potential entrepreneurs in a local milieu will make choices that tend to
reinforce a pattern of specialization, whatever the precise cause of the initial spark
happened to be. Institutional adjustment gradually increases the fit with the chosen
specialization and adds to the performance of the cluster. It is an unavoidable conse-
quence of this process that it reduces the range of alternative development paths
that may become attractive when external circumstances take unexpected turns. The
immediate benefits of a deepened specialization are balanced by increase in the risk of
lock-in, stagnation or even decline.

Fifth and finally, we contended that an evolutionary approach has much to offer
but also pointed to a number of unresolved issues or major theoretical challenges for
future theory building. Whether the promises raised by the still juvenile evolutionary
economic geography will be fulfilled as it matures depends not least on its ability to
invigorate empirical research on economic development of nations, regions, cities and,
indeed, of clusters.

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**References**


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