

Proximity and Endogenous Regional Development

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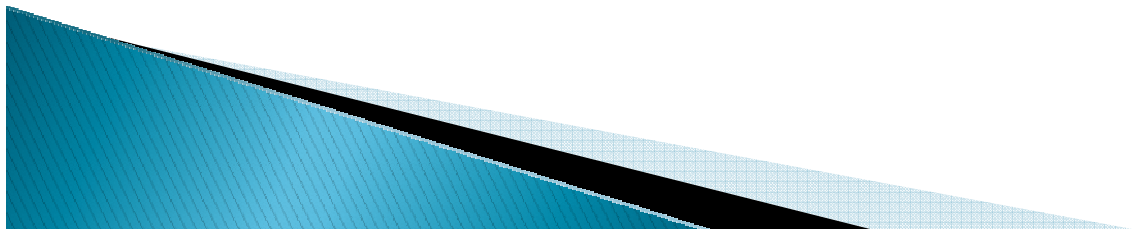
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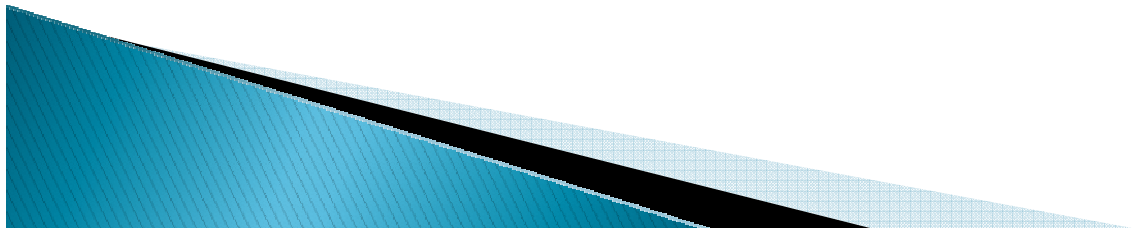
Proximity

- ▶ *The notion of ‘proximity’ is now embedded in the literature on knowledge transfers and industrial clusters in the context of endogenous regional economic development and growth.*
- ▶ *Proximity does, however, take on a multitude of meanings, and is not simply related to geographic or spatial proximity in the context of agglomeration economies in location theory.*
- ▶ *It also is used in a ‘relational’ context, referring to interactions among economic actors that may be variously characterized as social, cultural, electronic, and institutional.*
- ▶ In this paper I review the emergence of ‘proximity’ as an explicit concept in research in the context of endogenous approaches to regional economic development and growth. Some policy implications are discussed.



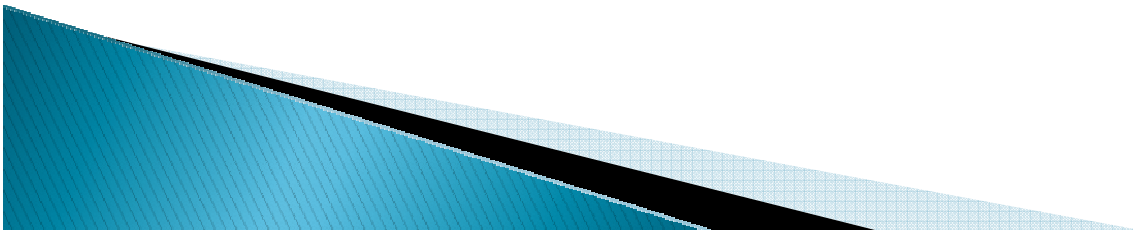
As outlined by Krugman (1991)...

- ▶ A fundamental fact is the clustering of economic activities in space.
- ▶ That geographic concentration of production provides evidence for the pervasive influence of some form of increasing returns.
- ▶ It stands to reason that the links between a firm and its suppliers are easier to establish if suppliers are located in the *proximity*.
- ▶ The development and success of firms will be influenced by the conditions prevailing in their environment.



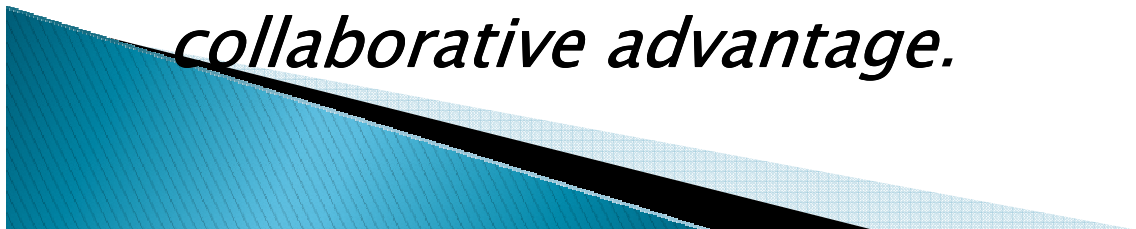
In regional or local economic development...

- ▶ It has been widely suggested that what might be called *proximity effects* are significant, especially in the context of the role that endogenous forces might play in accounting for the differentiation that exist between regions in their economic performance across a nation's space economy.
- ▶ That gives some regions a *competitive advantage*, as distinct from a *comparative advantage*.



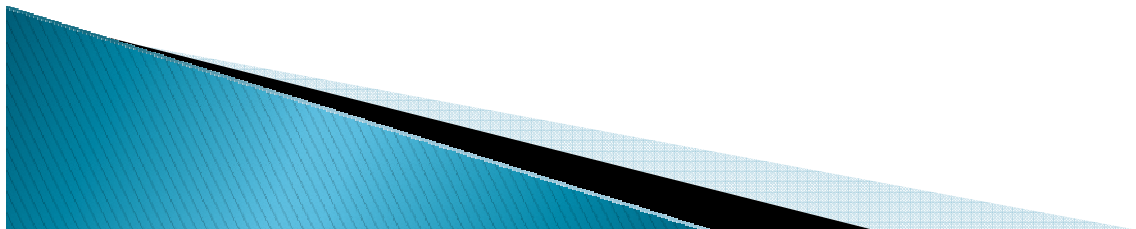
The 'new growth theory'

- ▶ Also commonly referred to as *endogenous growth theory*.
- ▶ Places considerable emphasis on the importance of:
 - knowledge spillovers
 - business networks
 - institutional embeddednessas manifestations of *localization economies* that are engendered through *proximity relationships*.
- ▶ The operation of those factors is at the heart of what Henton (1995) refers to as regional *collaborative advantage*.



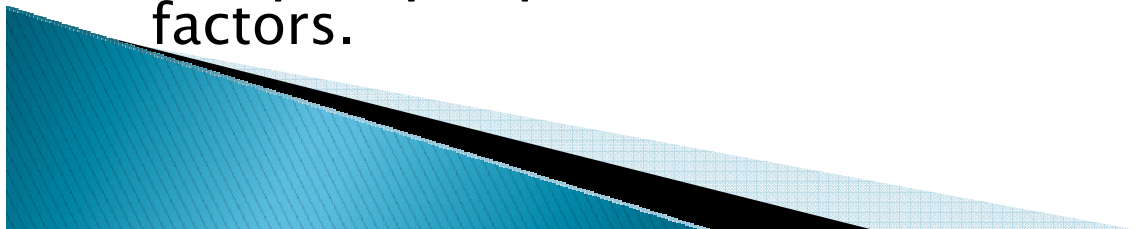
This paper discusses (1)...

- ▶ The issue of *proximity* in the context of *endogenous regional economic development and growth*.
- ▶ References to *proximity* – or the lack of it – in the literature on location theory.
- ▶ The long-standing work by location theorists and regional scientists on *agglomeration economies* and the increasing emphasis on knowledge transfers and innovation.
- ▶ Reference is made to the fact that despite the potential role of ICTs in what had been predicted as the ‘death of geography’, the evidence is that face-to-face contact remains important, especially for tacit knowledge transfers, and the geographic concentration of economic activity continues to be strong.



This paper discusses (2)...

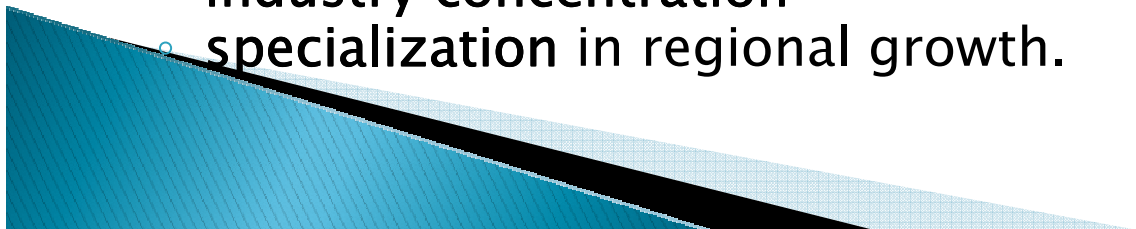
- ▶ How *proximity* has been approached in the regional science literature, referring to the types of *proximity relations* that have been identified by researchers.
- ▶ How the notion of *proximity* is embedded within the regional science literature on industrial clusters, knowledge spillovers and innovation.
- ▶ Institutional factors, the learning region, and regional innovation systems.
- ▶ The emergence of an *ecological perspective* on entrepreneurship, knowledge transition and localization economies.
- ▶ The policy implications of the role of *proximity* and related factors.



Explicit reference to
‘proximity’
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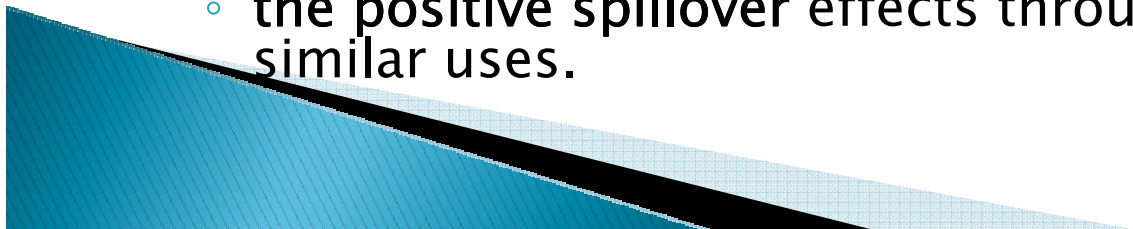
The term *proximity* was not much used – if at all – in the writings of location theorists in the early days of regional science

- ▶ But...
 - Alfred Marshall (1890), in his writing on agglomeration economies and the notion of industrial districts, inferred the benefits to be derived from *proximity among businesses*.
- ▶ However, a search of some of the major and now classic texts on location theory – of which there was a proliferation from the late 1940s to 1970s – reveals no explicit reference to ‘proximity’ *per se*.
- ▶ Rather, that literature tended to focus discussion on the role of:
 - agglomeration economies
 - localization economies
 - industry concentration
 - specialization in regional growth.



Martin Beckmann (1968) explicitly referred to *proximity*

- ▶ “... in a market economy ‘optimality’ depends on prices of the commodities involved.” (p. 10).
- ▶ “... if all prices relevant to economic activity are independent of location, that is, constant everywhere, then optimality will still depend on proximity to (1) potential customers, (2) similar and competing plants and facilities, and (3) economic activities in general.” (p. 10)
- ▶ Beckmann elaborated on the *external economies of proximity effects* – also known as *neighbourhood effects* – that arise through
 - the negative spillover effects of proximity through pollution, noise, etc., which may be exacerbated by land use zoning laws
 - the positive spillover effects through that proximity to similar uses.



However, by the 1990s and beyond...

- ▶ The regional science literature was to develop a more explicit focus on *proximity effects*, often within the context of analyzing:
 - the role in general of **agglomeration economies** – which had been a long-standing focus in the writings of location theorists
 - the role in particular of *knowledge transfer/spillovers* and *innovation*

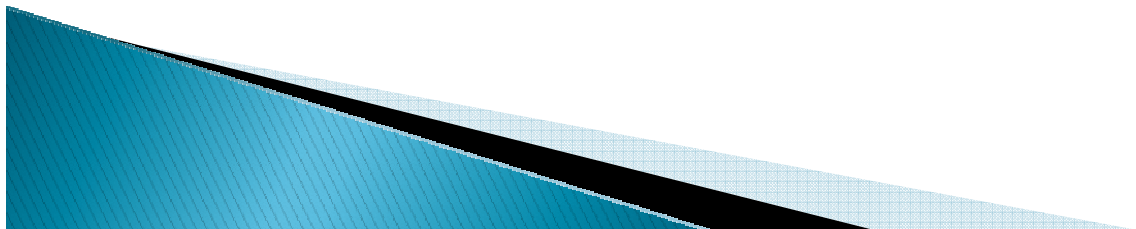
in the context of the proliferation of research investigating what has been variously referred to as the **industrial concentration/district/cluster**.

- ▶ That coincided with the emergence of the *new growth theory* (see, for example, Romer 1986, 1990; Lucas 1988; Barro 1990; Rebelo 1991; Grossman and Helpman 1991; Arthur 1994)



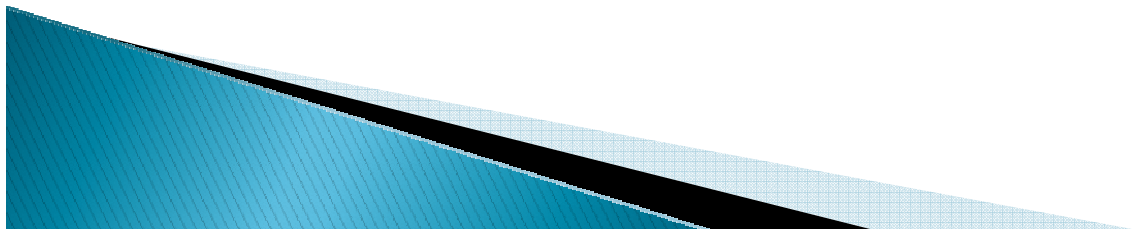
The 'new growth theory' / endogenous growth models ...

- ▶ Relaxed the assumption that technological progress is an *exogenous process*.
- ▶ The suggestion was that it is an *endogenous response* of economic actors in a competitive environment, with increasing returns in factor productivity arising out of *endogenous factors*, including:
 - innovation
 - scale economies
 - learning processes.



That coincided with...

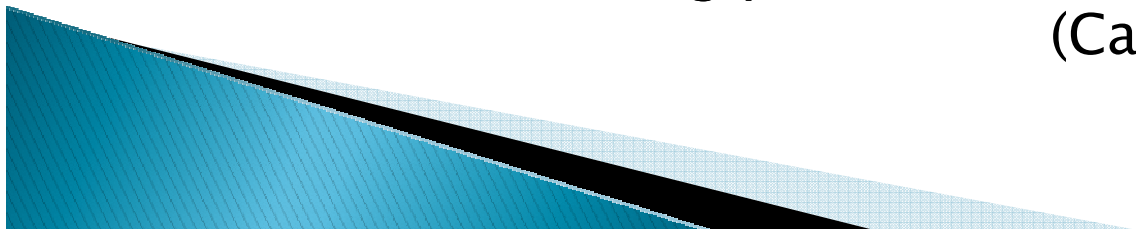
- ▶ The rapid evolution – some would say revolution – in *information and telecommunications technologies* (ICTs).
- ▶ The emergence of high-technology regions in specific locations around the world.
- ▶ The era from the 1970s of the transition from the industrial, manufacturing dominated economy to what has been variously referred to as:
 - the post-industrial society
 - the service economy
 - the knowledge society.
- ▶ Andersson (1985) also refers to this as the ‘C-society’



The endogenous determinants of increasing returns are seen as deriving from...

- ▶ *Spatial, geographic proximity among firms*, facilitating the exchange of tacit knowledge, which reflects the interest of economic geographers in explaining the concentration of innovation activities.
- ▶ *Relational proximity among firms*, which concerns interaction and cooperation among economic agents, which is the source of collective learning and socialization *viz-a-viz* the risk of innovation.
- ▶ *Institutional proximity*, which takes the form of rules, codes, and norms of behaviour – what might be termed institutional factors – facilitating cooperation among actors to develop organizational forms to support interactive learning processes.

(Capello and Nijkamp 2009)

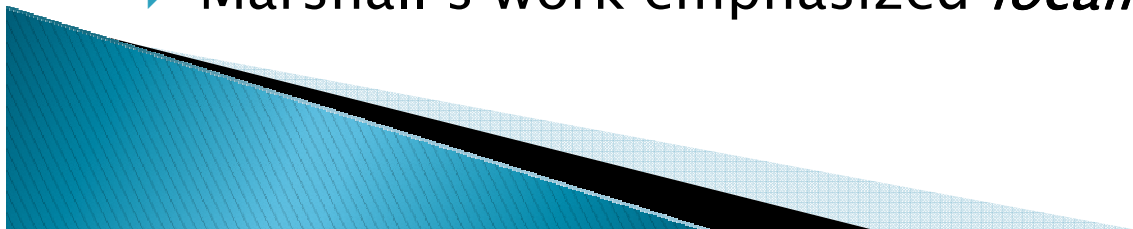


Agglomeration and agglomeration economies



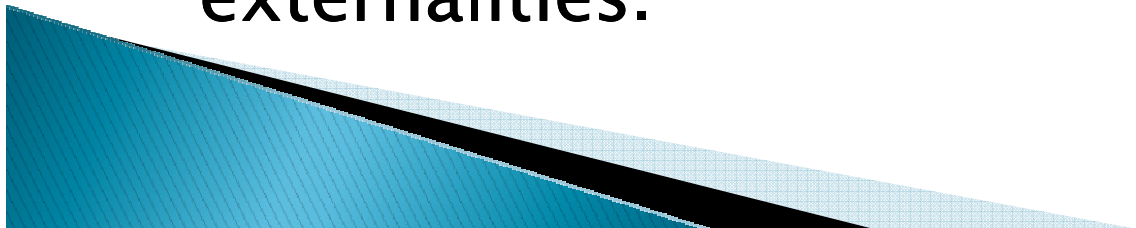
Early approaches to agglomeration economies

- ▶ Alfred Marshall (1890) emphasized the positive effects of the co-location of firms in the context of increasing economies of scale.
- ▶ He also recognized:
 - the *interaction* between internal and external economies of scale.
 - the *cumulative relationships* between internal economies of scale and the size of market outlets.
- ▶
- ▶ The *drivers* of that cumulative relationship were seen to be:
 - internal economies of scale;
 - geographic transaction costs
 - the associated demand externalities.
- ▶ Marshall's work emphasized *localization economies*.




Marshall saw...

- ▶ The positive effects arising from *agglomeration* (or *clusters* as is the term widely used more recently) as being:
 - non-traded local inputs
 - local skilled labour supply
 - information spillovers.
- ▶ *Geographic proximity* to specialized suppliers and labour supply was inferred as being pecuniary economies, while *information spillovers* were seen as being non-pecuniary externalities.

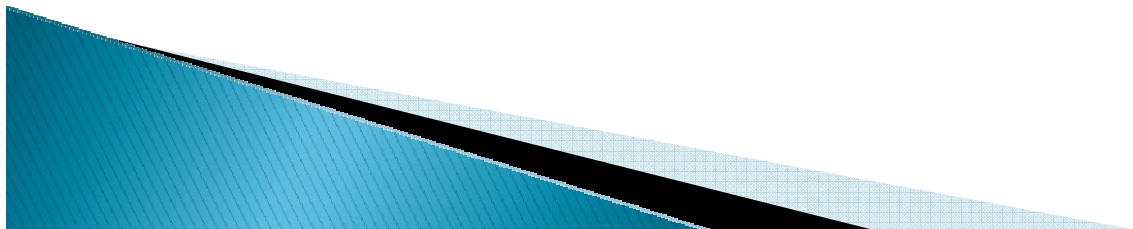


Later on Ohlin (1933) was to focus attention on...

- ▶ How the individual firm is affected by *co-location*.
 - ▶ He proposed that agglomeration economies had four origins:
 - *internal economies of scale* related to the technique of production function of a firm;
 - *localization economies* affecting the individual firm as an influence from the industry in which it belongs;
 - *urbanization economies* arising from the size of the regional economy, and are external to the industry and to firms
 - *inter-industry linkages of inputs-outputs* where proximity to suppliers of intermediate inputs can reduce the price.
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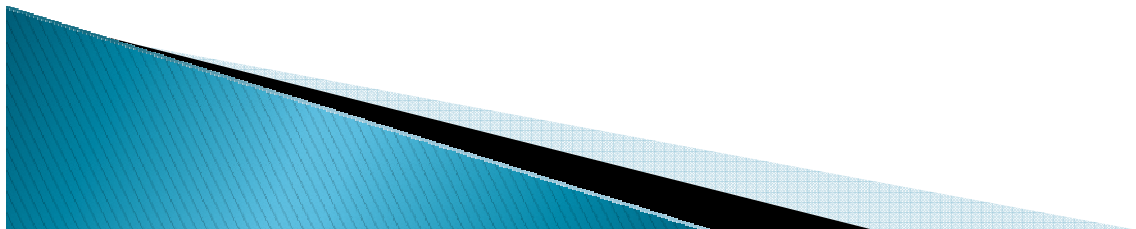
Hoover (1937; 1948)

- ▶ Provide another classification of agglomeration economies in which:
 - *internal returns to scale* are firm-specific
 - *localization economies* are industry-specific; and
 - *urbanization economies* are industry-specific for each urban region.



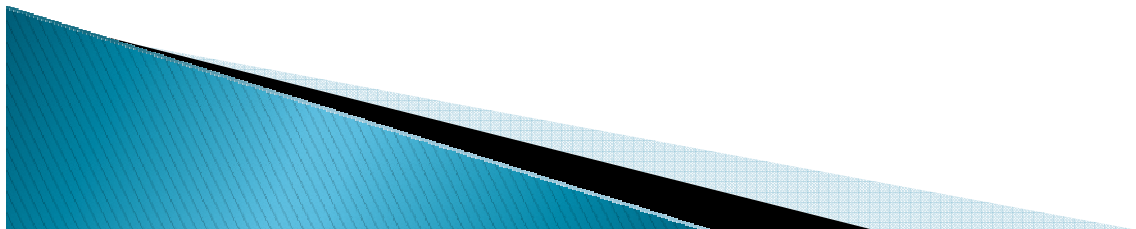
Agglomeration economies and behaviours thus encompass...

- ▶ Both horizontal (Marshallian linkages) and vertical dimensions to the relationships between firms in an industry.
- ▶ Audretsch and Aldridge (2009) say the *theory of localization* suggested that:
 - “... because geographic proximity is needed to transmit knowledge, and especially tacit knowledge, knowledge spillovers tend to be localized within a geographic region.’ (p. 202)



Developments in approaches to agglomeration economies from the 1970s (1)

- ▶ The focus by regional scientist writing on agglomeration economies became explicitly concerned with investigation externalities characterized by:
 - *knowledge spillovers between firms* in a spatially concentrated industry.
- ▶ That has been widely referred to as Marshall–Arrow–Romer (MAR) externalities.



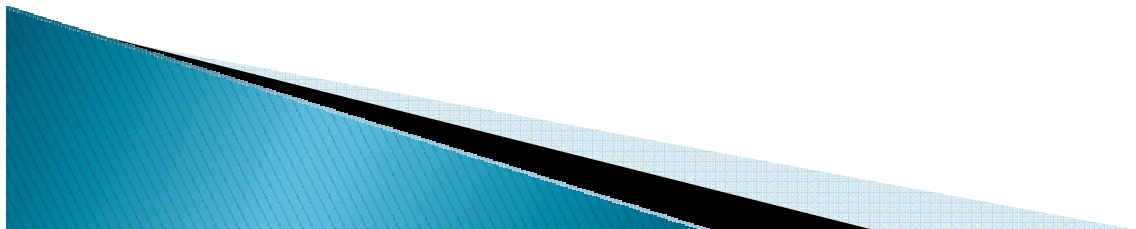
Developments in approaches to agglomeration economies from the 1970s (2)

- ▶ Later, investigation of economic and social diversity – especially in city regions – led to a focus on:
 - :
 - first cross-sectoral spillovers, known as *Jacobs externalities* (Jacobs 1966; 1969), in which diversity was seen as a key source of agglomeration economies by improving opportunities to interact, copy and modify practices and innovative behaviour; then
 - later on an intensity of competition, known as *Porter externalities* (Porter 1990), in which it was argued that knowledge spillovers in specialized, geographically concentrated industries would stimulate growth.
- ▶ Unlike the MAR theory, as McCann and Oort (2009) point out, the notion was that for firms important knowledge transfers come from outside their own industry.



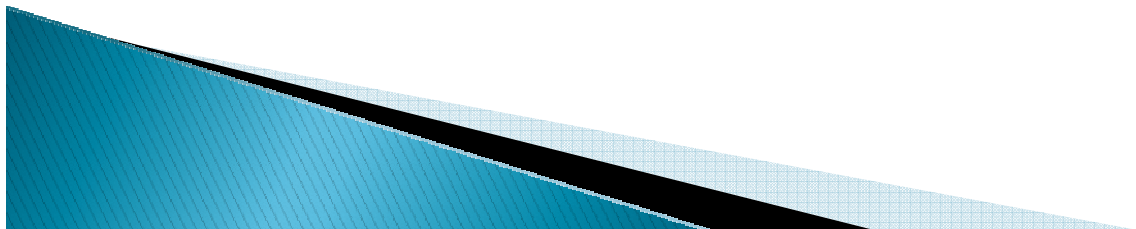
Quigley (1998) proposed that agglomeration economies had four features...

- ▶ *Scale economies*, or indivisibilities within a firm, which were the historical rationale for productivity growth in agglomerated industries;
- ▶ *Shared inputs and consumption*, encompassing Marshallian economies of localized industry;
- ▶ Potential *reductions in transaction costs*.
- ▶ The *application of the law of large numbers* to the possibility of fluctuations in the economy.



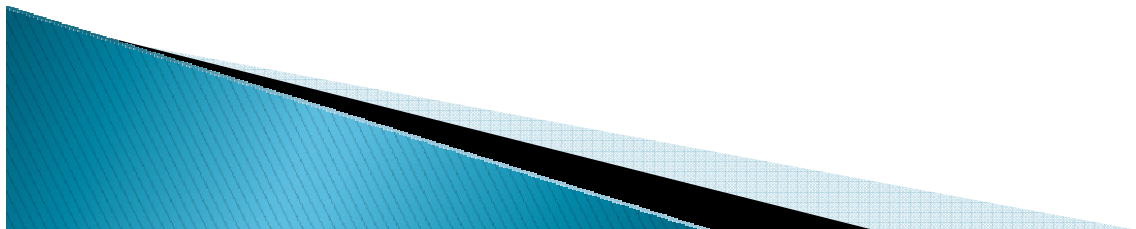
McCann and Oort (2009)

- ▶ Agglomeration economies – and especially *industrial variety* at the regional level – might be considered as:
 - “... a portfolio strategy to protect regional income from sudden asymmetric sector-specific shocks in demand.” (p. 21)
- ▶ *Industrial variety* would thus reduce regional unemployment and promote regional growth through spreading risk.



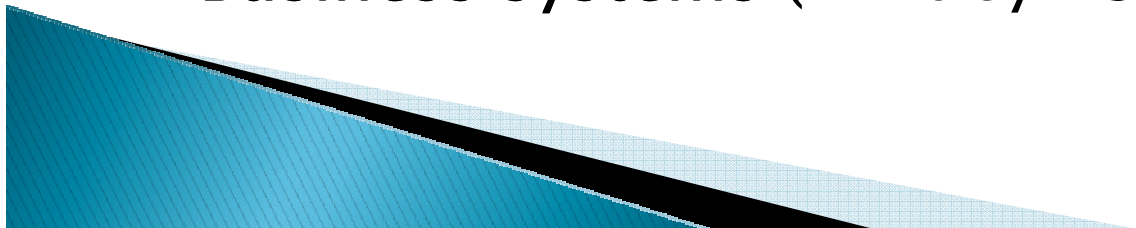
The Californian School of economic geographers...

- ▶ Focused attention in particular on *transaction costs*.
- ▶ During the late 1980s and into the 1990s, work by Scott (1995) also emphasized the structure of production in terms of a division of labour that was held functionally together by *networks* of input/output relationships



Around the same time, other researchers
were to show that that might be
manifest in...

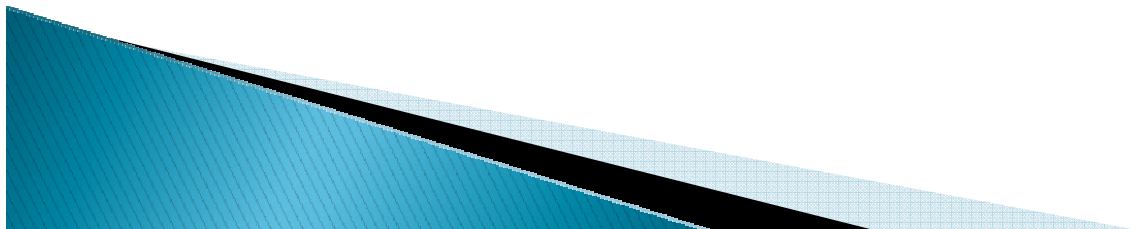
- ▶ Industrial networks (Hakansson and Snehota 1989)
- ▶ Production complexes (Dahmen 1988)
- ▶ Industry clusters (Porter 1990)
- ▶ Innovation systems (Lundvall 1992)
- ▶ Business systems (Whitley 1992).



The *new economic geography*

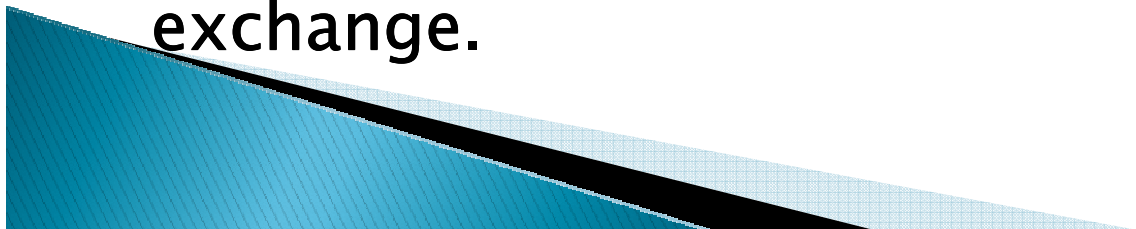
(Paul Krugman (1991))

- ▶ The *spatial clustering* that had given rise to agglomeration economies in the modern era had been the result of the interaction between:
 - economies of scale that generate *increasing returns*
 - transport costs (referred to as geographic transaction costs)
 - regional market potential.
- ▶ Krugman's notion was that there is a dynamic in the co-location of firms that generates increased market potential, thus stimulating more firms to co-locate.



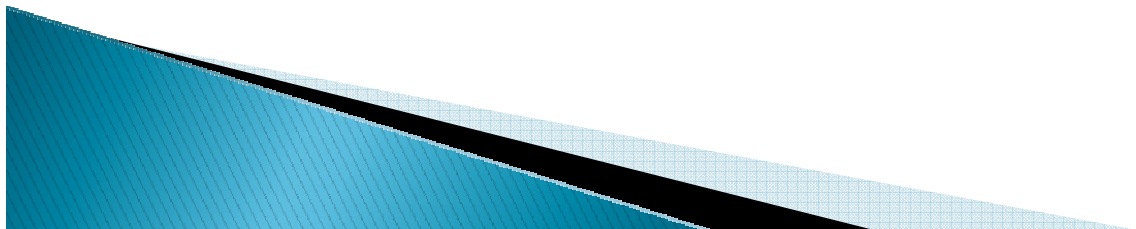
ICTs and the 'death of geography'?

- ▶ It was claimed by some that the evolution and adoption of ICTs would lead to the *death of geography*.
- ▶ But despite the potential space-mitigating effects of ICT, the empirical evidence seems to be that:
 - despite the supposed 'distance destroying' effect of these technologies, physical proximity may be essential for some forms of knowledge exchange, and in particular tacit knowledge.
- ▶ Many writers have expounded on the importance of tacit knowledge transfers through face-to-face exchange.



The overwhelming evidence is that...

- ▶ The benefits derived through the *proximity effects* of networked transfer of knowledge
 - – and especially in the context of innovation in the rise of high technology firms and their *spatial clustering* –is reinforcing the importance of agglomeration economies.



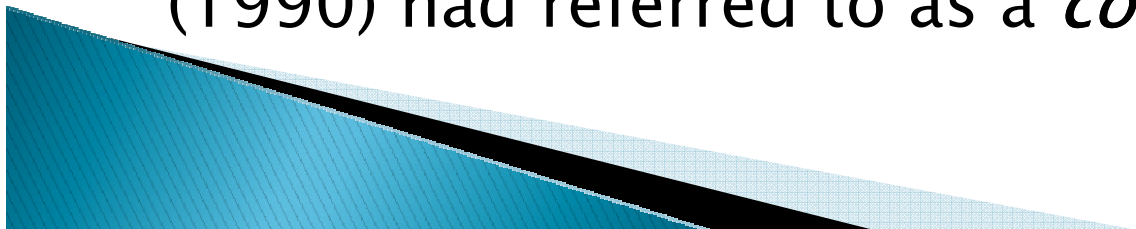
A focus on technological development, knowledge spillovers, innovation, and local milieu

- ▶ What emerged from the 1970s in the regional science literature, with its increasing emphasis on an *endogenous growth* approach, was a strong focus on:
 - technological development and
 - the diffusion of knowledge and innovation.
- ▶ The latter had its origins in the growth pole theory of Perroux (1950; 1951).
- ▶ Capello (2009: p. 39) refers to that as a conceptual leap in which 'bottom-up' processes of development at the district and local milieus were emphasized:
 - **territory** has been:
"... conceived as a system of local governance which unites a community, a set of private actors and a set of local institutions."
(p. 39)



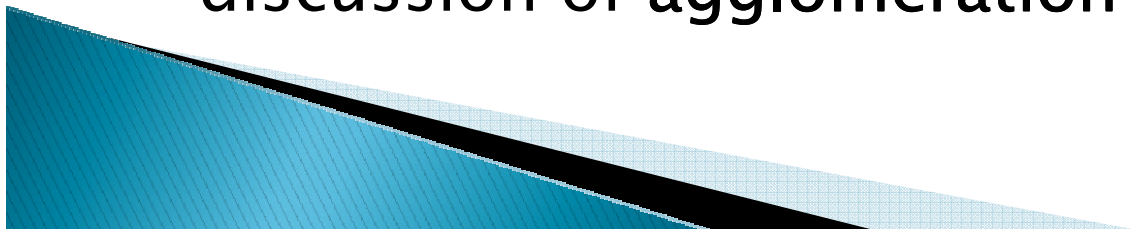
Other approaches

- ▶ Expanded on the idea of localized economies in regional economic development by proposing an *ecological view* of regions based on:
 - knowledge generation and spread in industrial clusters in which
 - collective benchmarking drives firms to stay ahead of stay ahead of the game and their competitors.
- ▶ Saxenian (1994) had said this was essential for innovation in the context of the development of ICT clusters (as in Silicon Valley) with firms in close proximity.
- ▶ That created a *regional advantage* – what Porter (1990) had referred to as a *competitive advantage*.



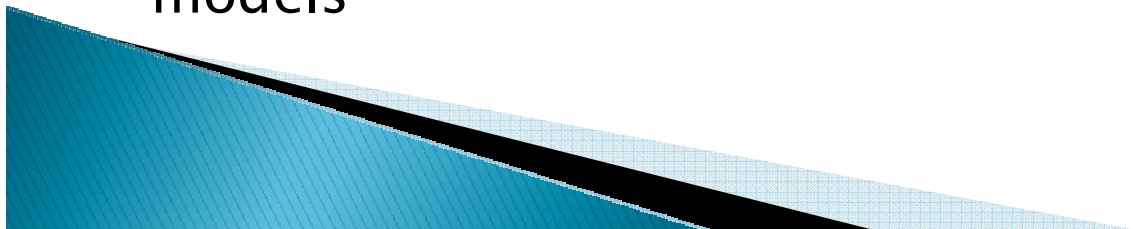
Summary

- ▶ There was thus an increasing concern among researchers to focus in particular on *intangible knowledge spillovers* and on *innovation* in regional growth.
- ▶ A fundamental feature of those approaches to looking at the role of agglomeration economies was, in fact, the notion of *proximity*.
- ▶ *Proximity relations* had explicitly emerged in the discussion of agglomeration forces.




But there are measurement issues

- ▶ These *intangible knowledge spillovers* can only be measured indirectly.
- ▶ From the mid to late 1970s to around 1990, the empirical investigation of agglomeration economies tended to focus mainly on estimating production functions to explain the roles of *urbanization economies* and *localization economies*.
- ▶ Since then there has been more of a focus on *measuring agglomeration* using a concentration index of economic activity and a reduced form equation of employment and productivity.
- ▶ Measuring those effects has mainly been through *indirect measures*, such as using population or population density as a surrogate for urbanization, although more recently spatial lag variables are being incorporated into spatial econometric models



Meta-data analysis of the literature on agglomeration, innovation and regional growth (de Groot , Poot & Smit 2009)

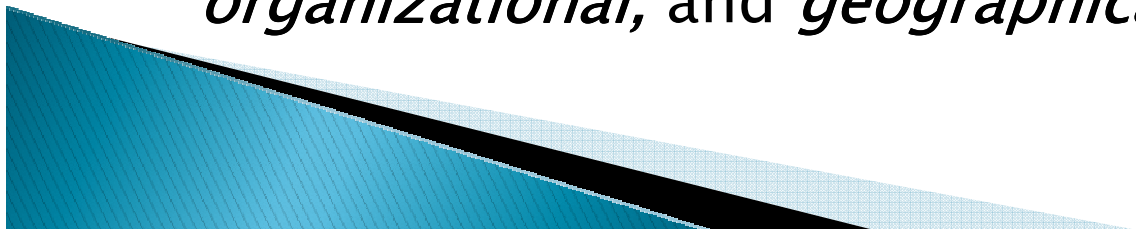
- ▶ Evidence of strong indications for sectoral, temporal and spatial heterogeneity of the effects of specialization, competition and diversity on urban growth, especially related to high-tech sectors.
 - ▶ Typically heterogeneity remains unnoticed.
 - ▶ Jacobs externalities are important.
 - ▶ The level of regional aggregation matters especially regarding the strength with which agglomeration forces operate.
 - ▶ Especially for specialization, population density has a positive influence.
 - ▶ Control variables in modelling including investment in capital stock and education have substantial effects, and that similar effects might be expected from social capital and trust, risk-taking entrepreneurship, infrastructure, presence of multi-national firms, R&D policies and institutions.
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The meanings of proximity



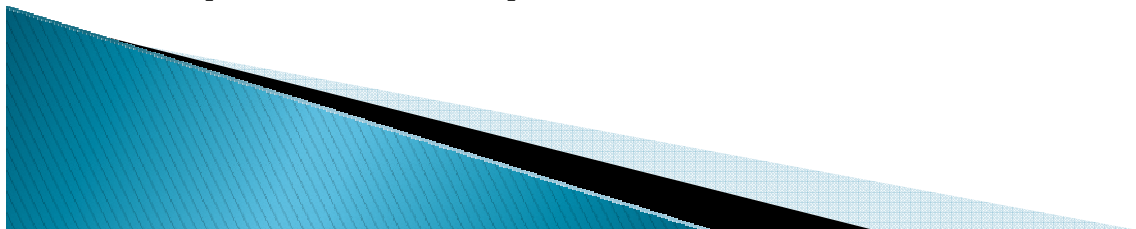
Going to the Dictionary...

- ▶ *The Australian Oxford Dictionary*, 2nd edition, Oxford University Press, Melbourne, 2004) definition of 'proximity' is:
 - "... nearness in space, time, etc." (as a noun).
- ▶ *Webster's New World Thesaurus*:
 - "... contiguity, concurrence, closeness (see nearness)".
- ▶ The term *proximity* has been used in a wide variety of contexts in the regional science literature.
- ▶ Considerable reference to *institutional*, *organizational*, and *geographical proximity*.



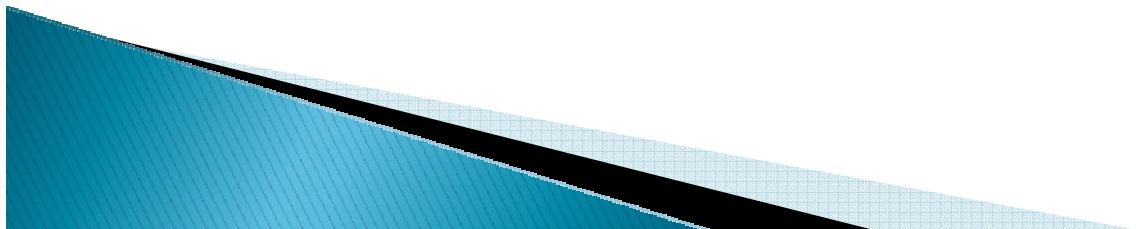
Proximity relations and knowledge spillovers

- ▶ *Proximity relations* are primarily about knowledge spillovers or transfers in the context of *agglomeration economies*.
- ▶ There are different *types of proximities* that develop between firms and organizations.
- ▶ These range from *spatial* and *structural proximity* to *relational proximities* that include *technological*, *social* and *cultural proximity*.



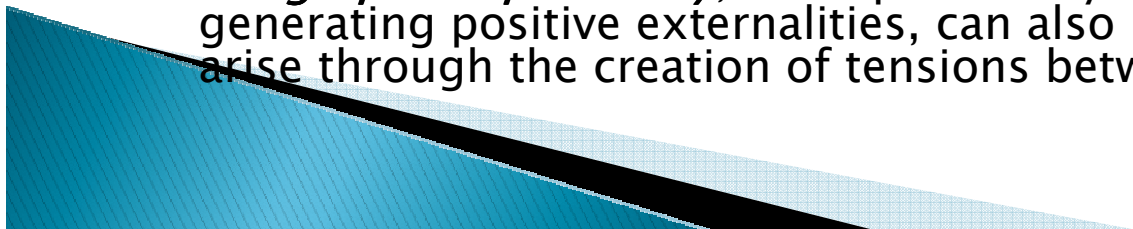
Differentiating between geographical proximity and organizational proximity

- ▶ Investigating *proximity* in the context of localization, Torre and Rallet (2005) have explicitly differentiated between *geographical proximity* and *organizational proximity*.
- ▶ The intersection between *geographical* and *organizational proximity* provides a grid of analysis of different types of geographic organizations.



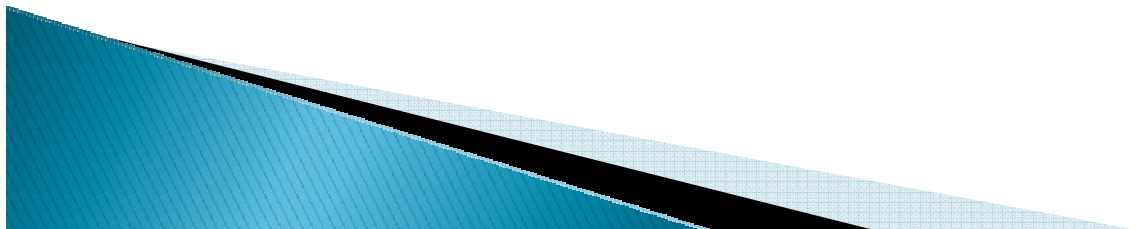
Torre and Rallet (2005: pp. 4–7) make the following observations

- ▶ *Organizational proximity* is founded on organization and not on the territory *per se*. It is able to cross regional and national boundaries.
- ▶ *Geographical proximity* may be strongly or weakly organized.
- ▶ *Organizational proximity* is *not* in essence geographical.
- ▶ *Geographical proximity* facilitates interactions but it does not necessarily facilitate co-ordination.
- ▶ The co-localization of economic actors does not necessarily infer direct relations.
- ▶ *Organized proximity* can be transformed into geographical proximity, if only temporarily.
- ▶ *Organizational proximity* can offer a powerful mechanism for co-ordination, particularly for big corporations.
- ▶ *Geographical proximity*, while potentially facilitating interaction and generating positive externalities, can also have negative effects arising through the creation of tensions between actors



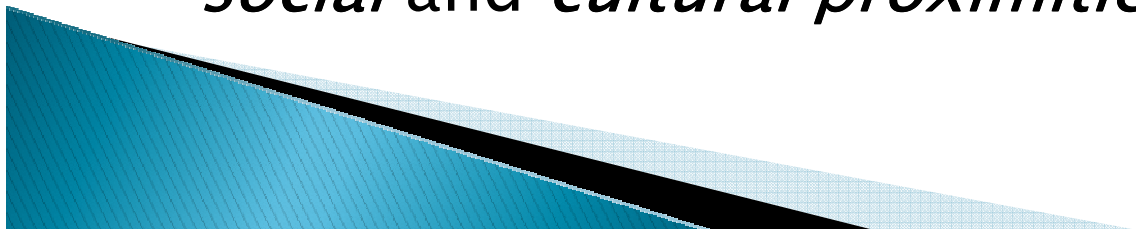
Structural proximity and geographic or spatial proximity

- ▶ The need for physical or *geographic proximity* among firms has been the type of proximity stressed by location theorists.
- ▶ *Structural proximity* refers to actors belonging to the same area of relation (firm, network, etc.) in which different kinds of interaction take place (e.g. cooperation or circulation of knowledge).
- ▶
- ▶ *Spatial proximity* refers to spatial distance between actors:
 - this has a significant influence on the transmission of tacit knowledge.



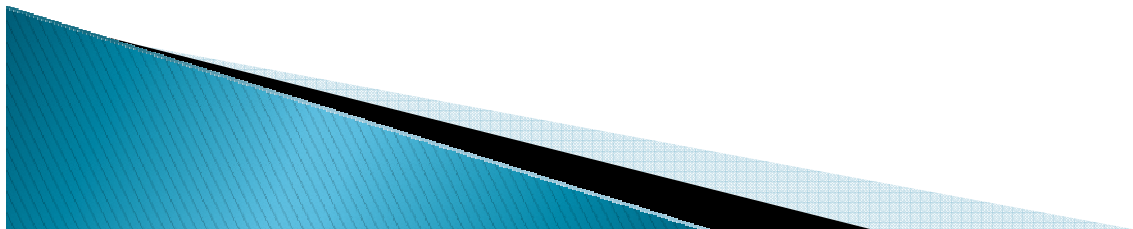
But...

- ▶ *Structural* and *spatial proximity* are not a measurement for a certain amount of shared knowledge between actors as a basis for interaction.
- ▶ Rather, as stated by Menzel (2005: p. 419), they are the:
 - “framework for interaction regardless of the shared knowledge.”
- ▶ In that respect they differ from *technological*, *social* and *cultural proximities*.



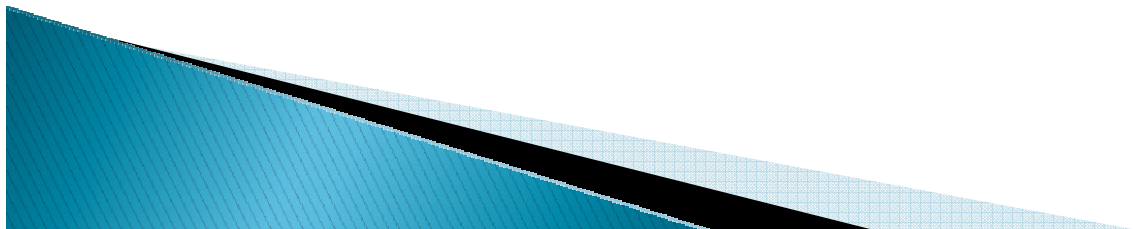
Relational proximity

- ▶ Playing an important role improving the ease by which knowledge is transferred is what may be termed *relational proximity* (Capello 2001).
- ▶ That encompasses the relations developed by a networked integration of firms through what Andersson and Karlsson (2006: p. 64) have referred to as “socio-cultural homogeneity.”
- ▶ It is basically about *shared knowledge* through *networks* that engender trust and common experience and values (Maskell and Malmberg 1999).



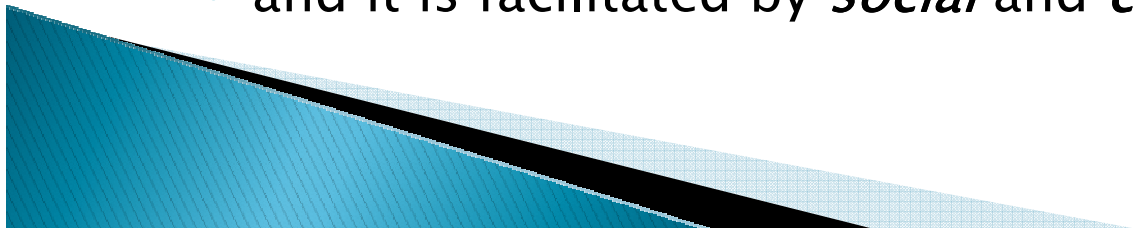
A number of explicit relational proximities enhance knowledge transfer

- ▶ *Organizational proximity*, *social proximity* and *cultural proximity* have been stressed by Gertler (1995), Nonaka (1994) and Lam (1998), and others.
- ▶ *Social proximity* involves “continuous contact and common experiences” (Menzel 2005: p. 418).
- ▶ But *cultural proximity* does not necessarily need direct contact, it being built on mutual rules, conventions, ideologies, points of view and traditions (Nonaka and Takeuchi 1995).



Technological proximity

- ▶ Refers to:
 - “the measurement of the shared knowledge directly aimed at, and exploited for, the generation of novelty. Shared technological knowledge includes for example knowledge of techniques, technologies and markets.” (Menzel 2005)
- ▶ *Technological proximity* between firms is seen to be part of the definition of a regional industrial cluster.
- ▶ The terms *electronic proximity* and *virtual proximity* have also been used in this context.
- ▶ However, it is important to note that:
 - the *transfer of knowledge* is independent from *technological proximity*,
 - and it is facilitated by *social* and *cultural proximity*.



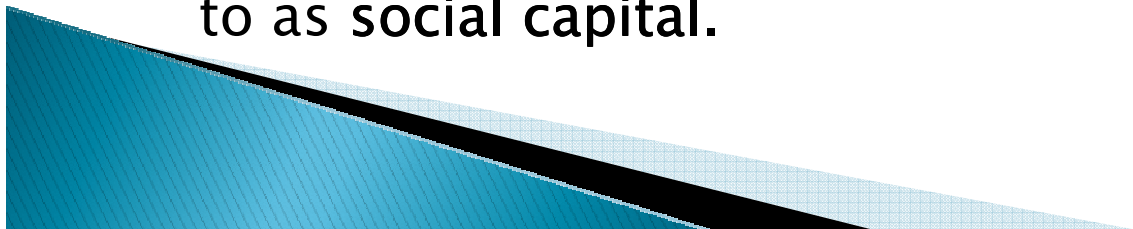
Structural proximity may...

- ▶ Coincide with *social* and *cultural proximity*.
- ▶ In *cultural proximity* the actors belong to the same organization of network.
- ▶ For *social proximity*, *structural proximity* facilitates continuous contacts, thus enhancing exchange among actors.
- ▶ Thus, the reinforcing effect of *structural proximity* can facilitate knowledge flows within existing relations.



A new theory of location: ecology of entrepreneurship and proximal capital

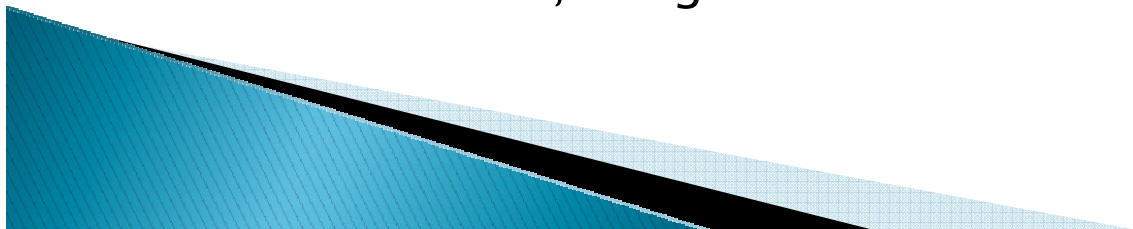
- ▶ Related, but not explicitly, to the role of *relational proximities* is a new theory of location embedded in the ecology of entrepreneurship which places an emphasis on what may be called *cognitive proximity* and which has been noted as representing *proximal capital*.
- ▶ Suraz-Villa (2004) has referred to the rise of networks of firms that:
 - become **embedded** in a **local culture** and economy, anchoring [firms] in intangible ways that may become difficult to uproot". (p. 98)
- ▶ That is akin to what we might describe as a *cognitive proximity*.
- ▶ It related to trust, which is based on a community of good-will of untraded assets, the basis of what is referred to as **social capital**.



An emerging literature in Regional Science where...

- ▶ The focus is more explicitly placed *per se* on *proximity factors*.
- ▶ In part this has been inspired by the so-called French School of proximity which has been developing theoretical insights and investigations into the meanings of proximity processes.

(see, for example, the contributions of Pecqueur and Zimmerman 2004; Torre and Rallet 2005; Bathelt 2006; Carrincazeaux, Lung and Vincente 2008; Torre 2008)



Any discussion of
proximity effects needs to
pay explicit attention to the
» literature on
industrial clusters

Clusters

- ▶ Another term for agglomeration?
- ▶ Certainly *industrial clusters* are a product of agglomeration economies.
- ▶ But with proliferation of the literature on clusters, the operative notion is interaction, which takes place locally or regionally.
- ▶ However, *clustering* can also take place inter-regionally (that is, *localized*) , nationally, and internationally.

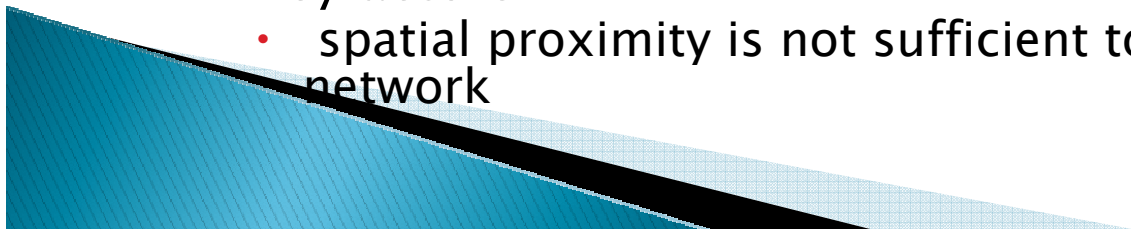


A transactions costs approach

(McCann and Arita 2004)

▶ A three-fold typology:

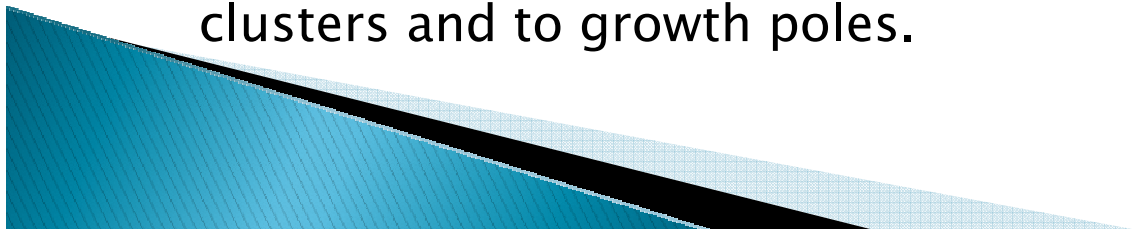
- *The pure agglomeration*, where inter-firm relations are inherently transient and fragmented with little or no market power:
 - are open clusters, and they best represent the Marshallian model of agglomeration.
- *The industrial complex*, characterized by long-term stable and predictable relations among firms, common in industries like steel and chemicals
 - are akin to the type of spatial cluster discussed in classical location theory
 - there is restricted access
- *The social network cluster*, associated with the work of Granovetter (1973), where mutual trust relations between key actors:
 - spatial proximity is not sufficient to acquire access to the network



Clusters, complexes, districts, growth poles, networks

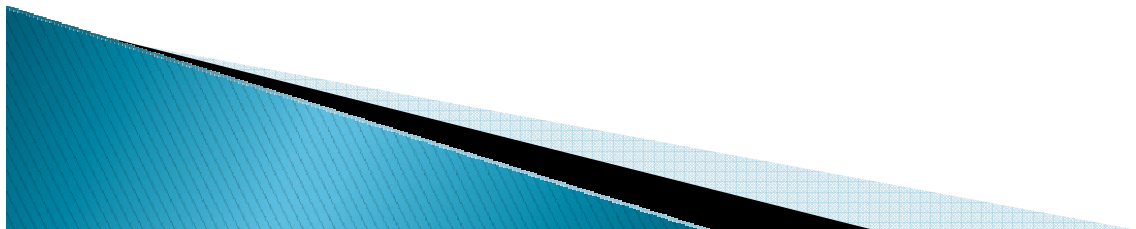
Five related concepts are:

- industrial *clusters*;
 - industrial complexes;
 - industrial *districts*;
 - *growth centres/poles*; and
 - *inter-firm networks*.
-
- ▶ The first four concepts have strong similarity, especially in the way they are used to define a spatial boundary.
 - ▶ The *industrial complex* and *industrial district* are very similar with their focus on localization economies and diseconomies.
 - ▶ Those *industrial cluster* concepts are all closely linked to Perroux's (1951) *growth centre/pole concept*, both being bases on the need for urbanization economies.
 - ▶ The *inter-firm network* notion is linked to both industrial clusters and to growth poles.



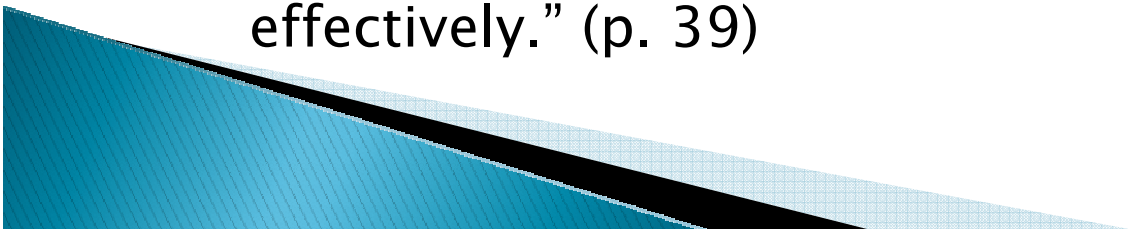
Inter-firm networks

- ▶ Locke's (1995) three-fold typology:
 - hierarchical
 - polarized
 - polycentric.
- ▶ These differ in regard to inter-group relations, patterns of association, and linkage.
- ▶ Firms do network across geographic, social and political boundaries, aided by the diffusion and adoption of ICTs.
- ▶ The ICT revolution had enabled firms to develop national and international networks that sometimes may assist and at other times hamper *firm mobility* and *regional economic development*.



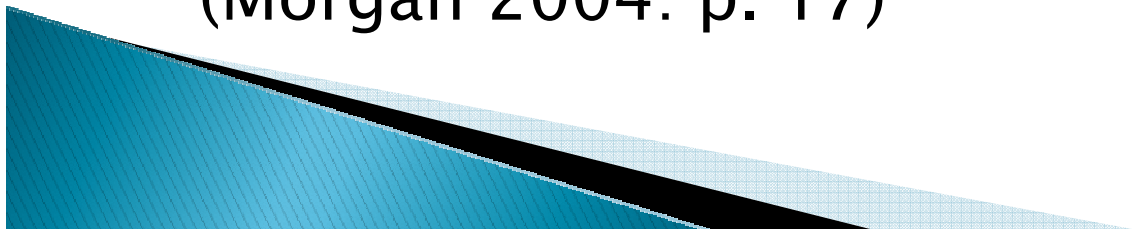
Polenske (2006) has suggested ...

- ▶ There is a need for more research to determine::
 - (1) whether industrial clusters, industrial districts, or inter-firm networks operate most efficiently in terms of agglomeration economies, especially in terms of reducing the average cost to the individual firm;
 - (2) the relationship among distance, regional boundaries, and clusters/districts/networks for different types of interchange; and
 - (3) the role of networking in helping clusters to function effectively.” (p. 39)



Porter's (1998) simple notion of a *cluster* as being a...

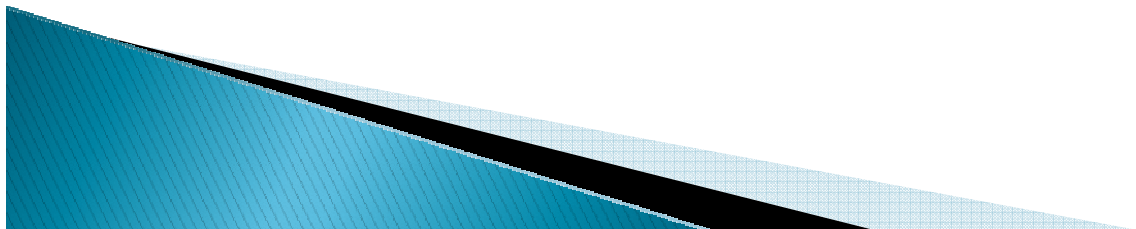
- ▶ “Geographic concentration of interconnected companies and institutions in a particular field.” (p. 78)
- ▶ It incorporates:
 - “... governmental and other institutions ... [providing] specialized education and training, information, research, and technical support.” (p. 78)
- ▶ Clusters occur across national, state, and metropolitan economies.
- ▶ But there is no such thing as a standard cluster (Morgan 2004: p. 17)



Learning regions and regional innovation systems

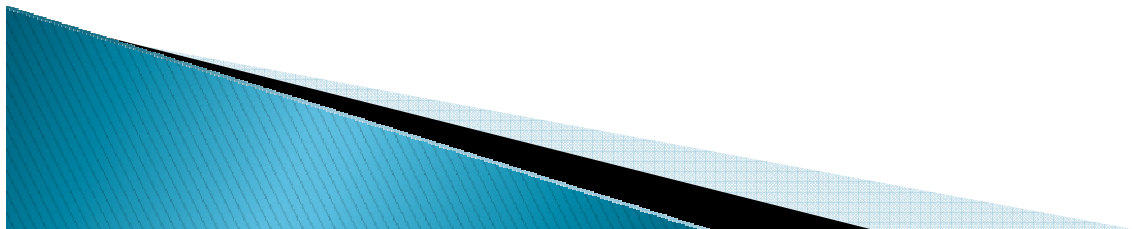


- ▶ Related to the work on industrial clusters, and in particular those whose formation has been driven by ICTs, there has emerged a considerable literature on what has been referred to as *learning regions* and *regional innovation systems*.
- ▶ This has particular significance with respect to *relational proximities*.

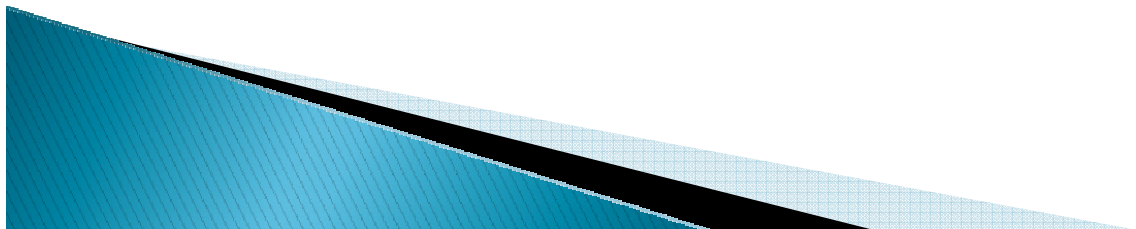


Regional learning

- ▶ A proliferation of terms
 - learning regions
 - learning organizations
 - learning systems
 - development coalitions', etc.
- ▶ Nonetheless, the concept has captured the attention of many researchers in regional economic development.

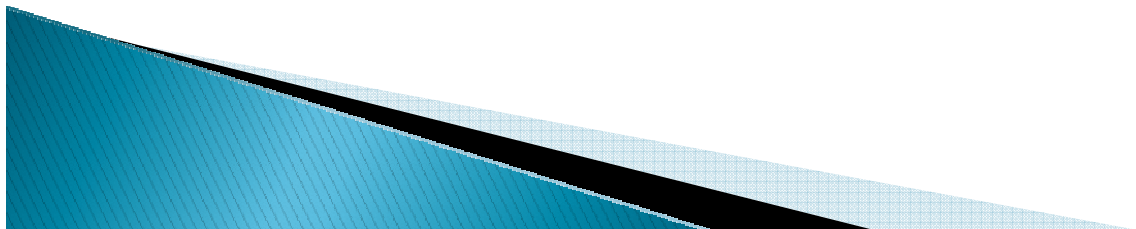


- ▶ The explicit focus on the role of *innovation* in urban and regional development research in regional science arose out of the interest in the role played by agglomeration economies in fostering a *localized learning processes* within a regional economy.
- ▶ Those localized net benefits are seen to more than compensate for negative externality costs associated with industrial clustering, such as congestion.



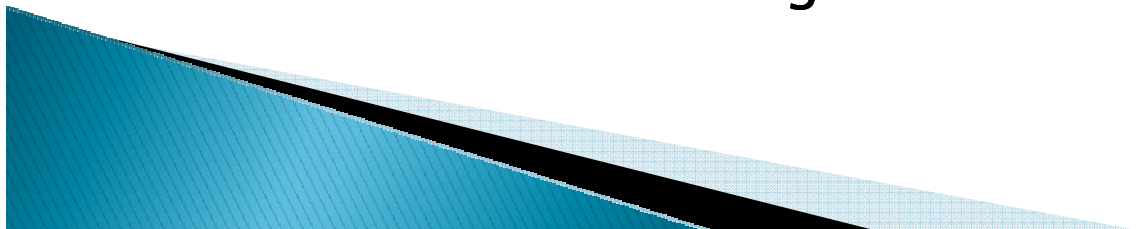
The *learning region* concept

- ▶ Had its roots in the *flexible production* and *flexible specialization* literature.
- ▶ The notion is that the *accumulation of formal and informal knowledge* enhances economic competitiveness, especially through the roles of *proximity* in supplying informally-constrained assets.
- ▶ The *learning region* thus has the capacity to:
 - generate
 - absorb
 - transformknowledge and information, and in addition to:
 - *transform knowledge into learning.*



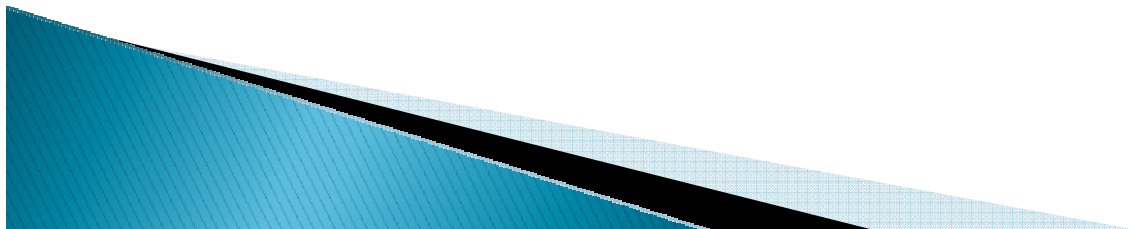
In the *learning region* literature...

- ▶ There has been a considerable focus on ICT adoption and use.
- ▶ In the context of the *theory of the milieu innovateur*, high *relational proximity* between economic actors and strong economic interactions are hypothesized to exist.
- ▶ There is an explicit focus on *cultural proximity* within the context of what Capello and Spairani (2004: p. 199) refer to as:
 - “... the role of intangible territorial assets.” (p. 218)



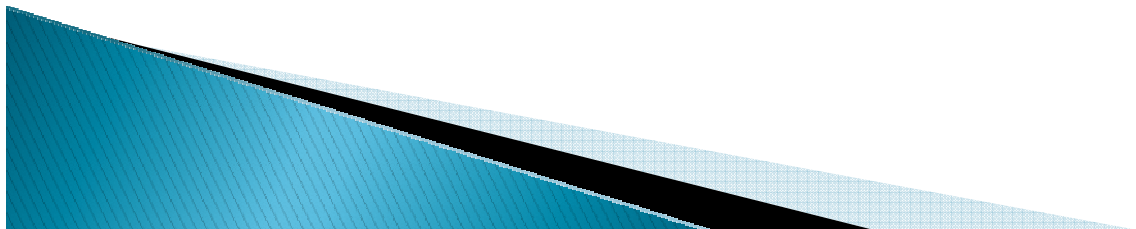
Polenske (2004) has noted that...

- ▶ The *learning region* is one in which industry, community, government and educational institutions all work to help the development of the region.
- ▶ Thus it will be:
 - “... characterized by a set of horizontal relationships among the actors.” (p. 42)



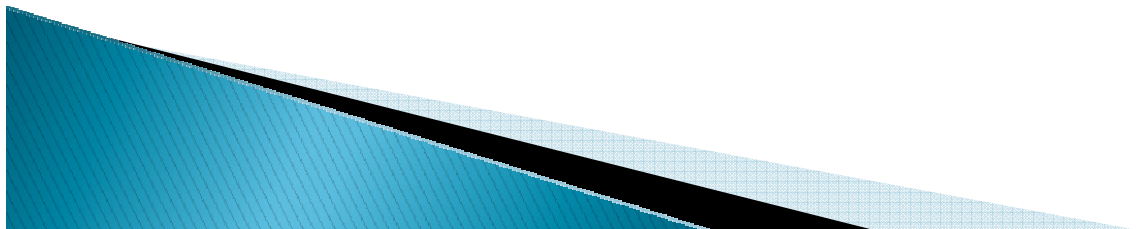
Rutten and Boekema (2004) have
pointed out that...

“... the literature argues that spatial proximity facilitates the exchange of embedded knowledge through a mechanism that was referred to as ‘the geography of knowledge.’”
(p. 192)



Regional innovation systems

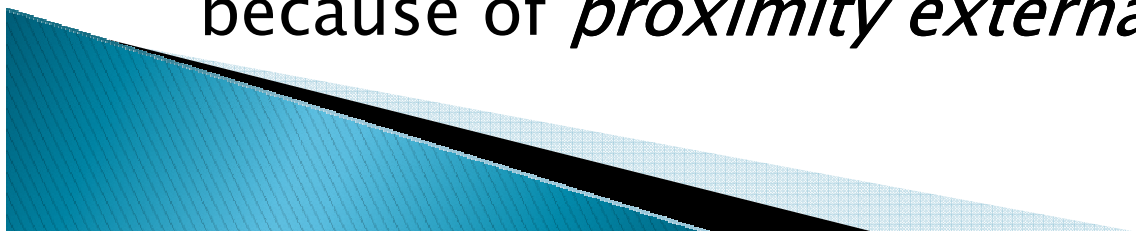
- ▶ Related to the learning region concept has been the somewhat parallel emergence of the notion of *regional innovation systems*.
- ▶ The origins go back to Schumpeter (1934) and his classic statement that innovation was a result of ‘novelty by combination’.



Nordic regional scientists were to write on creativity as the basis of knowledge endowment in regions as a non-material infrastructure

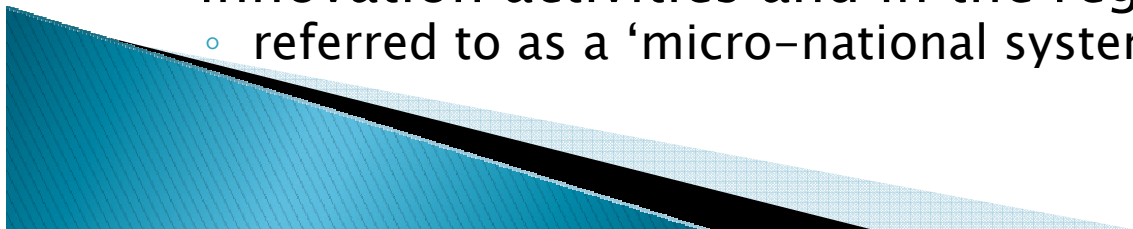
- ▶ Anderson's (1985) suggested that creative processes were stimulated by:
 - tolerant attitudes to experimentation;
 - versatile composition of competencies;
 - versatile basis for science, entrepreneurship and culture
 - arenas for spontaneous and informal contact
 - many-sided social and physical milieu
 - perceptions that needs are greater than resources
 - a flexible social and economic organization.

- ▶ Johansson and Loof (2006) have said that is because of *proximity externalities*.



Asheim and Isaken (1996; 2002) have distinguished between three broad *types of regional innovation systems*.

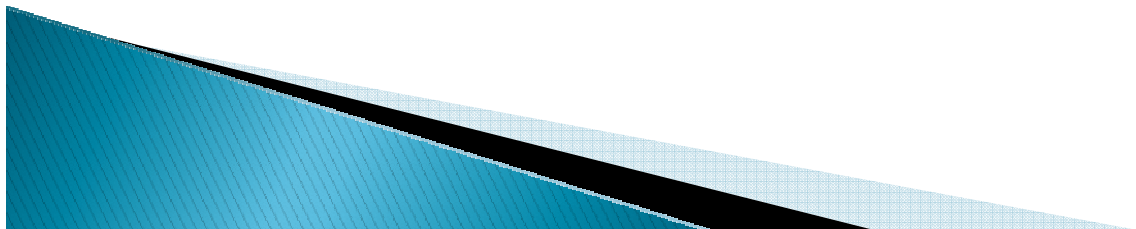
- ▶ Territorially embedded regional innovation networks, in which both *geographic* and *relational proximity* is the stimulus for the innovation activities of firms, and interaction with knowledge providers and their presence tends to be modest.
- ▶ Regional networked innovation systems, which are an extension of the above, but where connections with R&D and educational institutions and the network in which that occurs is more planned and systemic and maintained by the regional institutional structures that support an industrial cluster.
- ▶ Regionalized national innovation systems, which are different in that they involve outside actors in both firm innovation activities and in the region as a whole:
 - referred to as a 'micro-national system'



Institutional factors

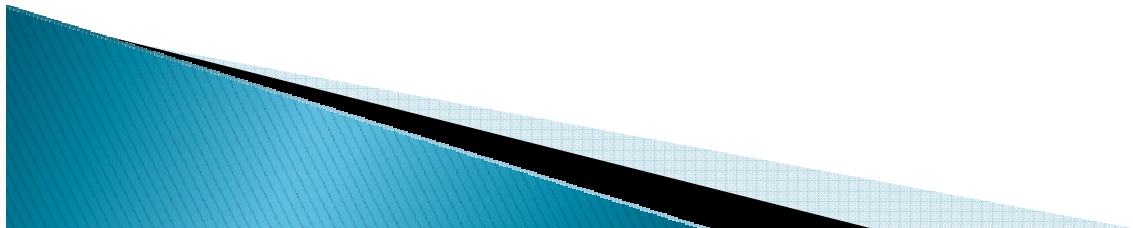


- ▶ *Institutional factors* also may play a significant endogenous role in the context of considering *proximity* as a force that engenders the transfer of tacit knowledge.
- ▶ That results in spatial concentrations of industry specializations and the emergence of industrial clusters that act as forces engendering endogenous regional development.



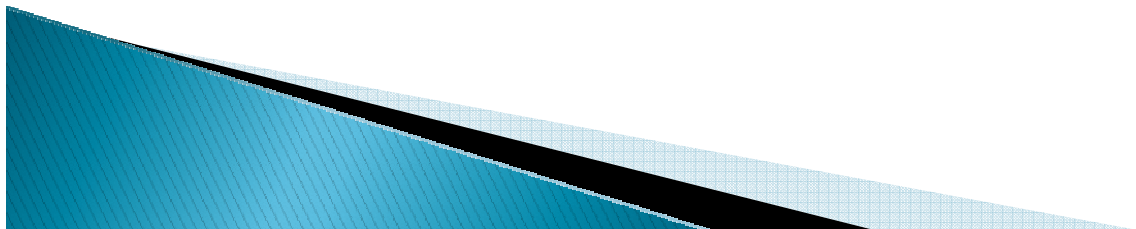
The importance of institutions (1)

- ▶ Amin and Thrift (1994) have written on the role of *institutional thickness*.
- ▶ Storper (1997) has referred to the *role of the quality of institutions*, local conventions of communication and interaction in facilitating the face-to-face exchange of tacit knowledge in local or regional development.
- ▶ Maskell and Malmberg (1999) have expanded on the notion that *proximity matters* by focusing on the “institutional embodiment of tacit knowledge.”
- ▶ The role of *entrepreneurial* innovation in converting into new business opportunities knowledge obtained through social interaction has been emphasized in the context of institutions.



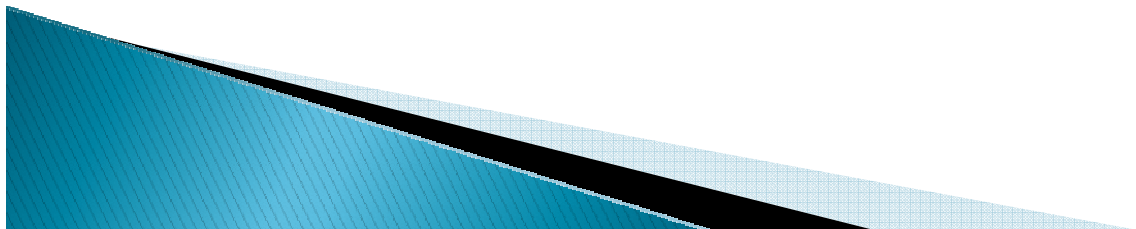
The importance of institutions (2)

- ▶ Florida and Kenny (1988) have suggested that *social structures of innovation* explain geographic concentrations of technology entrepreneurs.
- ▶ Increased *internationalization* – which is often manifest in the emergence of mega-metropolitan regions with their strong agglomeration economies and spatial concentrations of industry district specializations – may well lead to an increased embeddedness and dependence on specific institutions at the local or regional level



It certainly seems to be the case that...

- ▶ Leading urban regions are the concentrations of knowledge – human resources, universities and R&D institutes – and knowledge constitutes the principal ‘input’ in the digital economy.
- ▶ Such regions are, perhaps, the prime example of the *learning region*, enhanced by thick institutional structures, and displaying all the attributes of having an *embedded regional innovation system*.

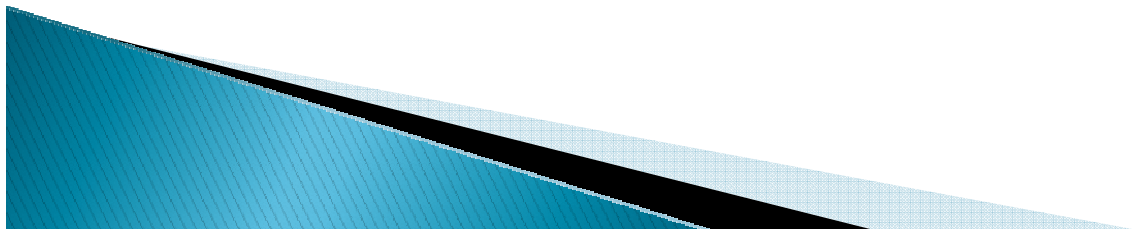


Some policy implications



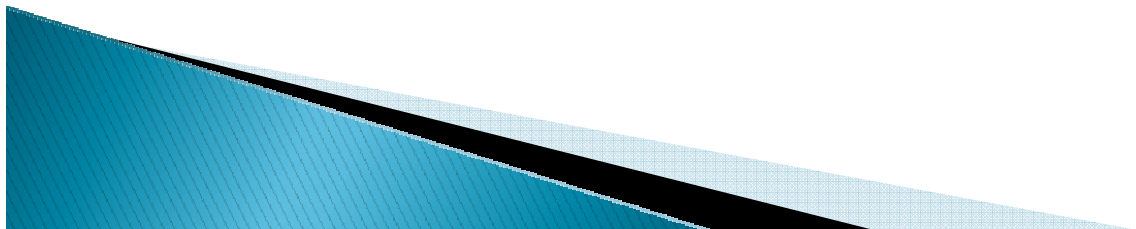
Shifting policy focus (1)

- ▶ Inevitably the focus of regional development policy approaches have changed during the era since the 1970s when there has been an increasing emphasis being places on the roles of *endogenous processes*.
- ▶ In the advanced economies of the industrial era, with its *Keynesian legacy*, typically regional or local economic development policy used to be largely: firm-centred, incentive-based, state-driven, and standardized:
 - policies often sought to stimulate demand in poorly performing regions through income redistribution and welfare policies that included direct and indirect incentives to firms to locate in those regions.



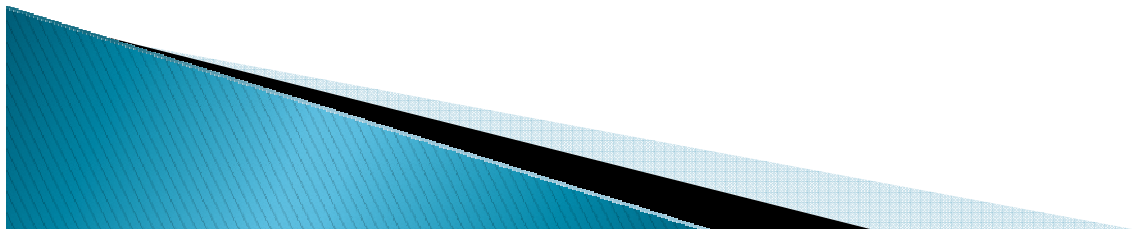
Shifting policy focus (2)

- ▶ The *neo-liberal policy approaches* that became important since the 1980s saw increasing faith being placed in market mechanisms that sought to stimulate entrepreneurship through a variety of small-firm policies and to deregulate markets, notably the cost of labour and capital.
- ▶ That shift generally coincided with two fundamental systematic changes, namely:
 - the shift to a *knowledge-based economy*, and
 - the high spatial concentration of knowledge industries.




Shifting policy focus (3)

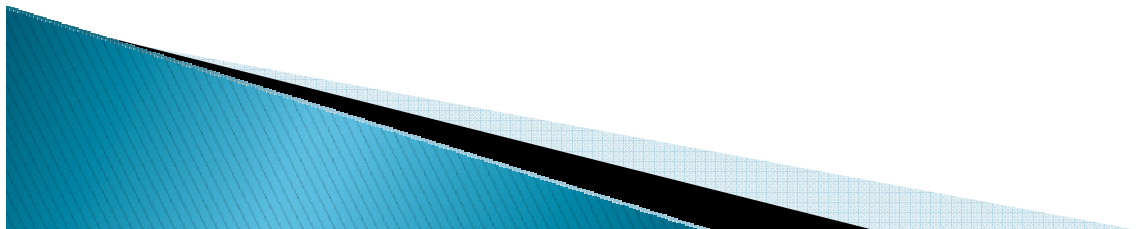
- ▶ As knowledge-based, information-intensive industries became more important as the basis of much economic activity in the post-industrial era, so too it seems does the spatial concentration of economic activity, particularly in large metropolitan regions, thus facilitating *knowledge spillovers* enhancing *innovation*.
- ▶ *Proximity relations* are explicit externalities that process.



Shifting policy focus (4)

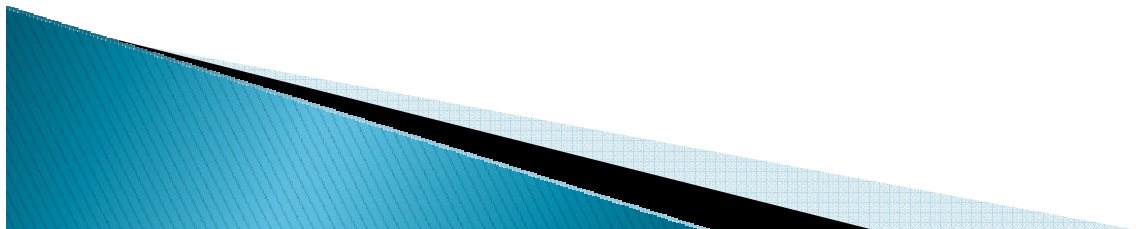
- ▶ Amin (1998) says an alternative policy approach has emerged designed to enhance economic competitiveness by:
 - “... mobilising the endogenous potential of the [lagging regions] through efforts to upgrade the local supply-side infrastructure for entrepreneurship.” (p. 3)
 - ▶ The idea has been to:
 - “... unlock the ‘wealth of regions’ as the prime source of development and renewal.” (p.3)
 - ▶ That reflects the notions discussed in this paper that *endogenous factors*, represented through agglomeration economies involving *proximity relations* enhancing knowledge spillovers, innovation, and entrepreneurship, are embedded in economic and social *networks* and *collective influences* that enhance the development of a *learning region*.
 - ▶ Industrial clusters have been seen at representing the situational context for the operation of those interactions and processes.
- 

- ▶ Regional economic development strategy needs to be based on assets that include both:
 - tangible assets (for example, physical infrastructure) and
 - intangible assets (for example, skills and knowledge), including institutional factors.



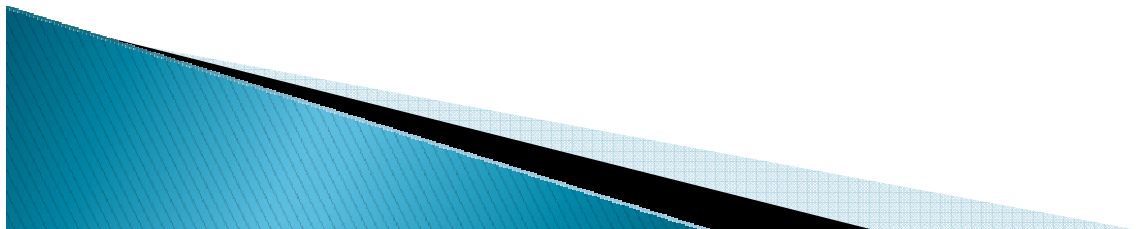
Recognizing the importance of agglomeration economies and their complexity

- ▶ *Agglomeration economies* remain a dominant force in regional economic development and that has implications for regional policy formulation and implementation.
- ▶ And it is important that regional policy recognizes the complexity of the agglomeration issue.
- ▶ Polenske (2001) has emphasized the role played by *economies of scale* and by *innovation* in making regions competitive.



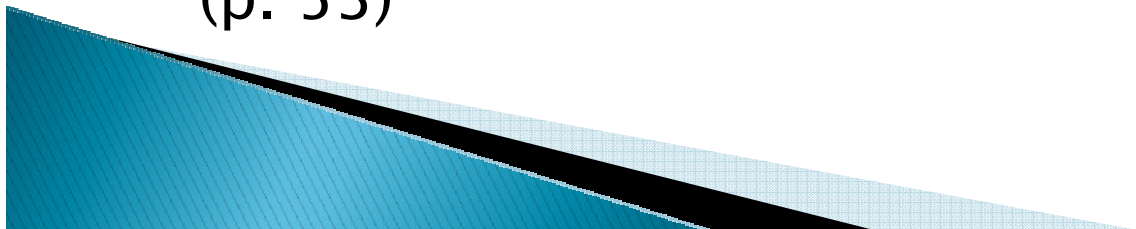
Cluster policies

- ▶ There has been a proliferation of regional policy seeking to *create industrial clusters*.
- ▶ In the European policy context in particular, this is seen in the degree to which regional or local policies have been aimed at supporting clusters and the economies of association within clusters.



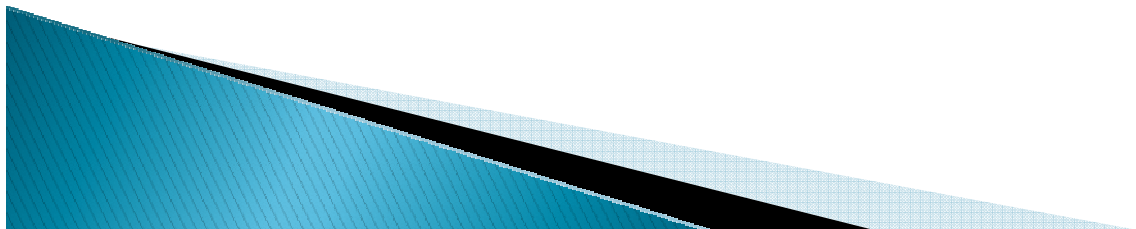
However, Gordon and McCann (2005) have warned that...

- ▶ “... there is no reason to suppose that innovation is systematically maximized in any particular type of industrial cluster.” (p. 52)
- ▶ “... the intensity of formal information exchanges is relatively insensitive to geography.” (p. 52)
- ▶ “... information spillovers often operate over regional, inter-regional and international spaces.” (p. 52)
- ▶ “... pure agglomeration, industrial complexes and firm isolation may all produce comparable results.” (p. 53)



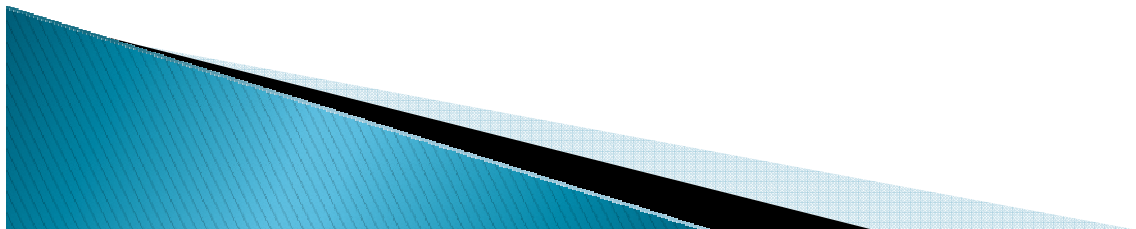
There is a tendency for policy on industrial clusters to...

- ▶ “... conflate a series of distinct and sometimes contradictory models of agglomeration processes, without distinguishing what evidence is relevant to which.” (Gordon and McCann 2005p. 52)



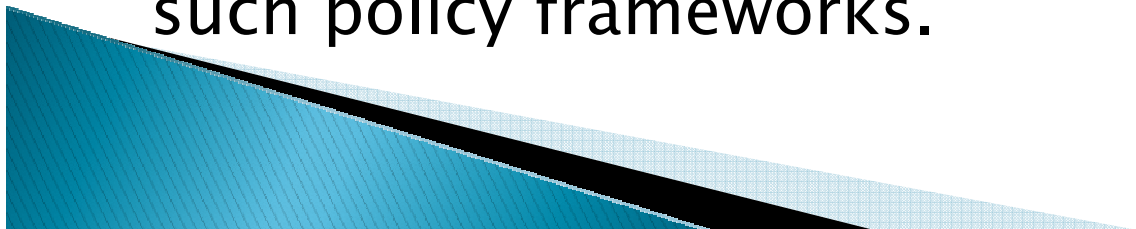
But...

- ▶ There may be a relationship between *cluster intensity* and regional economic growth which could have implications for regional policy.
- ▶ However, that depends on the nature of the cluster in terms of its industry sector characteristics.



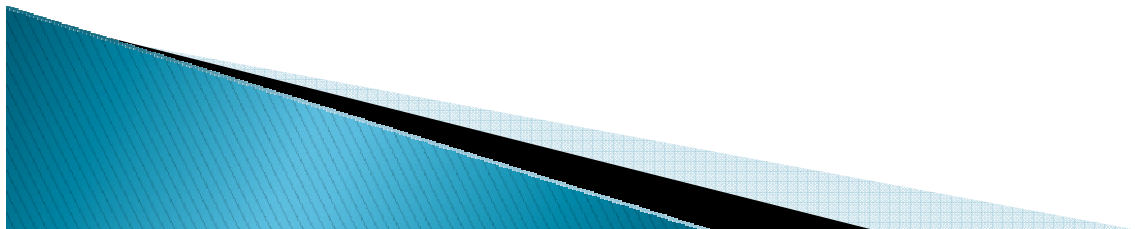
Warnings

- ▶ **Gordon and McCann (2005) warn against using clusters as a:**
 - “... blueprint for future industry developments, or to assume that innovation is necessarily maximized by such an arrangement.” (p. 53).
- ▶ **Wallsten (2004) reminds us that:**
 - “... little is actually known about which specific instruments will best serve public policy in creating knowledge-based entrepreneurial clusters.” (p. 229)
- ▶ **Morgan (2004: p. 17) reminds us that despite the proliferation of policy interest in industrial clusters and a cluster-based regional development strategy, there remains an “ambiguous evidence base” for such policy frameworks.**



A regional innovation systems approach

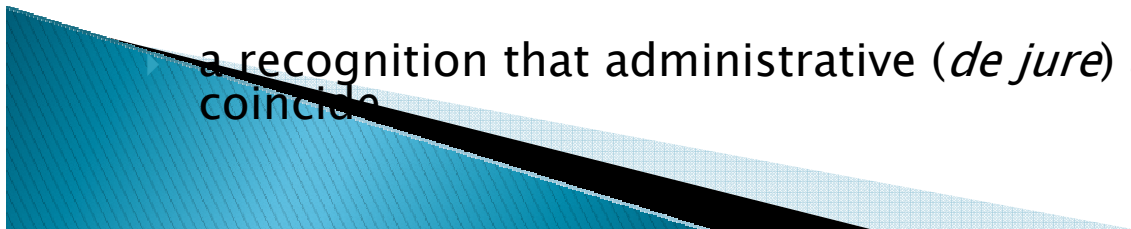
- ▶ Regional economic development policy has also been oriented towards developing *regional innovation systems*.
- ▶ That has been occurring widely in OECD countries



For success regional innovation systems policy needs to have...

Andersson and Karlsson (2006)

- ▶ either one or several clusters of suppliers and/or customers
- ▶ a strategy for SMEs to be linked to R&D and educational institutions either in or outside the region
- ▶ an adaptation of institutions of higher education to fit with the needs of the regional innovation networks
- ▶ ways to address the problems faced by SMEs in recruiting qualified personnel
- ;
- ▶ improve existing arenas and meeting places and create new ones to advance collective learning
- ▶ mechanisms that offer broad scope to support new entrepreneurial ventures
- ▶ strategies based on a careful and thorough analysis and understanding of existing
- ▶ a recognition that administrative (*de jure*) and functional regions do *not* coincide



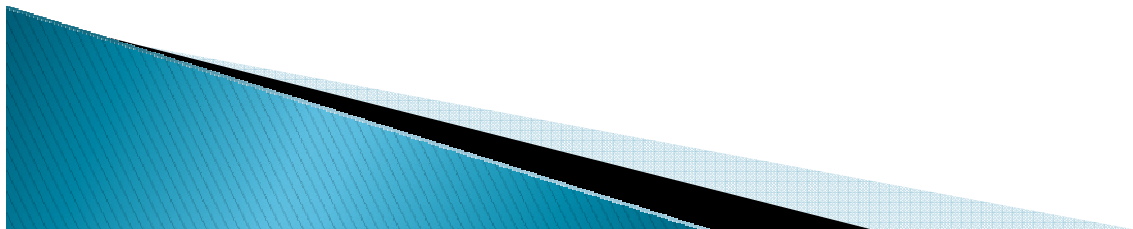
Johansson and Karlsson (2009: p. 254) suggest regional policy needs to...

- ▶ Focus on structural adjustments of tangible and non-tangible infrastructure that relate to a region's knowledge resources.
- ▶ They cite the following:
 - knowledge policies focusing on education and training to develop regional innovation systems
 - household milieu policies that influence life conditions regional innovation systems for enhancing access to jobs, recreation and natural environment
 - ;
 - facility policies that build transport, ICTs, property development and urban management
 - firm milieu policies that stimulate technology diffusion, supply venture capital
 - attract direct investments by external firms, and orchestrate cluster formation.

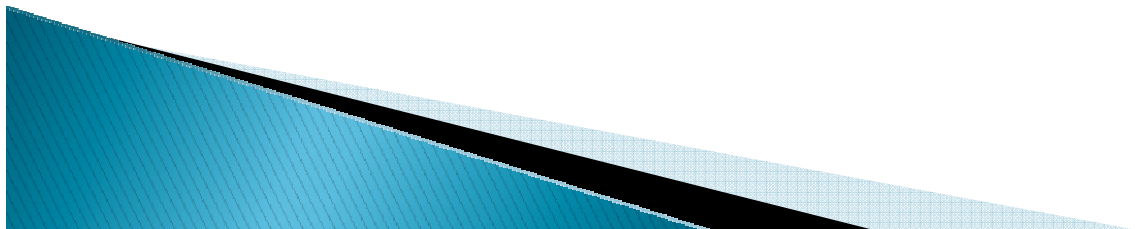


The importance of institutional factors

- ▶ As seen in some of the regional policies in the E.U. in particular, broadening and mobilizing the local institutional base and engendering governance approaches that create *institutional thickness* have become important in regional economic development policy.
- ▶ The importance of scale and density – especially with respect to ‘intelligent people’ (human capital) and institutions – needs to be recognized, as do networks associated with the economies of association .
- ▶ There is a need for *learning process* to be fostered through ‘softer’ processes relating to the dynamics of ‘regional milieu’, including social capital, trust, power relations, and organizational culture. That has particular challenges for how institutional arrangements that foster that might be facilitated through regional explicit policy intervention.

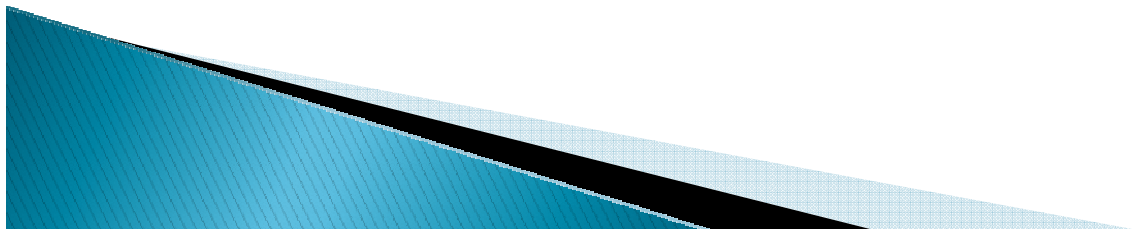


- ▶ While there has been some emphasis in regional policy on the notion that institutional factors do play a significant externality role in regional economic development, nevertheless there are considerable challenges for policy in putting in place the appropriate institutional structures that might meet the objectives of a region's development strategy.



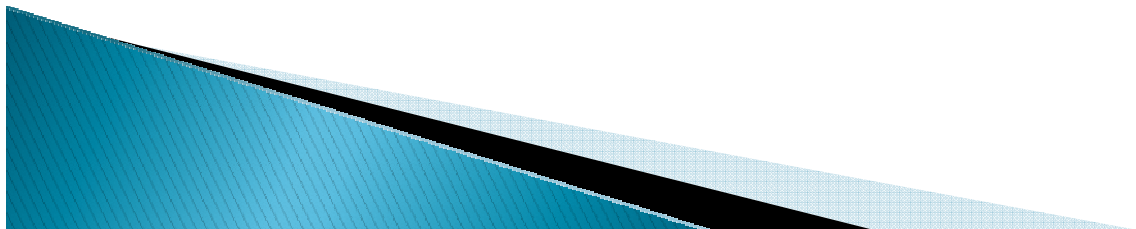
Entrepreneurship

- ▶ Audretsch and Aldridge (2009) have emphasized that:
 - “... entrepreneurship is an important mechanism permeating the knowledge filter to facilitate the spillover of knowledge and ultimately to generate economic growth.” (p. 208)
- ▶ Often regional policy has been oriented to use mechanisms that might generate the formation of small and medium size enterprises as a catalyst for economic growth, often within the context of an industrial cluster policy.



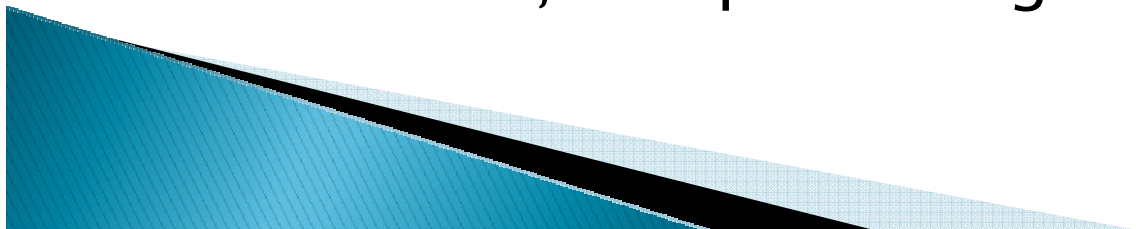
But...

- ▶ McCann and Arita (2004) have warned that:
 - “... strict interpretations of entrepreneurship, which focus solely on the development of small firms and spin-off firms, must be expanded to include the dynamic and innovative role of large organizations, and the relationships among firms size, inter-firm relations, innovation and local regional development.” (p. 248)



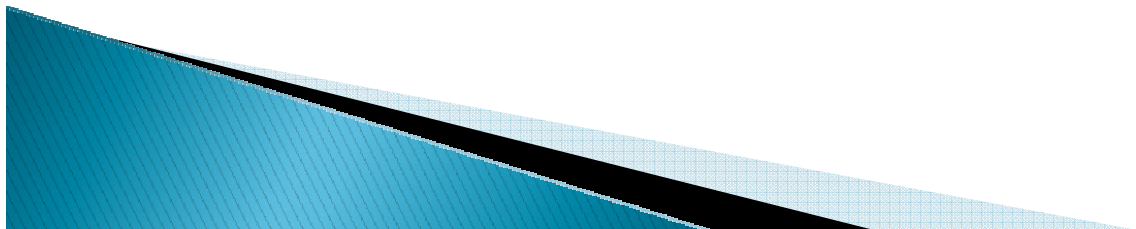
Overview on policy implications (1)

- ▶ Amin (1998) makes the telling point that what had emerged in *new regional theory and practice* has gone well beyond traditional local or regional economic development initiatives with the focus falling more on:
 - “... building the wealth of regions (rather than the individual firm), with upgrading of the economic, institutional, and social base as the prerequisite for entrepreneurial success.” (p. 9)
- ▶ That has been replacing approaches based on attracting certain firms/industries, keeping others out, and protecting existing ones.



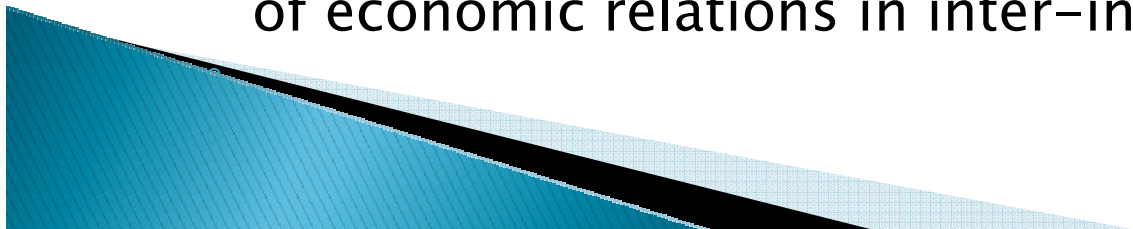
Overview on policy implications (2)

- ▶ Amin (1998) has suggested that local or regional policy effort might focus on:
 - “... developing the supply-base (from skills through to education, innovation and communications) and the institutional base (from development agencies to business organizations and autonomous political representation), in order to make particular sites into key staging points or centres of competitive advantage within respective global industrial filieres and value chains.” (p. 9)



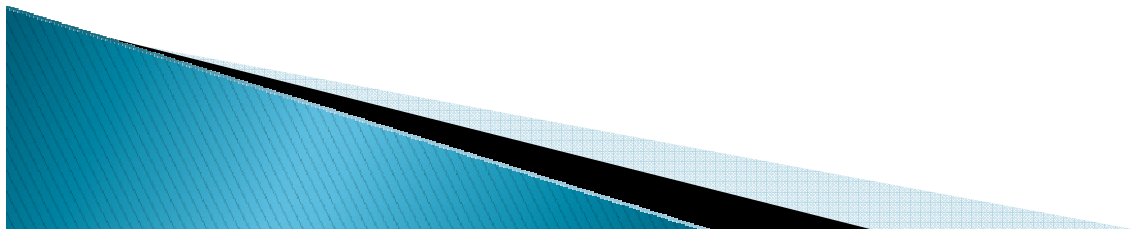
Overview on policy implications (3)

- ▶ On the matter explicitly of *geographical and organizational proximities*, Torre and Rallet (2005) have made the following important observations:
 - The need for geographical proximity for coordination cannot alone explain the geographic concentration of economic actors and the existence of production or innovation systems that have a local bias.
 -
 - Economic relations for which geographical proximity is a need tend to be highly embedded in territorialized social networks.
 -
 - Geographic proximity is not so much an economic cause of agglomeration as a social effect of the embeddedness of economic relations in inter-individual relations.



Overview on policy implications (4)

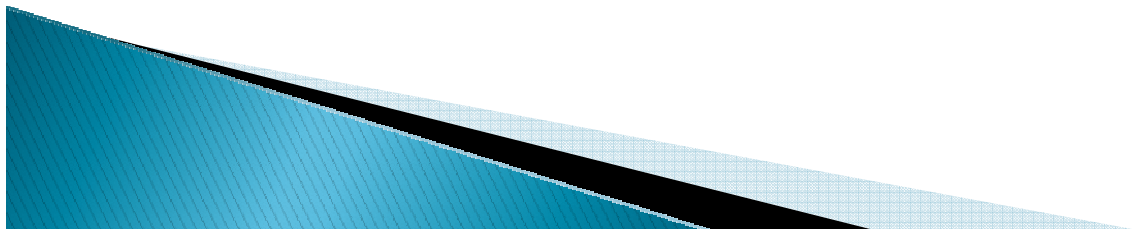
- The geographic framework of economic interactions is largely conditioned by the role of institutions, which may be influenced by local or regional development policy. It is the **organizational structure** of the regional economy on which interactions between economic actors depends.
-
- It is the **diversity of spatial scales** to which economic actors establish their interactions that is important.
- Because of ICTs, social and economic actors are now often in a situation of ubiquity being capable of being in various places, thus providing powerful mechanisms for long-distance coordination, as seen in the rise in importance of trans-national corporations.
- That **questions the traditional concept of localization as proximity** is now a combination of geographical *and* organizational proximity.



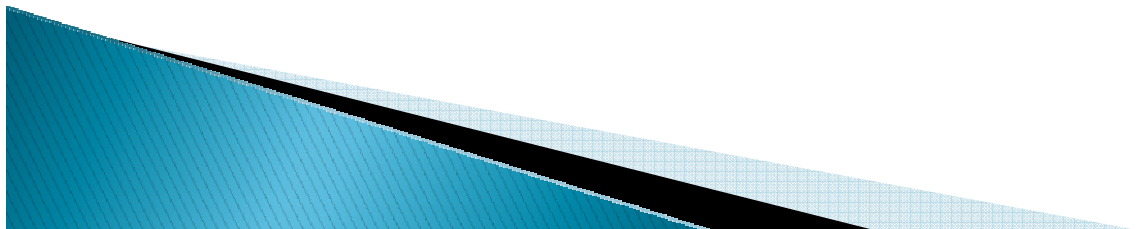
Conclusion



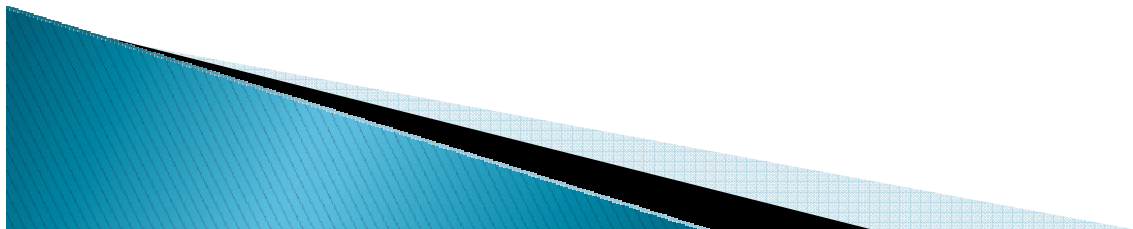
- ▶ It is clearly evident that there is a tendency for many economic activities to be geographically concentrated to take advantage of *agglomeration economies* (especially *localization economies*).
- ▶ Both *geographical proximity* and *organizational proximity* factors play key roles, if not interdependent roles, within the broader framework of an *endogenous approach* to regional economic development and growth.
- ▶ Interest in those issues has been greatly stimulated by the new economic geography (cf. Krugman 1991) and by the increasing focus that regional scientists have been giving to *knowledge spillovers* and *innovation*.



- ▶ The concerted attempt to understand regional competitiveness in terms of *endogenous factors* has resulted in a more explicit consideration in the literature on the nature and role of *proximity factors* – *structural* (geographic or spatial) and *relational* (organizational, social, cultural, technological) in *knowledge transfer* and *innovation*.
- ▶ It is within the context of *industrial clusters* that this work is largely embedded



- ▶ A crucial issue is the *geographical scale* over which knowledge spillovers operate.
- ▶ The more explicit treatment of *proximity effects* has also arisen out of the work on industrial districts, industrial clusters, innovative milieus, and regional innovation systems.
- ▶ As demonstrated by the work of the French School of proximity, we are now gaining better insights into proximity as a *transitional concept* between spatial and socio-economic interactions.



However...

- ▶ There remain many challenges to fully understand the link between *regional development* and *proximity relations*, and in particular to explicitly empirically test that link.

