



LA CIRCULATION DU CAPITAL TERRITORIAL KNOWLEDGE DYNAMICS AND ANCHORING MILIEUS IN EUROPE

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Abstract:

This paper is an attempt to introduce a different perspective on the relationship between knowledge and territorial development. Today, knowledge can be seen as essentially mobile and regions will prosper to the extent that they can *anchor* it and develop it further locally. Knowledge is then expected to generate economic value. In order to understand that process of value creation, it is necessary to abandon the well known distinction between tacit knowledge, which would stick to the local, and codified knowledge, which would be mobile. Indeed, the paper proposes another distinction. On the one hand, *substantive knowledge* generates value thanks to *exclusivity* rights for its exploitation. On the other hand, the more *significant knowledge* diffuses and is *shared*, the more economic value it generates.

This distinction is then used to interpret the results of the EURODITE research project. A typology of *territorial knowledge dynamics* and *anchoring milieus* is built. A larger European knowledge system is sketched out.

Key words

Knowledge economy, Territorial innovation models, anchoring milieu, EURODITE.

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Territorial knowledge dynamics and anchoring milieus in Europe

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During the last twenty years, Regional science and Economic geography looked at the role of knowledge mainly through Territorial innovation models (TIMs) (Lagendijk, 2006; Moulaert & Sekia, 2003; Simmie, 2005). This approach, which developed initially between 1985 and 1995, needs to be updated in order to fit today's context. The present contribution proposes, on the basis of case studies, a conceptual framework based on the following elements: first, a distinction between *substantial* knowledge, whose economic value is linked to content and which is generally exclusively controlled by companies, and *significant* knowledge, whose economic value relies on sharing and diffusion and which is usually shared among its authors and customers/citizens; second, the concept of *anchoring milieu*, which gives an account of the differentiated capacities of regions to anchor knowledge which is much more mobile than before. This conceptual framework allows the amending and updating of TIMs on three points:

- TIMs concentrated essentially on the conditions for the local accumulation of knowledge (Crevoisier & Jeannerat, 2009). With ICTs, the free circulation of workers in Europe, European research and training policies, the focus should be on the capacities to *anchor mobile* knowledge. When following their own trajectory, regions should no longer focus mostly on developing themselves new knowledge. From now on, their capacity to use knowledge developed elsewhere, their *anchoring milieu*, becomes decisive.
- The literature about TIMs largely used the 1944 distinction of Polanyi, used by Nonaka and Takeuchi (1995), then developed by Lam (2000), between “tacit” knowledge, which would be linked to a place, and “codified” knowledge which would circulate at very low cost – see among others the critical contributions of Bathelt et al. (2004) and Cooke (2008). Yet, the question is no longer the transportation cost, the technical conditions of that mobility, but the local capacity, at the place of arrival, to seize mobile knowledge in order to create economic value. Economic institutions which allow the mobility and anchoring (Berset & Crevoisier, 2006) of knowledge become determinant. In this paper, *contractual exchange* and *appropriation* will be associated with substantive knowledge, and *sharing* and *authorship* with significant knowledge.
- Largely influenced by industrial economy, TIMs were exclusively centred on production and innovation systems. Yet, the valorisation of knowledge does no longer compulsorily pass through the means of manufactured goods and takes much more diversified forms. Production/consumption today largely includes medias or direct social interactions, it includes more cultural content and the modalities of earning of producers are often indirect and complex (Ng, 2010). Moreover, in activities as diverse as the sports industry, health foods, Smartphones or health services, the growing and more demanding knowledge of customers and citizens determines the economic value creation. It is therefore necessary to give an account of the complexity of production/consumption networks, including their territorial organisation.

The aim of this paper is to propose an institutionalist framework in order to understand the economic and territorial dynamics of knowledge. This approach takes into account what occurred

during these last 20 years: first, the increased accessibility of knowledge due to NTIC; second, the institutional integration which characterises globalisation, with a particular attention to the European construct.

This work is part of the synthesis of a large European FP6 project called EURODITE¹ (Macneill & Collinge, 2011), a research led in 24 European countries dedicated to the knowledge economy in a regional perspective. This conceptual framework was elaborated for the analysis and synthesis of case studies.

The first section reviews classic contributions to the area of the knowledge economy and contributions to territorial knowledge dynamics.

The second section proposes replacing the codified/tacit duality with a distinction between *substantive, controlled (owned)* knowledge on one hand and *significant, shared (authored)* knowledge on the other. The economic value of controlled (owned) or substantive knowledge lies in clearly identified, stabilised and delimited content that serves as the basis of compensation in a transaction. By contrast, the economic value of *shared* or *authored* knowledge lies in the status of the *author* (or *authority, peer*, etc.) who is recognised by the persons or communities that produce and possess such knowledge and gradually adapt it to different contexts. Significant knowledge derives its value from the meaning that it provides those who share it. Both types of knowledge differ in terms of the *mobility* and *anchoring* as well.

The third section defines the concept of *anchoring milieu*. The anchoring milieu represents the capacity within a region to mobilise mobile knowledge from elsewhere. Today, the potential for knowledge mobility has increased considerably thanks to ICTs and, above all, institutional reforms at the national, European and broader international levels. Consequently, on a regional or local scale, it is the capacity to become part of this economy that becomes the determining factor. Different ways of doing this emerge in different regions and this is reflected in the concept of the anchoring milieu.

The fourth and final section starts by developing four ideal types of anchoring milieus. Each of these types is illustrated by two examples from the fieldwork. The typology gives an account of local dynamics, but also of their inscription in the larger system of knowledge mobility in Europe. The typology shows how knowledge circulates between these various types of regions following the presence of anchoring milieus. The European scale appears decisive because institutions which make mobility of knowledge possible (industrial standards, the unique market, the free circulation of workers...) are implemented at that scale. At the same time, the regional scale appears determinant for the anchoring of this knowledge. For public policies, the objectives are therefore clearly related to different scales of intervention.

¹ URL: (<http://www.eurodite.bham.ac.uk/>). We thank the participants to the project for their contribution to this paper. More particularly, for the synthesis: Anna BUTZIN, Christophe CARRINCAZEAUX, Chris COLLINGE, Phil COOKE, Margareta DAHLSTRÖM, Ben DANKBAAR, Frédéric GASCHET, Henrik HALKIER, Ernst HELMSTÄDTER, Laura JAMES, Anders LARSSON, Stewart MACNEILL, Simone STRAMBACH, Mario VALE, Geert VISSERS et Brigitta WIDMAIER.

1. Local=tacit, mobile=codified

1.1. Nonaka and Takeuchi and the opposition between tacit and codified knowledge

The most quoted work about the knowledge economy is undoubtedly Nonaka and Takeuchi (1995). They claim to build their approach on Polanyi's distinction between the so-called "tacit" and "explicit" knowledge types (even if this paternity is partly contested (Gourlay, 2006)). The idea is that the interaction between tacit and explicit knowledge is crucial for the emergence of new knowledge.

In the same line, but adding to this framework a much more elaborated concern about institutions and organisations, Lam (2000) develops what can be called the traditional view about knowledge. She says in short, that on the one hand, *tacit* knowledge is "embodied in individuals" or "embedded in communities", that it is the result of a context specific, action oriented learning, and that it cannot be transmitted without the presence of the "knowing subject". On the other hand, *explicit* knowledge is "embrained in professionals" or "encoded in collective" players. It can therefore be centralised and controlled in and by organisations.

Only organisational forms that manage to harness tacit knowledge achieve high levels of learning and innovation, because following Polanyi's idea, new knowledge can only emerge on the basis of individual intuition.

Despite its high significance, this approach has a major difficulty.

The idea of "tacit" knowledge is particularly vague and cannot be treated in an economic perspective. It is described as knowledge of which one is not consciously aware, that is developed out of practice and is not separate from context ("sticky") – characteristics that are often expressed through metaphors or in negative terms more than in terms of content.

Institutions related to knowledge should not be based on the form in which the knowledge appears (tacit or codified), but rather on its economic value and the social and territorial forms of its production and use.

1.2. The mobility of knowledge: the questionable opposition tacit=local, codified=global

In parallel with studies on the knowledge economy centred on organisation, knowledge and innovation have also been a central theme in the field of territorial economy. Approaches such as innovative milieus (Camagni, 1991; Maillat, 1995) and regional and national innovation systems (Lundvall, 1994) systematically concentrate on the issue of knowledge and innovation.

The central argument is also based on the distinction between tacit and explicit knowledge. Bathelt, Malmberg and Maskell (2004) outline the basic reasoning thus: "The main argument

regarding the spatial aspect of this has been that – on the one hand – the more codified the knowledge involved, the less place-sensitive should these processes tend to be. If – on the other hand – the knowledge involved is diffuse and tacit, the argument is that such interaction and exchange is dependent on spatial proximity between the actors involved. Only by being in the same local environment and by meeting repeatedly in person, can and will such more subtle forms of information be exchanged.” (p.32).

To transcend this view of tacit = local and codified = global, these authors point out that the problem is not that codified knowledge can travel with low costs. The problem lies in the substantial costs associated with identifying, assessing, assimilating and applying that knowledge. In their view, this “may become valuable only if fused with less transitory knowledge whether proprietary or embedded in a local environment in tacit forms” (p.32). Their 2004 articles stresses that the combination of that local knowledge with forms of knowledge, whether tacit or codified, that are *external* to the region usually occurs thanks to the existence of stabilised “global pipelines” that enable local actors to interact at distance with others and thus combine the advantages of the local “buzz” with the enrichment brought about by knowledge developed elsewhere.

This shows that that the model has been considerably expanded, but nevertheless still relies on the distinction between a tacit, non-articulated form of knowledge and a codified form.

2. An alternative proposition: an institutional approach of knowledge dynamics in their territorial context

Preceding paragraphs have allowed to identify the limits both of the traditional model based on the distinction between tacit and codified knowledge and of the assimilation between tacit and local knowledge, codified and mobile knowledge.

In this chapter, another distinction is proposed between *substantive* and *significant* knowledge based on the *social and economic institutions of the valorisation of knowledge* at the place of arrival and no longer on the technical conditions of its mobility.

The first paragraph examines how knowledge can be valued monetarily (2.1). Based on these various forms of valorisation, a distinction is proposed between *substantive* knowledge (2.2) (which has an economic value because of its content) and *significant* knowledge (2.3)(which has an economic value by virtue of the meaning it provides those who appropriate it) . These two types of knowledge correspond to specific territorial forms and distinct mobility and anchoring processes (2.4). The last paragraph defines the concept of *anchoring milieu* (2.5).

2.1. Knowledge and economic value

Following Lam (2000), the Territorial Innovation Models (TIMs) referred to above focused on innovation as the main lever of economic transformation. Since innovation involves putting new goods and services on the market, or the mobilisation of new processes for economic production, we can understand how innovation generates value. However, in a model like this, valorisation takes place only on the goods and services market.

By contrast, the manner in which knowledge is transformed into monetary value is not self-evident. Indeed, there is no structured “knowledge market”, and it is this which makes the process difficult to understand. Thus, it is possible to identify various forms of valorisation, which are more or less direct depending on whether the knowledge is used as an input or output (Antonelli & Calderini, 2008) in the production process and its position along the value chain (upstream, downstream or parallel), and so on.

So here are a few non-exhaustive examples of the way in which knowledge is given monetary value:

- Via the labour market:
 - certain skilled individuals with self-employed status will sell their knowledge almost directly on the market, for example in the form of scientific, artistic or technical expertise or services, etc.
 - At a broader level, skilled individuals will carry out work that mobilises and generates knowledge within firms that pay them wages with more or less sophisticated forms of incentive.
- Via activities or events that are more or less directly knowledge-based:
 - Seminars, conferences and fairs, etc. are events that people generally participate in a corporate capacity. The knowledge itself is not sold, but participation requires the services surrounding the activity to be financed as well as the wages of the people taking part;
 - Internal training within firms also involves expenditure in the form of wages;
- Through capital goods markets:
 - Patents, designs and models, etc. are the subject of various transactions such as user licences;
 - Machines, software and technical, scientific or artistic services have a high knowledge content and are sold in the form of goods and services to businesses; they require more or less shared learning;
- Through the goods and services market:
 - Many goods and services purchased by households have a high knowledge content. The majority of these require only limited learning by consumers before use. For example, it is not necessary to know any programming before using a video game or to have musical knowledge to listen to a concert;
 - Other services sell knowledge more directly to individuals, such as training, and various advisory services, etc.
 - However, today we are seeing the development of markets in which the competencies of users plays an increasingly important role in the development of the provision itself. A person with advanced knowledge will generate much more value in using his or her mobile phone than someone who knows only how to send messages. The same applies to fields such as healthcare, cultural consumption, sport, education and so on. (Ng, 2010).
- Through property rents:

- Property costs more in place like financial centres, high tech regions, cities of art.

• ...

So, there is a great deal of diversity in the valorisation of knowledge (directly or indirectly, by producers or consumers, etc.). For this research, we must examine how this valorisation can be thought of in the context of the capitalist market economy: what is the basis for determining the value of knowledge? How is this value calculated? What stakeholders and institutions determine the distribution of gains and expenditures associated with the creation and use of knowledge? How is this valorisation organised in space? And so on.

In order to answer these questions, an institutionalist distinction is proposed here between two ideal types of knowledge: substantive knowledge, based on control and property of knowledge, on the one hand (2.2) and significant knowledge, based on sharing and authorship, on the other (2.3).

2.2. Substantive knowledge

The **economic value** of substantive knowledge lies in the *exclusivity* of its use. In order to establish this right, an *exhaustive and precise identification of its content* is needed before negotiating the price of entitlement to use this content. Payment may take various forms: the purchase of goods (for example a standard car), services (for example expertise whose content belongs to the principal), capital goods (software, machines, patents, brands, etc.) or in the form of wages (e.g. paid to experts hired to develop particular knowledge under the control of the firm).

Substantive knowledge is characterised by *stabilised*, clarified **content** that may be used as the basis for developing *technical devices*, products or services. This knowledge is *convergent* – it has evolved towards stabilisation and synthetic integration. It is also *finite*, in the sense that it has identified limits. From an economic point of view, it may therefore be integrated into *functional devices*. Ambiguities related to differences in interpretation are removed as much as possible and knowledge tends towards the *monological*. It does not invite its own transcendence. At some point, this clarification may enable knowledge to be formalised or even codified in the form of data.

From the point of view of **actors and institutions**, appropriation is characterised by the transfer of the control of knowledge from a number of actors to a single identifiable actor (a person, firm or organisation, etc.). Such control does not signify a monopoly over the actual possession of the knowledge (it is difficult for a person to unlearn something), but rather a more or less exclusive social entitlement to make use of the knowledge, particularly in the economic sphere. Thus there is a degree of separation between knowledge on the one hand and the players who are the bearers of that knowledge on the other (objectivation). From an economic point of view, substantive knowledge is a resource that is embodied in both individuals and objects, but which is under the control of an actor (generally a firm) that, thanks to *exclusivity* can derive income from it. This paper will use the terms controlled or owned knowledge, on the understanding that legal ownership, or the right of the user to alienate or change knowledge, must be dissociated from its biological, psychological or physical control.

Regarding **territory, mobility and anchoring**, substantive knowledge becomes largely independent of the local context because of the process of stabilisation and clarification that it has undergone. In particular, it may circulate through contractualised economic exchange, embodied in

goods or services or in the form of licences and patents, etc. Anchoring occurs through investment and purchases and through the learning curve needed to use it.

2.3. Significant knowledge

The **economic value** of significant knowledge lies in the sharing and diffusion of that knowledge. It is *tied to the individuals, communities and contexts* that create and disseminate this knowledge. Their compensation may take the form of a salary (for a public-sector researcher, for example), mandates (for the commissioning of works by artists) the purchase of goods (in the case of AOC (*appellation d'origine contrôlée*) products or services (restaurant of a recognised chef). Value also emerges on the consumption side owing to the fact that the consumer who possesses significant knowledge will jointly create additional value (e.g., knowing about Renaissance history gives value to a visit to the city of Florence and internet proficiency adds value to the use of a Smartphone).

In terms of **content**, significant knowledge is characterised by its incorporation in thought systems. It is highly *contextual* and, as a result, open-ended. It continuously transcends its contours and its depth. It is characterised by creativity and therefore by uncertainty as to the evolution of its content. Each step opens up new questions and new possibilities for development. Differences in interpreting an item of knowledge are the primary means in which it is transcended. It is therefore dialogic knowledge, which loses its meaning – and therefore its value – when it is reified and static.

In terms of **actors and institutions**, *shared* knowledge is characterised by the way it merges with the community that possesses, enriches and shares it. The dynamics of this knowledge result from the plurality of actors that possess it and interact around it. Such evolutive capacity of knowledge is conditional upon the absence of an owner and of centralised control over its use as well as a degree of diversity in the community. Such knowledge is spread across both the community of producers and of consumers, and very often between the two.

Consequently, rules for the sharing of knowledge become vital to its existence and development. These rules do not concern the ownership or control of knowledge, but the *acknowledgement* (status) accorded by the community to the most emblematic or creative members. The rules of citation in the scientific world and recognition and criticism in the arts are examples of institutional systems that relate to both the acknowledgement of individuals and the evolution of knowledge. The key intellectual property instruments for significant knowledge are copyright and creative commons. In terms of consumers, or the interactions between consumers and producers, the processes of developing and sharing of knowledge are extremely diverse and may take monetary or non-monetary forms: compulsory education, communities of practice (computer clubs, sports clubs, etc.), awareness-raising campaigns, medical advice, driving instruction, etc.). The medias, whether specialised (for example scientific journals) or not, play an important role in this diffusion. Consequently, a large part of significant knowledge resides in customers.

Regarding **territory, mobility and anchoring**, the value of significant knowledge depends on context since meaning emerges in specific situations, from the relationship of knowledge to individuals or communities (knowledge of Renaissance history takes on a different value in Florence). Mobility and anchoring occur through sharing and diffusion, which is also the appropriation, specification, differentiation or transcendence of this knowledge. This diffusion also creates interdependence between locations.

Figure 1: The distinction between substantive and significant knowledge

	Substantive knowledge (controlled, owned)	Significant knowledge (shared, authored)
Properties	Stabilised , finite, identified, convergent. Incorporated in functional devices	Evolving , open, divergent. Incorporated in thought systems.
Economic value	Based on the content of the knowledge and its valorisation on different markets (exploitation). Based on exclusivity .	Linked to people , communities and/or contexts. Based on sharing , diffusion and adaptability.
Concrete forms	Embodied in capital goods (machinery, software, reports, etc.) but also in individuals under the control firms (salaried experts, for example).	Embedded in personal interaction as well as in objects (papers, scientific articles, books, local traditions, exhibitions, etc.).
Evolution	On demand, through investment , specialisation and decontextualisation.	Continuously transcended through differing interpretations and contextualisation.
Actors	Identifiable owner that controls the knowledge	Author (authority), peer or institution that is recognised as a source of knowledge; diffusion towards customers/citizens.
Institutions	Rights concerning the control , use and dissemination of knowledge (IP, confidentiality, etc.)	Recognition of the status of author, artist, etc., or the legitimacy of the knowledge
Forms of compensation	Direct through the goods market. Indirect through wages or profits	Direct through wages, fees, appearance money, grants. Indirect through the goods and services market
Mobility	Through contractual exchange and quality standards .	Through sharing and subject to the rules (reference points) of the community.

Anchoring	Through investment, learning curve and adaptation.	Through personal investment and the construction of meaning. Imitation/differentiation and contextualisation.
Movement, temporalities	Of labour to capital Embodying/disembedding Centralisation, then distribution. Convergence towards stability and then punctual exchanges and “learning curves”	From capital to labour Embedding/disembodying Selective diffusion. Successive upgrading and rebounds
Territorial value	Value is independent of context Specialisation/integration	Contextual value; specification/differentiation/inter-dependence

Source: author’s own elaboration

2.4. The mobility and anchoring of knowledge

Yet, the big change of the past 20 years has been precisely the dramatic increase in the mobility of production factors, including workers and knowledge.

As stated in the previous section (1.2), the notion of codified or tacit knowledge should not be the starting point for discussing knowledge mobility. In fact, even so-called “tacit” knowledge is able to move in space, through, for example, the mobility of skilled individuals. Furthermore significant institutional changes such as the free movement of workers in Europe have directly affected this mobility.

This increase in *potential* mobility should lead to radical shift in perspective: it is no longer the possibility of moving in space that is the limiting factor, but rather the local capacity *at the destination point* to use these mobile factors that becomes decisive. This is what we call *anchoring* (Berset & Crevoisier, 2006).

- *Mobility* is the point at which knowledge physically moves in space. This may occur in the form of data traffic in electronic networks, through telecommunications between people, or through the movement of people. Analytically, it may be posited that knowledge does not change during this phase.
- *Anchoring* is the point at which knowledge interacts with the destination context. Interactions between people and between people and objects are centred on the point of destination. It is the local appropriation of mobile knowledge. Analytically, it may be posited that anchoring is a more or less rich learning process that may affect both static and mobile knowledge. *Anchoring* is the real reason for mobility.

Mobility and anchoring do not necessarily follow one another in time: we do not necessarily have mobility first and then anchoring. The two processes may occur simultaneously, for example when two people interact in a videoconference or when they meet during a seminar.

The mobility of *substantive* knowledge may occur by various means: circulation of goods embodying knowledge, the performance of services and the circulation of intellectual property rights (patents, trademarks, designs, etc.). What these all have in common is that they result from *contractualisation*, generally bilateral, involving the movement of knowledge from one direction, and compensation, in principle monetary, from the other. Accordingly, the precise description of the content of knowledge is a prerequisite for its mobility. Similarly, the existence of *technical standards* will play a key role in facilitating or, conversely, complicating this description and therefore the conclusion of the contract.

Thanks to this formalisation, substantive knowledge has been rendered largely independent of context. For this reason, transferring substantive knowledge in space can be inexpensive and may not entail a large amount of learning at its destination. Initially, anchoring will consist of understanding, mastering and using this knowledge. For example, the purchase of a Smartphone by an individual or a machine tool by a company or the passing on of a formalised sales technique at a training seminar will require a learning period at the destination point in order to master the functions of these devices. However, such learning falls within the limited framework offered by the potentialities of this knowledge. Contextualisation at the destination point is akin to the diffusion of the knowledge in its original form, the reproduction of knowledge that already exists elsewhere. Moreover, the knowledge that has been transferred is not altered by anchoring. The computer program, the machine or the sales technique are exactly the same as they were before.

Later, however, on-site learning based on this substantive knowledge may obviously transcend these limits and consequently recreate specific local expansions and differentiations. We then enter a situation where we are developing new significant, rather than substantive, knowledge.

The mobility of *significant* knowledge also takes highly diverse forms: scientific conferences, the distribution of novels in a library network, on-line scientific journals, a visit to an art exhibition, media debate, etc. These different forms all occur within the *rules of personal interaction* that characterise a given community.

Anchoring significant knowledge always requires a personal investment by the person at the destination point. Anchoring consists of creating meaning for this person and this meaning extends or even goes beyond the knowledge as it appears at its origin. Anchoring is therefore not only imitation, but also differentiation that depends on the destination context. The rules that apply within the community enable this anchoring to occur because they acknowledge the author (the peer, artist, authority, etc.), or even in some cases the place (the origin) that transmitted this knowledge. For example, the rules of citation in the academic world enable us to start from a piece of knowledge and put it in perspective, critique it or go beyond it, etc. Unlike substantive knowledge, displaced significant knowledge will have been changed at the point of anchoring.

Subsequently, this appropriation may be continued through the incorporation of such knowledge in devices, designs, trademarks, etc and thus, on the basis of significant knowledge, lead to the production of substantive knowledge.

2.5. The anchoring milieu

Clearly, the development of knowledge mobility on a broad scale, such as that of Europe or beyond, changes the situation of nations, regions or any other spatial entity. On one hand, they witness their production factors and, more particularly, the knowledge that was once the basis of their economic strength becoming more easily accessible from outside and also becoming more mobile and likely to exit the region. On the other hand, these regions are in a position to capture additional knowledge developed elsewhere and thereby see a considerable expansion in new opportunities, provided of course that they develop new anchoring capacities.

These two movements, the development of mobility and the necessities of regional anchoring are therefore simultaneous and are the two sides of the same coin. Indeed, knowledge would not be mobile if it could not be anchored in any destination.

How, then, can we take account of the differentiated capacities of regions to operate in this context of increased mobility? We should include the capacities that exist at the regional scale, bearing in mind that not all actors in a region participate in these exchanges. Only some of them will fulfil this function, either individually, or more collectively, depending on the intensity of the interactions occurring in the region.

In order to identify differentiated regional capacities to anchor knowledge that has been developed elsewhere and that can subsequently be mobilised, we have borrowed the concept of *milieu* from GREMI (the European Research Group on Innovative Milieus) (Crevoisier, 2004; Maillat, Quévit, & Senn, 1993) and adapted it to research that is not directly related to innovation, but rather to knowledge in a context of increased mobility. The **anchoring milieu** accounts for regional capacities to anchor knowledge that is mobile at a much wider scale.

The anchoring milieu can be defined as *a set of local players (firms individuals, public authorities, research and training organisations, local entrepreneurs, medias, cultural institutions, NGO,...) who interact locally and with distant and/or mobile players in order to develop ever more advanced (efficient or meaningful) knowledge on the basis of competition/cooperation rules.*

a set of local players (firms, authorities, research and training institutions, customers, ...) who interact locally and with distant and/or mobile players in order to develop ever more advanced analytical knowledge, ever more specific symbolic knowledge or ever more efficient synthetic knowledge on the basis of competition/cooperation institutions.

3. A typology of anchoring milieu and knowledge mobility in Europe

Starting from the substantive/significant knowledge dynamics developed above, a conceptual distinction can be made between four types of *anchoring milieus* that differentially contribute to the mobility of knowledge on a wider scale.

Figure 2: Four types of anchoring milieus of substantive and significant knowledge.

KNOWLEDGE PROCESSES	<i>TO SIGNIFICANT KNOWLEDGE</i>	<i>TO SUBSTANTIVE KNOWLEDGE</i>
	↑	↑
 <i>FROM SIGNIFICANT KNOWLEDGE...</i>	The milieu appropriates significant knowledge locally or from other regions and makes it evolve into various forms through competitive and cooperative contextualisation → <i>Milieu of significant, shared, knowledge</i> CASE 1	The milieu mobilises pieces of significant and substantive mobile knowledge developed mainly in other regions and anchors them into stabilised functional devices. → <i>Milieu embodying mobile knowledge</i> CASE 3
 <i>FROM SUBSTANTIVE KNOWLEDGE...</i>	→ <i>Milieu embedding controlled knowledge</i> CASE 4 The milieu buys substantive mobile knowledge from other regions and it evolves through contextualisation into various competing and cooperative forms.	→ <i>Milieu embodying controlled knowledge</i> CASE 2 The firms of the milieu buy mobile knowledge usually from other regions and invest in it before reselling it.

Source: developed by author

Figure 2 is based on the distinction between substantive and significant knowledge. According to the perspective adopted here, such types of knowledge are thought of as human activities and as processes rather than reified and static entities. Accordingly, the diagram takes into account the dynamics of such knowledge: we enter through the rows on the left-hand side of the table, which reflect the state of knowledge at the beginning of the process and exit the table via the first or second column depending on whether the knowledge develops through significant or substantive processes.

So the four ideal types identified in this way are based solely on the distinction developed above. So far, their theoretical status has been purely conceptual. The purpose of this section is to show that the four types thus identified are also relevant for understanding the concrete territorial knowledge dynamics (TKDs) described under EUROTITE. As with any ideal type approach, it is

only through this confrontation that the categories developed above can be determined to be appropriate.

Methodologically, we must point out that the distinction between significant and substantive knowledge was largely elaborated starting from the observed case studies. . However, strictly speaking, it did not come about from the results. Moreover, a great deal of trial and error was needed before we found the appropriate terms. In other words, there was period of overlap and close interaction between the interpretation of the results and the development of the conceptual categories. These concepts emerged from this confrontation.

However, because of the linear nature of a research paper, this section presents the results after the concepts. This is not to suggest that the typology was developed independently of the results.

3.1. Case 1: Milieu embedding shared knowledge

The first case concerns milieus that appropriate significant knowledge in and outside the region and that alter it through sharing based on the rules of the community or place.

In concrete terms, these are regions that are the settings for significant cultural (fashion, entertainment, arts, etc.) or scientific dynamics (intellectual life, scientific debates, etc.). This continuous learning is characterised by processes of participation in the cultural life of the place and of imitation and differentiation of knowledge and the products and services that arise from it. In such a context, new ideas continuously attract new superseding ideas, so knowledge is not stabilised. On the contrary, the strength of these milieus lies in the fact that the knowledge is constantly being overtaken. Rules are created through the acknowledgement of status (of the designer, artist, researcher, scientist, authority, etc.) or through the existence of communities of producers or users and are at the intersection of market-based and non-market based principles (copyright, government subsidies and non-commercial exchange). As such, they generate knowledge that is often considered not directly applicable. Very often, but not always, public funding support contributes significantly to the creation and diffusion of such knowledge, particularly in what are deemed to be cultural fields.

Knowledge circulates via the media, which often plays a role in actor recognition (scientific, artistic, cultural or professional journals, websites of communities of practice, etc.), through the education and research system and through *temporary clusters* (Bathelt et al., 2004), namely conferences, fairs, events, etc.

Anchoring occurs through the “urban buzz”, i.e. the participation of actors in discussions, debates and local events. Personal investment is needed for knowledge to be appropriated and integrated into a system of meaning.

Table 1 : Two examples of milieu of significant knowledge (Case 1).

- The expansion of “quality” fast-food restaurants in Paris (organic or certified food, fresh ingredients, whole food, inventive cuisine, etc.) is a response to a local demand from the increasing number of people who have lunch in the district where they work. These restaurants are generally ad-hoc projects, often developed by people with a background in the communication or marketing industries who combine catering with various dimensions of Parisian cultural life in close interaction with different media (interior design, fashion, whole food, etc.). (Jeannerat, Kebir, & Crevoisier, 2009)
- In south-eastern Skane, “film tourism” develops because of the internationally known stories of Inspector Wallander. The main character of the thriller writer Henning Mankell is linked to the city of Ystad and its region. Today, tourists are attracted by the reputation of the books and the TV series and several activities like film production or film production training are developing. (Dahlström et al., 2009)

Source: EURODITE

Under the EURODITE framework, the typical regions for the development of these types of dynamics are mainly of two types:

- *Cultural capitals* sustain a permanent dynamic around cultural and artistic life (fashion, art, lifestyle, music, architecture, etc.), events, forms, tastes and colours, sometimes known as the “urban buzz”.
- There are also *more rural regions* which see the development of dynamics related to the countryside, food production, literature, events and sport and leisure.

In both cases, the media and other channels that disseminate knowledge to communities of consumers play a highly significant role. Producers also position themselves in relation to others, in an interaction in which their provisions are constantly renewed.

3.2. Case 2: Milieu embodying controlled knowledge

In contrast to the previous example, milieus based principally on substantive knowledge develop knowledge in order to make it more stable, more clearly defined and less dependent on its context. These milieus are composed mainly of firms or research centres that are primarily governed by market principles or the principle of controlling the techniques and markets on which they operate. Knowledge, which is acquired on the basis of bilateral contracts, is then developed by the firm and takes the form of investments for the firm itself or for third parties. The knowledge will then be resold on the market.

Strictly speaking, these milieus do not have their own independent dynamics since the knowledge evolves primarily on the initiative of individual firms within these milieus. Nevertheless, these firms will intensively mobilise knowledge residing within the local workforce and immigrants to the region and will also form contracts with research institutions. Thus the local context appears primarily as a provider of competencies created partly through public money.

Knowledge mainly becomes mobile through firms seeking patents, models or solutions to a client’s problem or request. This is focused research, carried out through databases or long-distance

contacts in the profession or within the firm. Mobility is then cemented through the signing of bilateral contracts.

Initially anchoring consists of learning how to use this knowledge and takes the form of a classic learning curve. Later, firms may develop this knowledge by investing in research and development for themselves or third parties.

Table 2 : Two examples of milieu of substantive of knowledge (case 2).

- In Munich, companies of the biotech sector shifted to cancer therapies using in-licensing knowledge. This means that these firms buy from other companies located in Japan, in the USA and in Great Britain the rights to develop protected knowledge and then to re-sell the improved knowledge to the same or to different companies. (Kaiser & Liecke, 2009)
- In Bratislava, the information security in business services develops thanks to consultancy firms that operate both at the local level, with a narrow knowledge of clients and needs, and on a European scale. At the same time, universities support extra-regional learning. This knowledge dynamics is therefore characterised by a strong mobilisation of knowledge generated elsewhere within international companies and universities and by local learning devoted to the utilisation of those new knowledge. (Rehak, Pastor, & Suranova, 2009)

Source: EURODITE

More generally, among the cases observed by EURODITE, this type of development seems to be a feature of technology-intensive sectors, for the most part upstream industrial production or commercial application services operations. For example, the biotechnology, pharmaceutical and telecoms sectors seem to favour these forms of research and development. Large fiduciary services or management consultancy firms also circulate knowledge between their offices and from central regions, where the solutions are developed, and more peripheral regions in which they are transferred, adapted and sold.

We may also consider the extent to which these dynamics are particularly strong in Eastern European countries at present. Indeed, the establishment of Western companies that have seized local markets or that produce on-site for Western markets have imported mobile knowledge on a large scale in order to use it or adapt it to local conditions. The competencies of the workforce and training and research institutions are mobilised as a result, but firms continue to control anchoring and there is very little diffusion of learning to the regional scale.

Knowledge intensive business services (KIBS) seem to play a decisive role in these dynamics. Indeed, their function seems to be precisely to anchor knowledge for an individual client, i.e. to gather, adapt, converge and stabilise scattered knowledge.

3.3. Case 3: Milieu embodying shared knowledge

The third case concerns milieus that centralise knowledge that is often developed elsewhere, but also in the region, and that converge them and connect and combine them in stable, functional and controllable devices. The great strength of these milieus is their capacity to transform knowledge that is relatively diffuse and has sometimes not been transformed into products and services and to develop new economic networks on that basis. Nevertheless, such practices impose control over knowledge that in many cases could evolve and spread more freely beforehand.

The main players in these milieus are either firms or research centres that develop new devices, whether technological or in the field of fashion or luxury goods, etc. The knowledge that is mobilised may be significant knowledge developed in specialised milieus. For example, in the field of fashion and luxury goods, the main firms in the sector will gather the latest trends and emerging talent, whether through immersion in the local milieu or by opening offices in the major metropolitan centres in question. In the field of technology, the firms in question, or research centres, will gather results and recruit researchers or entire research teams, again in the main centres of their speciality. This knowledge is then embodied in new products and services in a stabilised and extensively protected form, e.g. through the registration of a patent or design.

In the field of symbolic knowledge (fashion, luxury goods, news, sport and communication, etc.), these milieus must capitalise on both the logic of sharing and the diffusion of knowledge, in order to raise awareness and appreciation of their products, and the logic of exclusion, in order to make a profit from the sale of products. This is not without ambiguity. For example, designers taken on by big luxury brands have the status of authors or even artists while at the same time being controlled by large corporations. The same goes for footballers.

In the techno-scientific field also, the links between the two systems often gives rise to discussion and negotiation. Indeed, academic researchers, for example, often wish to profit from their work when it leads to important commercial applications rather than being content with recognition alone. Similarly, firms that work with research centres seek to obtain exclusivity over subsequent developments resulting from the technology, although this is contrary to the spirit of significant knowledge.

Knowledge can become mobile through various means, contractual or otherwise, from its place of origin and often via the processes of significant, shared knowledge. Anchoring, on the other hand, is done by firms, in many cases large ones, that stabilise knowledge while taking control over them and making them less dependent on their context.

Table 3 : Two examples of milieu embodying significant knowledge (case 3).

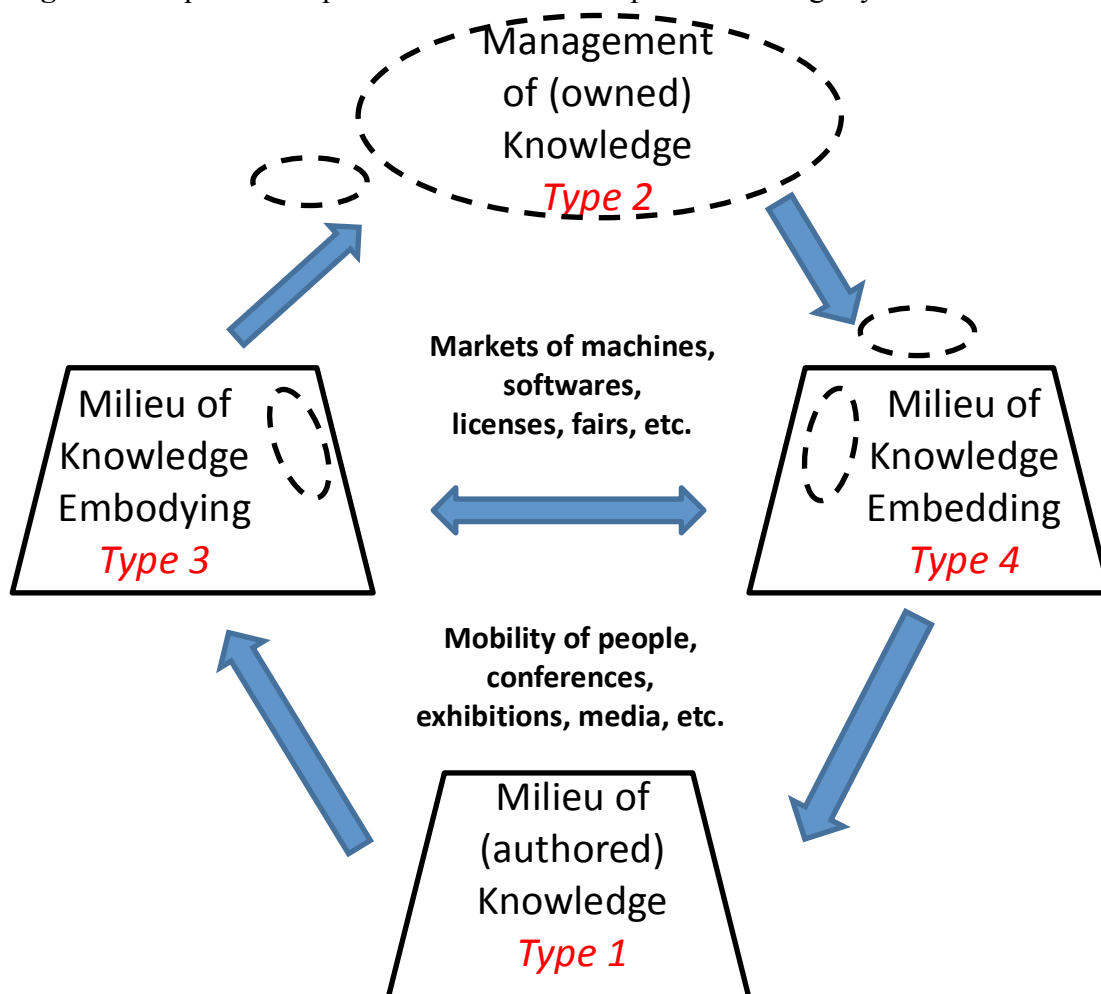
- In Toulouse, the Global navigation satellite systems (GNSS) project is the combination of at least four domains: infrastructures, with very few world players located in highly specialised clusters, hardware and software, with many players within these industries and applications in the service segment with a plethora of potential uses for those technologies. Upstream, the exploration phase is largely decentralised and supposedly largely mobilising mobile, significant and shared knowledge among scientists located in several clusters around the globe. The local anchoring occurs when technical solutions are progressively matured and stabilised in the Midi-Pyrénées region. Then, a new phase of mobility occurs with the diffusion downstream in many other regions where services are developed in relation to final markets. Technical standards seem to play a crucial role in that mobility and anchoring. (Brossard & Vicente, 2010)
- In Stuttgart, firms in the automotive sector intensively mobilise business services for the development of new engineering and visual computing. They mobilise knowledge coming from many places and at the same time develop close relations with local clients or partners. Business services play clearly the role of bridge between sectors, places and firms in knowledge dynamics. By doing this, they produce integrated devices and technologies for their industrial clients downstream. (Strambach, Stockhorst, & Sandmüller, 2009)

Source: EURODITE

More generally, the cases of EURODITE suggest that these TKDs are characterised by a degree of centralisation and therefore by urban centres who polarise knowledge from more or less distant and scattered spaces.

When it comes to analytical or synthetic knowledge, these two cases could be likened to “technopolises” or science parks in which knowledge flows more or less harmoniously from shared research to exclusive commercial applications, the classic example of this being Silicon Valley. In many cases, it is the KIBS that act as intermediaries and perform the task of collecting relevant, distant knowledge and adapting it to the products and services of the large firms that are their clients.

Figure 3 : A possible representation of the European knowledge system



Source: developed by author

In the field of symbolic knowledge, large cultural and creative industry firms in the areas of film, media, luxury goods or fashion also function according to this dual logic of embodying significant knowledge into substantive knowledge devices.

3.4. Fourth case: Milieu embedding controlled knowledge

The fourth case involves milieus that mobilise knowledge from elsewhere and appropriate it by mastering it and then extending it in diverse, evolving and more or less competing forms. The strength of these milieus is their capacity to transform the technical or symbolic principles into a variety of goods and services that are both evolving and competitive.

Knowledge that is mobile and generated elsewhere – generally substantive – first needs to be mastered locally, usually by “early adopters” and then by a more or less wide circle of imitators. Anchoring occurs through contextualisation and through appropriation by firms, training and research centres, and, at a broader level, by a section of the population and with the support of public authorities. This anchoring is characterised by imitation and differentiation and by the extension of imported technical or symbolic models towards more variable and evolutionary local forms. The different actors will develop rules of competition and cooperation that enable the learning of some of them to be used by the others to extend that learning in alternative forms.

Anchoring is characterised by the sharing – by the various firms that subsequently produce competing goods and services – of common, more or less explicit, rules of operation that enable them to maintain the quality levels of products, innovate regularly and maintain the collective economic value of that knowledge.

Table 4 : Two examples of milieu embedding knowledge (case 4).

- In Antalya, some hotels started informally to host football teams for training camps. At the beginning, this occurred because some owners of hotels were also football managers. They started to host football teams during the “dead season” and progressively, a learning process progressed within the region, but also with external specialised European tour organisers in order to improve services and catch new clients. This knowledge diffused then among various hotels and local tourism operators. Another knowledge dynamic was related to the use of place-branding in order to transcend mass tourism. The process consisted at the beginning in copying the example of Barcelona. Then, this mastering was prolonged towards other specific local resources like the coast of Konyaalti.
- The Ruhr region partly reconverted towards the organisation of large, world scale, events which were initially developed elsewhere. The important network of medium size cities with, among other resources, football clubs, allowed this region to organise the football World Cup. In the same way, the Love Parade, born in Berlin, was organised each time by a different city of the Ruhr up to the dramatic edition of Duisburg.

Source: EURODITE

More generally, in EURODITE, such milieus tend to develop in intermediate regions (neither rural nor metropolitan) with a tradition of industry or tourism. Compared to the previous cases, these regions are more specialised in the production of goods and services rather than in research and development. However, they remain dynamic because their competitiveness is the result of the

capacity to recreate continuously new models based on their traditional mastery of production techniques.

The same applies to tourist destinations. They simultaneously correspond to certain images and traditional stereotypes, while maintaining a degree of innovation in services and infrastructure.

3.5. A territorial representation of the European knowledge system

Figure 3 shows how the different types of milieus interact, the manner in which they complement one another and the principal circulations of knowledge between them. The upper part of the diagram represents TKDs that are dominated by substantive knowledge and largely initiated by companies. The lower section represents TKDs where knowledge sharing predominates. Anchoring by the local milieu is shown within each box. Movements of knowledge between these different milieus are shown in the centre of the diagram, contractual exchanges being very important for the upper types of regions while sharing modalities link the milieus of the part below.

Empirically, this typology helps to position the TKDs that have been identified in EURODITE:

- Milieus that are focused on significant knowledge may be cultural capitals or university towns, but also more rural regions that are jeopardising their cultural and natural resources through the diffusion of relative knowledge to other spaces.
- The archetypical form of a knowledge-embodying milieu is the science park – a place that mobilises a variety of knowledge developed elsewhere in the field of high technology to produce stabilised devices and marketable products and to register patents, etc. This type of logic can be found in the field of symbolic knowledge when large firms operating in the cultural industries (fashion, cinema, watch making, etc.) mobilise significant knowledge to make products protected by designs or trademark, etc. This is the principle of start-ups that develop new products and new ideas to be bought by large groups that stabilise them and distribute them on a large scale. KIBS also play a key role here in conveying and adapting scattered knowledge to the clearly identified needs of a major client.
- Some milieus develop TKDs that are dominated by an individual firm approach. While these firms do mobilise local knowledge, they primarily fall within a contractual approach to knowledge mobility and development. Such firms buy process and sell knowledge. These principles are very much present in the pharmaceutical and biotech sectors.
- Finally, some milieus mobilise substantive forms of knowledge developed elsewhere and manage to maintain their economic value by extending and differentiating them from one another, while generating substantial economic output. This type of milieu traditionally develops in regions of small or medium-sized industrial or tourism-based firms. Regional competitiveness in sectors such as tourism or industrial products in which fashion or authenticity play a key role (niche cars, luxury watches, etc.) relies on processes of imitation/differentiation and innovative developments based on traditional knowledge.

3.6. European scale, or the promotion of mobility

As noted above, mobility and anchoring are two sides of the same learning process. However, from an institutional point of view, the same bodies do not promote mobility and develop anchoring, so we have to identify the relevant bodies. Under the EURODITE project, which has adopted a European perspective from the start, TKDs are broached from a local perspective, as interactions with other places. The primary objective of the research has been to understand how these interactions between places developed in the context of European integration and from the perspective of EU policy. As a result, two scales appear to be decisive: the European scale, for the promotion of mobility (3.6.1), and the regional scale, where anchoring is the primary focus (3.2).

In terms of anchoring, the *anchoring milieu* concept takes account of the differentiated manner in which the regions use mobile knowledge (3.6.2).

3.6.1. European scale, or the promotion of mobility

Over the past 20 years, European integration has been characterised by the promotion of mobility of goods (e.g., the 1992 single market), persons (free movement of workers, recognition of qualifications, etc.), and knowledge (mobility of students through programmes such as ERASMUS, European research, etc.).

These are mainly institutional transformations allowing people to carry out their occupation elsewhere or study in other countries. It is also a question of recognising technical and administrative standards that make such movement technically possible, as well as the movement of goods and components and the entry of foreign companies to various national markets.

It is also a question of developing integrated technical infrastructure, such as telecommunications networks, the flow of payments and transportation networks, etc.

Note that these measures *create the possibility* of mobility and interaction across the European area. However, they do not impose any movement on anyone or anything. Thus, in order to understand the actual mobility that develops out of these new possibilities, we must consider the other dimension, namely anchoring.

3.6.2. The regional scale, or the anchoring of knowledge

In the context of European integration – i.e. the opening of borders and the integration of institutions and technical networks – actors are put in a situation that opens up new learning opportunities to them, while imposing new competitive conditions. The various actors (firms, workers, students, etc.) will not automatically travel, but will examine the advantages of moving or interacting more with other spaces. Thus, it is the characteristics of the destinations that will or will not bring about mobility from a given region.

Anchoring is the overall capacity of a place to interact with potentially mobile people, businesses, organisations, and so on. While attractiveness may be understood as the capacity of a place to physically attract people or businesses in a region, anchoring tends to focus instead on the quality of interactions between the mobile elements and the region's capacities, i.e. the learning capacities that the region develops from interactions with other places.

On the regional scale, European-level promotion of mobility is primarily seen as a business relocation or population drain threat. Anchoring, by contrast, is the way in which various actors will, at the regional level, use the mobility of resources from other spaces in order to learn.

Regarding public policies, the concepts of anchoring and anchoring milieu suggest new ways compared to the traditional, cluster inspired, regional policies. The aim is no longer to obtain a coherent production or innovation system within the region, but to insert the region in multi-local networks of mobility and anchoring of knowledge.

A region does no longer need to master all the core knowledge of a production or an innovation in order to be competitive. It needs some integrative capacities (REF STRAMBACH). It could consist, among many possibilities, to develop training curricula across disciplines that use to be separated, like technology and history, design and engineering,...

Accessibility to knowledge is today such that regional policy should strongly favour distant relations. There exist already many tools (INTERREG, programs for the insertion of migrants, selective attraction of migrants, student mobility,...). However, these actions were considered as complementary to traditional ones.

The distinction between substantive and significant knowledge suggests also to dedicate more attention to the competences of customers because the latter will probably be in the future at the heart of value creation. Policies based on clusters remain exclusively centred on knowledge on the supply side.

4. Conclusions: A knowledge mobility and anchoring system in Europe

EURODITE aimed to give an account of the way in which the various European regions fit within the knowledge economy.

This paper is part of this framework. Specifically, it constructs a *territorial and institutional approach to knowledge dynamics*.

Space is not seen here as a mere repository of the learning and innovation processes of participants in the knowledge economy (firms, research centres, etc.). Instead, the learning process itself is defined as a spatial interaction – one that occurs between actors that each occupy a space that is distinct from that of others. The confrontation of differences is the source of learning. Without space, i.e. without differences between actors, there would be no learning. Learning is a collective activity that connects actors and objects that are scattered in space and more or less mobile.

After 20 years of rapidly increasing mobility of European production factors, including workers, students and researchers, firms and, more generally, knowledge, a territorial knowledge economy consists in identifying the manner in which this knowledge circulates and is combined at various points and the impact of this.

This requires us to go beyond the traditional distinction between tacit knowledge, which is immobile and expensive to move, and codified knowledge that can travel cheaply. Indeed, the problem today is no longer the cost of mobility, but the difficulties of anchoring this mobile knowledge, which is now easily accessible. This leads to the question of how and why this knowledge is mobilised.

This question has been answered by distinguishing between two knowledge dynamics. Substantive knowledge is purchased because its content, which is exclusively controlled by a firm, offers economic value in one way or another. By contrast, significant knowledge circulates because it is the sharing of such knowledge that represents an economic value.

Exclusion and sharing define different types of territory, mobility and anchoring. Thus, it is possible to distinguish various types of knowledge *anchoring milieus* – milieus that will show distinct capacities for the local anchoring of knowledge that is mobile at the European scale and beyond.

The traditional TIMs of the nineties were stressing the role of knowledge exclusively in production and innovation systems. Significant knowledge allows underlining the role of the knowledge which is shared, also among customers and citizens, in order to create economic value.

Finally, TIMs did not ignore knowledge coming in the region from outside, but they were focused on the conditions for the local accumulation of knowledge. The concept of anchoring milieu proposed in this paper allows thinking about those local dynamics starting with the mobility and anchoring of knowledge, an approach which is probably more suited to the context of today.

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