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## Industrial Districts and the City: Relationships in the Knowledge Age. Evidence from the Italian Case<sup>o</sup>

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### 1. Introduction

While industrial clusters of SMEs are objectively discernible entities, it is highly disputable that the neo-marshallian industrial districts (IDs) can be similarly defined. Their distinguishing features within the more general class of industrial clusters are the fact that the firms are integrated within the same industry or phase (which can be directly observable) and the presence of a place-specific social capital which allows a trade-off between the imperatives of market competition and those of cooperation (which is not, by contrast, directly observable). These peculiarities are summarised by Becattini's well-known definition, according to which an ID is “a socio-territorial entity which is characterised by the active presence of both a community of people and a population of firms in one naturally and historically bounded area. In the district – and unlike in other environments, such as the *manufacturing town* – the community and the firms tend, as it were, to merge” (Becattini, 2004, p.19; our italics).

Becattini himself argues that the presence of such a merging can be only inferred by having recourse to indicators such as: (a) the functioning of conventional prices within the ID (Becattini, 2000); (b) entrepreneurs' self-limitation in avoiding extreme “Schumpeterian” actions against local competitors; (c) the recourse to joint actions to improve reciprocal competitiveness in the external market and, we add, (d) the practice of deliberately leaving a margin of indeterminacy in defining the terms of the reciprocal commitments in local transactions ~~(Cusinato and Cecchetto, 2007)~~.

In a world where the apparently endless development of market capitalism seems to impose increasing formalisation of any economic relationship and also threatens to pervade all social relationships, the ID phenomenon could prove that another route to development is possible, one which makes it possible to combine the richness of moral-based social relationships and the requirements for impersonality of market capitalism. It is also crucial to note that, again according to Becattini's definition, the achievement of such a condition entails a socio-spatial

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divide, between an inner space – the ID “socio-territorial entity” – within which the recourse to the moral economy as well as market practices is possible and also encouraged, and an outer space – the “other environments” – which is ruled by the harsh imperatives of market, and which the ID has necessarily to relate to. This dualistic structure is not new at all, and actually relates to an anthropological archetype which is usually found in the presence of communitarian forms of social integration: “You may charge a *foreigner* interest, but you may not charge your *brother* interest, that the LORD your God may bless you in all that you undertake *in the land that you are entering* to take possession of it” (Deuteronomy, 23:20, English Standard Version, 2001; ~~our italics~~).

Against this background, the theoretical frame underlying the notion of ID seems to be an updating of that archetypal structure to the industrial age, on the assumption that isles of community still exist. As known, these isles have been identified by the pioneers of the neo-marshallian approach with those parts of the North-Eastern and Central (NEC) Italian countryside where sharecroppers had long experienced the contact with the market and the city (Bagnasco, 1977, ~~1999~~; 2003; Brusco, 1989). Such a scheme entails competition between the newly-industrialised countryside and the industrial city, but, unlike the classical representation, according to which the countryside lies in a disadvantaged condition, this time the parties would be reversed, with the countryside enjoying specific advantages in both the economic and the social domains, thanks to its traditional background and the spatial proximity of ~~entrepreneurs~~ agents.

Without questioning whether this representation is consistent with the conditions occurring during the rise of the Third Italy, it seems expedient to examine if it fits with the present conditions, characterised by the de-industrialisation of cities, the de-materialisation of many crucial assets, the globalisation of markets, and the rise of what is increasingly labelled as the knowledge economy. Questions can be listed as follows:

- What is the role of the city in the post-fordist economy, and specifically in the knowledge-based and globalised economy? In these new conditions, is it still relevant to speak about a difference between the city and the “new countryside” with respect to their economic role?
- If a role difference exists, does it still entail a socio-cultural dualism, such as occurred in the early period of urban-industrial sprawl?
- If this is not the case, as we argue, how best can synergies be encouraged between the “new countryside”, and specifically IDs, and the city?

## 2. The role of the city in the knowledge economy

### 2.1. About knowledge

Knowledge can be broadly defined as the system of plausible beliefs the subject has about reality while being aware that, precisely because it is a matter of belief, there is a certain degree of approximation between the mental images and the reality itself. The key epistemological issue therefore is (and has always been) how to assess that degree of approximation. In contemporary western thought, two main epistemologies compete with regard to this point, the ontological and the hermeneutical. The former is based both on the Cartesian belief that truth exists *per se* and the positivist belief that the subject can reasonably assess the convergence of his mental representations<sup>1</sup> to it through empirical testing.

The post-modern criticism has originated precisely from the confutation of this positivist belief. The criticism ultimately maintains that the device positivists have conceived for excreting any residual metaphysical element from the scientific domain – i.e., empirical testing – is actually based on a metaphysical assumption: certain aspects that would be determinant in rejecting false assertions can indeed be systematically ignored in making empirical tests because of a fallacy in perceptive aptitudes (von Glasersfeld, 1980). From this point onward, truth becomes a conventional entity (once it is admitted that such a term retains some relevant meaning), and the cognitive focus shifts from searching for it to observing the mental processes by which subjects form their perceptual aptitudes (and fallacies).

The shift is particularly relevant as regards creativity because, while admitting that it stems from the recombination of existing elements in a new and useful way, recombination can occur at two different levels, depending on whether or not the reference set of elements includes the cognitive code(s). While in the ontological approach the recombination concerns the information drawn from reality according to the best approximation to the true code the subject supposes is at his disposal, in the hermeneutical approach creativity is conceived as the outcome of the exposure of the subject's own interpretative code to confrontation with other codes.

This entails, among other things, recourse to different sociologies of creativity. In the first case the subject *creates* by establishing a relationship with “things”, maybe in a solipsistic way (Schon, 1983), and society intervenes mainly by endowing him with a convenient cognitive code; by contrast, in the second case social relationships play a crucial role, by providing the subject with occasions for experiencing differences in cognitive codes. These

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<sup>1</sup> Purely to facilitate reading, the male is used to cover both genders.

diverse views are well rendered by Nonaka and Takeuchi (1995), who make a distinction between *Learning I*, “[which] is obtaining know-how in order to share specific problems based upon existing premises”, and *Learning II*, “[which] is establishing new premises (i.e., paradigms, schemata, mental models, or perspectives) to override the existing ones” (p. 44; our italics)<sup>2</sup>. The next section is devoted to ascertaining how the *Learning II* paradigm has entered firms and industry at large, as a core strategic activity.

## 2.2. *The rise of the knowledge economy*

Since the seminal work of Peter Drucker (1968), and in general since the demise of Fordism, it has increasingly been admitted that the economy has left the industrial paradigm and entered a new one labelled the “knowledge economy”. Many interpretations continue to be given of the genesis, significance and implications of this shift. The commonest one is that the event corresponds to the crossing of a certain threshold in the formation of GDP or total employment by the knowledge-based activities (OECD, 1996; Foray, 2000). This criterion is however a merely conventional one, because recourse to the systematic application of codified knowledge to industry dates back to the second industrial revolution. Labelling the crossing of that threshold as the entry into the knowledge economy is undoubtedly licit, but it might be that in doing so, some deeper aspects escape attention, and mainly that *the notion of knowledge to which the so-called knowledge-based activities make recourse might no longer be the same notion of knowledge to which the conventional approach makes reference when speaking about them.*

In response to this question, we advance the hypothesis that the advent of the knowledge economy consists in *the entrance of Learning II practices into firms and industry as a whole as a core strategic activity.* To understand how that event could have occurred, it is expedient to examine what has taken place within the communication circuits inside the firm with the advent of ICTs. Before then, communication necessarily required the intervention of the human factor, since the monitoring of automatic devices, based as they were on electro-mechanical technology, only worked in analogue mode, without any possibility of their being integrated into a complete monitoring system. The role of Humans was to make communication possible at the firm level, by translating (in the double sense of interpreting and transferring) the signals that were emitted by the different local monitoring devices. However, this unavoidable human intervention meant that communication at whole was pervaded by ambiguity, since individual interpretative codes are idiosyncratic, not to mention

<sup>2</sup> A similar distinction is made by Morin (1986), who distinguishes between “knowledge” and the “knowledge of knowledge”. In the following pages we shall make reference to the Nonaka and Takeuchi distinction.

that ambiguity itself can be opportunistically produced (Cusinato, 1996). It follows that even the most peripheral agent had at his disposal a power to condition the performance of the system, since he was able to affect communication, albeit at an infinitesimal level (Marcuse, 1964; Lyotard, 1979). It also becomes clear why (a) most of the top management's care was devoted to establishing detailed protocols for minimising the ambiguity content within the communication circuits (Sennet, 2006), and (b) the typical firm assembled all productive phases within the same plant, the factory: if technical indivisibilities can explain the large dimension of plants, the proximity between technically divisible parts and phases of the productive process satisfied the need both to reduce the decay of information and prevent free-riding within the communication circuits.

The advent of ICTs has wholly upset this scheme. The fact that it is now possible to fully integrate the peripheral monitoring devices into a single "syntactic"<sup>3</sup> network thanks to the generalised recourse to digital language, has made the intervention of the human component in the codified communication circuits superfluous. It follows that *there has been an unprecedented disembedding of syntactic/"monological" communication circuits from the previously single circuit, within which this kind of communication was inextricably entwined with the human/"dialogical" communication.*

This material separation has entailed crucial consequences inside firms and industry. Firstly, the closeness between the human factor and routine activities was no longer necessary. Secondly, routine activities have become potentially foot-loose, except when there are technical indivisibilities. The major consequence has however consisted in the chance the firm has had to adopt *Learning II* practices, thus displacing its focus from the mechanical production of goods to the handling of those conditions that are suitable for generating "vision[s] to create something new" (Audretsch and Thurik, 1998, p. 23). When *Learning II* is taken into consideration, the boundaries between firms and the socio-cultural domain also become vague and more permeable: rather, they become a new action-field for the firms themselves (Lash and Urry, 1994; O'Connor and Wynne, 1996; Houghton and Sheehan, 2000).

### 2.3. *The city in the knowledge age*

The disembedding of the monological from the dialogical communication circuits made possible by the advent of ICTs has revived the debate on the role of territories and the city in contemporary economies. According to the informational approach adopted by some scholars, it was foretold that face-to-face contacts would become irrelevant, and the city would lose its

<sup>3</sup> The term is drawn from Nonaka and Takeuchi (1995).

most distinctive agglomeration advantages, namely the facility to gather information within a dense and dynamic relational context (Boden and Molotoch 1994; Toffler, 1980; Pascal, 1987).

Other scholars subsequently argued that important agglomeration economies are at work also within the informational paradigm, such as because of (a) the presence of significant indivisibilities and scale economies within the circuits of codified information, which gives rise to networks and requires important infrastructures on nodes; (b) informational spill-over concentrates on such nodes; (c) these nodes themselves function as gateways between the various local places (each of them characterised by a specific tacit knowledge) and the global network within which the universally codified knowledge forms and flows. By remarking too that this set of technological, informational, connecting and transcoding functions entails recourse to a variety of highly skilled and highly paid workers, it is not difficult to conclude that the nodes in the space of flows not only preferably tend to be located in the city, but also give new substance and form to the city itself (Sassen, 1991; Castells, 1996; Rullani, 2009).

However, this view of the pivotal role of the city within the globalised ICT-based economy renders only one side of its new condition since it does not adequately consider the consequences of the subsequent advent of the knowledge economy, as it has been described in these pages. Once this event is considered, the key driver for facilitating the successful access of local systems into the global web and market is *creating* socio-spatial structures – namely, milieus – that prove to be fit for enhancing aptitudes for knowledge-creation, that is for (a) recognition of the heterogeneity in cognitive codes, (b) handling them – playing with them, according to the post-modern idiom –, in order to facilitate (c) the *generation* of genuinely new relations between things, agents and concepts, which is the very content of creativeness (Lane and Maxfield, 2005).

As regards the structure – that is, the basic components and their relationships (spatial relationships included) – for a knowledge-creating milieu to work, we can do no more here than merely to recall that<sup>4</sup>: (a) a knowledge-creating milieu is made of two interrelated (and in certain circumstances, interchangeable) devices, one of which generates “noise”, and the other, which is an intelligent device, is strongly inclined to view noise as the possible vector of underlying although unknown cognitive codes, the access to which would allow to gain original insights into reality; (b) two main ideal-types of knowledge-creating milieus can be identified, the first of which is the typical dialogical milieu, which is based on the personal

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<sup>4</sup> For a detailed analysis, see Cusinato (2011).

involvement of a small number of strongly motivated participants, whereas the second is based on impersonality within a large number of interdependent participants and can be identified with the city, a “milieu of milieus”; (Rémy, 2000); ~~Cusinato, 2007~~).

Focusing on the city, four further features seem particularly worthy of note:

- a) the buzz or noise which spontaneously stems from a sufficiently large, dense and dynamic ~~social network of social relationships~~ is a public good (~~Storper and Venables, 2002~~) (a trait which does not occur within a dialogical context, except for the restricted club of participants);
- b) this public good is destined to remain unexploited – and also to be viewed as “bad” – if there are no competences able to translate it into new information, and mainly information about its generative code or codes. (~~Storper and Venables, 2002~~);
- c) translation entails recourse to a chain of highly specialised figures, the first and the last links of which are respectively the emerging figure of the cool-hunter and the “post-modern” entrepreneur. Between them, a number of other figures intervene, giving rise to the so-called creative class: designers, engineers, psychologists, information and computer technicians, advertisers, publicists, and many others, who have in common the ability to deal with interpretative codes<sup>5</sup>. The cultural and professional aptitudes required for dealing with cognitive codes and, moreover, the fact that these aptitudes improve with interaction among insiders, cause the formation of increasing barriers to the entry of competitors into an urban cognitive milieu, which appears as a new natural-urban monopole (Camagni, 2007);
- d) since, ~~as has long been known (Arrow, 1962)~~, the market is not the most suitable device for exchanging information, and still less for dialoguing, it becomes necessary to have recourse to other devices, firstly reciprocation. This allows the internal relationships within an urban cognitive milieu to be based on a well-balanced mix of competition and reciprocity, i.e. on the same ingredient which is considered peculiar to IDs. It thus becomes possible to suggest that the best way of interpreting the city in the knowledge age is to look at it as a special kind of district, and precisely, a “*knowledge-creating district*”.

This way, the cultural ~~and somehow anthropological~~ contrast between the city and the neo-industrialised country would appear as a heritage from the industrial past, since both now resort to the same composite integrative device – a mix of competition and cooperation –,

<sup>5</sup> In the following pages, we shall call the activities related to *Learning II* as “knowledge-creating activities” (KCAs).

although differences occur on the material-functional ground, the city essentially being devoted to the generation of knowledge, and the ID to manufacture.

The main challenge concerning the relationships between the IDs and the city in the knowledge economy thus becomes one of enhancing synergies between the two on the crucial terrain of *Learning II*<sup>6</sup>, beside the more conventional although indispensable terrains on which the literature usually focuses (access to the global web of flows, to a sophisticated final market, to research institutions and knowledge-intensive services). Questions obviously arise about aptitudes and competences of both parts for interacting between them – and together, with the external world – on the delicate terrain of *Learning II*: are the ID actors culturally prepared to deal with the “noise” and “disorder” of the city? To interpret them as resources for creativeness, to be cultivated, rather than “bad” elements to be ignored or rejected. Symmetrically, are the urban KCA actors competent in dialoguing with agents that are distrustful of the uncertain and destabilising *Learning II*? Is it necessary to have recourse to intermediate actors and/or institutions to improve reciprocal aptitudes? In the next two sections we shall describe the shift that has occurred in the relationships between the city and the industrialised countryside in Italy, consequent on the advent of the knowledge economy, and we shall try to reply to the above questions in the concluding section.

### 3. New relationships between the city and the “countryside” in the knowledge age

#### 3.1. *The age of Industrial Districts: escape from the city*

In the early 1970s, Fordism was thrown into crisis by a series of events, both conjunctural and structural, which challenged two of its founding pillars: certainty and rigidity. The 1973 oil crisis occurred at a time when the mass goods market was saturated, the fixed exchange rate regime discontinued, and the rigidities imposed by Fordism had become a cause factor of friction, both from the productive and the socio-cultural points of view.

One of the territorial outcomes of the crisis of Fordism was the process of dis-urbanisation that took the form of an inversely correlated growth of inhabitants and economic activities in relation to urban dimension (Dematteis, 1997). In this period manufacturing activities, and mostly land-consuming and labour-intensive ones, delocalised elsewhere in Italy from metropolitan to peripheral areas of the North-western regions (Piedmont, Liguria and Lombardy).

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<sup>6</sup> Suggestions in this sense can be read in the final chapters of Becattini (2009).



The other phenomenon following the demise of Fordism was the exceptional development of small and medium-sized enterprises (SMEs) within neo-marshallian IDs. They were characterised by (a) specialisation in traditional sectors and (b) localisation in the NEC regions (from Umbria to Trentino), where a network of small and middle-sized towns lie in the “urban countryside” (Becattini, 1974). These small centres, each of which had planned its own industrial area, were also endowed with diversified urban functions, consolidated institutional traits, a variety of private trade activities and dense road networks which facilitated SME settlements (Fuà, Zacchia, 1983).

The ID quickly became a metaphor of successful local economic development. Together with the process of internationalisation of firms, IDs helped economic agents facing the need for cost reduction. Clusterisation and internationalisation do, indeed, represent two different ways through which economic systems can cope with the rise of the production costs due to the oil crisis and the rigidities of the labour market. Through internationalisation, the most routine productive phases have been displaced to developing or emerging countries, where firms draw heavily on the low cost of labour, relaxed control of negative environmental externalities and a favourable fiscal regime. By contrast, with the clustering of SMEs, cost reductions came from marshallian externalities and decreasing transaction costs. IDs were (and are) embedded in a shared all-embracing atmosphere (economic, social, cultural and institutional), based on proximity and the recurrence of face-to-face contacts. These features strengthen relational networks and enhance mutual trust, allowing entrepreneurs to adopt a vertically disintegrated model of production without having to face its costs. Since they can count on reciprocal trust, they do not have to buy all intermediate goods and services on the market which otherwise they would have to in a purely market-driven context, in order to protect themselves against risk and uncertainty (Williamson, 1985).

Finally, although firms were not technological innovation-oriented in this first pioneering phase, they could count on recurrent competitive monetary devaluations, which erased the delays accumulated in terms of labour productivity, compared with the other European competitors.

To sum up, from the point of view of territorial outcomes, we argue that while the city is central to the Fordist industry, it is no longer the case with IDs. Fuà and Zacchia (1983) stated that sprawled industrialisation became possible thanks to the lack of large cities: polycentrism and localisation economies coming from the clustering of SMEs seemed to be enough, at least till the '80s, to make the ID model competitive on the international scene.

### 3.2. The global economy: back to the city

The internationalisation of western firms was accelerated by the developments of ICTs, as well as new transport and logistic technologies. The new opportunities offered by the ICTs triggered a debate on the relevance of proximity and, consequently, the role of territories and the city in contemporary economies. Some scholars, on the basis that face-to-face contacts might hypothetically become insignificant, stated that territory would implode in a homogeneous space, eroding the importance of proximity and agglomeration economies (Boden and Molotch 1994; Toffler, 1980; Pascal, 1987). Mitchell (1995) speaks expressly about a progressive shift from the Weberian city to “Bits City”, while Castells (1996) speaks of a *space of flows*, a spatial organisation where agents, goods and information are in constant movement within a globalised space.

The reality is that all these theoretical contributions do not succeed in explaining why, notwithstanding their forecasts, polarisation and concentration processes, like territorial disparities, continued. As the most recent convergence studies show, at a sub-national level, territorial disparities are constant among the block of 15 EU countries, in rapid growth among new members (Paas and Schlittle, 2008), and increasing when shifting from the national and regional level to a sub-regional level (Straubhaar et al., 2002). Moreover, Mora (2008) shows that disparities emerge because of a growing sectorial specialisation and an increasing gap in human capital levels. Empirical evidence also shows that cities are not disappearing, but have rather reaffirmed their centrality in the globalised economy, where spatially dispersed activities are integrated at a planetary level (Hospers, 2003).

If, after the demise of Fordism, IDs seem to have suited the new productive needs, economic globalisation now requires a further shift in the techno-economic paradigm, because clusters are no longer able to provide the conditions for facing global competition. Nowadays, relative prices have changed and competition increasingly requires the continual introduction of process and product innovation, which are strongly knowledge-based urban activities. Cities, by protecting against risk and uncertainty, enable transaction costs to be reduced through cognitive inputs, the labour market and variety of suppliers (Camagni, 1993). Thanks to urban agglomeration economies – which concern the concentration of different and not necessarily interrelated economic activities, the sharing of transport infrastructure, public services and highly advanced services – many cities during the '80s succeeded in reversing the decline due to the crisis in urban manufacture (Storper, 1996). Activities in new economic branches (based on soft-inputs and on rapidly changing goods and services outputs) replaced the manufacturing activities inside metropolitanurban areas, generating, in some cases, a

geographical concentration of industries (industrial urban sub-systems) resembling that of the marshallian districts (Amin and Graham, 1999). Furthermore, as well as the delocalisation of productive activities all over the world, globalisation implies the concentration of management and control activities (and their related services and infrastructures), and this is confirmed by empirical evidence: the heads of the global value chains of large multinational firms have polarised in the main global cities (Sassen, 1991).

Scholars from different fields have provided different explanations of the features that make the city a suitable place for activities related to knowledge creation and innovation. According to Jacobs (1969), the *mixité* of economic activities within the city and the socio-cultural heterogeneity of inhabitants are the most suitable conditions for the creation, transmission and re-shaping of knowledge. Cities are characterised by a continuous internal and external interaction which permits individuals and organisations uninterruptedly to process “signals” and “impulses”, generating and spreading knowledge, enhancing the productivity and professionalism of employees and entrepreneurs. As a result, urban contexts can count on a ceaseless process of human capital enrichment that allows rapid technological change.

The neoclassical perspective suggests the importance of certain features that make the city particularly attractive for highly skilled workers (young people with a high level of education and income), such as consumer-oriented services, urban and climatic amenities, wage-enhancing opportunities and quality of life (Glaeser et al., 2001; Glaeser 2005). Florida (2002), for his part, focuses on the importance of tolerant contexts with a high quality of life that attract creative classes to congregate. To intercept this type of worker, firms would need to elect the same localisation for their plants, triggering a process of cumulative causation. But the story is perhaps much richer. Storper and Scott (2009) stress the relevance “of selective geographical matching of productive resources, skills and institutions of coordination” ~~(italics original)~~, which would jointly be able to explain the basic source of urban dynamism. Applying these statements to the Italian case highlights interesting stylized facts. From the point of view of the matching productive resources and skills, recent economic history shows that:

a) The tertiarisation process which has occurred since the '80s is deeply interrelated with the manufacturing sector, which remains an important driving force of the national economy<sup>7</sup>. In the '80s, indeed, most manufacturing firms began outsourcing many activities, such as book-keeping, logistics, maintenance, legal activities, marketing, cleaning services and

<sup>7</sup> In 1991, 2001 and 2007 manufacturing employees accounted, respectively, for 29.1%, 25.3% and 25.3% of the total employed workforce.

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staff training. As a result, service activities, previously carried out by employees inside firms, are now autonomous enterprises and, consequently, their employees, who were registered in the manufacturing sector, are now counted in the service sector (Gallino, 2003; Calafati, 2009).

b) The spatial outcome of that tertiarisation process has been the concentration of services, and particularly knowledge-creating services, in urban areas, as described above.

c) A sort of division of labour between urban areas and IDs has also emerged. As in a modern version of the Weber theory of localisation of industrial activities, cities furnish creativity, innovation and knowledge, which represent now basic raw materials and strategic assets for the manufacturing sector. Moreover, cities work as knowledge gate-keepers (Morrison, 2008), being the interface between the local and the global level. They allow IDs to build relational networks out of their local context, expanding their operative “boundaries” (IRSO, 2010). In this perspective, the interlinking of IDs and urban systems seems to be crucial if processes of endogenous development are to be sustained and global competitiveness faced (Rullani, 2009).

d) The possibility of establishing and improving such a link is closely related to the so-called *industrial commons* such as universities, the financial system, research and advanced services poles, hi-tech know-how (Pisano and Shih, 2009).

e) Urban marketing policies and targeted negotiations are essential to attract the knowledge-based and most innovative activities, and can have cumulative effects thanks to the mechanism of endogenous development (Calafati, 2009).

With reference to the view of the knowledge economy we have developed in these pages, it is however worth examining the interlink that exists (or could form) between the city and IDs, as regards the crucial domain of knowledge creation, that is the capabilities of dealing with cognitive codes. By labelling as “knowledge-creating activities” (KCAs), those economic services which are expressly devoted to the reshaping of cognitive codes – that is, *Learning II* – we **suggest** argue that they prefer (a) to cluster in the city, to take advantage of the generalised “buzz” that forms, not only within their somewhat closed circles, but in the wider urban arena, and specifically (b) in cities that are placed near IDs or within industrial milieus. The next section is devoted to exploring this hypothesis.

#### 4. A geography of Knowledge-Creating Activities in Italy

Our approach to knowledge-based activities differs from both the KIBS (Miles et al., 1995) and the Creative Industry (Landry, 2000; DCMS, 2001) approaches. It differs from the first

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because it does not take into consideration those services that, although they have a high technological content, mainly make applicative use of existing knowledge, such as “Data processing”, “Database activities”, “Maintenance and repair of offices, accounting and computing machinery”. By contrast, KCAs include “Media” as well as other public activities such as “Universities and Research Centres”, that are not recorded among KIBS. On the other hand, KCAs differ from Creative Industry because they do not encompass the entire creative chain, from the inventive conception and design to the manufacturing production and retail, but only the primary components of this chain, which are inherently concerned with *Learning II*<sup>8</sup>.

#### 4.1. Methodological aspects

Before seeking an insight into the Italian geography of KCAs, let us define the spatial unit of analysis, the economic categories we will focus on, and the index we will make use of to describe them. As far as the spatial unit is concerned, the choice has fallen on Local Labour Systems (LLSs) (Istat, 2005). These are defined as clusters of municipalities which are aggregated on the basis of labour commuting flows. LLSs, nowadays, are the only spatial metric in Italy that render meso-territorial functional relationships (Barbieri and Causi, 2005). This makes it possible to account for the profound territorial changes which have occurred in Italy since the '70s, the outcome of which has been the coalescence of neighbouring municipalities in urban systems, which are functionally interrelated although not recognised as autonomous institutional entities (Calafati, 2009).

Concerning the classification of economic activities, the focus has moved from placing the prime source of creativity on the accumulation and refinement of knowledge according to a given interpretative code, to aptitudes in handling and articulating interpretative codes, that is from *Learning I* to *Learning II*. On this basis and after having tested the main international classification (KIBS – Knowledge Intensive Business Services, European Innovation Monitoring System, 2005; CI-DCMS–Creative Industries, Department for Culture, Media and Sport, 2001) with reference to the Italian case, we propose an original classification. Through a semantic analysis of the definition of five-digit economic activities supplied by Istat<sup>9</sup>, we have reclassified them in order to extract the ones which handle interpretative codes as their normal activity and which we call “Knowledge-Creating Activities” (KCAs). As shown in Table 1, three sub-groups can be distinguished among KCAs:

<sup>8</sup> For details, see Compagnucci, Cusinato (2011).

<sup>9</sup> The glossary of economic activities can be found at <http://www.istat.it/strumenti/definizioni/ateco/>

1. Core KCAs, whose normal mission consists expressly in handling interpretative codes.

Within this group, a further divide is made between *Private Core KCAs* and *Public Core KCAs*, on the basis of the weight of the private and public sector within them.

2. Core-Related KCAs, which concern those activities that normally interact with interpretative codes, although this is not expressly readable in the Ateco definition.

Table 1. Classification of Knowledge-Creating Activities

<b>Ateco cod. Private Core KCAs</b>		<b>Ateco cod. Core Related KCAs</b>	
22110	Publishing of books	22150	Other publishing
22120	Publishing of newspapers	72100	Hardware consultancy
22130	Publishing of journals and periodicals	74141	Financial consultancy
22140	Publishing of sound recordings	74142	Labour consultancy
72200	Software consultancy and supply	74143	Agrarian consultancy
72601	Telematic, robotics, eidomatic activities	74146	Commercial information agency activities
72602	Other computer related activities	74145	Public relations
74130	Market research and public opinion polling	74150	Management activities of holding companies
74111	Legal activities	74203	Integrated Engineering activities
74201	Architectural activities	74205	Mining research activities
74202	Engineering activities	74811	Photographic activities
74401	Advertising	92200	Radio and television activities
74845	Designers	92310	Artistic and literary creation and interpretation
92110	Motion picture and video production	92400	News agency activities
73100	Research and experimental development on natural sciences and engineering	74144	Business and management consultancy activities
73200	Research and experimental development on social sciences and humanities	74204	Aerial photogrammetry and cartography activities
<b>Ateco cod. Public Core KCAs</b>			
92510	Library and archives activities	80303	Other higher education
80301	Higher education-3 years bachelor	85114	University hospitals
80302	Higher education-5 years bachelor	92520	Museums activities and preservation of historical sites and buildings

Source: Our elaboration of Istat classification of economic activities (Ateco 1991).

As regards the methodological aspect we conclude with the choice of the localisation index by which to map KCAs. Although the literature generally makes use of the *Localisation Quotient*, which relates employees in a certain sector to total employment (~~Boix and Galletto, 2005; Istat, 1997; Lazzeretti and Capone, 2006~~), we prefer to resort to a *Density Localisation Quotient* (from now on DLO), which relates KCA employees to inhabitants. This choice allows monitoring of two relevant aspects: a) the relative importance of each economic activity, not with respect to total employees (which may be a very low figure), but to the demographic size of the entire local milieu; b) the presence of structural differences between the labour markets in Northern and Southern Italy. In fact, the latter suffers from high rates of unemployment and inactivity.

The  $DLQ$  index is calculated as follows:

$$DLQ = \frac{\frac{E_{k,i}}{P_i}}{\frac{E_k}{P}}$$

where  $E_{k,i}$  is the number of KCA employees in the LLS  $i$ ,  $P_i$  is the number of inhabitants of LLS  $i$ ,  $E_k$  is the total number of KCA employees in Italy, and  $P$  is the total number of Italian inhabitants. An LLS is specialised in a certain economic sector when the relative value of  $DLQ$  is higher than 1.

#### 4.2. Cities, manufacturing sector and KCAs

Total KCAs employed more than 1.1 million persons in 2001 (they were about 750,000 in 1991), equal to 5.7% of total Italian employment (4.2% in 1991). Table 2 shows that 61% of them belong to Private Core KCAs, which almost doubled their employees and significantly contributed to the increase of the total KCA sector between 1991 and 2001. Public Core KCAs remain the smallest in terms of employees, even if their growth rate was 41% in the last decade. Finally, the Core-Related KCAs, which are the least distinctive KCA sector, are also the least dynamic in terms of growth rate, equal to 11.2%.

Table 2. Number of employees in KCA, KIBS and CI-DCMS sectors, 1991 and 2001

Year	Public KCA	Private KCA	Related KCA	KCA	KIBS	CI-DCMS
1991	387,876	134,127	252,370	774,373	863,533	2,108,327
2001	671,830	181,379	275,936	1,129,145	1,570,220	2,161,410

Source: Our elaboration of Industry and Services Censuses, Istat 1991 and 2001

The Gini index calculated for population, manufacturing employees and KCA employees at the level of LLS and weighted for their area shows that KCAs are the most concentrated activities. Private Core KCAs in 2001 have an index equal to 0.893, which is higher than KIBS (0.855) and CIs (0.833) (Table 3).

Table 3. Gini Index-weighted for LLS surface area - 1991 and 2001

Variables	1991	2001
Population	0.718	0.716
Manufacturing employees	0.766	0.741
CI employees	0.808	0.833
KIBS employees	0.849	0.855
KCA employees	0.867	0.869
Core Related KCA employees	0.864	0.879
Public Core KCA employees	0.943	0.940
Private Core KCA employees	0.893	0.893

Source: Our elaboration of Industry and Services Censuses, Istat 1991, 2001

All three classifications, moreover, show a much higher concentration than population and employees in manufacture (Table 3). Furthermore, Private Core KCAs seem to be a peculiar urban phenomenon: as shown by Charts 1 and 2, of the 34 LLS with DLQ>1, 31 are provincial or regional capitals; the LLS with DLQ>1.5 include the two largest Italian metropolitan areas (Milan and Rome) plus Turin, Bologna, Florence and Padua, each of them having more than 500,000 inhabitants. Of the remaining five LLS, three are provincial capitals (Trento, Pisa and Parma), Mezzolombardo is integrated with Trento, and Ivrea, which is close to Turin, has a peculiar history depending on the presence of Olivetti (a computer science-based firm).

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Source: Our elaboration of Industry and Services Censuses, Istat 1991, 2001

Charts 1-2. Density Localisation Quotient for KCAs (2001)





Chart 1. Total KCAs (DLQ>1)



Chart 2. Private Core KCAs (DLQ>1)<sup>10</sup>

A further contribution is given by Charts 3 and 4, which show the intersection between LLS specialised in Private Core KCAs (34 units) and IDs (156 unit), as identified by Istat (2005). The very low number of spatial intersections (5) seems to strengthen the hypothesis we stated in paragraph 3.2, according to which KCAs are urban activities strictly integrated with industry. However, as these ~~above~~ Charts show, the integration occurs according two very different models: in the case of IDs (Chart 3), the LLS specialised in KCAs are spatially complementary to IDs, often specialised in the “Made in Italy” sector<sup>11</sup> (Becattini, 1998) – a situation which reflects the historical complementarity between cities and IDs –, while when high-tech industry (OECD, 2005) is taken into account, a strong spatial integration clearly occurs (Chart 4). As a consequence, we can argue that the Italian IDs are not only generally peripheral with respect to the major urban systems but that they might be “dependent on” them for the supply of KCAs. On the contrary, LLS specialised in hi-tech industries, frequently overlap with LLS characterized by a substantial presence of Private Core KCAs, showing a remarkable level of spatial correlation.

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<sup>10</sup> Light gray is for  $1 < DLQ \leq 1,1$ , gray for  $1,1 < DLQ \leq 1,5$  and dark grey for  $DLQ > 1,5$ .

<sup>11</sup> In Italy, 232 LLS out of 286 are specialised in the “Made in Italy” sector, but only 7 of them are also specialised in Private Core KCAs.



Chart 3. Private Core KCAs > 1 and Industrial Districts<sup>12</sup>



Chart 4. Private Core KCAs > 1 and Hi-technology industries<sup>13</sup>

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## **5. Conclusions**

Learning I and Learning II are two cognitive modalities that are so closely intertwined as to be almost undistinguishable from each other in everyone's daily praxis. Although individuals think they are making predominately if not exclusive recourse to Learning I, they are actually carrying on a ceaseless shuttle between the two modalities, thus continuously reshaping, maybe unconsciously, their own cognitive code. This belief that Learning I is the normal route to knowledge has practically permeated modern civilisation: the separation between mind and nature and the need for "clear and distinct" ideas in order to dominate both nature and society (and maybe the mind itself), have relegated Learning II to the so-called pre-analytical (Schumpeter) or metaphysical (Popper) domain, that is away from the properly scientific one. In turn, the mechanical rigidity inherent in the industrial paradigm, and chiefly Fordism, the need it had for an unambiguous command-and-control chain (Sennet, 2006), made Learning I the normative approach to knowledge and, à cascade, to innovation within firms.

The ICT revolution, with its disembedding of monological communication circuits from the intertwining with the dialogical circuits, has made it possible to realise the higher creative potentialities of Learning II and, as a consequence, the key importance of dealing with

<sup>12</sup> LLS specialised in Private Core KCAs = white with black boundaries; Industrial districts = light gray.

<sup>13</sup> LLS specialised in Private Core KCAs = white with black boundaries; Hi-tech LLS = light gray.

information about cognitive codes rather than (or besides) information about the external world. The focus has therefore shifted to the socio-spatial devices – milieus – that are reputed to enhance aptitudes for *Learning II*. The firm and the city have already been indicated as knowledge-creating milieus, and are under examination by number of scholars. The question arises if the territory too can work and be governed (in the sense of governance) as a knowledge-creating milieu. As regards this concern, the above analysis suggests that the changing relationships between IDs and the city over time provide the appropriate frame (or merely a metaphor?) for supporting such a hypothesis. After a period – approximately from the late Sixties to the early Nineties of the past century – which was characterised (in Italy, at least) by the rise of IDs, and during which these socio-territorial formations were interpreted as an *alternative* pattern to development with respect to the fordist city, the time has perhaps arrived to question if this image is still consistent with the socioeconomic and spatial conditions consequent on the advent of ICTs and the rise of the knowledge paradigm ~~— or if it is obsolete.~~

On the prospect of the knowledge paradigm, the relationship between IDs and the city seems to provide the basic elements for a knowledge-creating milieu to emerge. On the one hand, the contemporary city works as a “heterogenetic” device, in the sense it is not only the main place but the main generator of heterogeneity, heterodoxy and also noise. On the other hand, the ID is by its very nature an “orthogenetic” device<sup>14</sup>, the mission of which is to turn disorder (raw and dispersed materials, including information) into order (goods). The other necessary condition for the system effectively to work as a knowledge-creating milieu is the presence of a “mechanism” allowing the disorder produced by the city, firstly, to be interpreted by the ID as a potential resource – a sort of informational raw material – and then possibly converted into genuinely new information through recourse to *Learning II* practices. This requires that a congruence – a dynamic congruence – is set up (and governed) between the city’s capacities to generate “noise” and the ID’s abilities to interpret it as a potential vector of cognitive codes. If the city does not produce “noise” in sufficient quantity (as is likely to happen in cases of excessive and undifferentiated urban sprawl), or does not catch, recode and transmit the “noise” generated outside, the local milieu can decay for a lack of raw material (informational impulses) input. On the contrary, if there is a lack of *Learning II* aptitudes within the ID, it is doomed to become isolated from the main source of information about cognitive codes and/or succumb because of an excess of noise. It seems therefore that the key

<sup>14</sup> The distinction between heterogenetic and orthogenetic socio-spatial devices is drawn from Redfield and Singer (1954), who originally introduced it to distinguish between the traditional and the contemporary city.

concern should be that the local actors concerned – policy makers, urban and ID entrepreneurs, representatives or pioneers of local KCAs, educational and cultural institutions – meet to (a) ascertain if the basic elements are there for a territorial knowledge-creating milieu to become established and work and, if they are, (b) start a strategy for creating a congruence between the generative capacities of the city and the interpretative and innovative capacities of the surrounding ID(s), and finally, (c) improve the performance of the milieu over time, by acting both to enhance the capacities of the urban fabric for generating unexpected novelties, and those of the IDs for converting them into innovation opportunities. These conclusions obviously detract nothing from other conventional strategies that are more directly connected to the *Learning I* approach, because of the necessary interaction between the two modalities of learning we have discussed above.

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