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Local Development and Competitiveness

by

Sergio Conti and Paolo Giaccaria

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Preface

In the last decades of the millennium, a new era, marked by new processes and phenomena, gradually established itself in the development of capitalism. As they belong to everyone's daily experience, they need only be briefly reviewed here to contextualise these introductory pages. For the economic geographer, these are: the advent of a new technological paradigm founded on information, communication technologies, microelectronics and computerisation; the growing tertiarisation of the economy; a new "culture" of consumption, which expands and is increasingly characterised by individualism and the multiplication of symbolic dimensions; the growing globalisation of economic activities (industrial, tertiary, financial); finally, the modification in the relations between the state and the market, between the public and the private spheres of the economy.

It would not be particularly useful to debate each of these realities, as there is substantial agreement on the fact that, although not phenomena that appeared suddenly, they underwent a very visible acceleration in the last part of the century, destabilising the old world while at the same time laying the foundations for a new era, inhabited by plural and divergent dynamics, pregnant with conflict and for this reason harder to master. At the same time, they have undermined the walls that enclosed certainties within a castle where order reigned and replaced them with disorder, uncertainty and instability.

The "old world" gave the impression, in fact, of being governed by certain rules and evolving according to predictable processes: large size companies and economies of scale in production, metropolitan growth, industrialisation as the only idea of modernity, development as a linear process for the production of wealth and the diffusion of standardising forces and processes.

This old world appeared essentially "comprehensible". This explains the construction of categories and languages valid for an economic system whose laws of evolution could be fixed once and for all, appearing for this reason as unassailable certainties, non reducible assumptions of a single great scientific model.

Strong epistemological thought, faithful to a scientific method which guaranteed its objectivity and rationality, had thus established that some disciplines possessed an epistemological and programmatic statute - the nomothetic sciences, i.e. those characterised by systematic research and the enunciation of necessary and universal laws - marking a clear-cut break with the evolutive sciences (chorologic and idiographic) which, dealing with casual, uncertain, unrepeatable and contingent phenomena, were therefore incapable of endowing themselves with an autonomous epistemological statute. Such a clear distinction between the sciences has been

drastically reduced in recent decades, and scientific truth has appeared increasingly as that far-off island of Melville, far from the West and the East, unmarked on any map, as real places always are. This is the great legacy of the last decades of the century left to the sciences of the new millennium.

The first group of sciences traditionally included economics. Since the 19th century, political economics has in fact ridden on the back of modernity, marking a sharp break with the classics and their economics attentive to social relations. In this way, economics has traced back the problem of knowledge to one of correct axiomatisation: ambiguous concepts were gradually substituted by the power of coherent logical/formal structures, constructed with given rules and precise definitions, where logic became the last word.

Economic geography itself, whose roots lie in conventional economics, was constrained for a long time to the "solitude" of economics. It is, in fact, well known that modern economic geography has found its main sources of inspiration in economic neo-classicism, in Keynesian macroeconomics and Marxist economics, around which principles and aspirations have been built to make the discipline of geography a "real" science.

The set path of the scientific project and the way of reasoning of the social sciences marks, however, a progressive turning point for the evolutive sciences and, with them, the proposals, implications and language of geography. The sign of change is given by the vast consequences related to the introduction into the explanatory design of contemporary science of the three fundamental dimensions of time, space and subjectivity, in other words the three cornerstones around which knowledge has gradually refounded itself in order to master a world characterised by uncertainty, instability and ingovernability.

In conventional science, trying to cope with processes deterministically projected towards equilibrium, time was considered as continuous, linear, and therefore predictable: the company was "condemned" to growth and a single (industrial) development model imposed itself and pervaded the world. The same was true for space: a de-historicised world is also a homogeneous world, banal, stripped of distinct differences and dynamics. It can thus be transformed, favourable to the exercise of the laws of the economy and the deployment of standardising processes and forces. These processes and forces, responding to profound logics, valid at all times and in all places, could be "explained" through universally "true" laws: if the world is seen as a set of unchanging empirical regularities then these must be visible and comprehensible. To do this, the condition required is that science deny any remaining legacy of subjectivity and give preference to objectively certain and rational instruments.

The new face of science is characterised by opposing conceptual premises. The first cornerstone concerns time, which expresses an evolution no longer towards equilibrium but something much more problematic, subject to multiple dynamics that do not allow in any way the prediction of future developments. History is thus an uneliminable component in any valid interpretation of economic and social phenomena.

The return of history cannot be separated from that of the spatial dimension (territorial, as we will say in the text). Space is not something dead, an object of calculation and axiomatisation, but a multiplicity of economic, social and cultural relations, rooted and uneliminable, both the origin and result of the historical action of mankind. It is thus multidimensional and heterogeneous and cannot be broken down indifferently into parts, just as the parts cannot be summarised in the whole. Certainly its structure is the expression of economic activity, but this is just one, though certainly important, aspect of a web of forces and processes that cannot be broken down.

The third cornerstone is a consequence of the previous ones. No form of knowledge is enough to give intelligibility to a world whose intrinsic complexity cannot envisage a full explanation. For this it is necessary to subvert the rational project and unveil the illusion of the objectivity of knowledge. The observer, dissociated from his own culture and language of discipline, thus becomes irremediably part of the scientific discourse. If reality is multidimensional, every interpretation of it will therefore be a "point of view" in a single cognitive process of phenomena which, in order to be understood, must be observed in their many aspects. There are no doubts that the greatest progresses in contemporary science have been made by introducing the observer into the observation.

In this perspective, geography once again becomes a *science of places*, i.e. infinite ways in which society (and the economy) acquires the meaning that cannot appear in the light of generalisation, incapable of placing phenomena in their context and projecting the categories of totality onto the individual parts. In order to be understood, the economic, cultural and social differences that are the foundations of the contemporary world demand languages and points of view through which reality (including global reality) is observed "from the place", with its extremely complex and historically unrepeatable social, economic and cultural strata. This reintroduces forcefully the function of the evolutive sciences in the scientific discourse and breaks the constraints that influential thought has erected between disciplines.

For this reason, in the first part of the book we shall see how the ideas and languages used by geography and economics scholars to represent the contemporary world have changed in the community of geographers and other social scientists. The profound transformations outlined above will be illustrated through the analysis of five shifts that have modified the realm of the economy as well as its representations.

The first transformation we will take into consideration (Chapter 1) concerns the relations between space and technology. The theoretical debate in the eighties and nineties led to the abandonment of the traditional hypotheses about technology (consider, for example, the linear model of the diffusion of technology) and the emergence of new perspectives on innovative processes. The latter ceased to be the result of a linear process, essentially exogenous to the society and economy, in order to be integrated, in an evolutionary perspective, into the broader historical and geographical context in which innovation originates and develops. Innovation thus appears as the outcome of the complex interaction of numerous factors that constitute

an only partially reproducible mixture. The elaboration of now familiar concepts such as national innovation system or milieu innovateur reflects the new centrality that places (and the differences between places) assume in explaining innovative behaviour.

In the second chapter, attention shifts to company organisation and, in particular, to the passage from the market-hierarchy to fuzzier forms of organisation, such as network-based ones. Again in this case, the change of perspective has meant reassigning a leading role to places as the context where economic and social networks co-evolve with the external environment, creating the conditions for the development of economic activities.

The third shift concerns overcoming the dualism between corporation and small enterprise that has characterised the debate on the nature of the company since the fifties (Chapter 3). In particular, the awareness that non hierarchical networks of small companies can have competitive and innovative behaviour, held previously to be the exclusive prerogative of the Galbraithian corporation, opened the debate on the search for *intermediate entities* (in other words, forms of organisation that lie between the single enterprise and the economy as a whole). Once again, this leads us to re-assess the role of places and the local, in that it is there that small companies find their material (labour market, skills etc.) and immaterial resources (i.e. personal relations and trust) that can no longer be generated solely within their own organisation.

Instead, the fourth chapter tackles the problem of regional imbalances that marks the shift from the enterprise perspective to that of territories and development. Through a series of theoretical steps, regional development scholars have progressively deconstructed the neo-classical hypotheses that saw in economic development a linear and necessary process that would lead spontaneously to equilibrium and the disappearance of differences between places.

This job of dismantling economic orthodoxy is completed by the shift from the functionalist approach to the systems approach (Chapter 5). As we shall see, the concepts typical of systems theory (i.e. autonomy, autopoiesis, organisation etc.) make it possible to view the region as a complex system, in other words as an entity endowed with its own identity that does not adapt passively to the changed external conditions but reacts to them in such a way as to conserve its own organisation.

Through these five shifts, the passage can be sketched from a *passive* vision of the territory (interpreted as a mere material factor and support for production) to an *active* vision in which places and local communities become entities with their own identity, whose characteristics have a substantial influence over the processes of innovation and economic development. This treatment enables full understanding of the meaning and importance that the contemporary social sciences assign to spaces and territories.

Our hypothesis is that these are not accidental episodes but a full-blown revolution in the way of viewing economic processes and their links with social and cultural structures. In other words, this new sensitivity to places offers the possibility of rethinking issues typical of economics in a different perspective that we might define as *local development*.

In the second part of the book, we will thus try to support more strongly, although in a necessarily simplified manner, the possibility of constructing a theory of local

development. To this end, the theoretical dynamics and instruments introduced in the first part will constitute the basis for a discourse which, starting from the different schools and suggestions, offers a more coherent interpretation of development processes.

The key idea is that there is no single development model operating at a given time and valid for all places, but that it is more correct to talk of multiple development paths that co-exist in the same place at the same time. The central point is not, in our opinion, to identify the succession of distinct hegemonic models (Fordism versus post-Fordism, mass production versus lean production and so on), but to show how the complexity of the contemporary economy demands more subtle concepts to explain its apparent contradictions.

In order to talk of local competitiveness and development, it is therefore necessary to shift attention from the relations internal to the individual company to those external to the company but within the territory (Chapter 6). This will lead us to reconsider the processes of simplification of reality on which the social sciences are based and to demonstrate how the understanding of contemporary socio-economic phenomena demands a radical rethinking of the categories of space and time (Chapter 7). In particular, we will consider the contribution that institutionalist economics can offer to the rethinking of the relations between space and time, economy and society, places and development.

Chapter 8 examines the problem of the identity of places and its relationship with the problem of development and competitiveness. To this end, we re-introduce some concepts already examined in the first part (network, local/global relationship, learning etc.) that lend themselves well to comprehension of how the multiplicity of development paths depends on the particular institutional assets of the individual local systems.

The next chapter sees the application of the theoretical framework elaborated in the previous chapters to the study of an empirical case, that of the evolution of the manufacturing structure of Turin. The choice of the case was dictated by the consideration that this city has been traditionally considered as the most significant European example of a Fordist one-company-town. The crisis of the Fordist model that began in the eighties and the profound restructuring that followed it make Turin an emblematic case for the evaluation of the relations between local identity and development path.

The final pages pose some questions which, as things stand, are still unanswered. The elaboration of a theory of local development radically modifies the perspective in which the social sciences usually view the relations between territory and economy. In particular, the attention dedicated to local institutions and social relations re-introduces the problem of politics and policy into the discourse, questioning the traditional instruments of governance and government of economic phenomena.

The authors of this book owe a great debt to the editors of the series for having stimulated them to prepare a work which, they hope, will arouse heated controversy. In writing it, we have naturally benefited from discussions with scholars in Italy and

elsewhere who have shaped our ideas in various ways. As it would be impossible to list everyone, let us just make particular mention of the endlessly provocative but friendly discussions with Alfonso Ciuffini, who followed the development of the work day by day. We must also record here our gratitude to Biagio Santaniello, who oversaw the layout of the text with great skill and efficiency, and to Paola Guerreschi for map design. Finally, the assistance of David Henderson in translating the text into English is also greatly appreciated.

Finally, it should be noted that this work is the result of a joint project involving the two authors. Though they fully share the methodological approach and structuring of the discussion, Sergio Conti is responsible for the first part and Paolo Giaccaria for the second.

Part One

CHAPTER 1

Space and technological dynamics

1.1. Premise

Examination of the problem of technological innovation has been fairly recent in the economic thought of this century. In fact, as J. Hicks (1979) reminds us, it dates back to the thirties. However, it found its definitive position only in more recent decades, when the rapid post-war expansion began to give signs of slowing down. It then became clear that the future of any economy depended to a significant degree on the capacity to produce not only manufactured goods, but knowledge as well. During this crisis social sciences, in discovering the structuring power exercised by technology on the organisation and dynamics of the economy, went through a profound upheaval, and new disciplines and directions of research asserted themselves: "the science of science", as Maier recalls (1982), and the "economy of scientific research".

In other words, it was recognised that the capacity of a company or national economy to achieve technological innovation could not be explained independently of more complex factors, such as the economic, social and cultural context in which the company operates, the type of product offered or the position of an industry or plant within the production structure. The most important fact is that, because of this, economic and social research found itself having to take into account the intimately dialectic link between technology and society, i.e. two dimensions which traditional theory had kept rigidly separate.

1.2. The illusions of modernity

In effect, traditional economic and location studies, profoundly influenced by neo-classical theory, do not consider technology and information as decisive factors in guiding the decisions and behaviours of economic actors. The availability of technology is simply taken as a given, on a par with all other production factors.

Neo-classical type reasoning is, in other words, unable to grasp the dynamic nature of technological change. By focusing attention exclusively on the consequences deriving from the adoption of a given technology (and not on the nature of technological change), the latter is specified entirely in terms of technical coefficients. It follows that the problem of the choice of a technological solution stems from a

typical process of maximisation that occurs in a context in which both the techniques adoptable and the results following adoption are known.

Given these assumptions, the opportunities of access to technology and information do not come under the optimising models of traditional location theory. Basing the explanation on the cost and relative availability of factors, the choice of location in those models was a product of the individual producer's objective of minimising costs (or maximising revenue), so that the substitution of the factors within a given production function led to the simultaneous achievement of both the optimum combination of factors and the best location (Storper, 1985).

For its part, the "orthodox" Marxist tradition countered the static approach of the neo-classicists with a technological vision of history that could not be separated from the economic conception. The explanation of technological change is thus highly linear, both economic and dynamic at the same time. The competitive nature of the market leads capitalists to incessant competition, so that they are constantly driven to innovate and appropriate all scientific knowledge made available to them. Technological progress is thus inevitable, and the capitalist mode of production conceived as a structurally dynamic system.

In the meantime, it is worth noting how the orthodox Marxist explanation of the innovation process is strongly impregnated with determinism. The individual entrepreneur, in fact, adopts an innovative strategy driven by an automatic mechanism, and innovation appears as both the cause and consequence of capitalist competition and of the conflict between capital and labour.

The purpose of these brief references was simply to recall the way in which "orthodox" economic thought, in its two main theoretical families, approaches the problem of technological innovation. The stress is not put on the complex dynamics that characterise the innovation process, but on the consequences deriving from the adoption of a given technique, developed and perfected "outside" the social and production sphere. The technological dimension and the socio-economic one are thus considered as evolving independently of each other. This vision leads to several significant implications, that M. Amendola and J.-L. Gaffard (1988, p. 2) summarise in the following way:

- technology is held to be fully defined and developed when it appears;
- it is invariably assimilated into the existing production structure;
- the innovation process concludes when the production structure has adapted to the new technological conditions.

The consequence is that, from the standpoint of the production structure, technological progress is defined almost entirely in terms of the modification of technical coefficients, so that the introduction of technological innovation is broken down into the three typical forms of optimisation: mechanisation of processes, savings in labour and other production inputs. Here is how R. Camagni summarises the basics of "standard theory":

> In this framework, technological change is not, therefore, actually explained, but is only an abstract "hypothesis" [...] In a world in which technology is identified with perfectly free information and in which the expectations of operators are, by definition, "rational", all that companies have to do is to use as best they can the pool of existing technological knowledge, considered on a par with public goods, optimising an objective inter-temporal function (Camagni, 1989, p. 211).

By basing the analysis of the relationship between technology and the economy on conditions of equilibrium (as in the neo-classical scheme) or by exaggerating the trends intrinsic to the system (as in the Marxist tradition), any reference to the *process of the construction of technology* over time is therefore finally eliminated. On the contrary, this process does not represent a phenomenon external to the dynamic of the economic system, but is achieved through constant interaction between the scientific community (i.e. institutions for research and experimentation of new technical solutions) and a specific economic and social environment, populated by firms and several other actors who bring their own technological and competitive strategies.

From this point of view, the unresolved problems are of two kinds. First of all, the complex nature of the innovative process cannot be explained in the abstract terms in which it is treated by conventional economic schemes. In the history of capitalist development, innovation has not appeared in the form of a linear and pervasive process, but has given rise to segmentations and conflicts between companies, profoundly modifying the behaviour and strategies of the actors operating in the system. This means that innovation must be situated in its own microeconomic context (the individual company, the individual production sector). Secondly, the introduction of innovation does not involve every part of the system simultaneously, but will be *socially and geographically differentiated.*

As historians of technological development have demonstrated (see, for example, Rosenberg, 1976), the introduction of new products and new production processes has been the answer supplied for problems, conditions and opportunities arising in given concrete situations which differ greatly from one place to another.

1.3. Technological innovation and evolutionary capitalism

Many of the premises that undermined the foundations of conventional theoretical frameworks had already been posed in the early decades of the century by Joseph Schumpeter. It took until the end of the seventies, however, for the Austrian economist's contribution to be "rediscovered", when an inspired group of researchers formed who were interested in his proposals and dedicated themselves to actively developing them. From these beginnings, a new foundation of knowledge began to be built, widely accepted by the community of economists and other social scientists, which broke with old patterns and introduced an interpretative model of technology that allowed many contradictions in the orthodox interpretation to be solved.

In the first of his major writings, *The Theory of Economic Development* of 1912, that already contains much of his contribution to economic thinking, Schumpeter,

reasoning around the traits of the innovative entrepreneur, places a fundamental divide with respect to the hypothesis of rationality on which neo-classical thought was founded and to the economic determinism that dominated the Marxist tradition. In the first case, as we have seen, the striving to maximise profit drives the entrepreneur to innovate to the extent to which innovation represents a rational means to reach this end; in the second, "innovation" is driven by an automatic mechanism (accumulation) stimulated by a logic of saving labour. The Schumpeterian entrepreneur acts, in contrast, driven by a multitude of motivations which transcend rationality. Innovation thus becomes an event of a causal nature that is situated outside economic phenomena: it responds to the dream and the desire for individual realisation, the gratification of producing and creating things, the search for success even more than the fruits that success brings with it.

As is known, the concept of the innovation process that appeared in Schumpeterian thought transcends the limited dimension of the company. The entrepreneur, in fact, carries out a function of "creative destruction", which promotes the more general process of capitalist development, so that the evolutionary dynamic of the system is temporally discontinuous and technological development cannot be separated from the transformations occurring in the structure of the economy and society.

It is true, however, that Schumpeter's theory has some rigid features, which we cannot reasonably go into here (see on this point Rosenberg, 1976). On the one hand, the causal function played by innovation in the explanation of the long-term mode of development of the economic system seems to respond poorly to the more complex economic reality. On the other, the focus of attention on the historical role of the individual innovative entrepreneur draws attention away from the economic and environmental pre-conditions in which enterprise flourishes and innovation develops (Thomas, 1985).

The reason why a number of scholars turned to Schumpeter's theory of the entrepreneur resides largely in the desire to find a sort of combination between the two types of innovation (radical and incremental) and the consequent contrast between the theories of demand-pull and technology-push, which dominated the scene following Schmookler's seminal work (Schmookler, 1966. See also Kamien and Schwartz, 1982).

Furthermore, it is no accident that the debate on technology was re-opened at a time of acute depression in the world economy, the same as the period when Schumpeter himself was at work. The re-proposal of his theories also came about in years of profound technical and organisational changes in the system, as a reaction to the incapacity of the greater part of fashionable economic theories (and the Keynesian approach in particular) to explain long term transformations in the economy. In fact, the seventies saw the arrival on the horizon of a body of innovations capable of constituting the technological core of a vast range of products and triggering the transition towards a new and pervasive technological paradigm.

For a large group of "neo-technological" economists, Schumpeter's system of long waves appeared at that time to be very useful in providing a "plausible explanation of the change that occurred in the economic climate between the late sixties and the

eighties" (Freeman, 1988, p. 60). It is, however, true that the debate did not reach any common conclusion. There is, in fact, no consensus on the driving role played by innovation or on the historical periodisations that have been proposed. Yet the neo-Schumpeterian interpretation represents, from the conceptual point of view, a substantially unified proposal that possesses a significance that goes well beyond the disputes in the scientific community.

To understand how this came about, it is necessary to recall first of all, with Kaldor (1954), that Schumpeterian thought constituted in many ways the "blow" that led to the search for a stronger bond between innovation, as the expression of individual behaviour, and the broader changes that derive from it. However, things did not stop at this point. As is often found in cases of this kind, one road that has been followed consistently was that of extending to economics the language and conceptual categories of natural sciences. The change induced by technology was thus compared to the evolutionary processes that occur in the animal and vegetable kingdoms, so that the development and diffusion of innovation are understood as a metaphor of the processes of natural selection.

On this point, it is worth dwelling briefly on the most well-known contribution, that of Richard Nelson and Sidney Winter (1977 and 1982), whose languages and tools of interpretation had great influence on geographical analysis. Consistent with the Schumpeterian tradition, the innovation process is understood as, first of all, the bringer of imbalance in the system. Secondly, the adoption of innovation is assumed as a heuristic process which puts the enterprise in the position to establish its own objectives autonomously (whether to conduct research or not, for example) and activates the necessary procedures (such as investment for the experimentation, imitation and development of new technological solutions). In contrast to what orthodox tools envisioned, the *decision-making* aspect thus reveals itself to be essential. It is the entrepreneur or the company management that determines the size of investment to devote to technological research, that makes this compatible with normal production activity and that identifies the already existing marketing technique which is most suitable to the company's strategic objectives (Thomas, 1980).

But what would be the most consistent strategy adopted by the entrepreneur? Another question is: what innovations allow the company to best pursue its objectives? The conditions for choice are not, in fact, unlimited, and the innovative strategy will be crowned by success only if the projects and resources invested in research are directed towards a given natural trajectory which has the possibility of developing within a relatively circumscribed area (the selection environment).

By *natural trajectory* (a concept that can be extended to that of technological trajectory), we mean the direction along which a technological innovation can develop freely, both because "normal" market conditions (i.e. potentially high demand) and "normal" technical progress (Dosi, 1988) are moving in that specific direction. A natural trajectory is also associated with a given technological regime. There are particular trajectories in every historical period, connected to one or more technologies, which define both the success of an innovative strategy as well as the broader technological transformation of the system (Elster, 1983).

In the fifties, for example, the Boeing 707 defined a certain technological regime and for at least three decades various companies, each launched along their own natural trajectory, continued to introduce successive modifications aimed at exploiting more intensely the potential of that aeroplane (Rothwell and Zegveld, 1985). In the same way in the semiconductor industry, technological improvements and market forces have led the development of the sector to the production of increasingly reliable, smaller and energy-saving inventions: "these developments clearly satisfied the needs of the aerospace and military industries and the computer market itself. However, it would be surprising if the technology accumulated and the production capacity had not taken that direction" [i.e. the same trajectory] (Elster, 1983, p. 67).

In its turn, the concept of *selection environment*, referred to a specific technological trajectory, reveals its choices and determines the way in which the use of the various technologies changes over time (Nelson and Winter, 1977, p. 61). Reasoning on the level of broad determination, the concept of selection environment presents a close analogy with the deterministic selection that occurs in nature. The economic universe includes a vast variety of companies, but only those that manage to gain access to the "best" technological innovations, or that make full use of their own research capacity, have the possibility of expanding to the detriment of others that leave the system or are forced into rearguard positions. By analogy with the natural world, therefore, the companies with the most aggressive behaviour, with the greatest financial capacity or which have the easiest access to information and external finance (to public aid, for example) are the ones which can make most fruitful use of a given technological trajectory and thus expand and dominate the system.

Given these premises, it is now easier to recompose the range of essential concepts that defines the problem.

When it appears, a new technological paradigm already contains the potential to find a solution to specific technological problems, in that it defines at the same time the field of research (pure and applied), the procedures to be followed and the objectives to be reached. It also opens up a process of technological development that is realised in the framework of a given technological trajectory, whose direction is defined by the economic and social environment. It is in the environment, in fact, that the conditions are found which allow the identification of the possible directions and the progressive specification of technical and scientific knowledge. We shall thus make a distinction between:

- *radical innovations*, i.e. discontinuous and even casual events, whose diffusion in the economic system can assume a cyclical form and be included within long-term waves;
- *incremental innovations*, which appear almost continuously in the system and consist in the "normal" improvement of products and production processes introduced previously. While these innovations may appear negligible individually, together they have a decisive effect on the growth of the profitability and efficiency of the system;

- *technological revolutions*, which lead to the destructuring of the rules of economic and social organisation and inaugurate a new long-term cycle that affects the whole economy profoundly. A technological revolution is usually connected to the rise of a set of cross-sector or pervasive technologies. It is therefore not only the origin of new products or processes but affects a range of economic sectors: the introduction of the railway and the steam engine in past centuries or the microprocessor in recent decades are clear examples of innovations which, by creating profound changes in the economic and social system, explain the later rise of other innovations and justify the expression "paradigm change" or technological regime (Freeman, 1987, p. 199). The term technological revolution would be justified in essence when the introduction of a set of technical solutions produces a range of consequences, amongst which: a) the drastic reduction in production costs of a large number of products or services, thus opening up favourable opportunities for new investments; b) a spectacular improvement in the technical characteristics of numerous products and services; c) a set of institutional and behavioural changes of both the company and the population. It is above all in this sense that the interaction between the technical economic structure and the socio-institutional structure that the readjustment of the system occurs.

In conclusion, an innovative process is a process through which a new technology is developed *sequentially* starting from an initial impulse from a specific socio-economic environment. It will have different outcomes in relation to the decisions taken by the actors who are the depositories of the new techniques, to the constraints and, on the other hand, to the stimuli present in the environment itself. In the first phase, which culminates with the commercial production of a radically new product, a relatively small number of companies is involved: they will then have to furnish the capacity or entrepreneurial spirit needed to transform an invention into a marketable new product. Only with its arrival on the market and the continuous adjustments (of an incremental nature, but in any case essential to increase its efficiency) will the "normal" technical progress that implies constant improvement of the original innovation be achieved.

Radical innovation and incremental innovation are thus reciprocally inseparable dimensions and stem from a single process: the first opens the way to successive improvements (that will be situated along a given technological trajectory); the second consists in turn in successive innovations of already existing products or processes and envisages spin-off effects in many other areas of the economy and society. This makes the innovation process dynamic and interactive (Figure 1.1), a not necessarily continuous logical sequence of many distinct, but interacting and interdependent phases (Rothwell and Zegveld, 1985).

As we shall see later, the production of technological knowledge can assume, in this light, an explicit territorial meaning. In the broadest sense, as Molle observes (1986), the selection environment is the expression of a "set of conditions" that act as stimulating or constraining factors for the development of a particular technological

trajectory. These concepts are broad enough to embrace territorial organisation as the condition which lies at the basis of the creation, diffusion and adoption of technology.

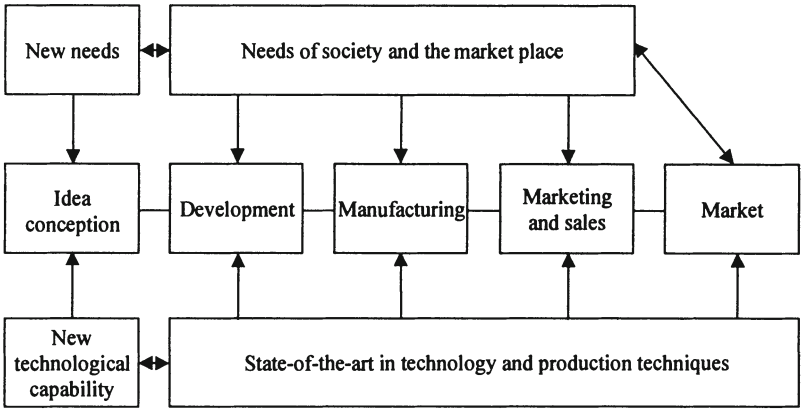


Figure 1.1 - Interactive model of the innovation process

Source: after Rothwell and Zegveld, 1983.

Technical progress, in conclusion, should thus be considered as a multi-dimensional phenomenon in which various factors, both internal and external to the company, contribute to the determination of technological choices. This makes clear a *systemic* point of view and the consequent assumption of innovative activities at multiple levels of analysis: the company level (Cyert and March, 1992), the industrial sectorial level (Pavitt, 1984), the national level (Freeman, 1988; Lundvall, 1992a) and, by extension, at intermediate territorial levels.

1.4. The linear model of the diffusion of technology

Until only a few years ago, the idea was generally accepted that the process of innovation was linear in time; that it could be broken down into a sequence of fairly recognisable phases: invention, its application in products capable of being sold on the market by an innovative actor, and finally its spread to other companies operating in the system. This is a rather mechanistic sequence, and predictable in its evolution, part of a logical universe that has had great success in the geographical sciences, focused for some time on the analysis of the diffusion processes of development and innovation within hierarchically structured configurations.

This conception could be justified as long as the absolute validity of the dynamic laws of the economy was presumed. It is not by chance that among its most dedicated supporters we find the neo-positivist and functionalist school. When transferred to the

world of the Fordist company, those principles became a heuristic way of analysing the spatial behaviour of enterprise in the second industrial revolution. From this, starting with a few general principles, some possible criteria of interpretation were deduced that did not demand particularly profound analysis of the nature and the motivational aspects of the actors operating in the competitive system.

This was the road initially taken by Schmookler and then followed by Kuznets (1969) and Vernon (Vernon, 1979) in formulating the principle according to which the life of a new product follows a linear s-curve that can be split into distinct stages – introduction, growth, maturity and decline – each of which is characterised by a certain type of demand structure and by a certain type of innovative activity. Perhaps because of their relative simplicity, these arguments were easily extended to spatial analysis. More specifically, in shifting from company organisation to the innovative content of the product put on the market, causal relations between the innovative process and the structuring of economic space can be hypothesised.

The scheme of reasoning, as is well known, identifies in particular three successive phases in the life of a product to which different modes of production and organisation of company functions correspond.

1. The *introduction*, or development of a new product and/or process, demands particular innovative conditions, as technological knowledge and high entrepreneurial and managerial capacities are fundamental. If in this phase the technology is concentrated in the hands of a few actors, they need at the same time access to numerous and well qualified actors present in the economic environment that surrounds them (suppliers of semi-finished products and other technological inputs, recipients of the product just introduced) in addition to highly skilled labour. The companies and plants destined to introduce a new product thus pursue a location policy in countries and areas central to the world economic system, where income is high and the functional and infrastructural conditions demanded are found.

2. *Growth* requires different conditions to the previous ones. When the market expands, the conditions are created to start up mass production, increasing at the same time the need to have financial and commercial capacities. In these conditions, the large company, which possesses the right managerial and financial levels, can count on an undoubted advantage. Given also that the relative reduction in production costs is decisive for company success, it will find it cost-saving to relocate and decentralise part of its plants, whether to other regions in the same country or to technologically "intermediate" countries. The same company will, however, continue technological research and the refinement of the same product and/or process in the preceding "central" area.

3. *Maturity*, or standardisation, is reached when the product is stabilised or it is no longer possible or economical to make significant innovations. As demand approaches saturation levels, the reduction in costs becomes a fundamental strategic variable. As production relies almost entirely on unskilled labour, the search for low-cost labour

areas leads the company to decentralise production towards regions and countries with lower levels of technological development and income (generally underdeveloped countries). The transfer, particularly intense since the late sixties, of various forms of "mature" production (knitwear, clothing, calculators, sound recording and player equipment etc.) towards some countries of South-east Asia and Latin America responds fully to this logic (Figure 1.2).

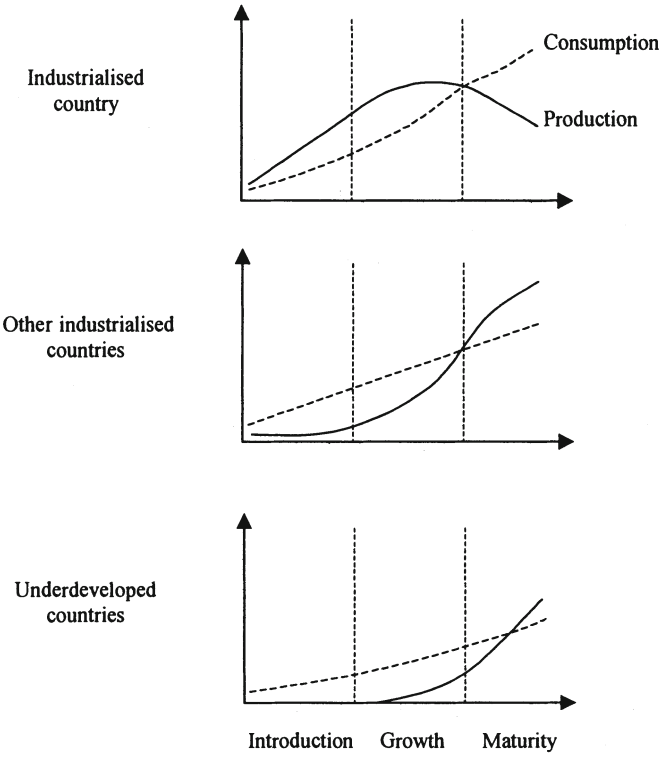


Figure 1.2 - The product life cycle according to Vernon

This scheme is, without a doubt, logically complete and thus represents a general conceptual framework within which to place both the analysis of company investment strategy (in particular of major multinational and multi-located corporations) and the study of the technological factors that influence location decisions. The success that the product life cycle theory has enjoyed stems effectively from the potential of using it in order to bring together the two issues of industrial location and technological change in a fairly simple manner and to provide a general interpretation of the processes of *geographical decentralisation of production* (see, for example, Norton and Rees, 1979; Utterback, 1979).

The essentially deterministic and causal character of the theory has been subject to heated controversies that have highlighted two major questions. The first concerns the weakness of the model from the point of view of its logical foundations. The second regards its poor adherence to the characters of the new technological paradigm.

From the first point of view, therefore, criticism is aimed at the technological determinism that indicates the assumption according to which investment decisions depend almost exclusively on the nature of the technology applied in each phase of product development. The top-down "technological spin-off" (i.e. from the developed area to the periphery) is understood as a process essentially separate from the society and economy of which it is a part. Apart from the general statement that the metropolis is the seat of innovation, this reasoning tells us nothing about the more complex conditioning posed by the social, economic and cultural context in which companies operate, nor how they intervene in the production and diffusion of technology and knowledge. In the model proposed, space and innovation are both assumed, in effect, as given and exogenous variables (Gordon, 1991).

From the second point of view, the concept of innovation used is decidedly ambiguous. Assuming that the product is introduced in its final form, the model does not consider the fundamental distinction between radical innovation and incremental innovation. We know, instead, that the new product put on the market is subject to successive modifications and adaptations. It is rarely the same at the end of the cycle (see, for example, Oakey, 1985). It has also been demonstrated that under current technological conditions, the rapidity of cycles means that it is difficult for the ideal model to find empirical confirmation (Duijn van, 1983). More in particular, the high frequency of the cycles suggests the assumption that only a few areas effectively possess the required conditions, determining a significant location inertia and running counter to the facts of company behaviour coherent with the sequential model.

1.5. Social regulation and the flexible organisation of production

The theoretical proposal

The thesis of *flexible specialisation* – the manufacture of specialised goods with the use of flexible technology and organisational forms – partly overturns the scheme seen above and focuses the explanation on the forms of social organisation of production. Flexible specialisation, which established itself in the industrialised world in the most recent decades, is understood first of all as a new social paradigm, in contrast to the logic of standardised mass production.

The foundations are found in the French-inspired "long wave historiography" and in particular in the idea that the historical evolution of the capitalist economy is to be understood as a series of periods in the course of which given institutional forms are contextualised that determine the forms of organisation of production and the social relations underlying it (see Chapter 7). From this point of view, the approach finds inspiration in Marxist theory, which is however integrated with solid references to

Keynesian economics and especially to institutionalist theory. For this reason, it represents an original synthesis of many theoretical contributions (Boyer, 1986; Lipietz, 1987; Leborgne and Lipietz, 1988).

Given these premises, we shall go on to illustrate as briefly as possible the theoretical proposal, which hinges around the concepts of the *regime of accumulation* and *mode of regulation*. The first term is of an essentially descriptive nature, referring to the possible configurations that capitalist development assumes in different times and places. These take shape, first and foremost, in a given set of production relations that change gradually as the system's historical evolution proceeds. In the last century, two different systems of accumulation in particular can be identified:

- the first of an extensive kind, founded on the continuous diffusion of production norms valid for all capitalist countries;
- the second, which began to establish itself in the years around World War One, is instead of an intensive (or Fordist) type, founded on mass production and consumption, the constant reorganisation of work tasks and the substitution of labour with technology.

The system of extensive accumulation, which established itself in the decades after the industrial revolution, saw the rise of manufacturing that brought together in a single plant workers who had been independent up until then. The development of manufacturing industry was then marked by specialisation, both of production units and within the single plants: on the one hand, each company refined processing techniques for particular segments of the production process; on the other, individual workers (and groups of workers) were assigned specific functions within the factory. A higher value of production was thus obtained together with a reduction in the time required previously by a self-employed worker to learn the technical notions needed to carry out the segment of the production process assigned. The old craft workshop was no longer able to host the workforce required by a production process that became more and more rationalised, thus separating manufacturing from the place of residence of the workforce. As a consequence, the first industrial centres were created and the transition was made from an agricultural economy to a manufacturing economy.

With the advent of Fordism and the scientific organisation of labour, the production process was segmented even further, and manual work was separated from intellectual work not only in functional terms but also geographically. Standardisation demands, in fact, a substantial increase in fixed assets, which is accompanied by the search for new production and market spaces, and produces a rapid concentration of industrial and financial capital. If manufacturing, which is relatively undifferentiated internally from the technical and functional standpoint, had marked the beginning of significant processes of demographic and production concentration, the large company started to distribute its factories territorially: management, design and system control activities replaced the plants located in urban centres, while these plants were moved first to the suburbs and then in the direction of peripheral areas (even on the international scale).

These phenomena had a visible impact on the economic and territorial organisation of entire regions and countries, and large companies consolidated their dominion. It

was not only agriculture but also small manufacturing capitalists which felt the effects of the unequal exchange between the city and the dominant segments of the industrial system. In the United States, for example, the expansion of the large auto companies, in the first three decades of the 20th century, is a clear example of the processes of urban concentration and of the historical failure of the classical theories of the free market. In that period, the success of the Big Three (General Motors, Ford and Chrysler) was accompanied by the drastic reduction in the number of "independent" car producers (falling rapidly from about 300 in 1914 to only 44 in 1927) and the rise of the world's greatest industrial metropolis: Detroit, on the eve of the great depression of 1929, produced 69% of the entire American output of cars and trucks, provided over 46% of the employment in the sector and rose to sixth largest city in the United States (in 1900 it was only 15th).

These brief references help to establish that *some constant features* (both social and economic) govern the mechanisms of accumulation and make it possible for it to develop over sufficiently long periods. In essence, Robert Boyer, one of the founding fathers of the regulationist approach, concludes that each historical phase offers traits that give coherence to the system of accumulation (Boyer, 1986, p. 46):

- a certain type of organisation of production and of relations between wage-earners and the owners of the means of production;
- a sufficiently broad time frame to allow an effective return on the capital invested;
- a form of distribution of the value produced that allows the reproduction of the various social classes and groups;
- a sufficiently extensive and dynamic demand to ensure the expansion of production capacity.

These features (or parameters) together ensure the evolution of the system, allowing it to absorb – or at least to delay – the distortions and imbalances that are created constantly in the process of accumulation (such as recessions, class conflicts, trade wars etc.). At the same time, they suggest that the cohesion and capacity of a system of accumulation to reproduce itself over time depend on the consolidation of a given set of social relations, i.e. formal and informal structures for the governance and stabilisation of the system (from forms of state intervention in the economy to models of socialisation and individual and collective behaviour) which are combined in the second term introduced earlier, the mode of social regulation.

Thus, the extensive system of accumulation was accompanied by a mode of regulation of a competitive type: in the framework of a system of economic and political relations regulated on the world scale by the British hegemony, national policies were strongly marked by the free trade and non-intervention ethic (wages, for example, were negotiated directly inside companies and were subject to market fluctuations). A long period of transition, roughly included between the two world wars, marked the progressive consolidation of the Fordist system. These technological changes that enabled great increases in labour productivity would not have been generated, however, if a monopolistic form of social regulation had not been established previously, allowing companies to maintain high returns whatever the

market demand. In the meantime, the nation states adopted a strongly interventionist approach in the economy and in society.

Let us give a common example to clarify these statements. The 1929 depression that shocked the Western economies was followed by the introduction of a series of adjustment (or regulatory) mechanisms to assure the survival of a system of accumulation (Fordist) that was being put to a tough test. These took the form of policies to adapt wages to price dynamics and were accompanied by widespread welfare actions which, ensuring a certain control of social and labour relations, guaranteed unprecedented growth in the productivity of the system in the decades that followed.

The economy of flexibility

Developed to explain the evolution, reproduction and crisis of the systems of accumulation that followed each other in the course of the 20th century – and the Fordist system in particular – regulation theory is a frame of concepts with which it is possible to explain a new system in its formative stage. It substitutes the rigidity of production with growing flexibility in the labour market, in the organisation of production processes, in consumer markets and in the relations between actors operating in the competitive world.

As we have seen, in mass production a set of mechanisms of institutional stabilisation ensured the profitability of major investments in fixed "inflexible" assets. This scheme went into irremediable crisis when faced with the growing environmental uncertainty which appeared following many phenomena, whether endogenous or exogenous to the system. They concerned, first of all, the gradual saturation of the markets for standardised products and coincided with the rise on the world economic scene of new (especially Asian) industrialised economies. These were accompanied by a series of contingent conditions, amongst which the growing social conflict of the seventies in the industrialised economies, the uncertainties deriving from currency fluctuations, the growth of global debt and the consequent increase in interest rates, and the two oil crises which hit Western countries in the same period.

The introduction of new *flexible technologies*, even if in different ways from country to country, can thus be interpreted as the response by economic actors to the recession and growing market uncertainty, as the rigidities of the old production approaches were unable to cope with them. More in general, the trend towards a growing flexibility of the system can be traced back to some fairly well defined connotations, which can be identified very briefly in the following two categories.

1. The automation of production cycles, in which a given machine can be used for the production of a quite broad range of products and product configurations. This put companies in the position of being able to respond to the demand of a fickle market without demanding considerable advances of fixed assets. The importance given to internal economies of scale (at least in some sectors) was thus reduced and the rise of smaller forms of company organisation can be explained.

2. The adoption of flexible working processes that reversed the previous trend towards the division of tasks and the deskilling of the workforce. In this light, it is possible to make a distinction between functional flexibility, directly connected to the organisation of work inside the company, and numerical flexibility, linked to the labour market dynamic and the relationship between company and employees. The first refers to a company's capacity to modify the position of the workers – now "multivalent" and no longer Tayloristic – in relation to changes in demand and the marketing strategies adopted. The second refers instead to the possibility of varying the quantity of labour used in relation to changes in demand, turning increasingly to the use of part-time workers and sub-contracting.

Two approaches compared

The diversity of the starting points and the conceptions that characterise the theoretical scheme of regulation does not rule out numerous overlapping areas with the theory of the long waves of development. As a reaction to the Schumpeterian "technological determinism", the thesis was embraced that the new forms of organisation of the social relations of production were the origin of the introduction of technology and assume the character of a structuring force of change. Whatever the starting point of the explanation proposed, the intimate relation between technology and society appeared inexorably as a distinctive feature of a new way of representing the evolution and transformation of the world. On this common basis, which represents the unity of research on the theme of technological change, it is now easier to recompose the distinctive traits of the technological revolution currently in progress, which, as underlined by Manuel Castells, modifies the "material bases of all social organisation" in the long run (Castells, 1989, p. 15).

Possessing a virtually pervasive character, both sectoral and functional, and generating an intimate alliance between scientific knowledge, culture and development of production forces, information technology is the basis of the rise of new forms of organisation of the economy and society. To be extremely concise, this can be summarised in the following three main categories: 1) the structural flexibility of the economic and social system; 2) the growing instability of company structures; 3) the new and complex spatial behaviour and processes.

1. The system's growing *organisational flexibility* is thus a turning point. It is both the expression of the "revolution" induced by the new information technologies – because of the capacity that these have to produce and generate organisation, i.e. multiple, new organisational forms – and an essential support for the very functioning of the system.

The two main theoretical families – that of the neo-technological economists and the theorists of flexible specialisation – nonetheless appear to converge in maintaining that flexibility transforms the socio-economic system in different and specific ways:

- the employment structure is radically changed. In contrast to the relatively rigid organisation of employment relations in companies of the second industrial revolution, the new organisational forms offer uncertainty and mobility (thus

reducing employment stability) and new forms of employment relations assert themselves: temporary work, flexible hours, segmentation of tasks;

- the traditional relations between the company system and the regulation system change. If the monolithic essence of the nation state seems more and more an illusion, at the same time the withdrawal of the state from intervention in many spheres of the economy and society is accompanied, in contrast, by growing support for activities that generate innovation;
- to respond to the complexity of an environment that is no longer simply economic but also technological and institutional, the company must change its own criteria of management and organisation, questioning the foundations of the economies of scale of the second industrial revolution. From the point of view of the organisation of production, it is easy here to refer to the adoption of modular techniques (such as just-in-time), introduced first in Japan and then spread rapidly to the other industrialised countries. Their distinctive feature is the reduction to the minimum of stocks of both products and components. This means that companies, instead of manufacturing great quantities of products in advance of demand, manufacture only on request from the market. Introduced initially to tackle heterogeneous consumption models, once these techniques were perfected they meant that *product differentiation* itself became a competitive advantage. Japanese car producers, for example, systematically encourage the heterogeneity of the market so that, compared to the Fordist model, competitiveness shifts from price to product competition. The modular conception thus authorises product differentiation without necessarily determining the disappearance of mass production. The (flexible) mass product is now defined as a commodity conceived by starting from standardised modules in which the final assembly allows the differentiation of the final product.

2. With the redefinition of the competitive dynamic of companies, the oligopolistic organisational forms seem less and less efficient, while new structures capable of exploiting the potential of the multi-centred relations between companies and between them and other institutions establish themselves. Economic actors are no longer asked to have a "culture" and an organisational model that stem from technological development in itself. As organisation is conditioned, but never determined by technology, it thus becomes a prerequisite of technological development itself. The search for relations of interdependency and collaboration between actors is, as we shall see in the next chapter, the origin of different organisational forms compared to the usual ones represented by the Galbraithian corporation or by those regulated by pure market relations.

3. In the logic described above, location behaviour acquires an unlikely complexity according to the usual schemes of analysis. The diffusion of new technologies produces multiple effects (diversification of production, organisational restructuring, flexible labour markets) that are not necessarily connected to each other (Sayer, 1989a), but have echoes in spatial processes of different and sometimes contrasting types. The new

forms of company organisation – as we shall see in the next chapter – imply location behaviour that, while highlighting significant differences between diverse companies and sectors, produces a dual process: the growing decentralisation of production functions and many company processes, on the one hand, and on the other the decided reconcentration (or reagglomeration) of the highest (technological and strategic-command) functions.

Looking at the first aspect, there is a sort of extension of the Fordist logic of scattering and breaking down the production cycles territorially, with the consequence of further deepening the processes of social and spatial division of labour. As far as the second aspect is concerned, reference is made to the fact that equally vital for companies are: a) the need to be present in the nodes of the world's information, communication, commercial and financial networks; b) the modular organisation of production systems, based on the systemic integration between conception, design and production of goods; c) the presence of new location factors (or attributes) directly connected to the generation and adoption of technological innovation.

The controversial relationship between spatial diffusion and reconcentration of production structures appears to be one of the central issues in the debate around the question of technology, which has made a decisive contribution to the changed way of observing reality, discrediting concepts held to be well consolidated and stimulating new ones, the cornerstones of a renewed cultural atmosphere. Our discourse will now hinge around these, comparing different perspectives on the link between innovation and geographical space.

1.6. New technologies and location factors

This analysis would seem to declare the defeat of a proposal founded on a high degree of generalisation and thus incompatible with the theoretical framework on which we had laid the premises of the dialectic spiral between technology, economy and society. In this way, we have started along a different theoretical path whose explanatory capacity is based on the study of the *local environmental conditions* in which innovative processes occur.

The analysis of high technology sectors and companies opens a radically different prospect of research. The often modest size of these companies, their greater organisational flexibility, the high level of added value in semi-finished and finished products are, at first sight, factors that give them a certain capacity to escape from traditional location constraints. Also considering how the main production inputs, themselves of a very high technological content, come from numerous sources, and how the final markets themselves are not "localised", we are in possession of tools that subvert traditional schemes, and thus the location dynamic of these actors appears in a radically new light (Rees and Stafford, 1983). We must therefore conclude that other factors, not linked to the usual relations of technical and functional interdependency, explain the symbiosis between companies themselves and the environment in which

they operate. In other words, we are faced with a significant transition from the analysis of "frictional" variables to that of *discrete area factors*, i.e. relating to specific attributes capable of encouraging the generation and diffusion of highly technological productions.

In perhaps the most systematic examination of discrete area factors, R. Premus (1982) clarifies the explicit normative content of this line of thought. Analysis of the factors capable of attracting technologically advanced companies is based on the assumption that, in their location decisions, they display effective indifference to distance variables.

The origin of this issue lies in the renewed interest aroused by the phenomena of massive concentrations of innovative entrepreneurial activity in certain areas of the globe: Silicon Valley, along highway 128 around Boston, the Research Triangle Park of North Carolina, the Cambridge area of England, the technology pole of the Ile-de-France south of Paris, the Tsukuba region of Japan and so on.

A "new" location analysis seems to assert itself in this scenario (see Miller and Côté, 1987; Gordon and Kinball, 1986; Saxenian, 1985). The growth and multiplication of companies devoted to technological innovation would appear to occur in the framework of a process that feeds itself. Specific attributes and local strategies determine the rhythm and nature of technical progress, and thus develop more rapidly in the areas that offer a sufficient endowment of the factors indicated above and in the framework of which precise strategic objectives are pursued during local policy-making decisions.

Below, the main area factors constituting the shell of the "new" location theory are summarised. These are the outcome of a significant range of particularly empirical research.

First of all, the analyses most directly influenced by the classic example of Silicon Valley highlight the following three factors:

1. the presence of high level universities and technology research centres (Castells, 1985; Thwaites, 1982);
2. the availability of venture capital to invest in innovative activities, relatively more risky than other investments and with delayed returns;
3. an efficient infrastructure system (highways, airports, telecommunications).

In its various expressions, American research has also underlined the role of other conditions that sometimes appear decisive in explaining the phenomena of agglomeration of high technology companies (see, for example, Malecki, 1997):

4. a widespread anti-union attitude in the local communities concerned;
5. proximity to military research and experimentation centres, both because of the technological effect they produce and of the flow of public expenditure for military and aerospace programmes;
6. finally, favourable climatic and environmental conditions and excellent quality of life standards, essential for attracting highly skilled technicians and personnel.

In addition to these conditions, there are a further two on which European research places particular insistence:

7. a rich and diversified set of high level consultancy and information services (Ewers and Wettmann, 1980);
8. a solid urban economic base, including administrative, commercial and cultural structures in the broadest sense. Generally to be found in the "historic" cities, these functions would seem to help the development of innovative capacities to a noticeably higher degree than in more recently formed technology poles, usually marked by few high level structures and sparse groups of companies (Aydalot, 1986).

The results of numerous empirical analyses have, however, "reduced" the significance of some of these factors. If each of them can be considered important in some of the contexts examined, the anomalies found would seem to be too numerous to allow a general location theory of innovative industry to be constructed on the basis of these factors.

First of all, the presence of university structures did not always turn out to be decisive. It has, in fact, been empirically demonstrated that numerous university research centres have failed to reach their goal of helping to trigger significant processes of technological development. For this reason, the centrality of the relationship between company and university, related specifically to the Cambridge case, has been greatly reorganised in favour of economic and commercial factors present in the area. The very "genetic" hypotheses concerning the most well-known of these phenomena, Silicon Valley, have largely been stripped of the "technological determinism" associated with them. Numerous and more complex conditions would appear to have contributed in the post-war period to the rise of the Californian technology area: the concentration during the war of an enormous defence industry production potential and the later federal demand for electronic products and considerable influx of public funding would all seem to be factors capable of debunking the myth of the impact made locally by university research structures. Many analyses have also shown how the companies operating in the more recently formed technology centres (see, for example, Gordon and Kinball, 1986; Stöhr, 1986), in reality, establish close relations with technology research environments at considerable distances, denying the existence of significant spatial correlations between "knowledge-producing" companies and academic institutes. Furthermore, the presence of military research and experimentation centres constitutes a significant but excessively specific factor (i.e. limited only to the United States) for a general explanatory capacity to be attributed to it.

According to W. Stöhr, only some of the factors listed above show effective correlation with the real process of innovation. In particular, these are the conditions of a more residential than entrepreneurial nature. The availability of a skilled workforce, the presence of a solid and diversified economic base, as well as cultural and educational structures worthy of an urban environment:

> would indicate a close relationship between residential qualities and company innovation [...] The interaction between the different local factors thus appears to be an important pre-requisite for the success of high technology industries and company innovation itself (Stöhr, 1985, p. 34).

The loss of significance of the other factors would seem to derive from a simple consideration already echoed in earlier pages: innovation is not the direct consequence of the presence of these factors, but derives from their reciprocal functional interaction.

From these considerations, it is possible to recognise some significant outcomes of the debate started by the proposal now illustrated.

- First, an innovative process is a complex phenomenon, and any strategy stemming from a single universal "model" is too simplistic. By its very nature, innovation can, on the contrary, follow a *plurality of evolutionary paths*, each one answering to the logic of a specific (regional or local) context (on this, see, for instance, Aydalot, 1986).
- Second, the mere sum of conditions (or discrete factors of localisation) do not sufficiently clarify the role of the environmental context that underlies a process of technological innovation (Ewers and Wettmann, 1980). If the identification of the discrete area factors is an inescapable step for the description of the phenomenon, the presence of these factors does not appear to be enough to spark off an innovative trajectory. What is instead essential is their interaction on space, followed by the activation of a synergic process that explains methodologically a range of differing innovative phenomena.

It is thus necessary to move on to a perspective that focuses on the more general social, economic and cultural conditions that lie outside the restricted formalism of normative location theory, even in its most up to date version. In the latter, in fact, the innovation processes continue to be derived mechanically from the presence of "objective" location factors, leading to the elusion of a more complex historical analysis of the relationship between industrial structure and society.

1.7. Systems, networks and environment

Interactive dynamics

With the arrival on the scene of the evolutionary perspective of technological change, things changed radically and the frame of reference acquired completely new meanings.

It has now become essential to get to the root of the interaction between the sphere of research and the sphere of production, so the innovation process is no longer understood as a linear and predictable sequence of phases, but as a process of production (or creation) of technology, involving various actors and achieved endogenously in the economic and social structure.

In order to be able to work in this perspective, it is firstly necessary to acknowledge two essential concepts on the basis of which it will be possible to recompose the fragments of the theoretical proposal:

- a new technology is not created just in the laboratory, separately from the specific environment in which it develops. On the contrary, it is the latter which determines its nature, extension and temporal profile of development;
- the economic structure (the company, to make a simplification) does not adapt passively, in turn, to a new technology, but evolves constantly with it: it is the economic structure, in fact, that stimulates new technical solutions and enhances product development by changing it.

As we have seen, the context in which the evolutionary theory of technological change takes shape is explicitly dynamic. The dimensions of time and space are both constituents of the process through which, step by step, new technology and production capacity are created and developed. It follows that the innovation process cannot be determined a priori. Technology is not complete in the form in which it appears, but is gradually incorporated in physical and cognitive elements that themselves constitute, along a given technological trajectory, other innovative capacities.

From these premises, we can draw a number of fundamental options.

- An innovation process will be a process of cumulative and specific learning, which "does not necessarily appear as a linear sequence that always follows the same path from invention-innovation to diffusion" (Tödtling, 1995, p. 172). It is cumulative to the degree in which it is based on a *learning process* – both individual and collective – that delivers a relative advantage to actors who already possess accumulated skills. It is specific in the sense that these types of knowledge are not casual and undifferentiated but refer to a given trajectory, which develops in a specific economic and social environment.
- If an innovative process is conceived as a complex chain of interactions between different actors, this implies a form of learning achieved through co-operation (or socialisation), in other terms through the combination of multiple capacities and knowledge. The notion of *network* is thus forcefully proposed to this end, i.e. to give sense to the phenomena of interaction and interdependence between the actors.

Innovation networks and synergic interactions

In general terms, the concept of network gives intelligibility to a process through which capabilities belonging to a multitude of actors (public and private, companies and scientific and institutional bodies) are combined. These capabilities are built and at the same time enhanced through a collective learning function. In the sense used here, the concept of network represents an organisational mode through which a solution can be reached to the problems connected to the generation of technological knowledge and information. For ease, we can quote the admirable definition by J.C. Perrin:

> an innovation network is a form of organisation of the relations between the actors involved in a process of innovation, which, because of its length and openness (plurality of specialisations, diversity of capabilities) sets in motion a collective learning whose synergetic effect makes a decisive contribution to the creativity of the whole (Perrin, 1990).

This question is undoubtedly important. The idea of organisation allows interpretation of the relations between the actors in terms of *synergic interactions*, which are central to the understanding of the functioning of the network. If we limit ourselves to considering a system (territorial and innovative) in terms of area factors, the co-operation between the elements that determine the behaviour of the system would be difficult to grasp, as we would stop at the properties of the individual elements. If we instead assume that an innovation process lies beyond the reach of individual actors, the centre of attention will be the technological and scientific environment, so that stress is placed on the property of the system and not on the nature of the sub-systems, or elements (such as the individual companies, research centres, institutional bodies etc.). In other words, the technological environment is "much more than a location factor" (Joigneaux and Rohaine, 1986, p. 189), and is thus the fundamental strategic variable in an innovation process.

In doing this, one takes into account a phenomenon that lies at an intermediate level between the two extremes in which the dynamic of an economic system is traditionally represented: i.e. the individual actor bearing its own behavioural logic (rational or motivational) and the environment in the broader sense, in which the economic, institutional and technological rules of play have their context. The assumption of an *intermediate point of view* implies, in effect, the idea of a non-deterministic organisation. This stems from the behaviour of actors (private, institutional, academic, etc.) whose activity is also felt in relations that transcend mere market transactions. At the same time, the set of these relations does not develop in an undifferentiated and casual manner, but produces a sort of cohesion between the actors involved, conferring on this set (or system) an identity that distinguishes it from the wider system in which it operates.

We have thus returned to the original idea: organisation – the set of network relations between a plurality of actors – lies at the origin of an innovation process. There is no innovation, in effect, without an "organisational innovation", i.e. a collective learning process based on the combination of skills and knowledge both inside and outside the actors involved.

Given these premises, it is now easier to synthesise the fundamental dimensions that constitute a network of innovation (Lecoq, 1993):

- the economic dimension. In this light, we find an organisational form that is not easy to define from the empirical point of view. Theoretically, it is instead possible to situate it in terms of a way of organising the relations between actors that transcends the two usual forms in which a production system is represented, the hierarchy and the market;

- the historical dimension. A network presupposes a system of long-term relations between actors based on the reciprocal exchange of knowledge. The organisation of the transactions develops over time and is based on reciprocal understanding and trust which can exist in a given territorial context;
- the cognitive dimension. The network is the depository of a production capacity higher than the sum of individual capacities. It is from this point of view that the conception of a process of collective learning emerges;
- the normative dimension. The network is characterised by its own system of rules which outline and define the relations between partners.

Taken together, all of these concepts are a fairly clear-cut breaking point with the usual logic with which an innovative process is understood and underline an explicitly systemic interpretation whose foundations, which will be illustrated in detail in Chapter 5, need only be recalled here.

The network, in other words a representation of the relations between the components of the system (in our case, companies, private and public institutions, research bodies of various kinds etc.), is necessarily open to the environment (for the sake of simplicity, we could assume the nation-environment, the level on which we find the economic and institutional practices which define a system of regulation). Openness to an environment from which constraints and information originate is thus a factor of evolution (transformation) of the network in the course of time. However, we know that a system is also operationally closed, in the sense that, through the organisation of network relations that develop within it, it is capable of "filtering" the disturbances and stimuli from the environment. As a consequence, it differentiates itself from the environment with which it interacts: it is through organisation, in fact, that our system expresses its own autonomy and identity which, by adapting itself, makes it possible to evolve along a given trajectory.

The spatial dimension of innovation networks

It is now time to understand how this highly dynamic and structurally unstable form of interactions between human resources, companies, research structures, financial and management bodies etc. comes to possess *spatial recognisability*. This is the question that a group of researchers that came together in GREMI in the mid eighties tried to answer. In addition to Philippe Aydalot, the group included regional economists like Roberto Camagni, Bruno Lecoq, Jean-Claude Perrin, Denis Maillat and Olivier Crevoisier (Aydalot and Keeble, 1988; Maillat and Perrin, 1992; Maillat, Quévit and Senn, 1993). The starting point for the elaboration of their theoretical proposal, in line with the assumptions of modern systems theory, lies in bringing out the organisational nature of network relations.

In this proposal, a network assumes both a functional and institutional dimension. From the first point of view, reference is made to an innovation strategy set up by the actors that we can divide for simplicity into two classes. The first is a strategy of adaptation to technologies that already exist, or, in other terms, of exploiting a technological trajectory whose origin lies outside the network (Perrin, 1990). This was

by far the most common strategy in the past, as the set of relations between actors were structured around a leader-company, which was capable of controlling virtually the entire production and innovation process. The relations that are established assume in this case a hierarchical structure, so we shall talk of them as innovation networks in a broad sense.

The second is a strategy for the creation (or production) of technology which instead underlies an innovation process that cannot be pursued by an individual company, but demands multiple and complex synergic interactions. This is a rather recent phenomenon which replaces the linear form typical of earlier innovation processes with a radically different strategy. A company no longer looks to control the entire innovation process (an unlikely hypothesis in the current technological conditions), but to activate an almost permanent technology creation process, which evolves thanks to the interaction and co-operation between a number of actors.

From the institutional point of view, the organisation of the network makes evident possible ways of "governing" the relations between the partners involved in the innovation process. Now, in the case of a network that aims to exploit technology, the transactions assume an essentially bilateral form between a dominant actor and the others. We thus have asymmetrical relations, usually codified in a formal, contractual form, although without having to rule out the fact that the partners of the leader-company also draw benefits from the information exchanged. In the case of technology creation networks, the relations are, instead, multilateral (many actors participating in an innovation project) and tend to be symmetrical, as co-operation, and not hierarchy, is the keystone of the innovation process. In this case, we have innovation networks in the strict sense and the actors become part of the relationship thanks to their own specific competencies. As Perrin recalls, this is "a relatively new phenomenon in industrial history" (Perrin, 1990, p. 19).

In a broad summary (Figure 1.3), it is possible to maintain that a hierarchical network (precisely because it is based on conditions and factors present within company organisation) presupposes territorial links that are rather less intense than those required by a co-operative network.

In the first case, the environment (local and regional) represents an element exogenous to the functioning of the system and enters into it to the degree that it provides generic resources to companies (Lecoq, 1993). In the second case, the territorial interaction between actors is a fact that can be easily intuited. Informal relations between actors develop better in conditions of geographical proximity (consider the importance of face-to-face contacts) in environments characterised by a historically rooted collective and collaborative culture. In this case, the spatial dimension is an essential component of the technology creation process, in that belonging to a given territorial context is decisive in giving life to transactions that presume trust, reciprocity and ethics (as highlighted by, among others, Imai, 1988; Johannison, 1990; Storper, 1992).

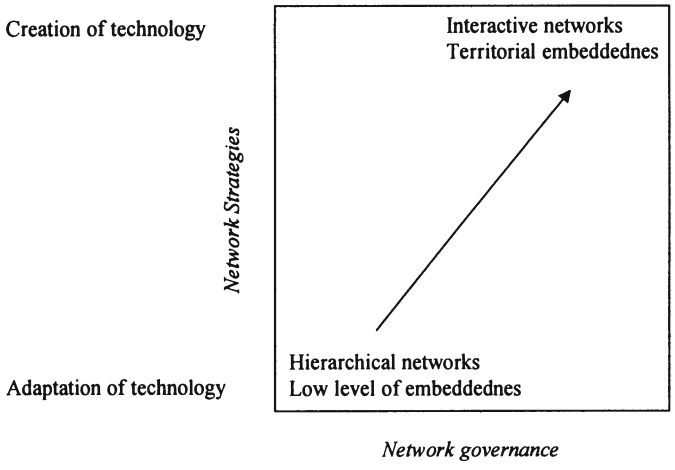


Figure 1.3 - Innovative strategies and network organisation

Specific resources and "milieux innovateurs"

We have acquired two significant elements. First of all, the fact that an interactive process aimed at the creation or development of technology does not depend on simple transactions regulated by formal relations. Secondly, it has been demonstrated that a synergic process sets up a field of communication that would be impossible to break down into its components.

If we were to reason purely on the basis of generic resources (such as raw materials, services, manpower etc.), the location behaviour of economic actors could be easily explained in terms of the search for cost differentials, in addition to the availability or lack of these resources. The location problem would thus appear as one aspect, among many, that go together to define the actors' strategic behaviour and would in any case be in line with previous technological choices.

The concept of a field of communication represents instead specific resources which, being explicitly localised, make the territory a strategic resource in the innovation process. Here is how Rallet and Torre see this:

> the recognition of the (partially) tacit character of knowledge, and thus the possibility of transmitting it through non-codified relations between economic agents is certainly one of the keys to explaining the relation between the spatial and technological dimensions. In effect, geographical proximity seems to play an important role in the diffusion of technical capacity because of the need for frequent and cumulative contacts between the actors of change and the transmission of information (Rallet and Torre, 1995, p. 11).

We shall thus attempt a brief review of the environmental (territorial) conditions on which an innovation process is built and which, to some extent, we have already come across in earlier pages. Very briefly, these are:

- an informal and non-mercantile organisation of relations between actors;
- a technical and industrial culture shared by them;
- historically consolidated collective behaviour and practice;
- an entrepreneurial and technological atmosphere.

As can easily be observed, the communicative dimension (the solid foundations of all the conditions listed) discriminates between a set of specific resources and generic ones. In contrast to the latter, specific resources are explicitly localised. It is unthinkable, in fact, to imagine that, being produced by a given context through the historical evolution of relations between actors, they could be reproduced in a different geographical area to their original one. As the depository of specific local resources, a given context differs from others and defines an environment of, again specific, technological evolution. The international literature defines this set of territorially non-reproducible conditions with the term *milieu*, meaning a system of actors and structures that can be fully grasped only within the complex play of reciprocal interaction.

The approach is explicitly holistic. The set of interactions between the actors and territorial conditions is the origin of a system-effect that shows itself in a particular technical, political and social atmosphere, climate and culture. It is thus a process that reproduces its own coherence as it evolves. Given these premises, it is logically difficult to reach a full and exhaustive definition of a concept – the milieu – that can be grasped only through many qualitative dimensions. I will therefore concentrate my attention on the latter, but not however without quoting the definition that seems most convincing, precisely because it is the most open to diverse dimensions. This is the one given by Maillat, Crevoisier and Lecoq:

> the milieu brings together a production apparatus, a technical culture and actors within a coherent whole. The spirit of enterprise, organisational practices, company behaviour, the forms of use of techniques and of learning market opportunities and constraints, and the capacity for work are in turn integrating and constituent elements of the milieu. The milieu appears as a process of perception, learning and continuous action (Maillat, Crevoisier and Lecoq, 1991, pp. 407-8).

This very general definition enables us to see two essential aspects of the concept in question: on the one hand, its dynamic character, given by the complex play of interactions activated in a particular environmental context; on the other, the fact that this set of specific resources does not constitute a simple condition of cost reduction (that economic actors can, at best, find in many places), but a set of non-reproducible externalities (economic, social, cultural and environmental) that have accumulated over long term historical processes. In other words, other criteria are added to those of efficiency of conventional economic analysis (obviously not cancelling them), which assign a contingent character to economic action, stemming from the "embeddedness" in a given cultural, political and social context.

This would explain why a process of innovation is necessarily localised. An innovation network cannot be separated from the environment which plays host to the relations between actors. Lecoq on this point offers a convincing and synthetic

interpretation of the concept of milieu, which in our framework takes on the explicit features of a *milieu innovateur* (Lecoq, 1993). Its features can be obtained by superimposing the following four dimensions:

1. *a territorial dimension*. The milieu is a geographical space whose boundaries cannot be defined a priori, but depend on the identification of specific behaviour that confers its own coherence upon it;
2. *an organisational dimension*. It is the co-operation between the actors, open to each other, that is the origin of the production of innovation. This organisational logic takes shape in a complex system of interdependency and reciprocity that usually assumes untraded forms;
3. *a learning dynamic*. In the play of interaction, the actors modify their behaviour to produce new production and organisational combinations. Learning is collective, therefore, in that it is based on knowledge shared by various partners;
4. *an industrial culture*, that expresses the historical memory, knowledge and technical background which take on concrete form in professional practice, a work ethic and shared values. It is the source of a certain consistency of behaviour and, in change, ensures the stability of the system.

Assuming this point of view, innovation appears, in substance, as a socialised and collective process (as well as an economic one) based on a territorialised organisation of relations between actors. It is organisation, in other words, that defines different paths for the creation of technology, as the depositories of non-reproducible economic, social and cultural practices. In this light, a milieu is innovative because it is open to information from external sources and, at the same time, the depository of specific externalities, which "are organised, co-ordinated and related to the economic, cultural and technical structures so that the most is made of localised resources in new technological and production solutions" (Maillat, Quévit and Senn, 1993, p. 7). It is these which imply that localised (tacit) knowledge is enhanced in new technological and production solutions.

We return, essentially, to the fundamental concept according to which, for the innovative capacity of a (territorial) system to express itself, the mere co-presence of a number of factors is not enough. What is needed is their reciprocal interaction, which takes the form of continuous multidimensional flows of information. And it is in this framework that the concept of synergy acquires a full meaning, in that it makes it possible to overcome in some way both the Schumpeterian tradition of the dynamic and motivated entrepreneur-innovator and the theses derived from the theory of organisation according to which the creation of technology demands high levels of co-ordination inside the company (in particular in large firms). It is by overlapping factors internal and external to the company that an innovation process acquires, in conclusion, full intelligibility. The organisational dimension, the strategy and behaviour of economic actors cannot be imagined in isolation from the market context, from the network interactions activated with a multitude of other actors, and from the institutional and historical-social framework that determine geographically differentiated paths of evolution (Figure 1.4).

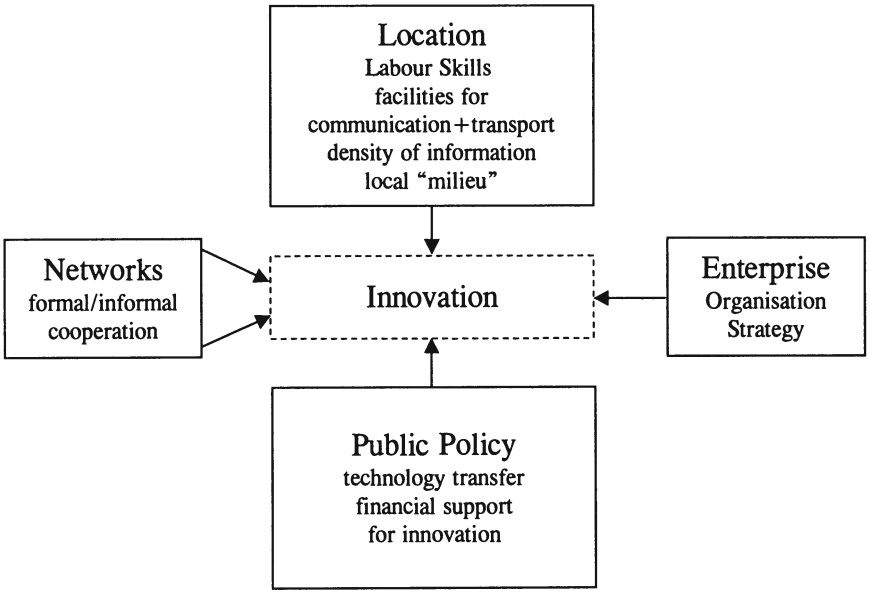


Figure 1.4 - Spatial differentiation of innovation. Factors of influence

Source: adapted from Tödtling, 1995.

1.8. Communication dynamics

Representation in terms of milieu and networks has been of great importance in the creation of new meanings to give to the dynamic of innovative and territorial systems. Nonetheless, the mechanisms have not been fully identified that can valorise a learning system and make it competitive on the global level nor, on the other hand, have those that determine (or inhibit) the territorialisation of knowledge.

The situation has been partly freed up thanks to the fruitful discussion between various disciplines (economics, sociology, anthropology, philosophy and territorial sciences) stimulated by a sizeable group of eclectic figures, among whom stand out Geertz (1983), Giddens (1984), Granovetter (1985) and Lundvall (1994).

Let us briefly summarise the terms of the question. The dynamic of the system is expressed as a learning process, depending on the variety, quality and density of information. At the same time, we know that information is a complex resource that can rarely be produced by a single actor - it is "in the air" of a place, as Marshall observed at the beginning of the century - and thus sharing and communication between actors are required for it to be produced.

But what is the mechanism that generates the evolution of the system through the sharing of information? Or another question: how can we explain the greater dynamism of certain systems compared to others, less capable of producing, controlling and using information for development purposes? The theory of communicative action and the more recent contributions in terms of the learning economy allow us to complete the path already laid out, even if at a highly abstract level.

We are dealing with a cluster of words that have now entered into everyday language. The distinction must be made between the concepts of *knowledge* and *information*, with the latter being more restrictive, referring solely to the part of knowledge that can be transformed into signals (in codes, we shall say shortly) and thus is easily transferable in space and between different actors.

The taxonomy proposed by Lundwall and Johnson (1994) is decisive at this starting point. Knowledge concerning facts and events (*know what*) or the fundamental innovations (*know why*) can be relatively easily obtained by a plurality of actors. It usually enters the information circuits in computerised form, in scientific publications, or more simply through usual means of communication. These forms of knowledge, or, better, information, although triggered in specific localities by certain actors, achieve virtually global dissemination. In other words, they tend to be pervasive and *codified* (according to the original definition by Polanyi, 1967), and in theory access to them is open to anyone who wants them and possesses the appropriate technical and cognitive instruments. In contrast, knowledge concerning the means of producing goods and information and making decisions (*know how*) is characterised by its non transferability. It is, in fact, created through learning practices of varying length, involving intense interpersonal communication. For this reason, it is rooted in specific contexts (a company, a local system) and based on manual, scientific and managerial working experience and practice. It implies, in other words, another form of knowledge, concerning other actors who already possess production and intellectual experience (*know who*). This form of learning (and of knowledge) is thus based on the activation of social relations, and is therefore relational, specific to each context, *tacit*, non-reproducible and non-transferable in the forms in which it is produced.

However, we know that the contemporary economy is characterised by the growing trend in the diffusion of information, i.e. the generalisation and transfer of even the least transferable knowledge in accessible languages. The very survival in the economic system of a company (or territorial system) that is the holder of a specific knowledge is increasingly dependent on the possibility of spreading the knowledge produced and, vice versa, of attracting knowledge produced elsewhere.

What we wish to state here is that understanding of economic and territorial phenomenologies passes through the *knowledge-based economy*, or rather through the economy of a resource that is largely embedded in territorial contexts. In other words, the generation of economic value implies the use not only of abstract knowledge, translatable into technical coefficients and market prices, but also into contextual knowledge. This latter is conceived in a particular context of experience and is thus valid in that context. To test an innovation, in fact, to contact other actors, to govern

complex production systems, to direct the action of managers and employees, the solutions adapted make wide-ranging use of empirical and adaptive methods. This is, therefore, territorialised knowledge.

For this knowledge to be enhanced, it must however be transformed, abstracted from the context, codified. De-territorialised knowledge can thus be transferred, making it possible to multiply and enhance its use to the maximum. At the same time, as long as it remains codified, knowledge cannot be applied. To be set once again into a particular context, it must be re-contextualised through appropriate cognitive operations (Nonaka, 1991 and 1995) (Figure 1.5).

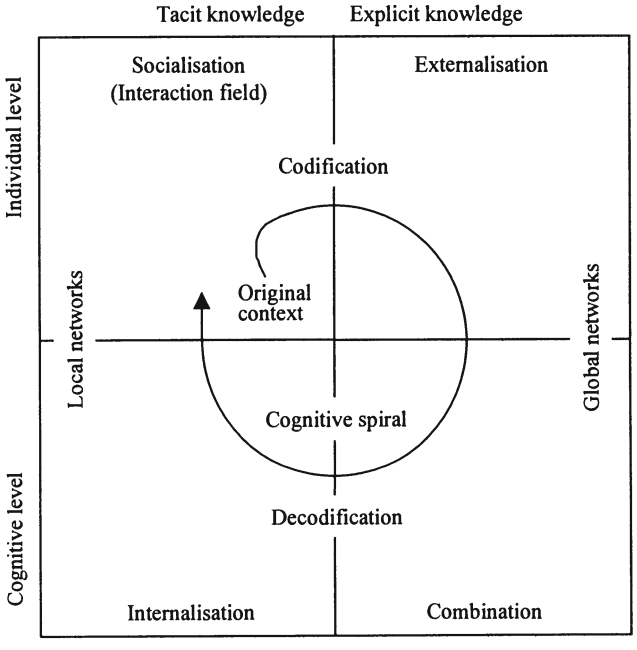


Figure 1.5 - Process of knowledge conversion

Source: reworked from Nonaka (1995).

If this is true, it follows that the local dimension asserts itself as a key element in the evolution of the system in that it is locally that the fundamental process of the conversion of knowledge occurs. The local system in fact exercises a dual function:

- on the one hand, the connection is made of codified (and transferable) knowledge to production activity. In this process of conversion, contextual knowledge, as the expression of the embedded values, culture and organisation, allows the local system to filter and transfer codified knowledge, adapting it to its own needs. In

fact, to meet competitive challenges, the system must reduce the environmental complexity through a process of selection that is based on a communication code internal to the system itself. The response provided by the local system to challenges of global origin is thus defined;

- on the other hand, the conversion is made of contextual knowledge into explicit knowledge. The transferability from one context to another will certainly depend on the type of knowledge, but also on the possibility of translating it into languages through which different places are related in global circuits of exchange of codified knowledge.

It follows that a local system, understood as the place of integration between contextual knowledge and codified knowledge, is not a closed system (as it could have seemed by rigidly assuming the approach in terms of milieu), but rather the segment of a virtually global circuit of learning and production of new knowledge (see also Becattini and Rullani, 1995).

1.9. Conclusions

The recognition of the existence of many paths for the development and production of innovation and knowledge leads to support for two theses of vast importance. On the one hand, a challenge is made to some of the, until recently, dominant theoretical hypotheses of the analysis of economic phenomena in space. On the other, the territory no longer appears as an "additional" condition, but as a fundamental dimension of the organisation of the contemporary economy and society.

From the point of view of the road that we have started down in this chapter, different forms of organisation of economic and social relations in space underline different trajectories of technological evolution, whose dynamic depends on factors of both an exogenous and endogenous nature. The former, although triggered by changes (innovations) that originate in specific places, assume a virtually global range of diffusion (they are, in other words, pervasive phenomenon, as we have defined them). The latter are instead the outcome of dynamics typical of individual territorial (local, regional) systems which have roots in long-term historical processes. In this sense, the endowment of resources of each system can act as a stimulus for innovation as long as it is associated with conditions capable of enhancing it:

> [It] does not stem from an instantaneous endowment of factors, but is founded on capacity for initiative, positive attitudes to innovation and the creation of new companies, on local decision-making processes, on local modes of operation of the industrial structure (Aydalot, 1986, p. 3).

The relational (and communication) dynamic thus asserts itself as decisive. Summarising to the maximum, it is possible to break down a communication process between the two levels of information and communication, which imply different levels of territorial articulation, corresponding to different models of communication.

In particular, the knowledge produced (the *information*) is easily transmitted, aggregated and disaggregated, and transfer is relatively inexpensive. It can therefore be transferred easily from one place to another and the pattern of diffusion tends to be global. In contrast, the *production of knowledge* has decided constraints to diffusion and effectively constitutes the highest ranking function, in that it establishes itself through a synergical process of communication between a multitude of actors and environments. As we have seen, it implies an evident territorial dimension.

While the circulation of information does not demand particular factors of agglomeration, the production of knowledge requires instead a territorial form of organisation including activities, infrastructures and, above all, capacity for reciprocal interaction. Precisely because it is linked to "factors of territoriality", it determines and produces the differentiation of space.

CHAPTER 2

Enterprise organisation, hierarchies, networks and competitive environments

2.1. Premise

We shall now turn our attention to the *enterprise* as a key actor in the functioning of the economic system. Called on to play the function of controlling and co-ordinating the factors of production, the modern industrial company, in the tradition of management science, is distinguished from other historical forms of organisation because of its *formal* way of regulating production and power relations. The reference is not therefore to the scarcely formalised company that characterised the manufacturing economy of past centuries, peopled with small independent producers usually working on a single product and in a restricted geographical area. Even at an intuitive level, it is easy to observe how the concept of (company) *organisation* indicates a rather complex actor. Faced with the "disorder" of the external world, it provides answers aimed at the most profitable use of resources and the definition of the most efficient forms of operation and expansion (Simon, 1960).

The concepts that we will use initially are drawn largely from constructivist theories, one of whose leading exponents was a professor of the history of industry at Harvard, Alfred Chandler. The assumption of this concept of organisation obviously does not exclude other representations of companies[1].

It did, however, dominate for many years in the branch of geographical disciplines that attempt to explain the rise, evolution and consolidation of the large, hierarchical and bureaucratic modern company which through administrative co-ordination managed to establish rules of behaviour that reduced the risks of the competitive market, assimilating the achievement of solid internal economies into the pursuit of production and management efficiency.

This theoretical threshold was to be crossed throughout the industrialised world in the final decades of the century with the explosion of the crisis of the large oligopolistic company and its related ethical and organisational models. The technological and social flexibility that revolutionised the contemporary world was the origin of important developments in the way of understanding the company. This was accompanied by the modification of the rules of competition and strategic action, and questioned once again instruments and lines of thought that had appeared consolidated.

2.2. Hierarchical organisation

The company and organisation theories

The explanation of the processes of the rise of the large company is obviously not univocal. Any single definition and interpretation would evidently not explain the complexity of this fundamental "engine" of economic development and the consequent logics of space organisation.

On a strictly formal level, the distinctive features of the large company can be easily (even if very arbitrarily) identified on the basis of quantitative criteria: capital, turnover, employees etc. It is also easy (but again arbitrary) to include in this category both the multiregional company, which operates and controls production units distributed within a nation state, and the multinational company, whose capacity for control extends over a number of production and distribution units operating in various parts of the world (Michalet, 1976).

However, in economic debate, it is mainly *qualitative* criteria that are proposed. In this light, the large company stands out for its capacity to implement a complex and flexible strategy – on the technological level, on that of the product (multiproduct) and on the spatial and temporal planes.

We also know that this type of company expresses a decision-making process much *more complex* than just maximising profits. While this remains a general objective (in that it enables expansion processes, through self-financing), this is in reality a *long term profit*, which has to measure up against a constantly evolving strategy. This includes not only expansions and contractions in size, but also production diversification, internal reorganisation and redefinition of the relations with other competitive actors. In this scenario, modern *organisation theories*, associating behaviourist, empirical and systemic elements, have provided a large pool of ideas from which to draw concepts and tools for the interpretation of the growth and transformations of the modern industrial company.

Functional and spatial division of labour

An evident reality lies at the origin of studies on company organisation: for over a century, the economic system has been going through a process still not concluded of *concentration*, for which a smaller and smaller number of companies has gradually accumulated growing financial and production capacity, earlier fragmented into separate activities on a modest scale.

On the theoretical level, this phenomenon recalls, in economics and economic geography, the thesis of *internalisation*, which expresses the company's need to run as many functions as possible internally, in order to increase its own capacity for co-ordination and control of significant segments of the economic system (markets, resources, technologies, regulations and tariff constraints etc.). This marked the definitive abandonment of the hypotheses of homogeneity typical of the neo-classical tradition.

The efficiency and "rationality" of organisation are assumed, in particular, as the factors used to eliminate the conditions of uncertainty present in the environment (other companies and actors). This means that an asymmetrical relationship of power is established between the actors operating in the system. It follows that the fundamental axiom of neo-classical economists – the interdependence between equals in a competitive market – collapses completely and is replaced by the idea of *hierarchical centralisation*. In this framework, the minor actors, often identifiable with a single plant, bonded to consumers and suppliers, to institutional regulations and local labour markets, appear inevitably *dependent*, in their economic, technological and financial choices, on the environment in which they operate. Large companies, in contrast, would appear capable of freeing themselves from environmental constraints and of proposing themselves as a factor of transformation and development of the economy and society.

The context is that of the *multilocated company*, whose multifunctional (or multidivisional) structure reflects, according to Galbraith and Nathanson (1978), both *production and geographical* specialisation.

At the basis of the problem there are some sufficiently well known concepts. A modern company organisation with plants distributed on the regional, national or supranational scale, distributes different functions between them: in other words, it makes a *functional division of labour* so that different activities, although co-ordinated, are assigned to different units that can be located in a relatively large space. According to Chandler's pioneering studies (1962) – the common reference both for scholars of an organisational-behaviourist and Marxist origin (see, for example, Radice, 1975) – the distinction between the functions present in a company highlights four different levels: the headquarters, which co-ordinates the various divisions, the central administration, the central headquarters of the individual divisions and finally the operational units which are responsible for actual production.

Given this premise, it is easy to see how it is unlikely that these functions will be concentrated in a single location in the modern company, and even less likely within a single building. Usually, they are instead located in different places, so that the functional division of labour overlaps at the same time with a *spatial division of labour*. The picture that emerges is essentially that of a *location hierarchy*, which reflects the division (again hierarchical) of the functions within the company.

Given these premises, it is easy to conclude that in industrial geography the causes of inequality between regions and countries were traced back for a long time to the strategies of the large industrial company, understood as an actor "capable of bringing about transformations, just as it reacts to changes" (Hayter and Watts, 1983, p. 157) in the economy. The conception of the company in terms of location hierarchies leads, in fact, to geographical representation of its organisation. Its development (or decline or location adaptations) thus always implies the modification of the functions that a region (or country) exercises in the framework of a larger production system.

The abstract scheme that appears from this simple scenario therefore attributes the differences between regions to a *functional determination* of companies that will be manifested on the different geographical scales. In relation to the functions and/or

types of production processes, it is thus possible to extract a hierarchical representation which, however roughly, can be summarised as follows (Törnqvist, 1970; Pred, 1977):

- decision-making, strategic planning, research and development functions are usually concentrated in a limited number of major cities in the advanced industrial countries, where reciprocal contact between decision-making actors is easier and more immediate and where the company interacts with other research centres and management and financial bodies;
- other production functions that demand skilled labour and the presence of specific infrastructures (transport, energy, training schools etc.) will be located in areas that already have a consolidated industrial base. This second hierarchical level, corresponding to medium-sized and even large towns, also attracts the functions of administrative and "divisional" co-ordination;
- finally, on the third level there will be standardised, low tech production which usually needs abundant manpower with lower skills, and thus more sensitive to pay differences. In other cases, the location of decentralised plants can stem from a strategy aimed at controlling the sources of raw materials and to impose a company's presence on final markets.

This simple scheme largely reflects the spatial structure of the real world. The company, whose strategic behaviour is directed by the search for advantages deriving from the differences between countries and regions in the availability of certain location factors (skilled and unskilled labour, accessibility to research and information etc.), thus produces a *spatial division of labour*.

The difficulties which a scheme of this type comes up against are, however, significant and should be fully clarified before continuing. For the moment, it is enough to highlight the deep logic that characterizes this theoretical perspective. The development and decline of regional economies are understood as depending on the unequal distribution of company functions. The company, because it possesses significant financial and organisational means, seems to be in a position to "free itself" from traditional spatial constraints and could itself define the directions of development. It follows that the differences between regions can be traced back to managerial and organisational functions, and the spatial division of labour is analysed in terms of the division of labour in the company.

Strategies and modes of growth

This type of company, to which significant management and competitive capacities have been attributed, is nonetheless a fairly recent phenomenon in the history of the Western economy. It appeared towards the end of the 19th century, and by the end of World War One the large corporation had established itself as the most influential institution in governance of the economy in all industrially advanced countries, operating in sectors where technology had made it possible for some time to produce high volumes of goods for markets scattered over a fairly large geographical area. The

entrepreneur of the classical tradition, usually used to dealing with a competitive market, had by then been replaced by groups of actors responsible for co-ordinating increasing flows of information and goods between the production units that made up the company. Using the most well known metaphor, this was the substitution of the *invisible hand* of Adam Smith's market mechanisms with the *visible hand* of management, as Alfred Chandler entitled his most famous work in 1962 (Chandler, 1962).

There has never been full agreement on the reasons that led to the rise of these managerial structures. It has in any case been demonstrated that the institutional form of the first great US corporations, which incorporated several independent units through legal and administrative means, differed considerably from the German model, which made ample use of the "cartel", and from the British and French ones, where groups of companies were formed under the domination of powerful financial holding companies already at the end of the 19th century (Chandler and Deams, 1980). In the twenties, however, the American "model" of a centrally controlled structure spread as the corporation form in all industrialised countries. In this sense, the development of the modern industrial company is understood as a substantial *organisational innovation* implying not only new (hierarchical) methods of structuring functions within it, but also the planning and control tools related to them.

In this light, the corporation represents an organisation which positions itself as the regulator of the environmental imperfections and uncertainties. Assimilation of the external environment, ensuring control of the largest number possible of functions (from suppliers to market structures themselves) implies, on the logical level, the idea of a company that aims for perpetual and inevitable expansion in size and functions.

It is essential to immediately make the distinction between *strategies* and *modes* of growth. The first term, again following Chandler, indicates "the setting of long term objectives, the choice of lines of action and the allocation of the resources necessary to achieve them" (Chandler, 1962, p. 13). The second refers, instead, to the mechanisms through which the company integrates new activities and functions by expansion. This is how it expresses strategic decisions taken previously: in other words, the means of growth define the selection of the behaviour most appropriate to the pursuit of long-term strategic objectives. These are two intimately related concepts, as the individual company always has to tackle both strategic decisions and choice between the possible forms of expansion along a contextually defined trajectory.

A company's strategic choices can be summarised in two equally possible solutions: *integration*, expressing a development trajectory aimed at increasing the company's dimensions while reiterating its original features (especially production specialisation), and *diversification*, aimed, in contrast, at progressively extending the initial field of activity and specialisation. In the first case, we also need to distinguish between strategies of *horizontal integration* and *vertical integration*. The former, developed to ensure a more substantial presence of the company in the market, generally lead to extension of control over manufacturers in the same product line (by absorbing competing companies). The latter, aimed instead at ensuring a more direct influence over suppliers and markets, are based on the acknowledgement of

shortcomings in the procurement and distribution system run by independent operators. The company thus substitutes them, creating its own structures to control purchasing and the commercialisation of products.

Especially in the first decades after their arrival, the integration strategy (in both the forms illustrated) was a constant in company expansion and the response to unprecedented growth in their geographical area of influence, in turn made possible by the development of transport and communication systems (rail for products, the telegraph and then telephone for information). On this, K. Chapman and D. Walker observe:

> Horizontal integration appeared to be the principal objective in the 1890s and early 1900s; vertical moves characterised the 1920s; corporate diversification was the principal goal in the 1960s (Chapman and Walker, 1987, p. 86).

Companies tended, essentially, to *internalise* transactions that had previously been regulated by the market. It is in this light, as has been said, that the rise of the great corporations at the turn of the century represented a formidable *organisational innovation.* Company growth in those decades was first and foremost an organisational response to fundamental changes that had occurred in production processes and distribution systems made possible, in turn, by the availability of new sources of energy and the application of new scientific discoveries to industrial technology.

The phase of company evolution that began at the end of World War Two, and which reached its extreme consequences in the sixties, was accompanied by a widespread strategy of *diversification* in new products and new markets, increasing the complexity of management and consequently demanding new organisational solutions. We will examine this last point in depth later.

Turning our attention now to the *modes* of company growth, the usual distinction is between:

- *internal growth*, achieved through the expansion of existing plants or the creation of new production units or plants (in the same area of origin of the company or decentralising them to other regions or countries);
- *external growth*, implying the acquisition, essentially through financial takeovers, of other companies already operating on the market, in the same or in other sectors of activity. In this last case, the acquisition of other companies is a strategic decision towards diversification, often accompanied by the elimination of real or potential competitors.

Most companies which have reached a dominant position in the system have, in reality, adopted both of these forms of growth in the course of their development. More in particular, the history of large modern companies reveals the fact that the strategy of diversification was adopted by all the companies which had reached a significant size threshold through previous manoeuvres of vertical and horizontal integration. In the same way, the acquisition of other companies already present on the market – often of smaller size and weaker strategic and financial capabilities – has

almost always turned out to be the most rapid means of tackling market dynamics and consolidating a position of relative domination in the economy.

It is obvious that these general considerations do not take into account the fact that in the definition of a strategic decision *subjective and cultural factors* always play a role. Thus, there can be differences in the forms of behaviour even between companies that have a dominant position in the market. The decision-making process is, in fact, rather different in the case of companies where ownership and control have remained in the same hands compared to others in which the management has replaced the shareholders in the direct control of the company. The former, when they have sufficient financial means, have tended to prefer to expand by creating new company segments (internal growth); the latter have seemed to prefer acquisitions of other companies already active in the market through financial operation. The excellent analysis by A. Blackbourn (1974) on the expansion in Europe of American automobile companies shows, for example, the quite clear contrast between the expansion strategy of Ford (a company in which the presence of family capital has always been dominant) and that of the other two US car giants, General Motors and Chrysler. The first has never interrupted a policy begun far back in 1907 of "conquering" European markets by directly setting up sales and production branches; the others, after early manoeuvres of internal growth, pursued, in contrast, a systematic policy of acquiring existing companies (such as Vauxhall in Britain and Opel in Germany, already acquired by General Motors in the twenties, the French company Simca and the British Rootes Corporation, bought by Chrysler).

Company strategies and organisational structures

What has been illustrated so far puts some pieces into place in this puzzle of the analysis of the relationship between multilocated companies and the dynamic of geographical space. These instruments must, however, be refined in the light of an elementary consideration: the functional and spatial division of labour within a company is not a fixed and immutable fact, but the outcome of complex decisions that change over time and are closely connected to modifications in the economic environment.

We will continue our examination through a number of successive steps that outline the indissoluble relationship between company *organisational structure, strategic behaviour and spatial (locational) manifestations* of the strategies adopted. These are three faces of the same reality, even if irregular and relatively difficult to decipher.

There is, in fact, an indissoluble relationship between *strategy and organisational structure*, as the first conditions the second and vice versa. In other words, an adequate and efficient organisation is decisive for the pursuit of an effective expansion strategy: in very brief terms, it can be said, for example, that an expansion of the scale of production can be pursued more easily by a company that has a solid internal organisation, adequate information and substantial financial resources (all factors that are found to a greater degree in large companies). In the same way, the conquest of a new market will be easier for companies that already possess a production plant, just

as it will be easier for a company organised in several plants to start up a product differentiation strategy, dedicating one or more of the plants to testing of the new product.

In contrast, the success of an expansion strategy can determine significant modifications in the organisational structure. As we have seen, the rise of the organisation of the multinational company is the outcome of a process of continuous expansion determined by a strategy aimed at greater market penetration, higher production flexibility or greater ability to control the economic and political environment. In other words, the strategy adopted imposes profound modifications of an organisational nature that can lead in particular to interdependence and functional separation between the various plants (Lorsch and Allen, 1973).

As a whole, in any organisational structure[2] there is a hierarchical configuration that can be broken down, as Simon described (1960), into at least three distinct levels: the top decision-making level, responsible for formulating strategic company goals and controlling activities; the intermediate level, to which co-ordination functions are assigned; finally, a lower level which includes manufacturing activities to which routine organisational functions can be attributed.

Strategies, organisational structures and forms of spatial development

When the various functions are assigned to different parts of the company, they entail *specific forms of spatial division of labour*, involving different geographical scales, that are never accidental. These range from the local scale, when the functional units are relatively concentrated spatially, up to the broadest planetary scale, where interdependence and division of labour in the company involve much wider spaces. The relationship that is established between *organisational structure* and *spatial behaviour* of the company is, therefore, on a par with the one between strategy and organisational structure, logically inseparable.

Respecting the spatial frame of reference, company growth and its consequent spatial expansion are assumed in sequential terms, in the sense that different location solutions are associated with the progressive modification of its internal structure. The easiest way to "describe" the spatial evolution of the company is to separate the two great processes that characterise it: 1) *spatial growth*, which consists in the increase in the company's size and number of plants; 2) *location adjustments*, which do not entail the creation of new production units, but the functional modification or even elimination of them.

1. In the first case, we have a process of expansion of the size of the company, which can occur essentially through (Erickson, 1980): a) increase in the size of existing plants; b) opening of new production units; c) acquisition of existing plants; d) mergers with other companies. Each of these choices reflects precise expansion strategies which have to measure up to not only the existing organisational structure, but also the specific economic and social conditions of the environment influenced by the activity of the company (Watts, 1980).

2. Secondly, company evolution is not solely the expression of a growth process, but can also include later *adjustments* to the location structure. The closure of existing plants is obviously the most visible form of the spatial reorganisation of a company, which can cause dramatic consequences for the local economies concerned. Other forms of location adjustment involve the transformation of the production use of the plants, and these should be viewed in close relation with the definition of the strategic behaviour and organisational structures of the company.

Figure 2.1 proposes a scheme of the spatial evolution of the company understood as inseparable from its organisational structure over time. In the ideal model represented, the geographical extension is induced by the expansion of markets and production, by diversification strategies (implemented both through the localisation of new plants or the acquisition of existing companies), as well as by the adjustments and rationalisations that accompany the company's normal activity.

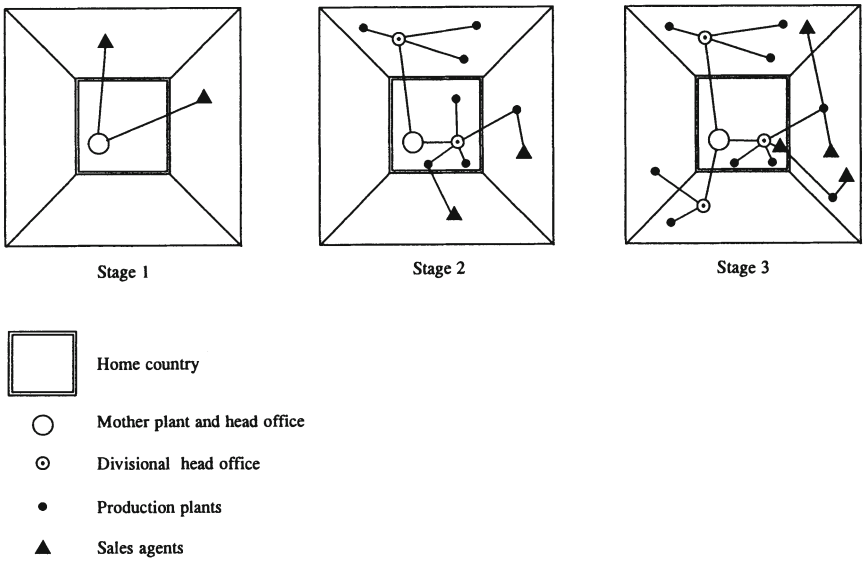


Figure 2.1 - A model of corporate growth

The concept of the *spatial evolution* of the company thus embraces both *growth* and the *adjustments* that regularly accompany it: these include various forms of rationalisation consistent with the increased size and modifications to the organisational structure (closure or expansion of plants, relocations, definition of new links between company units and the external context). The graphical representation, constructed on the basis of some of the most well-known models of the spatial growth of the company, assumes, on the one hand, the idea of a fixed pattern of company

development (from single plant to multinational) and, on the other, the relations of interdependence with other actors with which the company interacts in different ways (see, for example, Dicken, 1998; Häkanson, 1979; Taylor, 1975; Watts,1980).

The sequential scheme of *selection of strategic behaviour - modes of growth - location decisions* envisages, in turn, the constant transformation of the company's internal relations, i.e. the flows of materials, people and information, as well as the lines of authority.

1. On the first level, the *functional structure* reflects the absence of geographical separation between strategic-leadership functions and production functions. This is the typical case of a company in the early stages of its development - usually a company with a single plant and type of production - which concentrates almost all its activities, with the exception of the sales network. With the goal of penetrating (national and international) markets, the location of the network is determined above all by proximity to consumers.
2. As size grows, the spatial and functional division of labour becomes more complex. The expansion of the company in other regions and countries is achieved through both the transformation of commercial units into manufacturing centres, and the acquisition of independent local actors which thus become part of the "divisionalised" structure. The latter are integrated through "lines of authority" that pivot on the strategic centre, while the various segments of the company operate as relatively autonomous bodies, expressing a substantial capacity for operational and management decisions. Within the hierarchical structure, the "lines of authority" spread from the centre to the periphery, while information flows (about markets, technologies, products etc.) are often characterised by reciprocity between the strategic centre, national or regional divisions and production sub-systems.
3. In the third representation, the company structure is now quite complex and the frame of action tends to be global. The company manufactures both highly specialised goods and standardised products for a mass market. The various units thus pursue different location strategies: some are oriented to drawing advantages from cost differentials (primarily labour costs), others aim to penetrate technologically advanced regions. The relations between the sub-systems thus assume considerable complexity, going beyond national (and continental) borders, jut as the strategy of the single divisions involves multiple markets. Production can in fact occur simultaneously in different countries, while the supply of product components is outsourced to independent companies whose range of action also tends to be virtually global, with the creation of full-scale global commodity chains (see Chapter 8).

Practically unknown until the sixties, this "model" of supply developed rapidly in later decades, introduced by some major American corporations and then adopted by European and Japanese manufacturers. These forms of "offshore" production have had a major impact on some developing countries, especially in the electronics sectors (Hong Kong, Taiwan, Singapore, South Korea, Mexico), the production of automotive

components (pistons and cylinders in Korea and Taiwan, brake systems in India, accumulators in Thailand), clothing (West Indies, South-east Asia and Mexico), watches (Mauritius) (Dicken, 1998). Thus, while the divisional centre remains soundly bonded to the system's central area, the production activities follow a dual logic: for production in the mature phase of the product life cycle (see Chapter 1), developing countries offer the most attractive conditions; in contrast, new emerging phases with a relatively high technological content usually follow an opposing location strategy, preferring countries and regions with a well-established industrial base.

2.3. The firm as an open system

From the perspective described so far, the diverse organisational variations can be synthesised in a single structural principle, the *hierarchy*. In equally general terms, it is possible to see a certain correspondence between company functions (from strategic to manufacturing ones) and *spatial hierarchies*, which can be represented by a sort of functional specialisation between regions (and countries), reflecting the division of labour between the levels typical of the company hierarchy.

Economic development and spatial relations (inter- and infra-regional) are thus assumed as transmitted and mediated by the company organisational structure, which for this reason represents the structuring factor of development and of the relations between regions. This is a conception in which space comes into the model because of the dynamic of the *functional relations* that exist in the organisation. If the hierarchical pyramid is the means of controlling and co-ordinating activities, this explains how attention is focused closely on *internal organisation*: it is, in fact, the corporation – which internalises production, research and the application of new technologies, capable of organising the most diverse functions on an increasingly vast geographical scale – that defines directly the technical and power relations with other actors (see Chapter 6).

It is no chance, therefore, that the *theory of open systems* (or of functional systems) has turned out to be a formidable conceptual instrument to represent this type of company (McNee, 1974; Törnqvist, 1977). It assumes a clear demarcation between the system (company organisation in our case) and the environment (technological, competitive, social), where the former controls the latter.

It is not necessary to repeat the hegemony of this way of interpreting a system in the 20th century social sciences. It is sufficient here to recall the statement of Edward Ackerman (1958), and more in general of the theoreticians of functionalism, according to whom it is necessary to study the organisational behaviour of individuals and groups in order to understand changes in society. The subjective behaviour and informal organisation of previous centuries was contrasted here with the ethic of a modernity founded on *formal organisations* (such as the technostructure). The company, like any other organised system (government institutions, trade unions and employers' associations etc.) is therefore assumed as a complex entity (we are thus far from the "classical" Weberian entrepreneur), the analysis of whose behaviour can lead to a

"rational" understanding of reality. Here is how Robert McNee, to whom we owe the introduction of the study of the enterprise in geography, argues this paradigmatic transition:

> [the *functional systems approach*] puts little emphasis on goal attainment, efficiency, optimality or satisficing. Instead, the survival and development of the organisation itself is considered to be of central importance: whatever the goals may have been originally, the organisation will seek to survive, even if this means major modifications (or even replacement) of initial goals. The structure of the organisation is not seen as a clearly planned mechanism for goal attainment, but rather as a spontaneous and homeostatic phenomenon. [...] the overall structure is viewed as the result of cumulative, basically unplanned adaptive responses to stress and strains in the system. These may originate either in the environment or within the system itself (McNee, 1974, p. 64).

These theses, even if they were to appear unacceptable and inadequate in the light of contemporary systems theory (see Chapter 5), seemed at the time to provide a clear way forward for a provisory and incomplete theory of the company, opening up the possibility of examining better the relationship between organisation and environmental conditions, modifiable by actors who, because of their organisation, embodied a higher managerial capacity.

In this way, the adaptation and evolution of company structure were no longer seen as the expression of abstract rationality, viewed as stemming from an unceasing conflict against the forces that constantly challenged the very equilibrium of the system, whether they came from the environment or inside the organisation itself. To understand this better, it will thus be necessary to throw light on the relations between system and environment, breaking down the system into its fundamental functional components.

On this point, it was again McNee (1974) who transferred to the company the breakdown of the organised system suggested by Rapaport (1968). An organised system will be analysable (and divisible) from three different perspectives: the *structure* (i.e. the very essence of the system), the *functioning* (the functions exercised by it) and finally the *evolution* (its temporal development).

The structure of the company-system. The company is represented as a system of interdependent activities. Its structure constitutes the key for the definition of the system itself. This is given by a series of different roles which interact through lines of authority and forms of centralisation or decentralisation of decision making. It is in fact through the interactions between its elements – or *communications*, as suggested by Boulding (1972) – that a system can receive and process information that is then transformed into strategic action and behaviour.

If we reasoned around the small production unit that was the subject of traditional theory, the identification of the elements of the system would be fairly easy, as the interactive relations would be circumscribed to those between the company – which embodies all functions internally in a single place – and the environment with its constraints and stimuli. The representation of major company organisation, characterised by specialisation and functional and spatial division of labour between

plants, is more problematic. On the one hand, it constitutes a sub-system of the larger industrial system and, on the other, the elements of which the company is composed are in turn interacting sub-systems, each of which activates specific forms of relations with the environment.

It follows that the company-system has both an *internal* structure, characterised by a hierarchical organisation within which flows of products, people and information materialise, and an *external* structure, identifiable by the relations with the environment whose context is the location process. In this light, the logical systematisation proposed by G. Törnqvist (1977) allows us to assume the company-system as a set of functions and roles connected and co-ordinated through the constant exchange of goods and information which is implemented on *three distinct levels of communication*:

- the first concerns the transfer of goods and products, and essentially explains the flows between suppliers of semi-finished products and the production units, on the one hand, and, on the other, relations with the market. At this level, geographical proximity still plays a significant role, although less than in the past;
- the second is where information is exchanged through interpersonal contacts. These may occur through physical journeys of managers and technicians between the headquarters and factories, although meetings are more frequent and intense in the central units, where close relations develop with the research, finance and administrative bodies outside the company. There is no doubt that "the greater need for interpersonal contacts is one of the main reasons that has led to the concentration of management activities in the upper level cities" (Törnqvist, 1977 p. 156);
- on the third level, finally, information is disseminated via telecommunications. On this plane, physical distance loses much of its importance.

The functioning of the company-system. By functioning (or behaviour) of the system, we mean the way in which the organisation responds to environmental stimuli, using the information received, which is then processed within the structure. The choice between the centralisation and decentralisation of production and decision making, the opening or closure of plants, expansion through the creation of new units or by acquiring existing companies, are all reactions to stimuli from the environment. The company translates them into behavioural alternatives, selecting the information signals, in a continuous process of cumulative adaptation to disturbances in the environment.

Operating in the framework of a broader environmental system, the company reacts to the stimuli that it produces, and its evolution over time – its functional and spatial transformation – will depend on the capacity to reach its goals (survival in the economic system, expansion in size etc.), adapting to the changes that occur in the environment. The behaviour of the company will thus be the result of the interaction between exogenous and endogenous forces. Thus, for example, for the choice of a new

location, it will receive from the environment a whole series of information that it will translate into a smaller or larger number of behavioural alternatives.

This thus underlines that a significant part of the energy flows between the company and the environment concerns the exchange of information. The company does not, therefore, only receive and transform energy in terms of materials and work, but also in the form of immaterial elements. However, while it is rather evident how in the first case (physical inputs) the company will accept solely the ones useful for its own production process, "it is perhaps less obvious to consider how a company absorbs only certain types of information" (Dicken, 1971, p. 418). The process of absorbing information, as with other inputs, is therefore *selective*, dependent on the attitude of management to the perception of information transmitted by the environment. Company organisation, uncertainty and motivational objectives are thus combined in a framework in which the company, as an *adaptive system*, is in constant interaction with the environment, where the intensity of the exchange of information varies in relation to the organisational structure. P. Dicken summarises the feedback process between company and environment as follows:

> Information signals indicate the functioning of the firm in relation to a changing environment and enable its performance to be controlled in the light of its established goals and policies. When information feedback is *negative* it indicates an undesiderable deviation from organizational goals, an excessive imbalance in energy flows, and provides the basis for the correction of malfunctions in the system's operation (Dicken, 1971, p. 428).

Evolution of the company-system. Evolution is the expression of the structure and functioning of the organisation. In the context of large companies of the second industrial revolution, the context is one of a general process of growth that activates "a hypothetically endless spiral" (McNee, 1974, p. 69). As the life of the organisation extends, its size also increases (in terms of employees, production volumes etc.), and this determines growth and increased complexity of the internal division of labour and spatial differentiation and, consequently, of the quantity of resources and information that must be obtained from the environment. The latter, in turn, allows the organisation to prefigure other evolutive scenarios (in terms of employees, quantity and variety of products), and even more complex internal functional and spatial relations. The great oligopolistic company expresses, in essence, the primacy of a hierarchical pyramid inertially "condemned to growth (and immortality)" (Williamson, 1980, p. 183). We have seen, in fact, that the industrial imperative of the decades in the mid 20th century demanded the acquisition of a critical size on the international level: it was necessary, in other words, to hold a sufficient share of the world market to enable the corporation to exercise effective control over real and potential competitors.

This point of view thus made it possible to give order to a heterogeneous array of concepts and knowledge that achieved prominence in the decades after World War Two. This was a deliberate strategy to combine the contributions deriving from the history of industry (which in the wake of Chandler assumed an explicit evolutionary

meaning), industrial psychology, theory of regional development and the sociology of organisation, which with the fundamental works by Simon, Cyert and March aimed to get to the roots of the decision-making rationale of the large multi-division and multinational companies. With the disappearance of the simplifying criteria on which the neo-classical orthodoxy was based, the approach of functional systems appeared then as a fundamental tool capable of offering a unitary method of analysis. It is in this sense that the systemic approach did not represent in itself a "model", but an integrating and unifying scheme of analytical knowledge, a *conceptual theory* to reformulate, through a specific language, the different fragments of the study of an intimately complex phenomenon.

Company analysis was thus recomposed from the standpoint of functional systems, according to which the real world (society) is studied in an analogous way to the human body, as a "whole" whose elements, because of the functions that they perform individually, define the reciprocal interdependencies and explain the order and dynamic of the system. The transfer of these concepts to the company (from the simplest production unit to the most complex organisation) leads to the interpretation of its overall order.

This conceptual perspective found its coherency in a world in which the company represented a factor of stability in a *relatively stable environment*, and which for this reason allowed the "great machine", represented by Galbraith's corporation, to pursue a managerial order and "rationality" on the basis of the dominant economic criteria (increase in production volumes, cutting of unit and general costs, expansion of markets). This world changed rapidly, however, in the last decades of the century. It has become a reality full of uncertainty and instability and, on the level of ideas, decreed the defeat of theoretical approaches in which the demarcation between system (company) and environment represented a general and discriminating category.

The ample space that is devoted here to the reconstruction of the schemes of an organisational-behavioural type is explained by their influence on the post-war debate around the company. Nevertheless, the functionalist approach "reduces" the complexity typical of each organisational function, which cannot be traced back to an ordered system separate from society (see also Chapter 4). By giving preference to the linearity of the development of an organisation assumed as extraneous to the social context, the functionalist scheme would not enable us, therefore, to grasp the fundamental *differences of behaviour* (the strategic-subjective dimension, we shall call it later) that derive from the complex and geographically specific relations of conflict and co-operation that are established between the actors and the environment. From the point of view of spatial analysis, it will not be only the dimension, the technological level or the availability of factors of production to determine the behaviour of the company locally and thus define the spatial structure of the organisation. Geographically, society and economy are highly segmented; the environment does not therefore represent a neutral context within which the company evolves and expands.

2.4. Strategic action and competitive environments

Porter's strategic model

In the search for enterprise behaviour and its related organisational configurations, an essential contribution has come from the *recovery of the strategic dimension of company action*, in a completely new framework:

- on the one hand, enterprise boundaries are no longer determined by the opportunities which exist in the use of pure market mechanisms, but by assigning particular importance to the subjective/strategic role;
- on the other hand, the rules of competition are seen as marking a sharp break with the tools of the old *strategic planning*, no longer able to bring out the centrality of the new (and increasingly widespread) relations of a *non-competitive* nature which guide relations between the enterprise-organisation and the external environment.

From this standpoint, Porter's contribution (1985, 1986 and 1990) cannot be neglected. The success that his work has had in recent years can be explained in the light of his global framework, allowing all the competitive forces to which enterprise is subject to be taken into account. Furthermore, while being very much inspired by the teachings of industrial economics, he has contributed to the emergence of strategic analysis from the backwaters of costs and mass production, proposing *generic strategies* which correspond to different competitive logics (mass production strategies, differentiation strategies, niche strategies).

In this way, the centre of analysis is shifted radically from the corporation's *endogenous capacity* to plan, control and govern technological innovation and market demand *to the capacity of the company to respond actively to stimuli from the outside world*. In other words, observation shifts from the relations inside the company to company/environment relations, highlighting a widening of horizons and an increase in the possible alternatives.

To summarise very briefly, Porter's attack on the orthodox theoretical apparatus is achieved by denying the hypothesis of reciprocal extraneousness between enterprise and environment in order to allow a much more complex dialectic to emerge: the environment thus ceases to be an objective fact, and becomes the product of strategic enterprise action, through the establishment of competitive/co-operative relations with other enterprises and actors.

The centre of analysis is no longer the company as an organisation endowed with capacities to plan, control and govern the access to resources and information, technological innovation and market demand, but a much more complex dialectic. The environment ceases to be an objective and easily manipulable object and becomes a rich context that offers constraints and opportunities for a number of possible behavioural alternatives, which the company implements by generating relations of competition/co-operation with other companies and actors.

To this end, Porter places enterprise and its sector at the centre of his approach, defining two key concepts: the *value chain* and the *competitive environment*.

1. The concept of value chain is used as an instrument to break down and describe the competitive and co-operative relations which go together to generate the competitive advantage of the enterprise in the context of the broader industrial system. In this light, the enterprise is seen as a set of distinct but connected elementary units which work together to generate the value of the final product: *primary activities* (input/output logistics, marketing, sales) identify the material creation process of the product or service; these are necessarily accompanied by various *support activities* which work towards the realisation of the primary ones: purchasing functions, technological development, human resources management etc.

In addition, because of the different ways in which each enterprise organises specific links between the elementary units which make up the various production cycles, a division is made between the *internal value chain*, including all of the units which the enterprise owns or controls directly, and the *margin*, including the enterprises (endowed in turn with their own value chain) with which it comes into contact for the production and sale of the product or service. In this way, the various activities constitute a *system*, which extends not only within the enterprise, but also outside it, involving suppliers and client companies.

The co-ordination of this system of interdependent activities – both internal and external – depends directly on the strategy aimed at giving the enterprise a competitive advantage. At this point, it is useful to understand what this competitive advantage is: in reconstructing the value chain which contributes to the conception, production and sale of a product or service, key *segments* are identified in which the enterprise enjoys advantages over competitors, or can create them, possibly redefining the value chain itself in an innovative manner.

The generation of *economic value* is not therefore a phenomenon which can occur in an isolated link of the chain, but which requires co-ordination and the contribution of all activities, producing a competitive advantage because of their complementary natures. Economic competition does not therefore occur between isolated adversary enterprises but between alternative value chains, each of which usually organises a number of companies.

2. It follows that the *competitive environment*, the second central concept in Porter's theoretical framework, is not limited to only those competitors which, according to the theoreticians of strategic planning, the enterprise ought to challenge. It extends to a complex plurality of actors (real competitors, suppliers, potential competitors, producers of substitute products or services), situated along the value chain, which define the extension of the activities of the enterprise.

From this point of view – apart from explaining the success that this scheme has had in geography – two fundamental dimensions in the notion of competitive environment must be understood: the *historical* and the *geographical* ones. The first is fundamental for the understanding of the dynamics of the forces in play. The competitive environment of an enterprise does not, in fact, remain constant in time, because competition changes and intensifies, technological complexity increases, and the enterprise must continually develop new control and co-ordination capacities.

Geographically, in turn, the competitive environment has the tendency to expand, integrate and differentiate itself: it follows that *location strategy is an integral part of the competitive action* of enterprise.

The structuring of possible enterprise location strategies thus depends on: (a) the *configuration*, or the geographical organisation of the value chain, included between a virtually global scale and a local one; and (b) the *organisation*, or the intensity of co-ordination of the enterprise activities, without regard to their geographical distribution[3].

By re-evaluating the strategic-subjective dimension, Porter's proposal thus had the merit of allowing the breakdown of the enterprise, focusing on the fact that comparative advantage - determined by the overall system of the countries in which the enterprise operates - differs for different companies. Furthermore, when it is broken down into its different segments, it becomes largely specific to each country. It is thus presumed that there is a bond of reciprocal specificity between enterprise and environment, so that the search for competitive advantage is seen as inseparable from an interactive dialectic with local actors and systems.

This last statement leads us to the final stage in Porter's journey: if competitive advantage occurs and is maintained thanks to a strongly local process (Porter, 1990), there would be the conditions to broaden research horizons from the enterprise-system to wider economic systems, to explain, starting from this, the competition mechanisms between countries, and thus the reason for the success of certain global competitors which find the conditions for their success in certain local contexts (national, regional).

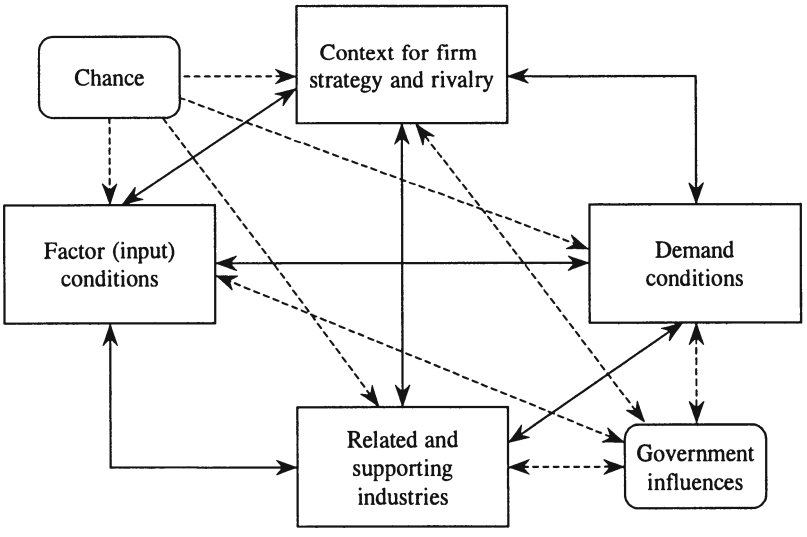


Figure 2.2 - Porter's diamond

Source: after Porter, 1990.

The answer can be found in a *combination of geographically non-reproducible environmental advantages*, four great attributes which interact and reinforce each other, determining the *diamond* of national competitiveness: 1. the *conditions of the factors* (such as skilled labour and infrastructure); 2. the *conditions of demand* (its nature and its capacity to interact with supply); 3. the *presence of supporting and related industrial sectors* (above and below the cycle); 4. the *structure and rivalry of the enterprise* in the framework of the relevant industrial sector (Figure 2.2).

Adding to these attributes two further variables – *chance* and national government *policies* – one obtains a set of conditions which would give a country or regional system a dominant position in certain production sectors (or segments). It would follow that a system appears *difficult to reproduce* and at the same time *difficult to penetrate* from another domestic base[4].

Competition, actors and the environment

The space which we have devoted to reconstructing Porter's proposal can be explained by the strength of his model which, like most strategic analysis models, is an *open* one, i.e. it does not allow one to come to certain, definitive conclusions. On the contrary, it places the possible decisions within a range of action options, taking into account specific cultural, structural and competitive features. In conclusion, some considerations worthy of attention open the discussion to follow.

- Starting from the notion of enterprise's competitive advantage, the problem of economic relations between nations is brought back into play. These no longer depend on natural conditions (such initial factors as resources or static comparative advantages) (Krugman, 1986), but are understood in dynamic terms as an expression of the strategic behaviour of a population of competitive actors.
- (Global) enterprise strategy is not conceptualised in generalised terms, but different types of strategy are envisaged in relation to enterprise decisions on the configuration and co-ordination of activities (Porter, 1986) and to specific local conditions. Therefore, the reasoning is of a clearly evolutionary nature: on the one hand, the economic process cannot be separated from the capacity of the actors to adapt themselves and model their own competitive environment; on the other hand, the very competitive advantage of national systems does not reproduce an immobile system, but includes processes of decline and the establishment of newcomers.
- Finally, attention is devoted to the problem of intermediate territorial contexts (cities, regions). Geographical concentration – favouring information flows, increasing the visibility of competitive behaviour, and easing exchange within the cluster – is taken as the relevant unit of analysis, comparable in some ways to that of the nation.

Given these assumptions, it follows that Porter's scheme is instrumental in the definition of a fundamental concept which was absent in the open systems approach: a process of *co-evolution* between enterprise and environment. The determining factors of success are, in fact, to be found in local processes (in the nation-environment, but

by extension regions and cities), different from others because of economic structures, values, culture and institutions. In this way, the relationship of reciprocity between enterprise and environment appears paradoxically as a structural component of this historical phase of growing globalisation, of pervasiveness of technological knowledge and of market instability. These are all conditions which, leading to the breaking down of those barriers which protected non-competitive domestic enterprises and sectors, attribute increasing importance to new factors capable of sustaining the national/regional competitive advantage (technological, professional etc.) (Porter, 1990).

For enterprise, openness towards the globalisation of competition becomes the winning strategy, bringing it into *contact with a plurality of specific competitive environments*. Only thus will it be able to choose the best financial and technological sources, and to face the challenge of growing diversification and autonomy of outlet markets (Ohmae, 1985). Enterprise, in other words, has to involve in its own strategy a *growing variety of external forces*, extending the value chain to an increasingly specialised range of suppliers and clients, and in turn specialising its internal chain.

In brief, the geographical extension and complexity of the competitive and technological environment force the company to pursue increasing organisational flexibility, understood as the capacity for *adaptation and openness*. This leads to the position that the theoretical approach reconstructed above, by assigning a "strong" meaning to the relational capacity of the company towards the outside, contributes to the "superseding" of the traditional systemic logic, founded, as I have reiterated, on the idea of relatively stable relations between the company and an environment controllable through forecasting and control tools inside the organisation.

2.5. From hierarchies to networks

We thus find ourselves with the two rather differing conceptions of company phenomena. The first is represented by the corporation model, on which the "classical" school of organisation made its fortune for decades, symbolised by the works of Igor Ansoff (1965). It codified a company model based on a rigidly linear behavioural model: *structure - conduct - performance*. This way of understanding organisation was in line with an interpretation of the company seen as an economic institution that, through an administrative structure, controls and co-ordinates a set of activities undertaken by its various units. The Galbraithian corporation of the fifties and sixties was this: the elementary unit of economic action which, as it evolved, tended to establish with the other actors a relationship of *dependency* towards the "rationality" of the centre.

The second conception, summarised in Porter's scheme, made a significant contribution to breaking down those pillars of interpretation and, above all, enables a rigorous explanation of the "new" strategic behaviour (on both the *internal* front, and, above all, on the *external* one) which, as is well-known, has dominated the literature in the last decade. The "organised capitalism" of the previous decades and the "classical"

model of enterprise growth through internalisation no longer appear to be suitable instruments to deal with the current rapidity of change and the growing environmental variety and variability. Present conditions of globality, technological flexibility and market interaction do not allow any enterprise, in general, to be *self-sufficient* in the face of the problems posed by complexity. The management of the growing *externalisation* of abilities outside of the enterprise and beyond its control become the priority in company strategy.

The dynamic of globalisation

It is well known that there is substantial agreement on the identification of a sort of transition from an internationalised economy to a global economy – a term widely used today without any precise definition – in the course of the 1970s. This period saw, on the one hand, the dismantling of the system of control of national economies laid down in the Bretton Woods agreement, followed by the broadening of the GATT regulations and the establishment of numerous free trade areas. On the other hand, it saw the strengthening and extension of the sphere of influence of the multinational corporations.

More in particular, and with a considerable acceleration in the 1980s, the phenomenon of globalisation has been seen in the rise in the trade of goods and services of all kinds, involving developing countries to an increasing degree. A significant share of this trade is now between local branches or subsidiaries of multinational companies, which in the 1980s significantly promoted what Michalet (1976) defined as "delocalised production".

Finally, in the context of a growing increase in foreign investment from Japan and the European Union (previously, the dominant part came from the United States), the rising share represented by the services sector explains the formation of large multinational corporations in finance and transport. In this scenario, it is useful to note how a large part of trade concerns the transfer of patents or rights for new products and new processes. This has thus speeded up the adoption by companies of technologies of pluri-national origin, in addition to the rapid evolution of international flows of economic, technological, political and cultural information. It is on the basis of these structuring factors that, as is well known, Marshall McCluhan constructed his "global village" scenario.

In this framework, new and numerous forms of organisation of internal and external relations have been underlined. Phenomena such as the decentralisation of production, the vertical disintegration of production cycles, the establishment of a varied range of non-competitive agreements between different companies have been described not as contingent phenomena limited to single sectors or countries, but as profound and irreversible changes in contemporary industrial organisation. The operating context of companies (and especially large companies) has, thus, tended to identify itself increasingly with the world economy. In other words, the frame of reference of economic behaviour is more and more a *varied* (in space) and *variable* (in time) set of resources, markets, and technological knowledge, less and less restricted

by national and continental borders. To summarise very briefly, at least two phenomena that characterise the globalisation assume central importance for our purposes.

1. The first concerns the modification of the nature of the relations between demand and supply, expressed in the rise of growing *autonomy and segmentation of market demand*. For the Galbraithian corporation the essential objective was to expand as much as possible the market of goods and services produced, with the aim of drawing the maximum benefit from economies of scale and variety. The expression "consumer society" intended to express exactly this: the tendency of consumers to buy goods produced and sold in a standardised manner. The trend towards the globalisation of markets should not be understood (as was found in the Fordist logic) in terms of standardisation of needs or tendency to develop standardised and uniform products in the various market segments. If numerous examples suggest that this last aspect is still dominant in certain production sectors (as in the highly visible cases of consumer electronics and certain clothing products: see, for example, Donaghu and Barff, 1990), it is nonetheless evident that the development of a global market leads to a rise in the quality of the needs, variety and variability of the products requested. The satisfaction of this variable and differentiated demand now brings back into play the criteria of efficiency of the global company.

2. The growing range of technologies and the strategic role played in economic competition by the development of scientific and technological potential becomes an unquestionable element in our discourse at this point. What is crucial, however, is that in this trend the importance is not so much of the speed of development and the dissemination of new scientific solutions as of the *pluralistic and diffusive* way (in many countries and research centres) the innovative process occurs. As has been seen, the key variable in the growing complexity of the economy is the access to and control of *information*. It is the availability of information and knowledge that makes it possible for companies to challenge a world increasingly uncertain and instable, introducing flexible organisational and technological solutions.

We are now in a position to understand better how *completely new scenarios* open up on the front of *strategic company behaviour*. These are in explicit contrast with the evolutionary model of the Galbraithian corporation. The globalisation of economic decisions, the growing segmentation of the final markets and the pluralism of technologies and information increase competition and force companies to be present on many markets extending the range of the location choices. The process of internalisation now enters into conflict with the new needs of flexibility (the need to have access to the results of technological innovation, the need to provide appropriate responses to market volatility) and the growing overhead costs. In other words, "in general, no company is allowed to be *self-sufficient* given the problems posed by complexity" (Vaccà, 1986, p. 13). Each company must, therefore, give itself a different and flexible organisation that allows it to turn to external resources, outside

of its control. At the risk of being expelled from the markets and of failing to gain access to the fundamental technological dynamics, the company must attempt to both strengthen its *global* position and its *embeddedness* in specific regional and national contexts. It must, therefore, *organise externality*, i.e. the relations with other companies and different socio-economic environments, which can no longer be mastered through the usual forms of expansion in size (see Chapter 6).

Non-competitive behaviour and relations

The scenario outlined above includes a broad spectrum of *behavioural innovations* which question traditional organisational structures and modes of growth (by internalisation) that appeared to be cornerstones of the dynamics of capitalism. They usually concern the development of *non-competitive relations* of various kinds, which modify at the root the organisational structures of the past. Schematically, it is possible to identify some essential typologies, whose empirical significance is, however, controversial and arouses discordant interpretations (see, amongst others, Håkanson, 1989; Alvstam, 1995):

- *acquisitions*, in which the units acquired maintain their own legal/formal individuality. The objectives reached with these manoeuvres usually concern better positioning on the international markets;
- *joint ventures* and co-operation agreements between autonomous companies for specific projects (such as the development of new products or technologies or the joint use of certain commercial functions). The objectives pursued in this case are the distribution of risk, the search for synergies in the production of knowledge or to overcome cultural barriers (as in the case of agreements with Third World companies that ensure the product a sort of "local content");
- *strategic alliances* (or "triadic" alliances), which can reasonably be considered the most common and radical innovation compared to the behaviour typical of multinationals in past decades. By changing the rules of competition, these collaboration agreements tend to favour the search for strategic complementarity – and thus competitive advantages – between companies rooted in different continents and cultures, and, more particularly, in the three great areas of the industrialised world (the *Triad* of United States, Europe and Japan).

Together with other "external" initiatives used to pursue specific goals, as in the case of agreements stipulated to tackle particular technological problems[5], these operations are certainly not a novelty in the history of modern industrial economies. It is nevertheless significant how they have spread and been used intensely in the most recent decades. Compared to other waves of external growth, the "new" strategies of *outsourcing* have triggered highly visible processes of diversification, both in technologically advanced sectors and in traditional ones and services.

This would certainly not be enough to demonstrate the thesis that we are faced with organisational changes that overturn the logics of the past. It is, however, significant that a new form of governance of the relations between companies, founded on

functional decentralisation and the sharing of responsibility, has been added to (and in many cases substitutes) the old model of centralisation and hierarchical integration.

While there are many determinants of the "new" strategic behaviour, it is however necessary to find a *unitary conceptual framework*. The *network* is the unifying concept, replacing the idea of the large company and the self-sufficient organisational structure with a vision that embraces multiple poles between which to locate a varying range of co-operative interactions.

Company networks

As we have seen, in viewing the company organisation as an open system, it was assumed that it received from the environment materials and information that it transformed and returned in the form of output. In this context, development could be easily interpreted in terms of a process through which the company adapted over time to the new environmental conditions by modifying its own internal structure.

We are now in the presence of a radical change of point of view, and the idea of flexibility is establishing itself as a challenging conceptual category, affecting both the environment in which the company operates and its own organisation. We have already clarified how the contemporary competitive context has destroyed the rationalist illusion of a predictable and plannable environment. Shifting attention now to the flexibility of organisation, it is necessary to embrace two central points in the recent debate among economists and industrial sociologists: a) the growing complexity that the organisation assumes in relation to final product markets; b) the activation of externalities in relation to other companies and actors with which to pursue a "common" strategy of conceiving and manufacturing products.

The first point clarifies the transition from a system in which the supply of the product dominated over demand to another system, in which the dynamic of competitive forces, globalisation and temporary fluctuations determine the growing segmentation of the products that the market demands. It follows that to keep significant shares of production and sales, the company must respond to the evolution of the market through at least partial delocation of its activities of design and production. From the second point of view, the rigidity of the forms of hierarchical organisation are replaced by outsourcing strategies. These lead to the construction of networks of co-operative relations between companies: the pooling of specific knowledge brings out, as we know, the potential of the individual members of the system, determining the generation of network synergies. It is essentially complementarity that is the cornerstone of network relations more than competition or opportunistic behaviour (which cannot in any case be ruled out).

In other words, the company is forced to render economic (and thus governable) the growing environmental complexity (Dosi and Orsenigo, 1988). This marks a definitive watershed between the centralising logic of the old corporation and an interactive (or network) logic based on the sharing of knowledge and the division of labour between co-operating actors. The concept of *co-evolution between company and environment* (a universe of other actors, institutions etc.) thus defines the passage, as

K. Itami argues, from the integrated hierarchical organisation to an organisation founded on the development of a relational capacity that allows the company to identify, gain access to and exploit resources located outside it (Itami, 1987). The concept of co-evolution represents an important point in our reasoning, in that it makes it possible to overcome the oversimplified perspective of open systems and creates a bridge towards the concept of system as it is understood in contemporary systems theory. In the network, in fact, the borders between company and environment are blurred, and the protagonist becomes an overall dynamic that can be interpreted as a form of organising (or self-organising) the system, which exceeds the capacity of each individual actor.

To illustrate briefly the importance of this approach, it is worth breaking down the concept of network applied to company organisation into three dimensions that cannot be separated from each other. These are the actors and the relations that link them, the shape of the network and interaction (see also Chapter 8).

1. The *actors* (or nodes) can easily be identified in the members of the network system (individual companies or interacting parts of companies, but also groups of companies associated on a territorial basis, as in the case of the industrial districts, which we will examine more systematically in the next chapter). As systems themselves, the nodes are the bearers of initiatives they conduct autonomously, while interacting with each other through relations either of a formal or informal nature. This explains in particular the statement according to which the strategic capacity of the actors is not dissipated but improved in the network. Merely competitive behaviour has to be replaced by behavioural choices in which the border between competitive and co-operative relations becomes blurred.

We are in fact far from the idea of an organisation supported purely by formalised relations through which the functions present in a hierarchical system are co-ordinated. The organisation now appears as *relational*, i.e. the network becomes both a structure and a process, in which the competitive, formal and mercantile relations are combined with others (co-operative, informal and non-mercantile), based on trust, solidarity and ethics between members. These last factors, in reality,

> appear as an aspect of economic culture over and above economic relations themselves, and not just a simple form of cultural expression. They lie outside the economy, yet have a profound impact on it (Holton, 1992, p. 191).

It follows that "generic" behavioural solutions are replaced by a range of different types of strategic behaviour that changes over time and space. It is easy to understand, for example, how much more complex a strategic positioning in a the value chain is, compared to another decision aimed at pursuing a more or less indiscriminate dimensional expansion. At the same time, the governance of environmental complexity is no longer delegated to a "single central place" which directs the entire system, but broken down amongst its nodes, which will construct the relations needed between systems (Silverberg, 1988).

2. The *shape* is given by the configuration assumed by the links between the nodes. The network organisation brings together very different organisational and relational processes which reflect the growing complexity and flexibility in the (geographical and functional) breakdown of the value chains. It is, therefore, only through simplification that the new forms of organisation can be grouped in some large formal typologies:

- networks as the effect of the *decentralisation* of company functions, in which the strategic and organisational functions remain concentrated, while other actors (often of small size) are given responsibility for single production phases and the supply of services;
- *solar* company, the effect of the projection of functional units towards the outside world, with the goal of not only reducing costs (as in the previous case), but above all of specialisation in different products and/or markets. This structure involves both large companies which organise themselves in relatively autonomous units, and small companies which specialise their activities and grow through the acquisition of other small companies;
- *districts and associations of companies*, in which the link between companies is no longer based on central a company but on a territorial or associative basis. Especially in mono-production or high technology areas, the need to make investments in innovation, fight competition and to expand the market drives actors to create common structures (financial, commercial and technological services). These are forms of co-operation that, however, admit competition between the different units in the network;
- *agreements between independent companies*, finally, are made when a single product and/or market is "managed" by a number of independent companies which come into contact through agreements, in which the parties are all on the same level, maintain their autonomy and develop complementary relations.

In the first and second cases, the formation of the network corresponds to phenomena of reorganisation within a hierarchical system through decentralisation and reduction in the vertical integration of large companies (see Chapter 9). In this case, we would talk of *networks in the broadest sense*, with the formulation of a *multipolar* model, in the sense that the company is divided into independent operational and decision-making centres that can thus penetrate national and/or local contexts and fully exploit the technological and market opportunities there (Wells and Cooke, 1991, p. 17). This can be the result of either decentralisation processes or of the breakdown of the company into different functional units – "the company shrinks", it is said – so as to reduce costs and above all to pursue a progressive specialisation in different products and markets. In this case, the internal hierarchical structure remains dominant from the point of view of strategic and organisational functions, while operational, production and service functions are decentralised. These thus cover "a range of product and market diversification that is unprecedented in economic history" (Butera, 1990, p. 17).

The third and fourth cases involve, instead, co-operation agreements between independent companies. Here we are talking about *networks in the strict sense*, and the

emerging model is that of the *constellation* (a concept introduced by Lorenzoni, 1985), in which the network of alliances does not eliminate the operational and strategic-management autonomy of the various units. As we have seen, in this case relations of equality and complementarity are developed between independent.

3. Finally, *interaction* refers to the systems of management of organisational forms in which we find the simultaneous presence of autonomy (the nodes) and strategic complementarity (of the articulation of the value chain and of the resources that each member brings to the system). It is thus configured as a complex system of relations which determine what Thorelli defines as the *network culture*, in which each actor is *rooted* in a play of common codes, practices and norms: a relational system that assumes a defined theoretical framework with the concept of the *sharing of language* (Thorelli, 1986).

Interaction between actors is thus delegated to the communication of specialised and shared languages. In fact, as Vaccà (1989) observed:

- given the polycentric nature of information processes and the consequent involvement, in enterprise development strategies, of a growing variety of entrepreneurial and environmental forces, communicative interaction is the means chosen to give an organised form to relations between autonomous enterprises;
- just as knowledge is not a generic fact, but specific to each actor or social system, communicative interaction is based on languages constructed for specific communication problems. It is, in fact, directed at integrating into strategic processes (innovation, production etc.) specific resources present externally and organic to certain objectives;
- a language which allows access to a common code of interpretation is thus specific to a single network and is *shared* by complementary actors. This allows them to valorise the complementarities within the network (i.e. to transform firm-specific knowledge into network-specific knowledge).

The concept of *language specificity* is a decisive issue. The fact that each network has a specialist content means the enterprise is faced with the need to develop a plurality of languages – and thus of corresponding networks – opening itself in many directions. Enterprise thus "becomes part of many networks, each one developing itself polycentrically, including several enterprises" (Vaccà, 1989, p. 141).

In this light, the reference to linguistic communication possesses a significant meaning for our purposes. It leads us to an idea of structurally unstable enterprise, with changing boundaries (those of the network), thus marking the overcoming of open systems theory, in which the demarcation between enterprise and the exterior was clearly identifiable, as were relations between actors and between actors and environment. In the conditions described here, strategy and structure tend to be projected externally (the very concept of enterprise fades into the concept of network) *annulling the boundary between enterprise and environment.*

2.6. Conclusions

The framework has thus been outlined, although many elements have remained on the sidelines. It would obviously be foolhardy to claim that all companies are moving indistinctly towards a growing externalisation of their structure. Nevertheless, it is essential to acknowledge that recent decades have marked the profound and irreversible transition, in terms of the method and logic of interpretation of the company, towards a new organisational archetype in which the boundaries between actors and between actors and the environment become changeable and blurred.

If there is no doubt that the dominion of transnational and global company structures, today as in the past, are the origin of the devaluing and destruction of the identity of places (de-territorialisation), it is however significant how in recent decades these same major company organisations have in contrast evolved in the direction of differentiating their own behavioural (production, technological and market) model in relation to the different territorial contexts (regional, national) that come into their range of action (re-territorialisation). In this sense, the flexibility of strategic company behaviour is both the consequence and a factor of geographical *varieties*, and the network representation gives us an image of the transnational company itself as a *territorially articulated system*. Company behaviour is, in fact, increasingly the result of systematic interaction with other territorialised actors: this allows an increase in the company's learning capacity, reducing the risk and uncertainty of the decision-making process.

We have seen how up to the sixties, the company could be represented as a system whose evolution depended on a learning and adaptation function in a separate and clearly defined setting. The Galbraithian company thus represented rather well the organisational archetype of the open system, i.e. the cornerstone around which the post-war theory of company organisation had been constructed. According to this rationalistic ideal, strategy was a set of procedures through which relatively stable relations tended to be established between the company and its external environment, meaning that a strategic process was assessed on the basis of the capacity of the organisation to control environmental complexity. The company was thus understood as an organisation which, aiming to reduce uncertainty and to prevent conflicts with other actors produces and reproduces, as stated by R. Nelson and S. Winter (1982), relatively stable organisations.

This rationalistic (and functionalistic) illusion of a plannable and masterable reality now comes up against the complexity of the contemporary world. The globalisation of economic processes, the pervasiveness and multitude of technologies, the increasingly interactive dynamic between companies and markets, are all factors that define a growing situation of *environmental uncontrollability*. And information especially, no longer representing a resource that can be accumulated inside the company structure, becomes a factor to be produced and enhanced collectively. All this demands that companies no longer seek general strategic solutions, but continuous adaptations and modifications of strategic behaviour: the end of the millennium does not therefore mark the end of organisation, but opens the search for new organisational solutions,

richer and more differentiated in time and space. The network organisation appears to express, in this light, a dual strategy: on the one hand, it is the instrument through which the governance of uncertainty, instability and environmental differentiation can be pursued; on the other, the networks themselves are forms of giving new value to company identity and organisation.

Articulating itself in the network, the company does not in fact eliminate its own strategic initiative. On the contrary, as the clear demarcation between company and environment disappears, it finds in the network-system a new specific place, which brings out both the strategic initiative (and thus identity) of the individual actors and the evolution of the system as a whole. As we have seen, the network amplifies the design capacity of the system as much as of the individual company, allowing both to govern a larger and more varied field of action.

In real terms, the processes underway do obviously not cancel the global power of the great monopolies. In fact, through the formation of network organisations (in the form of strategic alliances, deverticalisation and externalisation etc.) they have both reinforced it and made it more complex, making the company territorially articulated. We will come back to this general concept which, in the light of the scenario outlined, appears as a radical turning point in the way of viewing the contemporary world. The theses upheld so far, intended to make a fundamental break in the organisational logic of company organisations, necessarily leave too many ambiguities unresolved. Other elements will thus have to be added, which we will present, in the next chapter, in a completely different perspective.

Notes

(1) Initially a branch of sociology, organisation theory does not possess a common theoretical agenda, nor is there consensus on the very definition of "organisation". For enterprise, the simplest scheme breaks down organisation theory into a number of major approaches: *rational* (inaugurated by Taylor's work on "scientific" organisation), *contingent* (Lawrence and Lorsch), *constructivist* (Chandler and Mintzberg) and, as we will see in more detail in this chapter, the approach in terms of *positioning* and competitive interactions (Porter).

(2) Traditionally, three fundamental organisational structures are given: a) the *conglomerate*, as the expression of a diversification policy implemented through the acquisition of plants and companies that operate in different markets and production sectors; b) the *vertically integrated* company, characterised by the close bonds between its production units, c) the *mono-production* company, in which high levels of interdependence are found.

(3) By overlapping these two dimensions it is possible to obtain typologies of *generic strategies* for enterprises having to face what is becoming a worldwide

competitive environment: a. *global strategy with cost leadership*; b. *global strategy with differentiation leadership*; c. strategy of a *multi-domestic type*; d. finally, an internationalisation strategy limited to the *export* of products from the company country of origin.

(4) The process of creation and strengthening of the national "diamond" is exemplified by Porter in the analysis of four industrial sectors dominated by four different nations. These are: 1. Printing machinery, introduced first in the 15th century in Germany, whose companies contributed approximately 35% of world production in the sector in the late 1908s; 2. Patient monitoring equipment, founded in the United States in the 1930s and 1940s, and in which US companies still hold an undoubted competitive advantage; 3. Ceramic tiles in Italy (where production is highly concentrated in the area of Sassuolo, in Emilia Romagna), in which Italian manufacturers in 1987 produced almost 60% of world exports; 4. finally, Japanese industrial robotics, starting from a domestic base which was internationalised only recently (in the mid seventies) but which after just a decade was producing 50% of the industrial robots in the world (see Porter, 1990).

(5) Amongst these are operations of *internal venturing*, *joint development* of innovative projects and *venture capital* operations, i.e. financial investments in "risky" enterprises run by small external companies and accompanied by related strategic and operational consultancy (see Arena et al., 1988).

CHAPTER 3

The plural economy

3.1. Premise

As we saw in the previous chapter, the corporate geography which dominated international debate for decades had a precise historical dimension. The focus of attention on the "inevitable" rise of large-scale corporations was largely driven by their growing influence on the world economy. This mode of proceeding reflected a second reason: the ideology of a form of development resulting from the choices and behaviour of large companies, capable of integrating and controlling space and "exporting" their own rationality.

In this framework, the *region* was defined in relation to the action of exogenous forces (major companies, in fact), seen as the only ones capable of structuring production, overseeing the diffusion of technology and activating processes of social and spatial interaction (core-periphery, dominance-dependency).

The economic upheavals that mark the transition between the two millennia do not need to be specified in detail here. It is sufficient to recall that the end of the seventies saw the conclusion of the "thirty glorious years" (the expression was coined by Jean Fourastié), marked by progressive industrial and financial concentration and by the ideology of development inseparably linked to large companies. In the early post-war decades, this had appeared as the only road to industrialisation, ending up by inspiring both the positive and "optimistic" interpretation of a development founded on internal economies of scale in production and on major cities as factors of dynamism and modernity, and the opposing theses, critical of the dominant doctrine.

However, the seventies marked more than one watershed in the development process. While many early industrialised regions began a generalised decline, others were going through processes of light industrialisation through the birth of small and medium sized companies, and some traditionally agricultural regions started an unprecedented industrial boom. These phenomena were not predictable according to the schemes through which economic theory had interpreted industrial development up until then. On the one hand, these new industrial realities showed processes (founded on the valorisation of local entrepreneurial and financial resources, specific knowledge and a historically established production capacity) different to the ones expected. On the other, the proliferation of small and medium sized companies overturned a long-

term trend, and for this reason was described as "a clear-cut break in the natural evolution of capitalism" (Julien and Maurel, 1986).

For more than a decade, debate was thus dominated by the theme of small companies, as if to herald the rise of a new and "progressive" era in the development process of industrial capitalism. In reality, the increased instability and uncontrollability of the markets following the suspension of the convertibility of the dollar into gold (1971), the abandonment of fixed exchange rates (1973) and the oil crisis had highlighted the structural weakness of the large company model. Corporations then began to reduce the number of employees, downsize the scale of production, turning systematically to the use of sub-contractors and the decentralisation of functions.

The "new" centrality of small companies was indeed supported by facts, in that in almost all industrialised countries this "segment" of the economy had demonstrated considerable resistance when faced with the "historic decline" of mass production. In addition, in some regions – such as the high technology districts in the United States and Japan, and in Europe in the French Midi, the British West Midlands, Danish Jutland, Baden Würtenberg and to a highly visible degree in central and north-east Italy – the systems of small companies were almost the only ones that created new job opportunities.

Both the theoretical and empirical research which drew inspiration from these "new" realities often represented the original drive that inaugurated some significant changes in economic culture and in the social sciences in general. The debate, characterised by a profound interdisciplinary approach, involved first of all sociology, history, anthropology and geography itself, betraying at times an implicit ideological motive. To understand the centrality of small companies in the economy it was necessary to question the profound dynamic of modern industrial systems, the role of the entrepreneur in the economic dynamic and the "new" logics of regional development. None of these questions could be discussed in a circumscribed manner, but on the contrary presupposed a constant extension of disciplinary analysis, enriching it with new instruments and concepts.

In the mid eighties, a significant reversal of the trend began to be felt. Parallel to a new phase of expansion, a great movement of acquisitions, mergers and concentrations throughout the industrialised world seemed to bear witness to the reconstitution of a framework of "certainty and stability" that gave back vitality to the corporation model. Involving even production systems based on small companies, these new processes of financial (as well as functional and territorial) integration were an evident phenomenon in those countries like Japan and Italy which had for a decade been central to the debate on the new forms of flexible production. And for some observers, the generalised crisis of the large company ended up by appearing more and more as a phenomenon circumscribed to the late seventies.

This was not, however, simply a return to the past. Too many phenomena had come to the fore in the meantime, pushing to the sidelines the Fordist orthodoxy (with its baggage of linearity, predictability and immutability), replacing it with a complex, unpredictable world, made up of wefts and overlaps.

There is now sufficient agreement on the fact that some major innovative facts have radically altered the rules of the game and thus the criteria for interpreting reality. These do not concern only the rise of the small company, but also the rediscovery of *national development models* (as in the case of the Japanese and Italian models, to cite the most visible examples), which appeared not as variants but as a structural component of the process of *globalisation* of economic processes. In this scenario, we must not forget the destabilisation of the markets and the rise of new mechanisms of social regulation, the spread of new information technologies, the development of service and financial activities and the increasing recourse by economic actors to forms of network co-operation.

The return onto the scene of the corporation does not, therefore, reproduce the old model of industrial development, but brings a *new organisational plurality*, in which different organisational models coexist and are juxtaposed in a process of evolution that makes industrial capitalism not a unitary and all-embracing system but an organic plurality of models and forms of organisation.

3.2. The origins of industrial dualism

In the tradition of the social sciences, the search for contrasts and differences present in the economy are largely found in the debate on *industrial dualism*. In the post-war economics literature, the concept of dualism was used to explain the simultaneous presence in a country of two different economic sectors: the first, advanced, pervaded by production relations of a capitalist nature; the second, traditional and backward, still characterised by economic structures and relations of a pre-capitalist type. This vision reflected both a division between the companies and in the labour market, inspiring at the same time a more general approach concerning the relationship between developed countries and underdeveloped economies.

It is worth recalling here how the thesis of the duality of the industrial system derived from the rather elementary observation that each industrialised economy can be divided into large and small production units. This distinction, which presumes the orthodox neo-classical scheme had already been superseded, was introduced for the first time by Miyakawa (1964) in his studies on the Japanese industrial structure and definitively re-ordered in the late sixties, when Galbraith (1967) and Averitt (1968), independently of each other, reached similar conclusions on the industrial dualism present in the United States economy.

It would obviously be inappropriate here to examine these "pioneering" analyses in too much depth, just as it would be to examine the trade categories (quite often inadequate) which were the basis of them. From our point of view, it is enough to recall how the contributions just mentioned opened a lively debate amongst economists. This developed on two fronts, both of them directed at moving beyond the orthodox approach: the first emerged from the cradle of neo-classical thought (Penrose, 1959); the second, in open polemic with the first, has cultural roots that are to varying degrees openly Marxist (Santos, 1979; Attali, 1975).

Transferring the reasoning on the duality of the enterprise system has made it possible, firstly, to partly overcome the rough schematism of the early studies on economic dualism (with the partial exception of those by Edith Penrose). In the neo-classical conception of equilibrium, the contrast between the two sectors (capitalist and pre-capitalist) was held to be an accidental and temporarily disturbing phenomenon which would be solved spontaneously with the diffusion of the characters of "central" development to the periphery. The duality of the system was now represented, in contrast, as the *innate nature* of an economy which always contains within it different sectors and actors, each of which plays an essential role in the functioning of the economic system.

On the opposing front, the thesis of dualism inspired an implicit overcoming of the orthodox Marxist vision which indicated in the irreversible historical evolution of the forces of production the gradual decline of "residual" organisational forms (the small company in its various forms). This essential and deterministic vision was thus countered by the conception of an industrial universe based on a relationship of dominance/dependency between two distinct parts of the system. The small company was therefore seen as a reality fully functional to capitalist development and the accumulation process, which perpetuates the co-existence of small and large companies in a hierarchical structure dominated by large-scale capital.

In reality, according to the way of thinking, the problems left by the most orthodox interpretations have been evaded but not solved. On the one hand, the implicit superiority of the modern forces of the economy, represented by large corporations, is acknowledged; on the other hand, the co-existence and possible consolidation of small enterprise are admitted in that they allow a less ambiguous definition of the features and dynamic of the dominant segment. The system as a whole thus continues to be divided drastically into two contrasting segments, neglecting the more complex reasons that regulate their dynamics as well as the greater variety of the relations that are established between actors operating in the economic system.

3.3. The small enterprise in the contemporary economy

The segmented economy

It is easy to note, in fact, that each economic system possesses many discontinuities. As Berger and Piore (1980) maintain, in fact, dualism does not necessarily imply a division into *two* autonomous and discontinuous segments, but the fact that *a society is divided into segments and is not organised in a continuous fashion.* The fact that there are two or more blocks of this kind is not fundamental. The important thing is that the number of segments is not multiplied indefinitely, otherwise a continuum would form again.

In their turn, in a series of essays published in the early eighties, Taylor and Thrift (1982 and 1983) proposed an alternative to the framework outlined above, with the evident purpose of providing a more suitable scheme of reference. In their seminal

work, the process of segmentation of the enterprise system is assigned a *historical nature*, that can thus be traced back to broad political, social and economic conditions. Each new configuration would contain new segments, added to the existing ones, which would explain the relations of dominion and/or subordination present in later configurations. It follows that each "model" of articulation "stems from its preceding structure and is at the same time the origin of its later structure, which will be increasingly more complex and interconnected" (Taylor and Thrift, 1982, p. 451).

The works of both Berger and Piore and those of Taylor and Thrift had a great impact on geography in that period: they suggested the need to get to the roots of how a real economic system works. Their reasoning has to be put into the economic context of the time (the eighties), when the phenomenon of the small enterprise began to acquire completely new meaning.

In the previous three post-war decades of constant economic growth in the developed countries, most economists, politicians and company managers had not hesitated in putting forward the idea that small companies represented an archaic structure, partially condemned by the very evolution of industrial capitalism. This attitude that characterised the scientific community for years may come as no surprise: in the course of those decades, in fact, small companies' share of production had gradually shrunk, just as the number of small companies compared to the total number of companies in industrial countries had fallen.

Between the seventies and the eighties, however, the arguments traditionally invoked to support the expansion in size of companies (such as the effects of scale, of learning and of variety) often changed from being factors of competitiveness to elements of vulnerability. The most important consequence was that of questioning the *industrial rationale* of the post-war period, and with it the "great certainties" on which the success of the international management schools had been built.

Economic reality changed profoundly in that decade, and the rise in many countries of the small enterprise was described as "a full-scale break in the natural evolution of capitalism" (Julien and Maurel, 1986). The general crisis of the Fordist-Taylorist model of industrial development highlighted the advantages of the small company, which can be summarised in its greater production and management *flexibility*.

The new facts that broke onto the scene *cannot* be explained as contingent events or limited to individual countries or production sectors; they assume instead a more general meaning. Let's take a brief look at them:

- the growing segmentation and *variability of market demand* questions the criteria of efficiency of the company of the second industrial revolution and places the small enterprise, with its higher production efficiency, in a position of relative advantage;
- because of the *technological development*, production that had previously demanded high capital investment levels is now also possible for smaller units: in this way, the connection between size and productivity changes radically. The more and more complex nature of innovative processes implies, in turn, the involvement of many actors (companies belonging to different sectors, public and private institutions), assigning a central function to small enterprises;

- the new dynamics of the *labour market* (the increase in wage levels and the growing rigidity in the management of labour) have provided incentives to spread strategies of production and territorial decentralisation. *Labour market segmentation* represents another factor that can no longer be ignored: with limited employment opportunities, entry into the labour market for young people and women has encouraged self-employment, generating widespread forms of diffuse enterprise and leading to a significant rise in the share of small companies - at least in highly industrialised countries (Loverige and Mok, 1979; Edwards, Reich and Gordon, 1975).

Numerous quantitative analyses have demonstrated how, since the seventies, small and medium sized enterprises have occupied a non-negligible position in the creation of new sources of employment, determining in many cases the fates of regional economies. In almost all industrialised countries, this type of company has, proportionally, generated higher shares of employment than large companies.

Before going into the examination of the theoretical and empirical consequences outlined above, it is necessary to look briefly at some specifics on the nature and distinctive characteristics of small companies, even if limited to the aspects that are important for the purposes of our approach.

First of all, it is necessary to remember how hard it was to reach a comprehensive definition of the concept of the small company. This derives from the fact that the reference is to a *heterogeneous range of actors*: from the point of view of the technology used and the field of activity (manufacturing, commerce and services), of the type of operational logic (different for independent companies and for those operating as sub-contractors), and finally of the rate of turnover, which implies the continuous creation of new companies accompanied by the equally frequent exit from the market. Even the criteria of size for the identification of small companies differ, varying from added value to assets, from turnover to the number of employees. From this last point of view, which at the end of the day is the most commonly used criterion, there are considerable controversies: while in the United States the *Small Business Administration* usually classifies as small companies those with fewer than 250 employees, in most European countries (the exceptions are Austria, Norway and Switzerland) and Japan this category covers companies which employ fewer than 50 workers (Julien and Marchesnay, 1988; Storey and Johnson, 1986; Bolton, 1971; Ciampi, 1994).

There is at the same time substantial agreement that the characters of the small enterprise can be seen above all from qualitative criteria, aimed at highlighting the *relations with the environment* in which the company operates. Thus, apart from the question of size, the *organisational configuration* (the prevalence of a centralised and personalised decision-making structure) and a simplified and often intuitive *management structure* (Laufer, 1975), the *task environment* takes on particular importance, including the suppliers, customers, competing companies and, more in general, the information retrieval system (Thompson, 1967). The explanation of the rise and consolidation of the small enterprise in the economic system is found in the set

of conditions that defines the terms of the question in the environment in which the company operates.

This has represented a fundamental turning point in attitudes: the extraordinary thing is that it was realised that the small enterprise is not an exception (or an imperfection, according to the neo-classical orthodoxy) in the economic and social world that surrounds us, but a fundamental aspect of the way in which a society organises itself and produces. It is as if the social scientists, politicians and business decision-makers who had had no doubts about identifying the corporation as the model of modernity, had suddenly changed the glasses through which they viewed the world.

The *theoretical lesson* is perhaps even more important: the debate on small companies has made a decisive (even if not exclusive) contribution to creating the conditions for a profound review of the scientific discourse within the social sciences in general and in economic thinking itself, i.e. in a field of knowledge traditionally alien, save rare exceptions, to assuming capitalism's real essence: *the variety and differences* (between countries, regions and companies) as the *key conditions in the economic process*.

This is the key to the analysis which we shall put forward in this chapter. Alongside the rise and consolidation of complex global company networks, the breaking onto the scene of the small and medium size enterprise has revealed itself to be crucial in the search for new meanings to give to the phenomena of our times, marking more than one turning point in the geographical thought that has developed in these recent decades.

We shall thus review the main stages in the debate. This is a series of passages that we shall scan very briefly, as they are sufficiently well known to specialists in the territorial sciences. Our review will also be fairly fragmented. This is due to the absence of a rigorous historical and theoretical sequence of the various proposals and the numerous overlapping areas that are necessarily found when one tries to explain complex phenomena.

The decentralisation of production and the "peripheral" economy

Initially, the transformations in industrial structures inspired the theories of *production decentralisation*. This was the start along a path of research which had considerable impact on the theoretical and operational levels, whose most significant result was the breaking down of the system of companies into a plurality of divisions not brought out by traditional conceptual schemes. It is still true that in this period the relationship of domination/subordination between large and small enterprises was again underlined as a phenomenon that was *organic* to the functioning of the economy. However, the explanation no longer stemmed, as before, from the blinkered vision of a world that could be divided into two clearly separated segments. Small companies appeared, on the contrary, as a structural element in the mechanism of accumulation thanks to their articulation in segments, each of which was assigned its own function. A rigid, causal subordination was thus replaced by a functional and typological articulation, with the small company ceasing to be considered as a "morphologically" homogeneous reality.

The studies on the Italian *peripheral economy* (the most evident case of industrial dualism in the West, according to Berger and Piore, 1980) appeared much more significant, however. These studies highlighted the incompleteness of the analyses on production decentralisation and of the image that they gave of small companies as dependent or at the most involved in residual or niche production. It was discovered that a significant part of small companies could be characterised by overturning the traditional parameters used. It could thus be seen that "bunches" of small and medium sized enterprises possessed their own autonomous markets (national and international). Secondly, it was discovered that many of these companies followed a locational logic significantly different to that of the past: more than the regions that had written the history of the industrial development of Italy (the north-west), they preferred other areas (the small and medium cities of central and north-eastern Italy), in which specialisation in a particular type of production prevailed and where significant agglomeration economies could be achieved.

Since then, the questioning of the dualistic theses, which explained the great imbalance in development from both the sectoral and geographical point of view (between the North and the South of the country), went hand in hand with the criticism of the dichotomous visions (development-underdevelopment, advanced regions-backward regions, small-large companies) which distorted a more complex reality. In the interpretation of the economy, therefore, there was a shift from the *unique* model (coinciding with the large company and its mechanisms of development and regulation and based on the contrast between development and underdevelopment) to the simultaneous presence of *multiple* models of development and transformation of regional economic structures. From the sectoral point of view, the image overlaps: in the sectors of specialisation of the "central" area of the system, characterised by the presence of large companies (means of transport, chemicals, household appliances, electrical and electronic consumer products etc.), the share of Italy's exports out of the total from industrialised countries falls. In contrast to what is found in countries like France, Germany and Japan, the competitiveness of the sectors typical of the "peripheral" economy, both traditional and modern, grew in Italy.

These references to the Italian situation, although justified by the visibility that the new organisational forms of production have assumed, were nonetheless instrumental in underlining a phenomenon that concerned the Western economies as a whole. The realities that came dramatically to the forefront in those years also produced widespread disillusionment amongst researchers with the traditional criteria of theoretical analysis. It is thus entirely legitimate that various attempts were made to explain the new forms of organisation of the economic system, with the result that new concepts and languages broke through onto the scene.

The simplest way to explain the industrial, political and economic transformations that originated in that decade was initially to turn to a *technological explanation*. And in this light, it is undeniable that the introduction of new technologies – especially process technologies – rapidly made the organisational forms of the past archaic and production systems obsolete. But if we look closely, it was easy to realise that the way

of conceiving things was not sufficient, in that it derived from a unilateral and automatic vision that in effect reproduced the old rules of scientific analysis.

The introduction and generalisation of new techniques is not, in fact, a phenomenon that occurs by chance at a lucky moment in the history of a society. If the years we are discussing were a period of deep crisis for the Western economies, it would be unreasonable to uphold *tout court* that the new technologies were the origin or a cause of the crisis. Observers began thus to wonder about whether the new technical and organisational solutions should not instead be interpreted as a response to the contradictions that the crisis had opened in the capitalist system which had been based for years on some certainties taken for granted.

The idea thus began to advance of a close link between the two phenomena – the arrival of new technologies and the transformations in the modes of organisation and production – which only history will be able to clarify. And a circular relationship reappeared between the categories of reality and their historical development, neglected by official science for a long time. From many points of view, this marked the revenge of the historical dimension in the explanation of the economy and it was recognised that the criteria of interpretation of reality require a substantial change in the standpoint from which it is observed. If we rapidly review the succession of ideas that have asserted themselves since that period – as we shall do in the following pages – we discover that to understand better the breaks that appear in reality and in the related conceptual categories, a priority key to interpretation stems from the assumption of *historical* discontinuity in the development of our society.

3.4. Theoretical syncretism

The lesson of history: mass production and flexible production

Few books have had a greater impact in the recent debate within the economic and geographical sciences than the work of Michael Piore and Charles Sabel (1984). This book in fact allowed most economists and geographers – above all in English-speaking countries – to discover the small enterprise as a concrete and visible reality that demanded a substantial space in economic theory.

There is, however, a second and more important reason that explains why the scientific community was fascinated by the book and this is the key to interpretation capable of unifying a vast variety of empirical evidence. The thesis of Piore and Sabel is that the rise of the small company is a full-scale divide in the development process of the Western economies. This explanation derives from a particular interpretation of history, seen as a periodisation of successive and differing phases: the reasons for the recent success of the small company (the book was published in 1984) are not viewed as passing or contingent, but as a phenomenon that expresses the rise of a new economic paradigm that replaces the Ford-Tayloristic logics that had ensured the formation and consolidation of large companies in the past.

As is well known, our authors' reasoning was inspired by regulationist theory and the principles of economic institutionalism (see Chapter 6). The new system of *flexible specialisation* (of the production process and labour market) would in effect be *alternative* to mass production: they prefigure the conditions to re-instill competitiveness to non-standardised goods and to the organisation of production based on production units. In its turn, technological development, far from appearing a routine process like standardised production, is a continuous activity, manageable through the co-operation between different actors. All of this explains the rise of institutional structures whose most obvious aspect is the formation or re-emergence of production systems that "greatly resemble" the ones that dominated the industrial world before the advent of mass production (Sabel, 1989).

The new system of flexible specialisation finds shape in a number of ideal configurations:

- the *industrial districts*, which give renewed value to an old craft tradition, characterised by the presence within a production agglomeration of a multitude of small enterprises, linked to each other by a complex system of competition and co-operation, usually specialised in the production of household and personal consumer goods together with the machines to produce them (such as footwear, furniture, textile products and clothing etc.);
- the *production complexes of technological excellence*, founded on the synergic interaction between many companies and other actors involved in the production of technology and knowledge applicable to a structurally flexible production system;
- finally, there are phenomena of *articulation of large companies* into smaller units, in which the old company maintains an essential organisational role while delegating to others, often financially autonomous, roles that had previously been centralised.

What characterises the new system of flexible specialisation from an institutional and organisational standpoint is essentially a production system made up of small and medium sized enterprises, highly specialised and linked to each other by a network of mercantile relations (and not only mercantile, as we will see), in contrast therefore to company systems of the hierarchical type, associated with large-scale, vertically integrated oligopolistic organisation. The "new way" to industrial development thus re-affirms the primacy of local economies which already represented the organisational form of industrial production before being thrown into disarray by mass production and a culture of standardised industrialism. The *new flexible industrial spaces* would seem to share three basic characteristics with the organisational and production logic of the time (Sabel, 1989): continuous product modification, technological flexibility and the presence of institutional structures to provide direct support for innovative activities and regulation of employment relations.

This is, in brief, the reconstruction of the reasoning of Piore and Sabel, whose thesis is not however free from criticism (see, for example Martinelli and Schoenberger 1992): proposing flexible specialisation as a general model alternative to the old model of organisation of production ends up masking the greater complexity of

the system, where several models can co-exist without reciprocally ruling each other out. It is not, in fact, by turning to a deterministic interpretation that one can answer the questions posed by practical and theoretical problems. Nonetheless, this was an indication of a turning point in economic culture that attempted to grasp, under the chaotic appearances of reality, a set of links that laid bare the limits of knowledge based on the hypothesis of the intrinsic superiority of the structures and processes that had dominated the century's economic scene.

Transaction costs and geographical industrialisation

Faced with the "weakening" of the role of the corporation in the economy, the rise of new models of growth based on small company size and the explosion onto the scene of "new" and dynamic production spaces, the first problem was to clarify the ambiguities underlying the concept of *transition* between the "organised capitalism" of the previous decades and the "alternative" organisational forms to it. In this direction, one theoretically complete attempt looked for an explanation of the geography of the new system of flexible accumulation. This started out from the rediscovery of the mechanism of *transaction costs*, understood as an instrument to evaluate the advantage deriving from the adoption of the organisational form that allowed economically more efficient management of production (Scott, 1983 and 1988; Storper and Walker, 1989. See also Moulaert and Swyngedow, 1989).

This is obviously not the place to reconstruct in detail the foundations of the theory. It is sufficient to note that, in contrast to the vertically integrated organisation of production of the second industrial revolution, the new technological conditions of growing market destabilisation and competitiveness mean pursuing the search for flexible organisational forms through *horizontal disintegration* (thus increasing external economies of scale) and through *vertical disintegration*, thus favouring, with the proliferation of specialised and independent production units, the formation of external economies of scope and the consequent intensification of the social division of labour.

The transaction costs, which dictate the boundary between the internal and external organisation of transactions, would explain the fragmentation (or disintegration) of production, leading enterprises to rely on external economies and thus to create a *variety of organisational forms* differing from hierarchical organisation. The enterprise is reinterpreted as an organisational reconfiguration which pursues the search for a structure of its own internal transactions "that balances scale and scope effects against market prices of inputs and outputs (where these prices include any additional transaction costs" (Scott, 1988, p. 24).

At this point it would be limiting to trace the reasons which explain vertical disintegration back to a pure cost mechanism. In reality, the transactional dynamic is subject to more complex and multiple mechanisms, which we can list as the following only through partial generalisation (Berger and Piore, 1980; Holmes, 1986; Scott, 1983 and 1988; Storper and Walker, 1989; Vennin and de Banville, 1975; Williamson, 1975):

- when production is run more efficiently by specialised external companies;

- in conditions of market instability, uncertainty or competition which require rapid changes in production methods and type of product;
- in conditions in which production efficiency is achieved by establishing intense relations between geographically close enterprises.

All these factors have undoubted importance. They help to explain organisational forms which, in looking for growing conditions of flexibility (in the production process, in labour markets etc.), mark a historical break with mass production: their visible result is the transformation of production systems in ensembles of smaller plants.

Given these assumptions, the territorial organisation of a production system is interpreted as stemming from the functional interactions between the company and the context in which it operates. This is a significantly different interpretation of the territorial organisation of production systems from that offered by the classical formulations of industrial location. If company organisation is a consequence of the striving for savings in production (which are achieved by strategies of vertical integration/disintegration of multiple production processes), this could also be an explanation of the reasons why large size may not always be the most efficient organisational form and why a significant set of small companies develops.

The new industrial landscape replaces the technical indivisibility and vertically integrated structures of the past with a "mosaic of agglomerations", or *vertically disintegrated production complexes*, which represent the organisational form around which the dynamic of a flexible production system pivots.

The theoretical proposal, consistent with the regulationist hypothesis and the thesis of flexible specialisation (see Chapter 1), is antinomic to that which inspired the formation and consolidation of vertically integrated company structures. In the case of vertical disintegration, in fact, the scenario is overturned, so that flexible specialisation is accompanied by the elimination of the obstacles to the establishment of new organisational models. It is as if cultural forms and types of social interaction, organisational practices, interdependencies regulated by competition and co-operation could again deploy themselves freely. In practice, in the highly technological districts and in the areas in which an ancient craft tradition was revitalised, the Fordist ethic was no longer at home.

Nevertheless, focusing attention on criteria of cost, it is difficult for the greater complexity of economic phenomena to emerge. The explanation of the interaction between local actors starting from a universalistic (and abstract) economistic criterion transcends the idea of *identity* (of the actors themselves and the spatial contexts considered), which constitutes, instead, a fundamental factor of historical continuity.

To conclude, this statement opens up a fundamental theoretical problem which the proposal is not capable of unravelling: in the geographical application of the theory of transaction costs, a *fundamental methodological reductionism* is found again, that can be traced back to the fact that the market is assumed as the fundamental organising principle. More precisely, the relations between the actors are simplified and traced

back to a generalised search for efficiency, which is pursued through the minimisation of transaction costs.

In this way, the theoretical proposal ignores, as Grabher (1993a) notes, the institutional context underlying business decision-makers' actions and the greater variety of relations that develop in a competitive market: uprooting the company from its social context, it does not grasp the function exercised by *non mercantile relations,* which assume growing importance in the complex dynamic of the contemporary economy and its interpretation.

Marshallian external economies and the rediscovery of civicness: between modernity and tradition

A different way to understand the processes of formation of "new" local production systems has its roots in the rediscovery (and re-evaluation) of the work by the British economist Alfred Marshall.

The reason why a sizeable group of contemporary economists and geographers (Becattini, 1990; Brusco, 1989; Conti and Julien, 1989; Sforzi, 1989) turned to a classical economist lies in the need to find a theoretical point of reference capable of explaining phenomena that are empirically too visible and widespread to be interpreted as mere abnormalities of a "normal" development process. Experience was to show that, in all industrialised countries, the development of small companies does not occur purely following a dynamic dictated by cost and mercantile mechanisms, but following a precise territorial logic.

The foundation of this territorial logic is found, as is well known, in the Marshallian concept of *external local economies* (or location economies). Without neglecting the economies in production that a plant derives from its own resources, from internal organisation and management efficiency (and which thus fall under its direct control), a second factor of economies is introduced forcefully, dependent on the social relations of production that form *outside the plant, but within the territory where it is located.* The formation of significant "bunches" of small companies occurs, in other words, in close association with limited socio-economic contexts characterised by historical conditions that "explain" and "describe" a social structure, a labour market and technical-production interaction between local actors.

The framework of reference that governs the logics of the increasing complexity of the industrial system thus becomes more varied. First of all, added to the development of the small company as the expression of processes of externalisation/disintegration of major companies, is another one. The latter calls into play the formation and development of production systems which have a clear *territorial configuration.* Secondly, and as a consequence of this, the introduction of the concept of *local system* leads to political, social and institutional questions becoming central to analysis.

This meant two considerable innovations on the theoretical level. The first is the acknowledgement of the existence of alternative development paths and solutions to achieve economic efficiency; the second is the acceptance of the insufficiency of a purely economic explanation of the diffusion of development and the need to pay

similar attention to social dynamics and institutional structures (Coleman, 1988; Goldenberg and Haines, 1992; Putnam, 1993; Tarrow, 1996).

The debate on districts was based, and continues to be based solidly, in fact, on research concerning the *social characteristics* of territorialised production systems and on *civicness* as a fundamental ingredient of development and modernisation.

Other examples and concepts could illustrate better the meaning and scope of a "model" which, precisely because it is founded on environmental and historical-social determinants, assembles a great variety of organisational forms. What has been said so far is, however, sufficient to underline how the wide-ranging debate on the *non-economic components* of the processes of industrial development has effectively helped to undermine some of the "certainties" on which conventional economic and spatial theory was based. This relegated as residual the phenomena (such as social differences) which weakened its methodological purity and impeded its formalisation. And so, it is in this framework that the explanation of location thickness of production activities was sought out by turning to the theoretical scheme of the *industrial district*, introduced by Marshall at the beginning of the 20th century to explain the fact that production can envisage alternative forms of organisation. An empirical confirmation was found in the industrial "groupings" that formed in England in the decades after the industrial revolution, resisting over time and co-existing with the large-scale production of major companies. The conclusion is that, as Fabio Sforzi states:

> the Marshallian concept of industrial district was proposed, especially in Italy, as a *style of analysis*, to interpret the configuration of the development of light industry, thanks to the characteristic intrinsic to its definition of combining socio-economic and territorial components in its explanation of the phenomena of local development. This acknowledged capacity for explanation of the concept of industrial district derives from the fact that it represents the theoretical and empirical place in which the external economies of location take shape (Sforzi, 1991, p. 84).

In this way, the emphasis is shifted significantly to the role played by the environment to which the company belongs, introducing a new unit of analysis – the *local system* – as a source of production economies. These economies are not simply economies of scale due to the action of a network of companies linked by input-output relations, but concern the learning and organisation system via non-mercantile interdependencies.

The organisational knowledge and capacities that form locally, together with the ability to integrate them with the general technology process, spread among companies in that they are members of a local community, sharing the same system of rules and customs which enable collective knowledge and organisation. From this point of view, the turning point is significant. The acknowledgement that the local system possesses a nature as versatile integrator of knowledge and organisation corresponds, in terms of interpretation, to the transition from a mass production model to one of flexible production.

Systems, networks and evolutive relations

Both in the transactional approach and in the theory of Marshallian external economies, the laws that explain the dynamics of an economy give meaning to the idea of *local development,* in that it is locally (territorially) that actors find the reasons for their own dynamism. Geographical proximity is vital to the explanation of the "new industrial spaces" according to the logic of transaction costs, just as a historically and geographically specific structure is the basis, as we have seen, of the approach in Marshallian terms.

It is important, however, not to lose sight of the distinction between the two theoretical proposals. The first underlines an atomistic approach, centred on individual behaviour (or on numerous types of individual behaviour). In the second approach, it is holistic, in the sense that the system – the set of actors and relations between them – is seen as a whole: in other words, the company, considered as an actor with its own strategic behaviour, tends to be annulled to make space for *a new hybrid form*, the district-company, which transcends individual behaviour.

This distinction gives the sense of the real terms of the debate between the supporters of the two positions: both present advantages and disadvantages which can be evaluated differently according to the points of view. The former asserts a causal dynamic with general validity, while the latter is instead essential to go beyond the limits posed by the "great" theoretical constructions, countering them with a "weak", pluralistic explanation, open to the needs to master the variety and complexity of forms in which contemporary reality manifests itself. Nevertheless, both leave numerous problems unresolved.

The origins of the agreement on the *network* approach lie in the realisation that through it one can reach a sufficiently comprehensive description of the whole without losing sight of the relations between the actors who, interacting reciprocally, are the constituent elements of the system. In brief, local dynamism is not understood as the result of the action of each individual company (or actor), but of their collective behaviour.

Without going into details already examined in the previous chapter, it is enough to recall the importance of the theoretical proposal: on the one hand, it helps to define a dynamic approach to company development, in that its foundations lie in a complex set of *relations* (local and other) which confer a *strategic-operational identity*, i.e. a capacity to relate to the external environment. On the other hand, there is a shift from the micro level of analysis (the individual company) to the intermediate level, and so the company becomes an *evolutive* actor (or, better, *co-evolutive*) in relation to an environment from which it draws opportunities and constraints to its action.

The *evolutive* dimension of the company (and at the same time of the local system) thus explains economic and extra-economic issues together, expressed in terms of both *collaborative* and *competitive* relations. These relations of *socialisation* (Giddens, 1984) cannot be represented in purely functional terms or connected to transport and accessibility costs, but demand their own instruments which allow the interpretation of the organisation of the system as a dynamic process of structuring. It is for this

purpose that the notion of *network* was introduced, understood as a metaphorical fashion of representing the relations between actors, which are assumed in their overall dynamic: in this sense, relations are an organisational and reorganisational function of the system (Thorelli, 1986; Butera, 1990; Holton, 1992; Håkansson and Shehota, 1995).

The context is thus explicitly *systemic*. The identity of the individual actor is not annulled in the network, but *co-evolves* with it in an environment inhabited by multiple actors, which presents itself in its turn as endowed with its own identity. The set of relations within the network determines its organisation and autonomy in relation to the external environment: the characters of the system are not therefore dependent on the "general laws" of the economy, but on processes of local organisation that follow their own rules (Dematteis, 1994).

Just a few references will suffice to give an idea of the effects of the network organisation on the actors that constitute it.

- The exchange of information (financial, fiscal, commercial, scientific and technological) between companies is achieved both in the framework of market rules and outside them, relying on trust, planning for the future and more or less tacit norms accepted by the members of the system. This set of norms also allows social control of information entering from the outside, adapting it and making it consistent with the socio-economic context. In addition, this encourages the development of a certain collective identity, grounded in a dynamic of co-operation/competition between actors.
- A systematic, formal or informal, agreement between companies, resources and institutions is built up in order to exchange technological, commercial and competition information. This consensus involves different forms of horizontal and vertical co-operation and facilitates the creation of a complex set of informal transactions, as well as the development of a space for formal transactions.
- The development of a technical culture multiplies the number of actors oriented towards technological and organisational innovation. In other words, the structuring of network relations eases the sharing of information and the generation of new organisational forms. The market only transmits, in fact, a small quantity of information, and even when this happens it can be at high cost.

The network dynamic is, therefore, the basis of a process of *collective learning* that stimulates the evolution of the actors operating in the system and regulates relations with the outside world: a process founded on non directly mercantile relations, which may not have been grasped by conventional theoretical tools.

As we have seen in the previous chapter, network interaction may occur within a major multinational company with ramifications in a number of continents. In this case, the company itself constitutes a system whose network links up the various plants, management centres, research laboratories etc. In other words, using this extreme case, the territorial proximity of actors *may not represent, at first sight, a meaningful dimension.* In this case, the network will be *trans-territorial*, i.e. involving

co-operative (as well as mercantile) relations between units of the same company or between different but interacting companies.

However, if we considered only this type of network, we would have a partial view of reality. It is worth recalling here how, if transferred onto the level of analysis of the processes of internationalisation of small enterprises, the network proposal has revealed unexpected capacities for explanation with respect to the conventional schemes. If, as is true, the small company operates on world markets *indirectly*, access to globalisation occurs through inclusion in international networks, autonomously or in connection with other internationalised companies. Access to networks allows companies (which remain territorialised) to operate on global markets indirectly, both in receiving resources (from other members of the network) and in supplying their products to the market (Julien, 1995).

It is at the same time indisputable that the universe of SMEs is extremely varied and implies differing competitive behaviour. In the same way, the processes of globalisation lead to a further segmentation of the fabric of the SMEs, appearing as a real factor of dynamism for many of them.

But on which mechanisms and processes is the globalisation of this type of company based? Again on this point, some generalisations allow us to grasp important issues. Figure 3.1 (constructed on the basis of work by Julien, 1995) divides the universe of SMEs into different categories according to the final markets of the products (*market space*) and the market origin of resources including information (*operating space*). The arrows indicate some major trends, dependent on different *strategic behaviour*, but all aimed at coping with globalisation. The squares in the figure correspond to the following categories of behaviour:

1. *Local competitive development* (regional and national), in which SMEs make up the greatest part. This category includes those companies obliged to improve their own competitive position in order to cope with increased competition from abroad. These companies can obviously operate in environments that are particularly dynamic and favourable to them (technological and financial support), and yet also follow major companies.
2. *Search for international resources* (especially information). While the product market continues to be local, the search for greater competitiveness drives some actors (especially in the service sector) to turn systematically to international sources that they can transfer to other locally-based actors. Long-term competitiveness requires an adequate flow of knowledge resources, even in traditional sectors. This is, therefore, a typical form of evolution of a district system.
3. *Export strategy*. This is an evolutionary form of the small district enterprise. It also represents a "natural" form of development for many suppliers of large companies, which find the opportunities for increasing their own production assets in globalisation.
4. *Explicit internationalisation strategy*. This would seem to concern a rather limited number of SMEs and can be explained ideally as a possible form of evolution of

some actors able to develop, for different reasons, their own economic, commercial, competitive and technological potential.

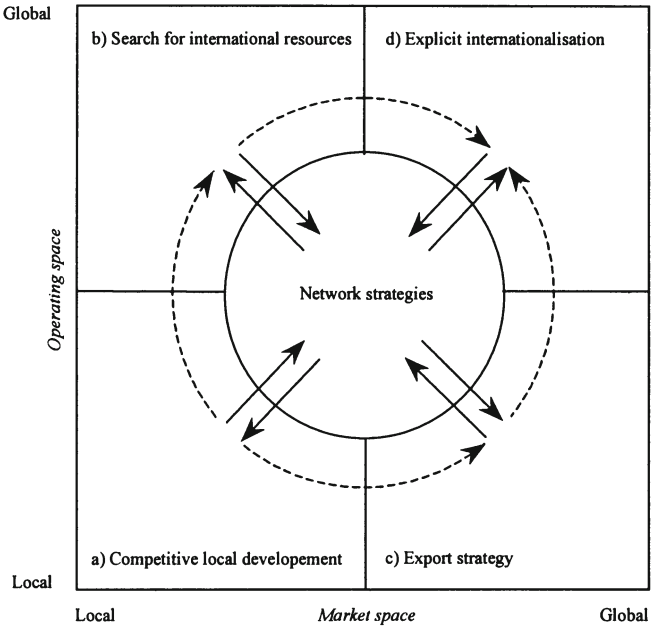


Figure 3.1 - Globalisation and small and medium sized enterprises

Source: reworked from Julien (1995).

In the case of SMEs, we know in any case that a much higher number of companies operate on world markets *indirectly*. For this reason, a fifth behavioural dimension is included in Figure 3.1: this dimension allows for access to globalisation through *inclusion in international networks* autonomously or in connection with other internationalised companies. Access to networks allows companies (which remain territorialised) to operate on global markets *indirectly*, both in receiving resources (from other members of the network) and in supplying their product to the market: this is a crucial aspect of the issue because virtually all types of SMEs can come under this heading.

Seen in this light, access to globalisation, because of the typical features of SMEs and their territorialised nature, makes the local system (the industrial district, for instance) dynamic, distinguishing between enterprises aiming at internationalisation more or less explicitly and others which draw advantage from the "new" global position reached by other actors. All this is very important in debunking the paradigmatic vision of the district, according to which the enterprise as actor tends to

disappear and be replaced by a new hybrid form, the *district-enterprise*. This scenario re-introduces very forcefully the enterprise's role as actor and leads to a less deterministic vision of the district itself: as globalisation advances, the integrating forces within the district lose bite and some dynamic actors, opening up to the outside, break the correspondence between the district and its operators.

Fields of communication

Representation in terms of network has been of great importance in creating new meanings for the dynamic of territorial systems. The emphasis on interaction is justified by the fact that only from this point of view is it possible to identify the mechanisms which explain relations and processes much more complex than those that could be inferred by paying attention only to cost and mercantile factors.
More in particular, we have acquired two important elements. First of all, the realisation that an interactive process aimed at creating and developing strategic behaviour does not depend on simple transactions regulated by formal relations. Secondly, in order to give intelligibility to this set of relations, the metaphor of the network has been introduced, used to represent the relations between actors that transcend competitive conflicts and, in contrast, enhance communications.

If we reasoned purely about generic resources (such as raw materials, services, manpower etc.) the location behaviour of economic actors could be easily explained in terms of cost differentials. The location problem would thus appear as one aspect among many that contribute to the definition of strategic behaviour.

The concept of a field of communication represents instead specific resources, which, being explicitly localised, make the territory a strategic resource in the process of change, which thus ceases to be a mere problem of the introduction of new knowledge developed outside the field of action of economic actors.

We shall thus attempt a brief review of the environmental (territorial) conditions on which a learning process is built and which, to some extent, we have already come across in earlier pages. Very briefly, these are:

- an informal and non-mercantile organisation of relations between actors;
- a technical and industrial culture shared by them;
- historically consolidated collective behaviour and practice;
- an entrepreneurial and technological atmosphere.

As can easily be observed, the communicative dimension (the solid foundations of all the conditions listed) discriminates between a set of specific resources and generic ones. In contrast to the latter, specific resources are explicitly localised. It is unthinkable, in fact, to imagine that, being produced by a given context through the historical evolution of relations between actors, they could be reproduced in a different geographical area to their original one. As is well known, this set of territorially non-reproducible conditions is expressed, as we have seen, by the term *milieu*, meaning a system of actors and structures that can be fully grasped only within the complex play of reciprocal interaction.

The approach is explicitly holistic. The set of interactions between actors and territorial conditions is the origin of a system-effect that shows itself in a particular technical, political and social atmosphere, climate and culture. It is thus a process that reproduces its own coherence as it evolves.

Given these premises, and bearing in mind the conclusions of Chapter 1, we shall limit ourselves here to recalling two essential aspects of the concept in question: on the one hand, its dynamic character, given by the complex play of interactions activated in a particular environmental context; on the other, the fact that this set of specific resources does not constitute a simple condition of cost reduction (that economic actors can, at best, find in many places), but a system of non-reproducible externalities (economic, social, cultural and environmental) that have been accumulated in long term historical processes. In other words, other criteria are added to those of efficiency of conventional economic analysis (obviously not cancelling them), which assign a contingent character to economic action, stemming from the "embeddedness" in a given cultural, political and social context.

This would explain why a learning process is necessarily localised. As we have already noted, a network dynamic cannot be separated from the environment which plays host to the relations between actors. Assuming this point of view, learning appears, in substance, as a socialised and collective process (as well as an economic one) based on a territorialised organisation of relations between actors. It is organisation, in other words, that defines different paths for the creation of different types of knowledge, as the depositories of non-reproducible economic, social and institutional practices. In this light, a system is open to information from external sources and, at the same time, it is the depository of specific externalities, which are organised, co-ordinated and related to the economic, cultural and technical structures. These are what ensure that local (tacit) knowledge is valorised in new technological and production solutions.

3.5. The local synthesis: a geographical revenge

This brief reconstruction of some of the lines of thought that have had the greatest impact on contemporary debate has inevitably been incomplete. Rather than examining the details of one or other theoretical proposal, the goal was more limited: leaving aside the singularity of the various schemes of interpretation, it was in fact possible to focus on broader theoretical arguments which offer different perspectives.

Searching for the "intermediate entity"

It is evident that the perspectives reviewed so far converge in putting the highlight on *the local system as an intermediate element of analysis*, i.e. as the foundation of economic organisation that was missing in the tradition of the social sciences in general. The territorial dimension emerges from the need to go beyond the contrast between the macroeconomic level of the national systems (the globalisation process

weakens the economic sovereignty of the nation states) and the microeconomic level of the company-actor.

The local system is first and foremost the level in which a *relational dynamic* occurs between different actors. It confers on both the actors and the system itself the capacity to assimilate the disturbances and changes that arrive unceasingly in the technological and competitive world, as well as collectively producing innovation and knowledge. As we have seen, this places the dynamic of the actors in their historical, social and institutional background, thus *contextualising* the global evolution of the contemporary economy.

The wide-ranging debate on local systems has helped to undermine many of the "certainties" on which conventional economic theory was founded. At this point in the debate, the problem of the criteria useful for the practical definition of these "new" production entities is no longer in question (whether they are territorial complexes, industrial districts, local production systems etc.), nor is that of whether they represent or not the superseding of (or a variation on) Fordism. What we want to say here is that, starting out from examination of the intermediate element of analysis, it is possible to specify a set of theoretical and methodological instruments which have a more general value, and are thus applicable to the many diverse forms of the contemporary economy, from districts of small companies to the old centres of mass Ford-Taylorist production (see Chapter 8).

This debate could not have developed if the positivistic separation of the social sciences had not been overcome. This had led to analysis of economic phenomena by abstracting them from the cultural, historical and social components. To assume the social and cultural context as the key variable in the organisation of production allows us to lay bare the "theoretical trap" of orthodox economics. It bases explanation purely on *strong* technical-mercantile categories, thus revealing itself incapable of explaining the importance played by the changed market and technological conditions and by non-mercantile relations, on which the relations between actors operating in a competitive market are increasingly based (Grabher, 1993a).

In geography, this way of proceeding had characterised the functionalistic-organisational approach to the study of the Fordist company, centred on processes of technical and economic concentration and on the "virtuous" (and at the end of the day, deterministic) relations that are woven between companies, parts of companies and *space*. In this case, the interpretation of facts followed a form of reasoning that had long dominated the scientific community, based on the positivistic "suspicion" of *weak* conceptual categories (such as identity, industrial atmosphere, communicative interactions, industrial culture etc.). Although difficult to measure, they have in any case come to the forefront as a consequence of the growing interdependency of the system and the breaking down of spatial and temporal barriers.

The dynamics of embeddedness

These weak conceptual categories are the origin of the thesis on *territorial company embeddedness*, introduced by Granovetter, a sociologist, and then discussed in spatial

terms by, among others, Powell (1990), Grabher (1993), Granovetter and Swedberg (1985) and Taylor (1995). In evident contrast to the orthodox economic explanations, the reference is no longer to the company as the organisation governing the economy, but to the *formative processes* of the organisations themselves, which derive from collective behaviour (networks, in essence) expressed both inside and outside the market. These processes are instead the expression of an *embeddedness* which is cognitive, political and cultural.

> Cognitive embeddedness recognises the bounded rationality and imperfect knowledge of economic actors, while cultural embeddedness highlights the importance of shared collective understanding in the decision-making, strategy and goal formulation activities of business enterprises. Political embeddedness refers to the impact on business decisions of their struggle with non-market institutions, especially the state and social class (Taylor, 1995, p. 110).

The thesis of territorial embeddedness, although appearing as a response to the incapacity of conventional economics to explain real company behaviour, is obviously not unreconcilable with the technical and mercantile assumptions that inspired it, as the latter explained processes and phenomena of undoubted empirical importance. The former do not deny the latter, therefore, but are part of a single cognitive circuit: it is in fact by overlapping the two components – economic-production and non-mercantile – that one can uphold the *inevitability of the local*, as the linchpin for the revision of the criteria of economic-social analysis, and in geography, for a non-deterministic analysis of the relationship between enterprise and *territory*.

The reflections of R. Varaldo (1995) are a useful point of reference in providing problematic concreteness to intuitions characterised by a high level of abstraction. At the centre of his reflections is the phenomenology of *location factors*, which would seem to play a different role in the various eras in which the evolution of industrial capitalism can be divided. In the historical phase of competitive capitalism, the territorial distribution of industry, which gave rise to profound imbalances between different regions and national economies in the process of growth, was favoured by the presence in some areas of natural environmental assets (essentially raw materials and energy sources). These *natural location economies* (of place), while playing an important role in attracting capital and population, did not necessarily involve systematic interaction between the actors involved in the production process. The main determinant of location was effectively represented by particular, pre-existing factors.

The Fordist model, while bringing further differences between regions and countries of growth mechanisms, was accompanied by a sort of location freedom, as a consequence of the effect of new technical and organisational factors (such as the possibility of long-distance transfer of energy, the availability of an adequate transport network, the rise of the great industrial organisation). In these conditions, the Fordist company "appears in its basic connotations as substantially alien to needs of embeddedness in a given territorial context, understood in a physical, socio-cultural and institutional sense" (Varaldo, 1995, p. 8). It follows that *functional location economies* (of polarisation), generated by the "catalysing force of the great factory",

were relatively independent of the socio-cultural and institutional environment in which the production process occurred.

In the network organisation that characterises the contemporary economic system, the usual dichotomies (between large and small, centre and periphery of the system) disappear and we see the rise of a relational logic - between companies and between them and the environment - founded to a growing degree on technical, organisational and communicative interactions. The *immaterial location economies* (Marshall's external economies), precisely because of their intangible and context-specific nature, are therefore difficult to transfer from place to place: as we have seen, it is on them that the contemporary global economy is based.

The introduction of the socio-cultural and institutional dimension (as an intangible factor and at the same time specific to each context) thus prefigures a sort of logical shift "from the located company to the territorially embedded company" which concerns not only small and medium sized companies - i.e. realities that draw most of the conditions for their dynamism from being embedded in specific socio-economic contexts - but even *multinational companies*, even if in a different way compared to the classic companies operating in districts.

From these concepts, it is possible to derive a generalisation useful for outlining a local system not on the basis of a rigid dichotomy between companies of local origin and non local ones (for simplicity's sake, multinationals), but between *different forms and intensity of embeddedness*. The latter assumes different forms (Varaldo, 1995, p. 28): (a) for the district company, the embeddedness will be *implicit* (i.e. connected to its formation process), *all-embracing* (i.e. involving the entire ramification of its branches, knowledge and culture) and thus *dependent* on the network of its external economies; (b) for the multinational economy, it will instead assume a nature that is *forward-looking* (i.e. deriving from a preliminary location decision), *selective* (i.e. aimed at interacting locally in a different way from context to context) and *interdependent*, i.e. aimed at activating specific interaction capacities locally.

In this framework, the *co-evolution between enterprise and environment* - understood as a specific set of tangible and intangible conditions - appears to be a pre-condition for company development and at the same time a factor of reproduction of the identity (or of the diversity) of the local systems. Just as the socio-cultural environment is not the mere expression of an autonomous historical evolution, but is dependent on the strategic behaviour of economic actors, the company can no longer be conceived as a system that is self-sufficient and has established hegemonic relations with the environment. On the contrary, it appears now as *one* of the actors between which a complex dialectic relationship is constructed.

3.6. Conclusions

In the end, this raises the problem of regional competitiveness in the era of globalisation. It goes without saying that the possibility of a local (regional) economy to launch itself successfully on the international markets lies, on the one hand, on the

identity of the product, and on the other, on the fact that the solution of the problem of competitive advantage is no longer found in the exogenous search for the best technology and production methods available. If a solution exists, it has to be sought inside the region itself, in other words in the capacity for co-ordination between producers, consumers and other local actors.

Above all in industrialised countries with high production costs, the problem of competitiveness depends increasingly on the capacity to create, accumulate and utilise knowledge more rapidly than competitors (Maskell, Eskelinen, Hannibalsson, Malmberg and Vatne, 1998, in particular Chapter 2). This is accompanied by growing international product specialisation, a phenomenon that, at first sight, is surprising in an era when the use of communications and computers encourages as never before the diffusion and imitation of technology (Salais and Storper, 1993). This means that the growing specialisation of the national and regional economies is no longer dependent on economies of scale in production, but on the nature of the products put on the market, on the know-how to make these products, on the type of needs that they satisfy and on the capacity to make the products themselves evolve continuously while preserving their originality.

The challenge is thus of an organisational nature, involving the actors and their rationale of action and communication, accompanied (as shown by the recent success stories of production regeneration) by the implementation of *network strategies* – between companies, between companies and institutions, between different institutions, where the creation of so-called *social capital* is fundamental for the formation of small enterprises (Cooke, 1995; Indergaard, 1996; Morgan, 1997; Rosenfeld, 1992).

CHAPTER 4

Regional development and policies. The legacy of functionalism

4.1. Premise

The discussion in the first three chapters shows, in our opinion, that economic facts and their interpretation have become so complex that they are controllable by orthodox economics only through the most daring mathematical abstractions. Above all, it emerges quite clearly that the economic world appears characterised by variety and dynamism. The mythology of the all-embracing corporation and general equilibrium has given way to the certainty that there are many ways of organising production and that the capitalist system is in constant transformation.

This awareness leads us to now consider in greater detail the problem of capitalist development (in other words, the need for growth and transformation that capitalism has shown since its advent) and the differences in the levels of economic development reached in different communities, societies, nations and places. In brief, this means considering the problem of *regional development*.

4.2. Economic development and regional imbalances

If, as Colin Clark states in his famous essay *The Conditions of Economic Progress* in 1940, it is true that "there is space for two or three economic theoreticians in any generation, no more", François Perroux, Albert Hirschman and Gunnar Myrdal are the three authors around whom a radically new theoretical world was constructed in the fifties, that of *regional development*. Its foundations lie in two assumptions which must be clarified immediately before going forward.

1. The central idea is that economic development *is not a linear and spontaneous process* - as presumed by orthodox neo-classical theory - but is instead a discontinuous process characterised by imbalances that produce and reproduce inequalities.
2. By giving priority to the analysis of *differences* between regions and countries in their level of development, a shift is made from a focus on the location behaviour of the individual company to theoretical schemes which describe and interpret the spatial configuration of regional and national economic systems.

In this way, the theory of economic growth is united with location theory, which up until then had evolved independently of each other. The former was characterised by "a-spatiality" and the latter by exclusive consideration of the individual operator. The scientific discourse that developed in this direction is not, however, an ivory tower, supported by methods of enquiry and principles fixed once and forever, but a set of constructions erected by communities of scholars who talk different languages. For this reason, after the necessary review of some already well-known concepts, different ways of looking at reality will be examined.

Beyond the neo-classical scheme

In the neo-classical tradition, as is well known, regional development disparities were explained as market imperfections or traced back to the slowness of the inevitable and gradual processes of equilibrium.

These simple statements are enough to explain how the predominance of neo-classical analysis in political economics effectively set the discipline at a distance from the analysis of the differences between regions, which are a structural component of reality. Starting in the late nineteenth century, especially in Great Britain and the United States (i.e. in the countries where, as stated by Stuart Holland, "development seemed assured"), economic science, apart from a few rare exceptions, puts the problem of equilibrium to the forefront. This, as useful as you want on the level of pure logic, is however insubstantial from both the theoretical and empirical points of view: it excludes too many factors which are, on the contrary, essential to economic mechanisms, such as internal and external economies of scale, the asymmetry in the relations between the actors, and the gaps in the allocation of factors and resources. As Holland again underlines, the theory of equilibrium starts "blindfolded" with respect to the characteristics of the regional world and evolves towards an idealised and unrealistic analysis (Holland, 1976).

The theory of *disequilibrium* that established itself in the post-war period "starts instead with its eyes wide open" on the reality of the capitalist economies. It was founded in a non-systematic fashion, as the more or less casual sum of different contributions. At the beginning, these seemed to have limited objectives in the framework of theoretical thinking, but they gradually assumed the significance of founding elements of an extremely general theory that assumed strong pragmatic importance. Such a proliferation of substantially similar ideas could evidently not be accidental. There seem to be two main factors which had a determining influence, but with different weights, on the development of these ideas.

The first of these factors can be easily identified in the Keynesian "revolution". This summarises, in the framework of a macroeconomic approach, a series of criteria certainly not new in the history of economic thought, but which had rarely been officially recognised: the recognition of the absence of conditions of equilibrium of full employment, the existence of long term economic cycles and fluctuations, the rejection of the dichotomy between real phenomena and monetary phenomena and the idea of direct state intervention in the economy.

The second factor, inseparable from the first, lies in the awareness of the growing gaps – in terms of income, investment and employment – between areas of rapid industrial development and marginal regions (a phenomenon common to most industrialised Western countries). Those decades of rapid growth of the Western economies had caused increases in territorial differentiation of the processes of accumulation, made more acute by the related migratory flows and processes of great urbanisation in the dynamic areas of the system. The *multiplier effect* of these phenomena (in addition to the sectors connected to manufacturing, such as construction and services) had ended up by radicalising contrasts and historical differences. The role of state intervention in inducing improvements and activating virtuous relations in the regions marginalised by these processes was seen at the time as the only possible recipe for breaking this perverse spiral.

Regional policy established itself after the war in line with Keynesian assumptions and was expressed:

- in a *direct* form, i.e. in the intervention of the state as the owner of segments of the industrial system, in regions where private initiative on its own did not find any incentive or advantage in investing;
- in an *indirect* form, meaning by this the function played by the public sector in infrastructure and more in general in the field of tax and financial policy.

The concept of polarisation in the theoretical framework of Perroux

The bases for overcoming the neo-classical scheme of equilibrium were laid definitively in 1950 and 1955 with the publication of two fundamental essays by François Perroux, who is remembered as the fourth great economist, after Ricardo, Marx and Schumpeter, to have tackled economics starting from the standpoint of development.

We owe to Perroux above all the merit of having rediscovered and popularised the work done between the two wars by Joseph Schumpeter. In particular, the work of Perroux owes a debt to Schumpeter in that he abandons the criteria of equilibrium and economic rationality and traces the general evolution of economy and society back to the revolutionary effects caused by the innovation process. They say, essentially, that without technical progress there is no form of evolution, uniting economic, social, political, cultural and ideological effects in a chain of relations. Economic evolution is therefore a dialectical, dynamic and irreversible process bringing with it heterogeneity.

Perroux provides a contrast to the banal space of conventional economics – which created the illusion of the "coincidence between the political dimension and economic and human space" (Perroux, 1950, p. 22) – in the *abstract and topological space*: a "field" of centripetal and centrifugal forces within which the actors and the means of production are attracted and rejected selectively from and towards different places. This means that economic growth is not achieved to the same degree in all places, but originates in certain points or *growth poles* with different intensities, from which it spreads along certain *channels*, involving the different parts of space in different ways.

It would seem reasonable to state that these poles correspond to industrial agglomerations in which driving units are located: manufacturing companies and sectors which, whether for their greater size, particular innovative capacity, or for their oligopolistic nature and the relations established with the surrounding fabric (suppliers and buyers, population and infrastructures), generate a multiplier effect capable of stimulating the growth of other economic units. As far as the 19th century is concerned, this driving function was essentially attributed to the development of transport (just consider the beneficial economic effects of the construction of infrastructure systems), but the new century saw the rise of steel, the car industry, electricity, oil and, in the fifties, electronics, synthetic materials and the aerospace industry.

These industrial sectors, characterised by high rates of product and productivity growth, are something more than merely "industrialising industries". Thanks to their innovative capacity, they are capable of producing profound transformations in a technical and institutional sense and in society as a whole. For this reason, the restrictive concept of growth pole was soon replaced by *development pole*, which refers not only to components of an economic nature, but also to effects of a deeper transformation of the regional systems. The context in which it occurs is, essentially, a *chain of causal links* which interweave and overlap in a unitary process that is the basis of the evolution of the system.

These initial intuitions, which in later years inspired an infinity of research works whether descriptive or applied to economic and regional planning[1], excluded in reality the explicit consideration of the geographical dimension of the processes of economic growth: the effects of polarisation were not, in fact, "localised", but considered in abstract terms as the consequence of an inevitable process involving the economic forces operating in a modern industrial society. As Harmansen recalls, for Perroux "geographical space appears only a rather banal type of space, while the main object of his attention is *economic growth*, i.e. the processes through which companies (and economic units in general) appear, grow, establish themselves and, sometimes, disappear" (Hermansen, 1972, p. 167). In other terms, an attempt is made to give a coherent explanation of the reason why a modern process of economic growth moves further away, in reality, from the static conception of equilibrium, while the identification of the laws that regulate the distribution of economic activities in geographical space appears at least a secondary objective. It is not then perhaps exaggerated to say that the success and influence the work of Perroux had on regional science at the time was due above all to the theoretical framework and the new concepts introduced.

Economic dualism and Hirschman's scheme of interpretation

Two years after the appearance of the second (and most influential) article by Perroux, Albert Hirschman provided precisely the theory of polarisation to support the idea of development understood as a *chain of imbalances*. In the "more or less spontaneous" development of the capitalist system, the search for higher profits generates, in the

early phases of this process, a "natural" geographical concentration of investments in urban-industrial regions (Hirschman, 1958). Consequently, the differences between regions are initially accentuated.

Once the location of a certain industry has been decided in a specific point of economic space (the *growing point*), a *multiplier process* begins that generates new demand. On the one hand, the immigrant population, thanks to the acquisition of greater purchasing power, demands new housing and new services; on the other, the company itself attracts new suppliers that produce inputs and purchasers of semi-finished products. The entire process is *cumulative*, in the sense that, once the first cycle is completed, new phases of development begin which generate, in turn, other forms of concentration. These phenomena are reproduced until diseconomies of agglomeration interrupt the process, or until other growing points establish themselves offering comparatively higher advantages. The spontaneous and "natural" tendency of entrepreneurs to concentrate in one place is thus the driving factor of economic growth which will determine the progressive broadening of the economic gap between the "developed" regions (the North, in the sense used by Hirschman) and the underdeveloped ones (the South).

The solution to the problems of regional development – in other words, a hypothetical equalisation of the levels of development between North and South – would occur, *in the long term*, in a *spontaneous* fashion, in that the growth of consumption levels in the developed areas would also determine an increase in demand in the underdeveloped regions, thus favouring the triggering of economic expansion processes in the latter. If this was not sufficient, then public bodies would define specific *development strategies* (for example investment in sectors that drive industrial growth), aimed at correcting the duality inevitably intrinsic to market mechanisms.

Myrdal's model of circular and cumulative causation

The model of *circular and cumulative causation* proposed by Gunnar Myrdal (1957) shows many analogies with Hirschman's analysis. According to Myrdal, spatial polarisation is the consequence of the operation of market mechanisms which, if not corrected, produce inevitable differences in development between regions. The conclusion is, however, more pessimistic, and the Swedish economist rejects any possibility of spontaneous equalisation of economic development levels, asserting the need for systematic and incisive *public intervention*.

The process of circular and cumulative causation originates, according to Myrdal, in the existence of particular conditions (including natural ones) which determine an initial advantage for the economic development of certain (*core*) regions. There, cumulative processes of economic development are triggered that also involve other (*peripheral*) regions which, as in Hirschman's scheme, would be involved in a centripetal process in the course of which capital and labour are attracted towards the regions that possesses the initial advantage.

Myrdal's model was so important in the debate of the period that we need to review it here briefly. The functioning of the mechanism of circular and cumulative causation

is based on the joint effects of *backwash* and *polarisation* (Figure 4.1). The former refers to the transfer of capital and other factors of production towards the rapidly developing centres or "poles". The underdeveloped countries and regions will thus be deprived not only of the wealth generated locally - which finds a higher return in the expanding regions - but also of the most highly skilled workers and the best entrepreneurs. Other non-economic factors are added to these economic ones, such as the difference in the provision of services (health, education etc.), which all go towards consolidating the fact that some areas appear more attractive. The economic interdependence between different areas is then reflected in the arrival on the markets of the peripheral regions of products from the central ones. This is a further obstacle to the development of endogenous industrial capacity in a process that produces economic stagnation and decline.

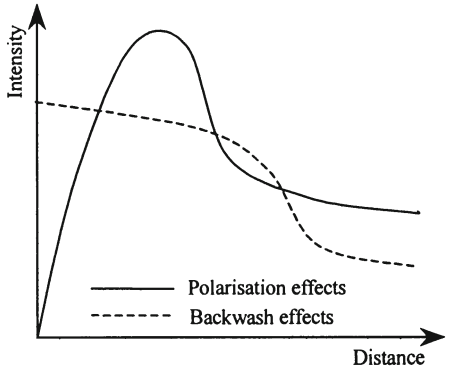


Figure 4.1 - Polarisation and backwash effects

The interaction between developed and undeveloped regions produces centrifugal forces which could be translated into processes of the *diffusion* of development: the expanding central economy can, in fact, stimulate demand in the peripheral economy (for example, for agricultural products or raw materials) and, if this process is capable of annulling the previous backwash effects, it leads to the creation of a surplus available to be reinvested locally, possibly triggering cumulative processes even in the peripheral areas.

In its simplicity, Myrdal's scheme is plausible and has a well defined structure in which the main variables are clearly linked to each other (Keeble, 1967, p. 261). Indeed, it is true that, being applicable indifferently on the regional, national or global scale, it has a very general validity.

Nevertheless, the model has at least two limits: in its schematic nature, it analyses only superficially the phenomena of spread (and, consequently, the processes of virtual regional convergence in development levels); secondly, it seems more useful to demonstrate the inadequacy of the classical theories of economic equilibrium rather than as a general theory of regional development. In particular, the spatial component

is identified only generically in terms of the geographical concentration of economic activities (poles) and the persistence of inequalities between these and the rest of the system. In this sense, Myrdal's scheme represents more than anything else the starting point for the formulation of a general theory of development with a spatial dimension.

4.3. Functionalism and functional systems

Analytical science and normative science

The polarisation theory proposed by Perroux and Myrdal's scheme of circular and cumulative causation both caused profound upheavals in theoretical reflection on the problems of development. In particular, the former represented the cornerstone around which the inspiring principles were defined in the post-war period of a forward-looking approach aimed at establishing an ethic and vision of new values that were brought together in *regional policy*.

It is in fact possible to identity two fundamental dimensions in Perroux's theory, the *analytical* and the *normative*. The former, on which we have focused so far, aims to describe and interpret the process of economic development in terms that are in contrast with the linear ones of equilibrium. From this standpoint, the theoretical proposal can be understood as an eclectic attempt to explain economic growth in a more realistic way (Perroux called it *une façon observable*) than it could be inferred from the models of balanced growth of the neo-classical tradition. The *normative* dimension refers instead to the more or less conscious use that has been made of the theory of polarisation for the definition of possible development strategies, whether on the national or regional scale.

In particular, much of the conceptual structure of economic and regional planning is due to the theory in question. In the early post-war decades, when the Western economies went through a period of intense growth, the systematic polarisation of production capacity in few highly industrialised and urbanised areas overshadowed the idea that the "diffusion of development" could occur spontaneously. Rather than count on the diffusion of development starting from "natural" growth poles, efforts were concentrated on the creation in the economically most backward regions of "artificial" polarisation, thus *accelerating* the process of propagation of economic development. The theory of polarisation then became the theoretical point of reference for the re-equilibrium strategies of areas with uneven development, and the development pole was seen as a motor capable of generating washback effects.

This is a drastic deviation from the spirit of the original formulation. If Perroux's proposal focused on the asymmetrical character of the development process, the operational models that began in that period to occupy the scene were, in reality, partly at variance with the theoretical model (Richardson and Richardson, 1974). The understanding of the relationship between the analytical dimension and the operational dimension of polarisation theory demands, however, that we broaden our considerations.

We shall limit ourselves initially to some obvious considerations. In order to be used as an operational tool, the concept of polarisation (which in Perroux's original conception had an essentially analytical and descriptive meaning) had to be reinterpreted in some way, stripped bare of its abstract meaning. The operation was relatively simple (and over-simplified, we would say now), given that the formulations of Perroux himself seemed to lend themselves rather well to many confutations and contradictions, as observed by Darwent (1969).

We shall now turn our attention to some basic generalisations: the pole is a spatial agglomeration of actors (companies, people, organisations) which benefit from the advantage of proximity. Through the technical links that are established between localised companies, the pole, generally assumed to be an urban area, will produce expansive effects that will spread – in terms of employment, income and innovation – in the pole's area of influence. In this way, the idea of polarisation assumes a rather different meaning to the original one, presenting itself as a mechanistic and linear precept: space is seen to tend towards a physical condition in which disparities will have disappeared. While the original idea limited itself to emphasising the asymmetrical character of development processes ("development is unbalanced", proceeding by a series of ruptures, Perroux says), the pole is now seen as a motor capable of systematically producing effects of stimulus and automatic propagation of development, effectively in conflict with the teaching of the original proposal.

These observations are enough to explain the dimensions of the operational extension of the original proposal and what was made of it in many countries of the industrialised world in the early post-war decades. Regional policies aimed at correcting imbalances in the levels of industrialisation were, in fact, based explicitly on a strategy of polarisation.

A few examples[2] would be enough to give a sense of how the reinterpretation in operational terms of the theoretical construction was an exemplary operation in its linearity. It did, however, bring rather complex implications that go beyond the specific case of the theory of polarisation – although it was in precisely the context of the theory and practice of regional development that they assumed visible connotations – and for this reason cannot be neglected.

This transformation of theoretical conceptions into an operational proposition found full expression in *functionalism*, a style of thought whose theoretical and epistemological premises have had great success in scientific thought and intervention policies in economic and social systems in the course of the 20th century. It is thus necessary to introduce, however briefly, the main underlying concepts.

The functionalist rationale

Despite appearances, the idea of functionalism is anything but easy to define and has been understood in rather different ways by the various authors. Partly for this reason, instead of presenting a definition that is not particularly suitable for our purposes (and which will become fully explicit only in the next chapter), it is more useful to first

tackle some of the concepts that are held to be the foundations of functionalist explanations.

First of all, it represents a relative novelty as a method of scientific enquiry. In contrast to the simplifying method so in vogue in the 19th century, aimed at breaking down reality into increasingly simpler elements on which to then proceed with detailed investigations, an attempt was now made to explain society as a set of elements and relations. Reality is, in other words, represented as an *organism*, and explained by taking the scheme of *physiology* as a model. And as for biological systems, a social system is seen to operate for the satisfaction of collective needs. It follows that the various members possess, by extension, a common system of values which reflects the values present in the society. Vallega, one of the shrewdest critics of the idea of functionalism extended to territorial sciences, writes:

> Functionalism is based on some very simple ideas: each element produces certain effects and is subject to certain consequences, and from all this the field of its functions emerges. The elements, because of the functions they express, establish reciprocal relations; the set of elements, precisely because of the interdependencies by which it is bound, behaves like a structure, i.e. a more or less intensely integrated whole (Vallega, 1990, p. 78).

The organism – society – is thus seen as a *structure*, an organic whole, or a set of roles (or *functions*) linked to each other by communication flows (Boulding, 1972): it follows that the organisation and transformations of society will be explained by starting from the position that the various elements occupy within society itself.

The roots of this style of thinking are found in the British cultural anthropology of Redcliffe-Brown and Malinowski and, above all, in the work of one of the 20th century's most influential sociologists, the American Talcott Parsons (1951). It was the latter, in particular, who was responsible for the representation of the *social system* as structured in a set of relations. Its life – the continuity of a social structure, in the same way as for an organism – is preserved thanks to its functional continuity, i.e. the activities and interactions that are activated between human beings and the organised groups of which the society is composed. In extreme synthesis, functionalism appears as a logical scheme aimed at explaining social structures, *not* on the basis of their historical origin or their geographical particularity, *but* because of the different functions which *jointly* confer on the system its *proper working order* understood as the achievement of collective goals.

In reality, the functionalist proposal possesses significant ideological contents. The assumption of an adequate *social order* cannot be separated from the inspiring principles of strategies and policies aimed at correcting the mode of functioning of modern society, which finds cohesion in the efficiency of the state, in the Fordist corporation and in appropriate economic planning activities. To grow, the system – "organised capitalism" according to Lash and Urry (1987) – demands an *order* in which roles and functions can be clearly identified and planned and where disturbing social factors can be eliminated through appropriate social engineering.

Extending these concepts to economic and territorial sciences, space is thus represented as a set of relations: a city, a region or a country-system are explained in terms of a space whose cohesion depends on the relations that connect the elements of which it is composed. A spatial system will thus be a rationally structured "whole" whose elements, reciprocally linked by more or less close-knit relations, assume the meaning that is attributed to them by the functions that they play in relation to a vaster space. It follows that the terms "spatial structure" and "spatial system" adequately express the geographical transfer of Parsons' structural functionalism.

The (regional, national) space is thus interpreted in terms of relations between the parts, which become complementary to each other, integrated into a more or less ordered and cohesive whole. It follows that its structuring depends not on its intrinsic features (social-historical and physical-environmental) but on the complex play of bonds and complementarities between its elements. Spatial order will depend on the "natural" play between the parts (between core and periphery, between "strong" regions and "weak" ones), while the pole, through its driving, propulsive and dominating function, will integrate and organise all the elements of which it is made up.

A *spatial system* will thus be a structured whole, whose boundaries and functioning are understood as depending on the ways the relations between its material components "are structured and co-ordinated" (Juillard, 1967). For this reason, it will be possible to break it down into functional units, usually ordered hierarchically. In the exemplary representation of E. Juillard, functional space can be split into three fundamental components (the relation with concepts of neo-positivistic spatial science is explicit):

- the *urban* structure, which expresses various degrees of centrality, from which the impulses for the functioning of the system originate;
- the *gravitational (or communication) corridors* in which the combined play of market and accessibility factors occurs;
- the *processes of diffusion* of modernisation. Following the pattern of the urban structure, this will show a hierarchical character, although diffusion effects towards the areas surrounding the centres involved are envisaged.

The idea of functional space appears essentially consistent with the concepts of polarisation and polarised region: a heterogeneous space, as defined by J.R. Boudeville, "whose different parts are complementary and produce a greater number of exchanges with each other, and in a very particular way with the dominant pole, than with the neighbouring region" (Boudeville, 1964).

4.4. Growth and functional integration

The general model

As an heir to the tradition of polarised growth, John Friedmann, together with Alonso, was fundamental to the development of Western regional studies[3]. Inspired by

international trade studies of the previous decades (Ohlin, 1933) and drawing heavily on the regional economic growth models proposed in the post-war period by Douglas North (1955), Theodore Schultz (1951) and Jeffrey Williamson (1965), he proposed an organic formulation in spatial terms of convergence theory, founded explicitly on the attempt to unite *economic development theory* and *location theory*.

A system of trade is established between industrialised countries that import raw materials and economies producing them – i.e. between the core and the periphery of the world economic system, in the original definition of Preibisch, introduced in 1949. This exchange favours the industrialised economies which, through favourable trade, draw on the periphery for labour, agriculture and minerals. The structuring of the world economic system (and the operation of these "requisition" mechanisms) cannot however be separated from the existing forms of spatial organisation.

Friedmann's contribution appears to go far beyond both Perroux's "abstract conception of space" and the "a-spatial" aggregations and simplifications of Myrdal and Hirschman. The problem of development is, in fact, inseparably linked to the evolution of the system of relations between the main urban centres and between these centres and the surrounding areas: for each *stage* of economic development there is a corresponding specific model of spatial organisation, which will in turn change as development proceeds. The economic system is thus represented as a spatially structured *whole*, where the main urban centres represent the dynamic and driving element of the whole system. The counterpoint to the "primacy" of an urban region is the "dependency" of a large periphery whose functions mutate over time, while still remaining relegated to a subordinate position compared to the core.

Like Myrdal's model, the core-periphery scheme of Friedmann can be applied on a multitude of geographical scales. So, reasoning on the level of world economic relations, the developed countries would constitute the first and the second type of aggregates, the underdeveloped countries the third and fourth. The American North-east and West, Western Europe and Japan could be considered, in particular, the central area of the world's economic system. On the national scale, the "core areas" would correspond to the great industrial and decision-making agglomerations (take, for example, the London region, Paris or the Milan conurbation), while regions such as South-east England and the Ile-de-France region would fall into the category of areas with an ascendent transitional trend. The Mezzogiorno of Italy, Scotland and Brittany would instead be examples of areas with a descending transitional trend; Alaska, Siberia and the interior of Australia, finally, would be in the category of frontier areas. Referring the scheme to the more limited metropolitan scale, finally, the urban districts with a high concentration of "command" activities would represent the "core", while ghettos and districts of functional decline would be areas in descending transition.

In the generalisation proposed, the regional economies are thus considered as *open functional sub-systems* with complex interactions which, as economic development proceeds, can change the position and functions played by the various regions in the overall economic-spatial system. In the early stages of a process of industrialisation, the concentration of industrial investments, population and services induces the relative advantage of one or few areas, while most of economic space stagnates or goes into a

process of relative decline. As development proceeds, however, economic functions spread and differentiate in space, to the point that, at an advanced stage of industrial development, "the entire national economy will appear as a fully integrated hierarchy of functional areas, with most of the population and activities concentrated in a network of metropolitan areas" (Friedmann and Alonso, 1964, p. 2).

This stage corresponds, in fact, to the formation of a *spatial system of functionally interdependent centres*, in which the presence of a structured hierarchy of urban centres reflects the integration of the national economy. In this phase, the full use of resources is accompanied by the efficient distribution of production capacity in space and the expansion of markets, while the risks of socio-political destabilisation characteristic of earlier stages are eliminated: the condition of proper working order would thus seem assured (Friedmann, 1972, p. 14).

Controversies and debates

We have given only a rough sketch of Friedmann's reasoning[4]. The objective was, in fact, limited to illustrating some of the most significant conceptual categories in a debate that occupied Western regional science for over twenty years and of which this author gives the most effective synthesis.

At this point it is useful to compare this model to the premises with which we introduced it, clarifying any possible misunderstandings. For ease, we will start the examination from different but inseparable points of view, which together seem to be capable of explaining the meaning of the theoretical proposal.

1. The thesis of *regional convergence*, which inspires the construction of the model, should not be confused with that of equilibrium. As we have seen, for neo-classical economists, the driver of the inevitable – even if remote – elimination of imbalances between regions was intrinsic to the free operation of market mechanisms. In Friedmann's scheme, the process of regional development was guided instead by precise political strategies: these function both to encourage an initial and inevitable "dualism" between core and periphery (which seems indispensable for starting up a development process), and to make later adjustments and corrections. In other words, convergence as a final condition does *not* constitute the outcome of processes that occur in real economic processes, but a guiding objective, inspiring a regional policy aimed at the elimination (or reduction) of the "backwardness" of the periphery. The link with Myrdal's formulations and with the originally French theory of polarisation is thus explicit.

Functional integration, as the condition achieved at the culmination of the process, is therefore a different and more problematic concept than equilibrium. If for neo-classical economics the presence of imbalances and inequalities is nothing more than an element of imperfection and temporary disturbance in the functioning of the economic system, for Friedmann the formation of economies of agglomeration and polarisation – whether natural or artificial – are instead the origin of all development processes. In these conditions the pursuit of functional interdependence creates and

reinforces the bonds between the centres; however, by assigning different functions to them, it reasserts the centrality of the dominant poles.

2. Identifying development as a process involving an economic space structured in a hierarchy of centres, the probabilities of involving a sub-system in the processes of economic growth are inversely proportional to the distance that separates it from the sub-system of a higher rank. The inputs (the spatial diffusion of development) are transmitted, in fact, *from the top to the bottom* of the hierarchical pyramid, and the growth potential of a centre depends on the interaction with centres of a higher hierarchical level. In this light, the *pole*, stripped of its abstract meaning, becomes the activator and disseminator of growth within a functionally structured space.

The entire argumentation is thus based on the assumption of a contrast between a modern and dynamic (capitalist, industrial, highly urbanised) "central" economy and a traditional and stagnant (pre-capitalist, agricultural, rural) "peripheral" economy. In this context, the *modernisation* of the traditional economy is a consequence of the *interaction* between two (or more) sub-systems in a substantially linear evolutionary process that assigns a decisive role to the "modern" sub-system, the only one capable of structurally transforming the traditional one. The traditional society, considered as a "natural" initial state of a society incapable of expressing its own vitality and susceptible to transformations *only* thanks to the intervention of external forces, is thus viewed as underdeveloped. The reference "model" of industrialisation-modernisation is presumed to be that of the United States (Friedmann in fact refers to this) and it is assumed that the later stages of evolution of the system towards the integration of economic space must reproduce what has occurred historically in the US economy. More in general, strategies of regional re-equilibrium, both from the point of view of the theoretical conception and in the actual practice of the first three post-war decades, drew inspiration from the idea of the diffusion in the peripheral regions of the model then considered successful, based on large-scale enterprise, metropolitan growth and the formation of solid internal and external economies of scale.

3. The reasoning followed explains the success of functionalist explanations in economics and the social sciences. As we have seen, they not only represented a useful tool for integrating a multitude of causal links observable in reality within an organic theory, but also a formidable tool for the formulation of normative hypotheses. This calls into question the *duality* of the functionalist explanation, which is both synchronous and diachronous: in other terms, it interprets reality, as Gore says, suggesting at the same time how this reality *should* be (Gore, 1984, p. 200).

By the terms "spatial structure" and "spatial system" which, as I recalled, are nothing other than the transfer of Parsons' structural functionalism into a spatial context, the definition of the system (usually a national system) is made *on the basis of the way in which it functions*. Economic space will thus be a structure in which the transmission of the impulses that originate from the central regions occurs through the settlement pattern, ensuring that the system as a whole survives and functions adequately. This way of representing reality does *not* explain the processes that

produced it, but is limited to describing it and providing some indications for improving the way it functions. Essentially, it says that the adequate functioning of the system – i.e. the transmission of impulses between its sub-systems – occurs when the central region can evolve in harmony with the presence of a well-developed urban hierarchy and of an equally efficient system of transport and communication along the links of the hierarchical chain. This *synchronous* image (according to which the elements needed for the maintenance of a system in its own proper order working are present) is at the same time an *a priori* assumption, a normative hypothesis that inspires actions to pursue given ends, i.e. the efficiency of the system and its elements.

However, the structure of a system never remains unaltered, but is subject to continuous *structural differentiations* (the introduction of a new industrial enterprise, for example, can mean the creation of new roles inside the system, with an increase in the division of labour and the overall interactions between the elements). This demands the introduction of regulatory mechanisms and return of the system to its proper working order. This introduces the *diachronic* component of functionalist analysis, whose object is the changes of the (spatial) system over time: it implies the assumption of the rules according to which the system evolves in relationship to the needs imposed by a changing environment.

Friedmann's scheme – and with it post-war regional science – thus finds a logical dimension in the functionalist perspective. The model of evolution of spatial organisation presumes the introduction of factors that disturb the initial equilibrium, such as the location of an "industrialising" industry, which produces the functional differentiation of the system, as well as a series of disturbances induced by a dynamic centre. In time, however, the system proceeds towards gradual integration, until it reaches a new equilibrium (or new *functional imperatives*) in which the problems of how it functions are solved.

Modernity is represented here by the structural model operating in advanced capitalist countries, which become the normative frame of reference. But development, as we have seen, has in reality nothing that is automatic or mechanistic, even less is it linear: as Perroux maintained, evolution proceeds by ruptures, producing and reproducing inequalities.

4.5. The world of tradition and the discovery of novelties

The conception of development understood as a process of diffusion that originates in certain centres (poles) and economic sectors (driving industries) was reflected for a long time in the regional policies. Regional development strategies were then based on the objective of increasing the mobility of factors (in particular, labour, capital and technology) and made widespread use of Keynesian instruments. This was done both through improvement to infrastructures and through public funding and incentives for businesses and sectors that chose a location in an area amongst those covered by regional development programmes.

This type of regional policy was, on the whole, in line with the economic ideology of the time, and especially with the optimistic certainty of the possibility of the economy to develop constantly. If great faith was shown in the effectiveness of Keynesian policies, this explains how for several decades ecological and economic resources were seen as "unlimited" and energy and transport costs kept exceptionally low. In this perspective, the success of a development strategy was assessed in quantitative terms (i.e. on the basis of indicators such as the value of industrial investments, the rate of growth of employment and the gross regional product etc.), largely ignoring variables of a qualitative nature (social, political, cultural, environmental-ecological).

The consequences of this way of conceiving regional policy began to appear dramatically at the beginning of the seventies in all industrialised Western countries and can be summarised descriptively in a few salient facts. As H. Ewers and R. Wettmann (1980) argue, in one of the essays that had most impact on international debate in that period, it was especially the "weakest" regions which were affected by the general recession that hit the Western economies: on the one hand, they saw a clear reversal in the positive trend in investments and, on the other, drastic reductions in employment levels.

In France, for example, unemployment rates in the *régions problème* (Midi-Pyrénés, Aquitaine, Bretagne) reached such high rates in 1973 that they could no longer be attributed to cyclical variations in the demand for labour. Similar problems exploded in the United Kingdom, where there was unanimous recognition of the inefficiency of traditional strategies of "aid" for regional development, and even in West Germany, a country where territorial economic imbalances were traditionally less marked than in other European countries. After 1973, industrial investments in the Italian Mezzogiorno slumped rapidly both in absolute terms (by 40% in only three years) and as a percentage of the total investments made by Italian industry as a whole (the drop was particularly sudden, falling from 44% to 24% between 1973 and 1977).

In this context, the abandonment of traditional development strategies was justified in the light of the incapacity of Keynesian mechanisms to make an impact on the long term destiny of regional economies. The generalised "crisis" that lasted for most of the decade reduced the effectiveness of financial and fiscal incentives as a means of activating new production capacity in assisted areas. The outcome of thirty years of regional policies was clear to the eyes of all: an uninterrupted chain of geographical and cultural "ruptures" and – from the economic point of view – the substantial under-use of the (economic, historical, political and ecological) potential of the regions involved in the development programmes.

This very radical statement is based on the conviction, which spread amongst researchers in the course of that decade and afterwards, that the functionalist (and mechanistic) postulates were no longer valid when faced with the new facts that marked the close of the millennium. On this, Giuseppe Dematteis, for example, writes:

> Throughout the world, now dominated by Western culture, ideology and economy, vast processes of deterritorialisation are underway. They are related to the fading of the idea

> and practice according to which geographical space tends to be ordered "naturally" by generally homogeneous zones, from the "centres" to the "peripheries", from the "strong regions" to "weak" ones. The differences between places thus grow gradually with physical distance as do the differences between the centres and between the regions with the intermediate hierarchical levels. This, which can be considered a territorial projection of the order typical of "modern" organisations (the state, the "Fordist" company, the planned economy etc.) went into a crisis with the latter when faced with their incapacity to understand and control complex territorial realities (Dematteis, 1995, p. 688).

On the empirical level, the seventies inaugurated new and intense processes of *diffusion* of production plants and, at the same time, substantial functional *reconcentrations*: two phenomena that began then to interweave and overlap without wiping each other out.

On the one hand, there was the polycentric articulation of business activities (and housing) in small and medium-sized towns, even if within given regions and development areas. This "concentrated" diffusion towards regions previously peripheral with respect to the traditional cradles of development was the consequence of at least three converging factors: a) the application of new "decentralising" technologies and organisational models; b) the search for factors of production at lower costs (especially labour and physical space) and, c) above all for housing, the growing congestion of the larger cities. In all industrialised countries, there was thus a gradual shift from a phase of territorial concentration of production to a phase of diffusion of manufacturing activities. As we have seen, this gradually involved previously peripheral regions (such as central and north-eastern Italy, but also vast areas of Spain, France, Denmark and Germany). In most of the world's industrialised countries, from the mid seventies on, these processes – reinforced by the massive use of electronics and computers in production processes and services – offered new and substantial phenomena of diffuse industrialisation to counter the relative decline of the old industrial agglomerations.

On the other hand, long-term trends in the opposite, centripetal direction established themselves: a) the progressive *concentration* of decision-making power in the economy and higher level services (in decided contrast to the trend towards the diffusion of intermediate and banal activities), and b) the continuing *concentration* of the highest quality innovative processes and industrial functions. The technological transformation of production processes – usually achieved through the systemic integration of the functions of concept, design and production – delivers a comparatively superior location advantage once again to some urban-industrial systems. Demanding specific location advantages, these activities paradoxically trigger "conservative" processes from the territorial point of view.

The consequence was the challenge to some dominant dogmas: that of the *hierarchy*, with its weight of virtually determined, rigid and measurable organisational principles; that of *polarisation*, as the spatial expression of economies of scale; finally, that of *sequential models*, as the tool for explaining processes of decentralisation and the hierarchical breakdown of production systems. Polarisation and hierarchy, as the

foundations of an established paradigm in territorial sciences, then began to be challenged on the empirical level, in addition to appearing relatively unprofitable in theoretical terms. Both lost much of their explanatory capacity because of the great flexibility of the new forms of organisation of production and the increasing complexity of location behaviour, making it seem less and less possible to enclose them within theoretical cages to which a general explanatory capacity could be assigned.

4.6. Conclusions

The introduction of the concept of polarisation thus meant rather more than a significant break with the neo-classical idea of equilibrium. Post-war regional science went considerably further. In the scheme proposed, the diffusion of development was connected, as has been repeated several times, to a form of organisation of space understood as a structured and hierarchical system of centres, in which it is the main centre that transmits the inputs to the centres (or regions) at lower hierarchical levels.

In the scheme proposed, the interaction between centres – and thus the "probability" of development spreading – would be more intense with the increase in the size of the centres themselves and the reduction in the distance separating them, while the diffusion of economic growth would proceed along the transport and communication network. In this way, the development diffusion approach embraces the idea of the intimate relation *between spatial processes and spatial forms*[5] and the urban system (the pole) is seen as the place of innovation and the structuring factor of a larger economic space. It follows that the "periphery" is defined *purely in relation to the core* and its profound nature – economic, social, historical, cultural, environmental – is not part of the theoretical structure.

The functionalist and evolutionistic character of this way of proceeding is highlighted by the assumption of the opposition between "modern" and "traditional", with the result that only *exogenous factors* (the dynamic and modern forces of the economy and society) can spark development in traditional societies. In other words, if the force of change is external, the "periphery" will not be able to develop on the basis of endogenous factors. And given that the diffusion of development "uses" existing spatial structures (and in turn transforms them), it will be spatial organisation that directs the processes of geographical diffusion of development in a cause and effect relationship: the spatial (and social) structures are thus seen deterministically as the result of "spatial causes".

As we have seen above, the growing awareness of the interpretative incapacity of traditional schemes went hand in hand with the discovery of the *heterogeneity* of the forms of development. These often followed relatively autonomous paths and thus not ones dependent on "that single growth process". The acceptance of this reality created a full scale paradigmatic change that involved numerous disciplines and opened up new and fruitful controversies.

Notes

(1) Perroux himself, for example, explained the industrial growth of the Ruhr in the light of polarisation theory. Boudeville and Paelinck, from the same Parisian school, the I.S.E.A. directed by Perroux, applied this theoretical scheme to the territorial planning of respectively the state of Minas Gerais in Brazil and to Venezuela. In the early sixties, Rosenfeld studied the industrial development of Turin in the light of polarisation theory.

(2) History was made in this sense by the construction of the poles of Dunkerque (steel) and Fos-sur-Mer (petrochemicals) in France and by the special intervention in the Italian Mezzogiorno, planned using the doctrine of development by poles as a basis.

(3) Established a few years earlier in the United States, especially through the work of Isard. With Friedmann the school of *Regional Science* established itself definitively and split from *Regional Planning*, which was presented as the application of regional science itself. The foundations of Regional Planning are illustrated in the seminal work by Friedmann and Alonso (1964).

(4) In reality, it would be necessary to take into account its reformulation by Friedmann himself, influenced by the work of Schumpeter on innovative processes and by Dahrendorf's ideas on social conflict. Here, it is enough to focus, even if briefly, on instruments and concepts useful for giving meaning to a corpus of theoretical and empirical studies that have profoundly influenced post-war geographical research. Without considering these, it would have been difficult in the following pages to grasp the new elements that appeared in the last decades of the century.

(5) Marxist-based theoretical schemes have been deliberately ignored here. Again in these, the economic and social structure of the region is assumed as determined by forces exogenous to the region itself, whether in the neo-Marxist formulation of the core-periphery model (see, for example, Harvey, 1985; Walker and Storper, 1981), in the formulation of dependency (see, for example, Slater, 1975), or in the analogous but more strictly defined one of the World-System Theory of Immanuel Wallerstein (1974). In these cases, the analysis of the relations between regions (understood as the pure expression of social relations, or assigning primacy to economic policy in the guidance of development processes) does not take into sufficient account the variety of situations that exist on the world level and lead to the conception of the core-periphery relationship as historically unchangeable. An unrealistic homogeneity is thus attributed to the periphery and the course of its (dependent) development is in any case considered as determined univocally by the core. This precludes the possibility of being able to grasp the profound nature of the different societies as outcomes of different and specific socio-historical processes.

CHAPTER 5

The language of systems

5.1. Premise

The lesson of history would thus seem to have punished the great theoretical constructs that represented the two post-war cornerstones of development theory: the positive approach to development as an inevitable destiny, predictable in its outline, and the dominant Marxist approach, pessimistic about the possibilities of snapping the mechanisms of dependency.

Reflection on the possible forms of "alternative" development began to spread in the early seventies. This is not the place to go back over intellectual channels that had long been relegated to the sidelines of scientific debate and which the irreversible crisis of the dominant paradigms made it possible to bring to light. It is sufficient to recall the M.I.T. report on the *Limits of Development* (Meadows, 1972), the introduction of the notion of basic needs, that of ecodevelopment (Sachs, 1976) and the various reflections on the environmental components of economic growth which had been completely missing from the traditional versions. As a whole, this was a series of confused and in some ways contradictory contributions which, more than constituting a new and organic theory of development, appeared, as "visions of a different development" compared to the functionalist and mechanistic canons that had dominated the debate on the theme in the early post-war decades: a set of approaches whose "intellectual history", as Friedmann (1992) underlines, has yet to be written and which swings between attempts at theoretical options and more directly operational strategies.

As we shall see, these aspirations to alternative development are also pregnant with consequences for theoretical reflection. The concept of system, which we have already seen in the meaning of open system (see Chapter 2) and of functional system (see Chapter 4), will thus become a turning point for the definition of a theory of development that consciously assumes territories and places as a starting point.

5.2. Visions and strategies of an alternative development

Functional and territorial forms of regional development and organisation

In the territorial sciences, these analyses were the champions of a full-scale intellectual revolution that marked a profound break with the functionalist "tyranny" that had

dominated the previous decades. The most convincing synthesis was then formulated by J. Friedmann and C. Weaver (1979), who proposed the distinction between the two contrasting meanings of the concept of regional development in these terms:

- *functional*, concerning the planning of the distribution of economic activities in a "rationally structured" space, i.e. in a system of centres and networks. On the operational level, the definition of a regional policy would assume in this case the conceptual instruments of positivistic spatial science (such as the concept of polarisation, the gravitational and diffusive models etc.);
- *territorial*, where, in contrast with the previous approach, priority is given to a strategy of activating endogenous factors of development and attention focussed on the specific forms of economic and social organisation of the individual regions. The "rediscovery of territoriality", understood as an irreproducible set of social and economic relations, was accompanied by the assertion of the need for the direct participation of local actors in economic and political decisions.

The first of these two meanings was the basis of the regional policies implemented in the first three post-war decades and drawn up by external technical and decision-making bodies, often in conflict with the communities affected by development programmes. It is thus the expression, according to the terminology introduced by W. Stöhr and D. Taylor, of a sort of *development from above*, founded on the extension to the marginal regions of the organisational activities and logics which had already shown themselves to be successful in regions of early economic development, and on the functional integration of the various regions to be effected by breaking down the barriers (economic, political, social, cultural and institutional) to the diffusion of development. This conception was based implicitly on the hypothesis of a process of transformation of the economy and society generated by few selected actors, while the rest of the population was considered "incapable" of taking the initiative: "essentially, a concept is assumed of monolithic and uniform development, value systems and human satisfaction which, automatically or through political intervention, spread to the entire world" (Stöhr and Taylor, 1981, p. 1).

The concept of regional development in territorial terms is the expression of processes of *development from below*, which nevertheless do not ignore the criterion of economic efficiency. They presuppose, in fact, the maximum enhancement and mobilisation of regional resources, in addition to the "local" control of the endogenous mechanisms of the generation of development. If growth in functional terms gave preference to the integration between regions "open" to impulses from the outside, a sort of *selective spatial closure* of the regional economy and society is now offered in contrast. This is not an option of autarchic development, but of development promoted by forces endogenous to the region itself, as the means for pursuing effective "spatial equity", understood not (and not only) on the basis of economistic criteria, but in terms of social welfare and quality of life, regional solidarity, self-realisation and local decision-making capacity.

The logical scheme of reference thus deals with a model of *self-centred* development. This is incompatible with the idea of regional openness based on the

pursuit of comparative advantages and the specialisation of regional economies within a framework of spatial division of labour. On the theoretical plane, the proposal thus seems openly critical of the principles that inspired functionalism and conventional economic thinking. In particular, it rejects the idea of the maximising of individual and company profit, in that this is extraneous to the hypothesis of the enhancement of local community and cultural values. It is implicit open criticism here of the old mercantile criterion according to which the productivity of any social activity is shown to depend purely on the market demand that it stimulates (Aydalot, 1985, p. 145). Self-centred development contextualises instead the territorialised dimension in which the fundamental needs of a local community are satisfied.

As a whole, the frame of theories of *self-centred development* is not fully formalised, but groups together a vast array of hypotheses and operational precepts. We summarise them below, recalling that they share the recognition of the fundamental role played by social, cultural, ecological-environmental and institutional variables:

- each territorially organised community possesses its own resources (human, institutional, ecological, socio-cultural) which constitute *endogenous potential* for the activation of forms of "integrated" development (Stöhr, 1984);
- these factors together (economic, social, cultural, institutional, environmental etc.) define a *regional identity* that is qualitatively unrepeatable, because of the specific modes of interaction between the factors themselves, modes that are the expression of the active political and decision-making participation of the communities in question. This is necessary not only to bring out the endogenous potential, but also to control the forms of external influence and the prevention of negative effects on the economy and community organisation of the region;
- strategies of self-centred development, based on the maximum enhancement of endogenous potential, must be *selective*, i.e. centred on certain key variables: in particular, preference will be given to sectors oriented to satisfying the population's fundamental needs (especially in underdeveloped countries), to those characterised by high labour intensity and/or by the prevalence of small-scale production units, and to technology "appropriate" to the historical and cultural conditions of the region;
- these concepts will be applied to the various geographical scales, i.e. to each territorial level in which the natural, human and institutional conditions potentially capable of activating a "relatively" autonomous development process are found.

In brief, we find ourselves faced with a set of precepts that reject the rigidity of the "old" organisational forms and embrace the idea of a complex and flexible economy,

> capable of adapting to changes and representing an alternative to the economy of large-scale units, able to manage complex sets, obtain high increases in productivity as long as it is possible to plan and programme. When the [environmental] uncertainty was limited, the company could successfully apply its own long-term programmes and enjoy a relative advantage. With the crisis and increase in the conditions of uncertainty of the technological and competitive environment, large-scale organisation became a burden,

> and its effectiveness lower than that of small units. With endogenous development, variety is thus in opposition to uniformity: variety of cultures, social statutes, technologies, but also variety of tastes, needs and products (Aydalot, 1985, pp. 148-9).

The failure of functionalist regional policy is therefore replaced by an opposing array of ideas and action programmes based explicitly on the conceptual category of *territory*: no longer a "space" whose relations are programmed and planned externally, but a set that organises and identifies itself starting from complex systems of relations that are established between social actors located in a "territory" with its own physical, historical and socio-cultural characteristics. In this light, the concept of territory has a broad conceptual impact: in particular, it makes it possible to assume the structural variety and plurality of the forms of transformation and development of the different contexts (by definition *local,* in contrast with more general processes and dynamics, which can be named *global*). In the framework of the problem of development, the conceptual category of territory introduces the idea of a complex set of local resources (material and human), defined by specific physical-environmental, cultural, ethical and ideological features, political practices and unique forms of association, socio-professional capacities and a virtually "unrepeatable" business climate.

At this point, the problem is the identification of the territorial unit within which the community is potentially capable of promoting its own plan of action. According to Friedmann and Weaver, this must be conceived as the *intersection* of three different abstract spaces, each of which is the expression of a distinct dimension of economic and social organisation:

> a common *cultural* space [...] a common *political* space [...] a common *economic* space. Although cultural, political and economic spaces intersect, they do not, as a rule, completely overlap. To the extent that they do, however, they trace the natural habit of a "community of destiny". Such areas of overlap may be designated as the primordial units of territorial integration (T) (Figure 5.1) [...] further divided into component spaces (T1...Tn), each of which will display unique characteristics within the common pattern (Friedmann and Weaver, 1979, pp. 196-7).

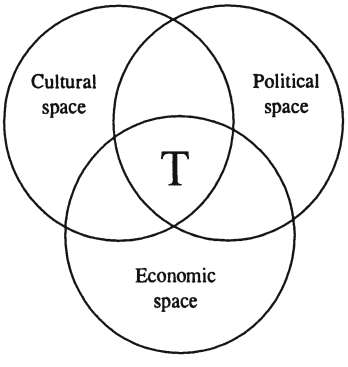


Figure 5.1 - Territorial integration in space
Source: after Friedmann and Weaver, 1979.

Each unit of territorial integration expresses its own demand for autonomy and potential to undertake autonomous development paths. A plurality of strategies and instruments specifically targeted for each reality would therefore be needed, and, as a consequence, forms of regional policy of much greater complexity.

The local dimension of development

The conceptual category of territory thus represents a *thickening* and a "local" sedimentation of *specific and non transferable* social relations. This concept is thus very different, if not antinomic, to that of *space* in the positivist tradition, through which "objective" phenomena and processes valid for all times and all places were represented. The theoretical turning point is significant in the light of this: for the interpretation of real phenomena, it is acknowledged that the "history" of a region can be the fruit of different circumstances and conditions, neither predictable nor enclosed within predetermined schemes.

These are certainly very generic observations which should be placed in the political atmosphere and the cultural background of the period (the seventies and eighties) in which the conviction matured that regional science (and the underlying concept of development that inspired it) should not limit itself to being an instrument to provide solutions according to universally valid scales of values. They do however give an idea of how in the territorial disciplines – as in the other social sciences – an epistemological clash of great importance opened up in that period, laying bare the limits of traditional conceptions. Very briefly, two lessons can be drawn from this:

- first of all, it is acknowledged that a (regional, local) development process is not a mechanical process dictated by balancing forces and tendencies, but something much more complex, problematic and contradictory. From this derives the fundamental break between two terms which, for a long time, were held to be synonyms, but which appeared less and less compatible: that of "growth" and that of "development". The first is understood as a "simple" increase in the size of the variables conventionally used (such as per capita product, employment etc.), so that the evolution of the system is assumed, as Passet wrote, in terms of "an increase in wealth and an accumulation of means of production whose creation, functioning and renewal is necessary" (Passet, 1979, p. 70). The second, which certainly does not exclude the first, expresses instead a *social process* which identifies the qualitative conditions and factors as fundamental (see Chapter 6);
- it follows that the panorama of the social and economic sciences begins to change radically. It is recognised that the starting point for understanding and representing reality is no longer, as suggested by positivist science, a cognitive method aimed at tracing the complexity of phenomena (economic, social, cultural etc.) back to purely abstract criteria. This attitude, which was to lead in later years to the demolition of numerous theoretical and methodological "certainties", reveals a different need to explain the transformations underway in the economy and society at the end of the 20th century which could not be grasped through theoretical schemes that *abstracted every phenomenon from its specific context*.

We shall come back later to the movements that helped to break up the categories that until then had been judged adequate and sufficient. Returning to the main thread of our discourse, it is necessary to underline how the real problem that the territorial sciences face is not that of overturning consolidated criteria and logics in order to propose others, antinomic with respect to the previous ones, but to introduce the possibility of having a system of categories capable of creating dialogue between different logics. As we shall see, univocal and general laws are not applicable to a complex reality.

Stating that the processes of transformation of the regional economy and society respond solely to endogenous stimuli and variables and that the forms of self-centred development are the only ones possible – as we have just seen the theorists of development from below did – leads, in fact, to the substitution of a unilateral and mechanistic vision with new and futile causal determinisms. Reality is much more problematic than can be understood from a formal theoretical and ethical confrontation.

In formulating a project which changes the criteria of interpretation, it is useful first of all to pause on the three determinants of regional development that G. Garofoli extracted from a debate that turned out to be particularly lively in the years we are talking about (Garofoli, 1991). These are fairly simple dimensions of meaning, yet useful for constructing a preliminary conceptual framework. Taking as a point of reference the growing territorial articulation of the economic system, he identifies three different determining factors capable of triggering a process of evolution of the regional (local) economy and society:

- *Local factors* capable of aiding the transformation of the regional system (for instance, the birth of new entrepreneurs) and thus stimulating the regional potential through market dynamics;
- *Reactions to external changes* (technological, organisational etc.) based on the system's own organisational capacity (for example, through the promotion of forms of collaboration and co-operation between a number of companies and other local actors);
- *External factors* which intervene and modify the production and social structures at the root (for example, through the location of large production plants belonging to companies operating outside the region).

In the first and second cases we have explicit processes of *self-centred* development, given that the *control* of the process is in the hands of the regional economic and socio-institutional forces, while the third case expresses a form of *exogenous* development. The distinction is not just nominal, but useful from the methodological point of view, in that it separates two conceptions of regional development that traditional theory kept, instead, intimately united.

To illustrate the substantial difference that exists between these different phenomenologies and to solve a conceptual antagonism long kept hidden, the proposal by Dematteis (1994) to separate the meaning of (local or regional) *development* from the simpler and more reductive one of *valorization* is fully acceptable. In this last case,

the regional system is understood as a passive support for more or less pervasive general forces and processes. Territorial valorization can, in fact, stem from variation in the distribution of comparative advantages. This means that the decisive actors in the transformation of the regional economy and society are in general of external origin and find in the region the territorial conditions (production factors, externalities in the broad sense) essential to the pursuit of its own economic objectives. It follows that valorization is a *reversible process*, which can be interrupted and cancelled if the conditions that generated it disappear (such as, for example, the discovery of factors at lower costs in other places, changes in the legal, economic, geopolitical conditions etc.). In the first case (local or regional development) there is instead the direct activation and involvement of territorially embedded forces, which react to the uniforming trends of external origin through their own *organisation*, capable of moulding forces and "disturbances" of exogenous derivation on the historical, social, economic and institutional conditions produced and reproduced by the system.

> The distinction between mere valorization and local development also helps us to understand why an increasingly international and global economy not only has a corresponding territorial uniformity, but also the contrary trend towards a diversification which cannot be traced back to the simple mechanism of the division of labour as a response to the expansion of the market (Dematteis, 1994, pp. 17-18).

The problem of development and the criteria for interpretation of territorial dynamics thus acquire a complexity unpredictable according to the conventional schemes. Many theoretical categories which have been hastily introduced in the last few decades (development from below, endogenous potential, self-centred development etc.) have been justified by the need to provide an explanation for the apparent novelty of the phenomena observed. On the theoretical front, these keys to interpretation have, however, been characterised more by their open contrast with the orthodox criteria of interpretation of development than by the solidity of their conceptual foundations. For these proposals to stop appearing as a fuzzy set of concepts and statements of principle, it is necessary that languages, methodological norms and theoretical principles be developed that enable us to look at reality in a different way.

A convincing answer to this is provided by *systems theory*. Because of its complexity, methodological implications and epistemological consequences, a relatively broad examination is needed, starting with the general theoretical and conceptual framework.

5.3. The systemic approach

A conceptual reappraisal

As Joël de Rosnay, one of the leading popularisers of contemporary epistemology, maintains, systems theory is a "new methodology that enables the organisation of knowledge in view of higher effectiveness of action" (De Rosnay, 1990, p. 16), setting itself up as an *alternative but also a complement* to the traditional analytical approach.

The latter, as we have debated extensively in earlier chapters, is epitomised by a cognitive strategy based on the reduction of reality to simple elements, which can be analysed separately from the whole to which they belong. This also entails the division of knowledge into different disciplinary areas. The systemic approach responds to this "reductionist" and simplifying strategy with the idea of the whole, assuming phenomena as elements in reciprocal interaction. The systemic approach is therefore a combination procedure (or methodology), aimed at organising *knowledge* and the *object of knowledge* itself. Talking of "system", the reference is to *both* the way in which the phenomenon is observed – which cannot be explained by the use of a predetermined and objective model – *and* to the phenomenon itself. The latter, assumed as a reality composed of a high number of elements and of relations between these elements, cannot be broken down or simplified, without losing sight of its essential feature, complexity.

More in particular, by defining a system starting from its essential components – the *elements* (i.e. a set of objects, but also of concepts, characterised by their own properties and attributes) and *relations* (flows of energy and/or information between both the elements of the system and between the system and the environment) – a leading role is given to the dynamic and complex character of reality, which could not reasonably be inferred from the functionalist cognitive schemes.

We shall now define some fundamental concepts worth recalling before moving on.

1. *The structure*. This is the set of elements and relations between the elements which have a special characteristic, *feedback*, aimed at describing a situation in which an element (or a system or subsystem) influences itself. The structure of a system (the set of elements and relations between elements) is, in other words, subject to continuous modifications through feedback processes. On its own, however, it is not enough to make a system intelligible.

2. It is, in fact, *organisation* which defines the set of processes described above. To state that the set of processes is organised means assuming that the relations between them depend more or less on each other and that the set constitutes a relatively cohesive *whole* (not by chance, the etymology of the term "system", of Greek origin, means "to unite", "to hold together"). To distinguish more clearly the organisation of the structure, we can turn at this point to the valuable lucidity of Maturana and Varela:

> Organisation is understood as being the set of relations that must exist between the components of something such that it can be considered as belonging to a particular class. By the structure of something, we mean the set of components and relations which, in practice, constitute a particular unit in the realisation of its organisation (Maturana and Varela, 1987, p. 62).

3. The *environment* is represented by other systems, with respect to which a system is more or less open (or more or less closed). It is obvious, in fact, that an entirely closed or entirely open system can only be an extreme concept: the first could not, in reality, be an object of knowledge, it would be a box in which nothing enters and nothing

leaves; the second would not be identifiable or separable from its environment. The openness of a system is defined by the degree to which the system itself acts on other systems and reacts to their action. The interaction between different systems is manifested in flows of matter, energy and information which stimulate its internal processes, providing the resources it needs, or on the contrary, disturbing its organisation and creating constraints.

4. *Autonomy*. In its relations with the environment, a system can, at a first glance, be represented as a *whole* that embraces incoming flows and from which outgoing flows depart. However, these can *not* be assumed indiscriminately, in that the system does not allow the entry of everything that arrives from the environment. To the degree to which it selects the disturbances of exogenous origin, an open system will also be relatively closed. The concept of *autonomy* therefore refers to the fact that the processes internal to a system do not produce only outgoing flows towards the environment, but also flows within the system itself and its own organisation. This means that a system is both open and closed at the same time. It is open to the extent to which the system is not, as we have seen, independent of the environment. However, it is closed as it selects constraints and disturbances that arrive from the environment, and reacts to them through internal organisational and re-organisational processes.

Systemic epistemology

This brief review of concepts certainly makes no claims to giving full intelligibility to the idea of system, but was deliberately limited to presenting an array of instruments to be developed in the argumentation that follows. The problem is now to give sense to such an abstract representation as the one outlined above: to this end, it is necessary to tackle a fundamental distinction that characterises the systemic approach, breaking it down into two different interpretations, *realistic* and *constructivist*.

According to the first interpretation, a system is an object of knowledge with certain characteristics. In this light, a system is an *analytical instrument of representation of reality*, yet very different to the objects and phenomena dealt with by traditional mechanistic science. As a "concrete totality", a system can be broken down into parts which will also be systems themselves, in turn organised in sub-systems whose complexity will be equal to or higher than that of the system they belong to. This is a fundamental methodological principle and not a metaphysical thesis: if reality is of an irreducible complexity, for cognitive purposes a system cannot be dismantled into elements (and thus simplified), but only into other systems. To explain certain observed phenomena or facts, it will be possible to analytically distinguish different systems which will not, however, be concrete parts of the "whole", but abstractions made by the observer with his own cognitive ends and needs (Morin, 1977, p. 139).

This introduces the constructivist meaning, according to which the system is nothing other than *a mental construct created by an observer* of an object, a phenomenon, a concrete case. In this light, the systemic approach is a unifying and

integrating scheme of knowledge. The systemic approach opposes the reductionism of the traditional analytical method with a *holistic* approach, as Le Moigne says, "a unitary conception of the world [...] a general theory of the universe" (Le Moigne, 1977, p. 59). In this sense, systems theory is a general framework (or *General System Theory*, in the revolutionary insight of Ludwig von Bertalanffy), which envisages a breakdown of knowledge that transcends the division between sciences. It springs from the following consideration: if it is impossible to uphold the existence of a single theory of the universality of phenomena, it is however true that all phenomena have *something in common* that can be traced back to a conventional scheme (the General System) which analyses each phenomenon individually. The system is *not*, therefore, an objective concept, but an instrumental cognitive concept aimed at integrating many dimensions of reality: as Morin states, systemic thought has established itself in order to explain complexity.

The epistemological impact is explosive. Originally formulated by biologists, the systemic approach developed in contemporary science in reaction to the classical mechanistic conception. By isolating elements from each other, this was incapable of offering a full explanation of living phenomena: as von Bertalanffy says, traditional science was thus not able to identify the fundamental feature of each phenomenon, its organisation. Extended to the social sciences, the concept of system thus aims to express the search for holistic understanding.

In characterising the systemic approach, use is often made, in the wake of R. Ackoff, to the contrast between the "The Age of Machines" and the "Age of Systems" (Ackoff, 1974). The former expresses metaphorically the fundamental epistemological principle of classical science and its analytical, causalistic and reductionist methodology[1]. Assuming reality as objective, with elements linked by relations of cause and effect independent of the observer, interpretation was reached through break-downs and divisions (through analysis, i.e. by simplification and formalisation). The epistemology of the age of machines thus inspires a formal scientific logic, founded on the axiom of the separation of the observer from the object of observation.

The crisis of that myth - which played an important role in the development of Western science - has many roots, some of which are found within the modern tradition. The turn in scientific thinking became more dramatic, however, with the introduction of the notion of system and with the epistemological denunciation of the claim to scientific certainty. We have just seen how systemic epistemology is based on the mechanisms of the *construction* of knowledge, i.e. on the cognitive means through which the explanation of the world is achieved, first conceptually and then operationally. The construction of knowledge thus belongs to the observing subject, in permanent interaction with the phenomena perceived and conceived: the cognitive process will thus be given by a circular relationship between reality and subject, which becomes an active and inseparable part of the process of construction of knowledge.

We are therefore able to summarise the main theoretical and operational consequences underlying a systemic epistemology:

- with the rejection of the postulate of pure objectivity of the *positivist tradition*, knowledge is no longer conceived as predetermined, but is understood to develop from the interaction between the subject and object of knowledge;
- this leads to the challenging of the idea of a *linear* progress of knowledge and based on what Isabelle Stengers defines as the "reassuring function" of a neutral and privileged point of observation, given by a defined set of laws, assumptions and methodologies;
- the idea of a unitary and *neutral scientific language* thus disappears. Reality is, in fact, multidimensional, made up of a plurality, if not an infinity, of relations and dimensions, and for this reason it cannot be fully known;
- it will thus be the *observer-subject*, according to its own decisions and points of view, that breaks down observable reality (the system). In conclusion, the object of knowledge does not exist as an autonomous reality, but only as a module of a system that also contains the subject.

On the evolution of systemic thought

Different views and perspectives are so numerous and controversial in systems theory that any attempt at systematisation would impoverish the problem excessively. We will thus limit ourselves to a division of systemic thought in three major stages, through which the concepts briefly illustrated here become more comprehensible.

1. The first concerns *closed systems* – closed with respect to their environment. In line with the principles of classic 19th century thermodynamics, a closed system has no exchanges of either energy or matter with the outside. It inevitably evolves towards a state of equilibrium, so there will be no net incoming or outgoing flow of energy or matter. This means that a system evolves from more or less complex states of organisation to increasingly simple states and, at the most, to equilibrium.

2. The second revolutionary stage started out from the work of an Austrian biologist, Ludwig von Bertalanffy. The basic concept is that of *open systems* which evolve along a temporal trajectory and are transformed in their constant relationship (openness) with the environment and in relation to the objectives they set: this is thus a conception of reality in evolutive and teleological terms. The object of the *General System Theory* (Bertalanffy von, 1972) was a reality described and imagined in terms of *holistic systems*, i.e. conceived globally in their relations with the outside.

The organism is thus a system, in other words a "dynamic order of [complex and partly unknown] parts and processes in mutual interaction". It follows that the object of the discourse is no longer the causal relationship on which Cartesian logic was founded, but the *structure*, i.e. the complex play of relations between the elements that, according to its objective and the relations with its environment, produces the behaviour and the evolution of the system.

3. Systemic thought in the last decades of the 20th century aspired to the elimination of the duality between closed systems and open systems. More in particular, starting from the distinction between *passive open systems*, dependent to some degree on the environment, and *active open systems*, capable of regulating their own exchanges with the outside, contemporary systems theory radically modifies the construction created by von Bertalanffy[2].

Attention thus shifts to the capacity of the system, subject to incessant exchanges of energy and information with the outside, to conserve or develop its own organisation.

It is not, therefore, only openness that enables a system to evolve, but the fact that the system has an "active" character, as it is capable of organisation. In this case, the system will not be destroyed or disorganised, but will react to the stimuli from the environment: the system is, therefore, *self-referential* and *self-organising*. In this way, one of the fundamental concepts defined earlier, that of *autonomy*, becomes fully intelligible: *autonomy refers to the closure of the system in an organisational sense, in that a system is resposible for its own behaviour.*

The recognition of the property of self-organisation of systems is of vital importance. In fact, by introducing organisation as an autonomous concept (and assuming that it is this that allows the identification of the system) it follows that the structure, as the means of manifestation of the system itself, is susceptible to modifications in the course of its evolution over time. The invariability will thus belong to the organisation, which reproduces the system's identity and autonomy.

This finally focuses on the idea of a system that is closed and open at the same time: its openness towards the outside defines the dependency of the system on environmental disturbances that can trigger, but *not* determine, the course of its transformation. The system is, in fact, closed in the *organisational* sense, thus ensuring the maintenance of its autonomy and reproduction of its identity (Dupuy, 1982).

Autopoiesis and complex systems

This theory of autonomous systems, already suggested in the post-war period by N. Wiener (1956) and later reformulated by H. Atlan (1972) and H. von Foerster (1982), owes its most mature structuring to Humberto Maturana and Francisco Varela (1980 and 1987. See also Varela, 1979). These two Chilean neurobiologists are recognised as having had the merit of introducing the concept of *autopoiesis*: this indicates the capacity of the system to plan and reproduce itself through the reproduction of its components.

The starting point is the clear distinction between *heteronomous* and *autonomous* systems, on which we need to pause briefly in order to understand better the overall theoretical structure. The former are characterised by an evolution according to the structure of the external world and are capable of moulding the internal organisation of the system. Autonomous systems are, instead, endowed with *organisational closure*, where the external world acts purely as a factor of disturbance. They thus appear

independent of the forms of the outside world, with the exception of the flows that assume importance for the self-reproduction and survival of the system. The inputs to which the system is subjected thus constitute *disturbances* which induce modifications in the structure of the system without changing the logic and the dynamic of its organisation. The relations of reciprocal interaction between the system and the environment (with other active systems) are defined in terms of *structural coupling*, which is achieved when the system, because it is closed from the organisational point of view, selects the disturbances from the outside, continuously modifying its own structure. Autopoiesis thus expresses a circular process which reproduces the elements and the relations between elements by modifying them.

Having begun life as a biological theory, the theory of autopoiesis is meta-theoretically applicable to social systems to the extent to which they are self-organised systems. In reality, a human and social system (cities, companies, production systems, regions, countries etc.) has characteristics *epistemologically analogous* to those of other living systems: in other words, it is capable of reproducing and adapting itself, conserving itself either passively or actively. A social system possesses, in other terms, autonomy.

It is, in fact, with reference to the mechanism of autopoiesis that it is possible to characterise the *organisation*, *identity* and *borders* of a system. These are three inseparable concepts that were largely unexpressed in traditional systems theory. If the organisation of the system is given by the network of relations between its components, these will also determine its physical borders. These borders are defined by the effective extension of the network which, defining the circular nature of the organisation of the system, guarantees its autonomy. In a system characterised by organisational closure, in fact, network interconnection between its components is the basis of the fundamental property of autonomy, which defines the closure and cohesion of the system with respect to the environment.

5.4. The region as a complex system

Regional organisation

A self-organised system is therefore an active open system: it engages in dialogue with the outside world, but uses environmental disturbances to reproduce its own autonomy and to increase its own complexity. We have thus summarised very concisely the results of the argumentation so far, in the course of which we have focused on some key points of great conceptual significance that now need to be re-assembled.

First of all, we have radically shifted the angle of observation. Our attention is no longer concentrated on an organic whole – the functional system. This system can now be broken down into sub-systems (themselves systems) whose borders can be identified through operations of organisational closure, so that each will be endowed with its own organisation and identity that differentiate it from all others.

Transferring these concepts onto the plane of territorial phenomena, it can be said that the object of observation is no longer the system (often identified with a national entity), but a partial system, in others words an *intermediate entity* (regional, local) included between the macro level (a national economy, at the most extreme the world or global economy) and the micro level, which in economic analysis is represented by the individual economic, social and institutional actors etc.

The theory of autopoiesis in fact introduces the possibility of defining the system in terms of organisation, of identity. The local (regional) system will thus be distinguished on the basis of its own rules of operation which, instead of being dictated from the outside, represent invariants through which the system reproduces its own autonomy in its constant openness to the environment.

It follows that the very concept of (local, regional) *development* must be explicitly reformulated. It ceases to be conceived through quantitative variables (such as gross product per inhabitant) industrial added value or other measures of economic dimensions which make a development process comparable to a linear process for the production of wealth. At the same time, the position of a region in the national or international hierarchy no longer appears compatible with a spatially ordered organisation in which "uniforming" forces and processes spread.

The development of a region (a local system) is now identifiable in much more complex terms, and the system as a whole appears to be a fragmentary configuration, in which a mosaic of different identities and organisational forms participate. In this way, the idea of development is connected to the territorial dimension, understood as a *set of concrete and symbolic relations* which are produced and reproduced as reactions of the (regional, local) system to more general economic and social processes. This implies a plurality of regional organisational "models", thus specificity, irrepeatability and complementary relations between different systems that go beyond the traditional univocal schemes of the core-periphery, dominance-dependency type.

We have already repeated that in the functionalist interpretation the region was assumed explicitly as an open system, i.e. one of the possible sub-systems into which a broader system could be broken down. The relations between regions were translated into a form of development with the purpose of integrating them, so that the openness of the system to flows of energy and information generated organisational forms consistent with the other organisational levels.

One region, for example, would be specialised in certain types of production, following an inter-regional division of labour that ensured an adequate functioning of the system as a whole. The region-system, as an open sub-system of a greater "whole", was thus interpreted as governed by exogenous variables that denied its autonomy, attributing to it forms of passive and adaptive behaviour. It did not open up to the outside except to work as a function of a system with respect to which it loses autonomy.

Let us take, for example, polarisation theory. In its operational application, as we have seen, the pole was assumed as a driver capable of autonomously propagating stimulating effects on its environment. This presupposed the idea that the diffusion of development is achieved without encountering obstacles: space was conceived as

passive, undifferentiated and incapable of organising itself. It is no chance, therefore, that the regional development policies pursued during the early post-war decades gave priority to the openness of the regions to exchanges with the outside, whether in the form of investments or of the spread of consolidated growth models in the areas of a production tradition. Functional integration is founded, in fact, on the specialisation of regional economies in particular sectors of activities (production of raw materials or parts of the production process distributed over the entire national space).

As an *autopoietic system* the region reiterates its openness towards the environment in that, as has been said above, it could not survive without constant flows of energy, matter and information: flows of products, capital, data, population movements etc. This set of relations interferes, however, with organisation that dictates the rules of internal operation of the system, for which the disturbances from the environment could only trigger, but not determine, the course of transformation. The system is also, in fact, autonomous, and the rules of its operation are dictated by the way in which the network of its constituent relations is represented internally, by a rather complex structuring of economic, political, cultural, social etc. relations.

The system cannot, therefore, be interpreted by using the well-chosen metaphor of von Foerster (1982), as a *banal machine*, controllable from the outside and with no behaviour of its own. On the contrary, it will behave as a *non banal machine*, where, in the presence of the same input, reactions neither pre-determined nor predictable are produced, dependent as they are on the internal state of the system. The autonomy of the (local) system will be given by the capacity to behave in its own way, dictated by a historically embedded network of formal and informal relations between actors which distinguishes it from the environment and from other systems (Figure 5.2). From this point of view, the regional identity must be interpreted in terms of its organisational fabric, i.e. the networks between economic actors, individuals and institutions that constitute and reproduce its organisation.

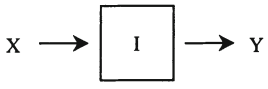
It follows that the idea of the autonomy of complex systems refers to their organisation and their organisational capacity. Being organised, a system possesses the ability to reproduce and transform itself. The closure of a system should not, therefore, be understood in an ontological but rather an organisational sense.

This last point is a fundamental conceptual question: the idea of self-organisation immediately evokes an "order" which emerges spontaneously from actors' actions and represents the condition which ensures, in change, the transmission of its internal coherence. In other words, the *identity* of the system derives from its organisation (which is far from being a simple juxtaposition of elements) and its structuring is the outcome – both dynamic and evolutionary – of collective action. Time thus becomes the decisive theoretical instrument for the study of the trends of complexification of society.

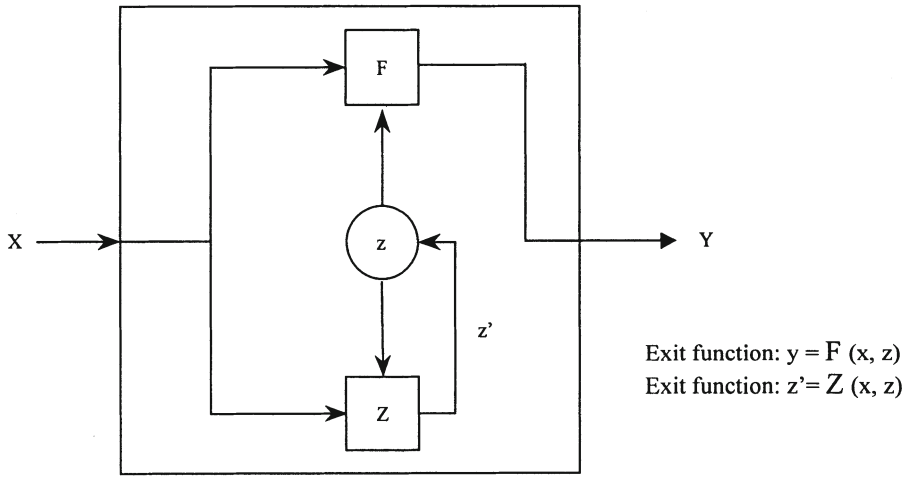
In this light, complexity and territoriality acquire full meaning:

- on the one hand, priority is given to overall logic rather than the logic of the parts and the accent is placed on the interaction between the structure and its functioning;

- on the other hand, territoriality is the expression of a *temporal process* of self-organisation achieved by actors working within a network and therefore expressing synergetic and evolutionary effects. Territoriality thus appears as a fundamental "organisational conquest". Only at a territorial level does a society (and an economic system), in fact, draw advantage from specialisation and integration: for example, reducing transaction costs, contributing to the realisation of collective learning, or to the production of innovation.



Banal machine



Non banal machine

Figure 5.2 - The idea of the machine in von Foerster's representation

Source: derived from von Foerster, 1982.

Development as an increase in complexity

But how is a region-system characterised and how does it change? We have seen that the internal organisation dictates, as it were, the rules of interaction with other systems, i.e. the structure's evolutionary path. But for this to happen, the system needs to be able to create, starting from its own organisation, new or superior states of complexity. In this case, the system can evolve. If this is not the case, it could initiate processes of more or less rapid disaggregation.

In the first case, the system uses the flows from the outside to evolve: it can thus modify its own *structure* (for example, shifting from one manufacturing specialisation to another), diversify itself qualitatively or quantitatively, making itself more complex. Thus, some major metropolitan centres have experienced, in different historical periods, processes of degradation of the old structures in order to endow themselves with new ones (a process that recalls the "creative destruction" of Schumpeterian memory). By becoming more complex, a regional (local) system tends to give itself a multiple composition, in the sense that the actors present, although integrating territorially, interact at the same time with many other environmental levels: in other words, they will be more capable of interacting with the other actors present in the environment (suppliers, customers, institutions etc.).

One possible way of contextualising this complex framework is to turn to an abstract and inevitably simplified representation, aimed at differentiating the elementary typologies of regional (or local) systems on the basis of their internal state and the cohesion between this and the signals arriving from the environment[3]. In Figure 5.3, the axes represent the elementary typologies of complex systems.

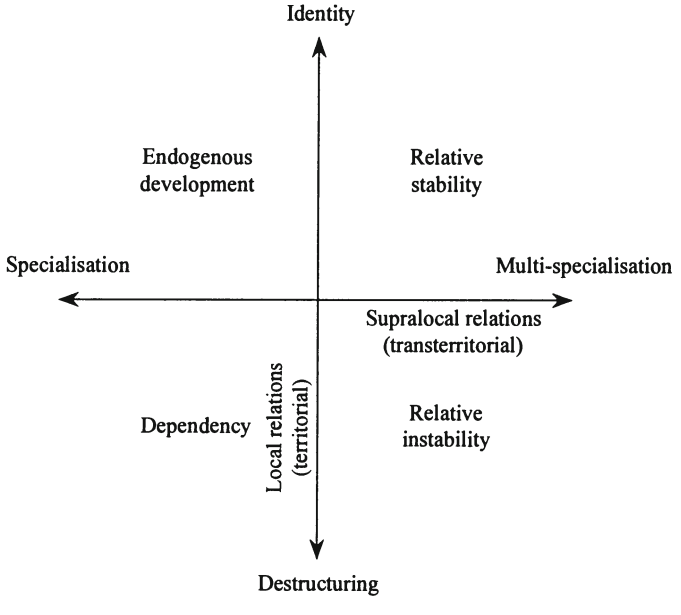


Figure 5.3 - Elementary typologies of complex local systems

1. By the term *local* (or *territorial*) relations, we mean the constituent relations of the system that define its cohesion. This cohesion does not have a binary character meaning that it either exists or it does not, however, but is placed on a continuous axis that goes from a minimum, below which the system does not exist, to a maximum. In this continuum, there are various values that identify:

- the *identity of the system*, as the expression of high organisational closure, and thus the capacity for selection of relations with internal response to environmental stimuli (disturbances);
- *destructuring*, as the expression, in contrast, of low organisational capacities and susceptibility to disaggregation when faced with disturbances of external origin.

2. *Supralocal* (transterritorial) *relations* define, in turn, the field of possible interactions with the outside, i.e. the capacity for supraregional (or supralocal) dialogue and interaction. They are thus an indicator of the degree of the functional endowment of the system (banal, rare, innovative functions etc.) that are or can be enhanced in the broader global system. Again in this case, the value of the functional endowment goes from a minimum to a maximum. Thus:

   - *multi-specialisation* implies the simultaneous presence of multiple functions, usually highly interlinked from both the functional and territorial points of view. Normally of the rare or innovative level, this multitude of functions is indicative of the presence within the local/regional system of a multitude of actors and networks that interact together and "open" to global actors and networks;
   - *specialisation* occurs when the functions played by the system are poorly innovative and the trade sectors poorly differentiated: this implies the presence of few local actors and networks, with the consequence of equally selective (specialised) links with the higher level networks.

Territorial (or local) relations and transterritorial (or supralocal) relations thus define a structurally differentiated scenario, the expression of the dialectic nature of the relationship between cohesive forces (of endogenous origin) and disaggregating ones (exogenous). The areas in the figure represent the two dimensions described above, enabling the identification of the different types of complex local systems.

- *Relative stability*, which combines maximum functional openness (i.e. capacity for dialogue with the outside, given by the plurality and complexity of the functions) and the maximum of internal cohesion and organisational capacity. This type covers the local systems where there is a decided degree of interaction with the outside, and in which the actors that operate within the system have had historically solid networks of communication. The capacity for dialogue with other systems can be developed on the level of financial, decision-making or technological relations, on the basis of the capacity of these systems to produce and reproduce technological, leadership and manufacturing functions. This type would include, for example, the world's major financial and management centres, technology districts, and the great industrial systems of the developed nations.
- *Relative instability*, which characterises systems that are potentially open in a functional sense. The capacity for dialogue with the outside is, however, mainly occasional, due to the relative vulnerability and weakness of internal organisation. As a whole, the instability of these systems stems from the uncertainty of the possible reactions when faced with unpredictable structural changes. Later

"bifurcations" can lead to different evolutions: building and strengthening organisation, or producing local destructuring and fragmentation. An industrial region specialised in traditional production would seem to come under this category when facing technological and market disturbances.

- *Endogenous development*, in which the strong and deeply rooted identity is accompanied by few functional specialisations. As a result, the dialogue with the outside is not very pluralistic. In other terms, it is limited to only a few functional interactions (such as the export of products, the introduction of technological innovations perfected elsewhere). At the same time, the system resists over time, as a result of its embedded specialisation and identity. A highly specialised industrial district, the expression of optimum enhancement of endogenous potential (enterprise, skilled labour), would come under this group.
- The condition of *dependency* characterises, instead, systems that are usually destructured, covering a wide and varied range of local situations. Marked by limited, or still to be developed endogenous capacities, their capacity for relations with other systems is casual – i.e. linked to specific contingencies, and in any case subject to decisions taken outside the system. The processes of enhancing these systems usually entails the search for externalities (cheap workforce, semi-finished products, political and legal conditions etc.) and whose practical results are often the decentralisation of production plants of companies operating elsewhere.

5.5. Two levels of the system

In the "ordered" representations of traditional science, the economic system was conceived as an "organic totality", a single system whose operating rules are valid in all places at all times. The problem was to discover the laws that regulated it, convinced that the infinite variety of economic and social phenomena, despite their apparently different appearances, could be explained in terms of universal laws. The dynamics of development were thus identified by applying mechanical and linear categories (such as the heuristic one of centre-periphery) which simplified and distorted reality. The world was thus represented as a mosaic of different parts, but in a world regulated by linear laws in each part – each region, each locality, in geographical language – was brought into line with a general dynamic, in which the specificities were seen as anomalies to be corrected.

In contrast to this, we have offered a more complex and realistic picture, which assumes the economic system as the sum of many autonomous and different systems, related to each other. In other terms, we have substituted for organic totality the idea of a system that, on the basis of its own rules, reproduces an identity and a uniqueness that were deprived of meaning if observed with an abstract and universal approach. This is a key methodological point which summarises the argumentation so far and makes it possible for us to take on the second part of this book.

Above all, we need to return to two essential points that we reached in reconstructing the evolution of systemic thinking. The first is the recognition that the

local organisation is an organisational component of the overall articulation of advanced societies. Its properties and functions (and therefore the very capacity to instigate its own evolutionary process) do not depend directly on the interaction with other levels above and below, but on its capacity to interact dialectically with them. A common example could be given of any industrial metropolis: facing economic, technological and geopolitical dynamics which cross the environment, the transformation of the production fabric proceeds along lines dictated by its history (professional and entrepreneurial culture, entrenched structures and infrastructures etc.) and will evolve assuming new meanings. In the same way, the environment will modify itself, caused by "meanings" received from the transformations within its different levels of composition. This explains, in conclusion, that the environment and system are transformed together.

The second regards the point of view from which the world is seen. A point of view from inside the system possesses the not insignificant methodological advantage of interpreting a *complex system*, where the rules of operation and evolution cannot be generalised once and for all. Reality, in its complexity and in each single component, presents itself in the form of complex phenomena which intersect and overlap, and whose qualities can be summarised:

- in their *non reducibility* by a priori reasoning;
- in the *unrepeatability* of each and every observable social phenomenon.

In conclusion, the problem arises of the sense to be given to the dynamic of the economic and social system. At this point, it cannot be separated from its epistemological foundations, which I have traced back to the concepts of openness and autonomy. As the categories of simplicity (such as those of "core" and "periphery") have faded away, this dynamic can be interpreted as a complex relation between the *global* and the *local*, understood as inseparable levels of a single proces of territorialization.

These are two metaphorical expressions (now worth introducing briefly in order to avoid possible misunderstandings) which will be examined more systematically in the second part of this book.

The concept of *global*, first of all, does not have a dimensional character. It must not be thought of as "extended" or "general", but in relation to entities which distribute and interact with each other. The global system is therefore understood in a relational sense where its extension is not definable a priori, depending on the system of the relationships that occur between lower level (or local) systems. The global, in other words, is composed of characteristics of the system it connects, modelled upon their specific configurations.

The *local*, in turn, has a meaning not dissimilar to that of region, when understood as a theoretical construct and not simply as an entity outlined by physical or political-administrative borders. This is not a mere segment into which the world can be subdivided, but a "complex totality", capable of autonomous behaviour. The term local, therefore, does not have a dimensional meaning (this does not indicate, in any way, a necessarily small or "peripheral" entity). From the point of view of geography,

this will be a physical space endowed with considerable specificity, which does not have meaning within an abstract or global view. In brief, a local system is not simply a part of the complex system, but is a whole in itself, endowed with its own identity which distinguishes it from the environment and from other systems. It is composed of actors which are aware of this identity and are capable of autonomous collective behaviour. This is, therefore, a system which interacts with the outside according to its own rules, largely informal and yet sufficient to guarantee reproduction in time.

Within a framework of this type, the scales of description are neither separable nor can they be put into a hierarchy. It would not be possible, for example, to order them starting from the global or vice versa. On the contrary, these are part of a single system which includes, at various levels, a dynamic of *actors* operating both at a global level (for example, a global system of production units distributed in a worldwide space) and at a local level (each of these units is, in fact, also localised in one place or local system).

The scenario is unequivocally complex. And it is exactly to render this complexity intelligible, as well as to describe and represent the relationships between the whole and the parts, that the concept of *network* has been resolutely affirmed. The network is assumed here as the representation of *social interaction between actors*, which by their nature can *not* be objectifiable (measurable or quantifiable), taking on a *metaphoric* meaning quite different from the conventional one in neopositivistic theories. This is not a bizarre thesis, nor is it conceptually forced, but it responds to one of the fundamental paradigmatic changes that has come about the recent years in an attempt to give meaning to the representation of social phenomena. On whatever level it is applied, the network representation is a meta-theoretical instrument having common characteristics. It is, in other words, a non deterministic representation which, when applied, gives meaning to the identity of the system.

Seen in this light, the system evolves and expresses itself by way of a relational dynamic involving multiple actors which act collectively, as well as individually. This means that a local actor finds itself interacting globally, not only as a single and distinguishable economic unit, but in as much as it is an expression of a whole of territorialised relationships which involve multiple actors. Morevover, the same local system interacts with the other levels *by way of the intermediation* of the actors belonging simultaneously to a local network and a supralocal (or, by definition, global) network. It follows that the membership of an actor in the (global) network must be interpreted as a dynamic between local, territorial systems, the organisation of which contains complex interactions which are activated between localised subjects within a territorially contained system.

5.6. Conclusions

This representation of economic and social phenomenology is of a highly abstract level. It is however fundamental in order to give meaning to an idea of development no

longer based on the assumption of one possible transformation process, but on the plurality and autonomy of different levels of action and organisation.

This illustrates, at the same time, a state of complexity which occurs when a situation can not be generalised using a priori theories but by integrating the different dimensions of reality together. This is in line with the new face of (fundamentally systemic) science. In recent years, it has subjected the precepts and concepts typical of conventional science to a radical transformation, introducing into its explanatory approach the three fundamental dimensions of *time*, *territory* and *subjectivity*, i.e. the three cornerstones around which knowledge has been refounding itself in order to master a world characterised by uncertainty and instability.

The first point, as we have seen, expresses an evolution not towards equilibrium, but something much more problematic, subject to many dynamics that do not allow predictions of future developments to be made in any way. The revenge of history, which represents the second point, cannot be separated from the spatial, or better territorial, dimension. Space is not, in fact, something dead, the object of calculation and axiomatisation, but a multitude of embedded and uneliminable economic, social, and cultural relations. It is therefore multidimensional and heterogeneous. It cannot be broken down indifferently into parts, just as the parts cannot be summarised in the whole.

The third point is a consequence of the previous ones. No form of knowledge, on its own, is enough to explain a world whose intrinsic complexity cannot envisage a complete explanation. It follows that the observer, not dissociated from its own culture, the language of its own discipline and its own cognitive project, thus comes back into the scientific discourse irremediably. If reality is multidimensional, every interpretation of it will therefore be a point of view in a single process of understanding phenomena which, to be comprehended, must be observed in their many facets.

We shall return to the consequences of this change and the related languages in the second half of this book, in which these three elements (time, space and subjectivity) will be examined in depth and discussed in an attempt to transform them into the starting point for a coherent theory of local development.

Notes

(1) Classical science knew only causal relations: "the sun attracts the planets" was the founding principle of Newtonian mechanics. The myth of modern thinking, which was the expression of classical science, was consequently based on the search for a system of laws and analysis methods that made it possible to reveal the simplicity underlying the many (or infinite) dimensions of reality. With Galileo, Newton and even more with Einstein, a rationalist science was gradually constructed in the search for absolute certainty, and thus aimed at excluding from its own cognitive universe whatever could not be formalised and quantified.

(2) An important contribution to clarifying this came from the linear thermodynamics of non equilibrium (or thermodynamics of irreversible phenomena) with the concept of *dissipative structures*. As we have mentioned, classic thermodynamics did not explain the possibility that a system could evolve while maintaining itself in a state far from equilibrium. With the concept of *dissipative structures*, introduced by Ilya Prigogine, it is instead possible to understand the behaviour of active systems. As they are capable of organising internally the flows that cross them, they are both open and closed. They are open with respect to the energy that they need to stay alive, and closed in their organisation, which they try to protect from the disturbances and disorganising forces that originate in the environment.

(3) These typologies of territorial systems and the underlying logic were illustrated in Conti (1994).

Part Two

CHAPTER 6

Competitiveness and development: from enterprise to place

6.1. Premise

In the first part of this book, attention was focused on the transformations of contemporary capitalism and on the consequent efforts to gain a better understanding of economic phenomena by social science scholars. It particular, it was argued that, in the last twenty years, theoretical reflection gave more importance to places and territories to explain the complexity of contemporary capitalism.

The question posed at this point in our analysis is the following: does the importance of the territory simply reflect the crisis of orthodox theories or can it be assumed as the basis for the construction of an alternative discourse on competitiveness and development?

In this second part, we will attempt to respond positively to this question. To do so, we must first understand whether the concepts of competitiveness and development can be referred to places and territories. In this first chapter, our attention will be concentrated mainly on the company and its relations with territories. As the question of the company was examined in detailed in Chapters 2 and 3, we will limit ourselves here to returning to some aspects already presented, organising them in a way that shows how the territory has become a fundamental element for understanding the evolution of the contemporary economy.

6.2. Company competitiveness: a starting point

The first concept that needs to be considered is, in our opinion, that of *competitiveness* which can be defined, in very general terms, as the *capacity of one actor to be successful over rivals, respecting the rules established by a third party*. In the case of production, this means designing and selling one's own products to the detriment of manufacturers of analogous products, and making profits such as to make it possible to maintain the advantage acquired. In this case, the market is the arbiter. How is competitiveness achieved? In general terms, we can identify two main components of competitiveness: *efficiency* and *innovation*.

The concept of efficiency is probably one of the ones most widely used in the field of economics. In principle, efficiency can refer to the capacity of a company to *exploit to the maximum* the resources available. In orthodox economics, efficiency is almost a

synonym of maximisation, in that an efficient allocation of resources means that any other use of the same resources shows lower utility. Efficiency is thus achieved by maximising the utility that can be obtained from the various scarce resources.

In everyday economic life, efficiency possesses a sub-optimal character, however, in that individual economic actor reasons not in terms of absolute efficiency (the best possible allocation of resources) but in terms of *relative efficiency*. In other words, efficiency is constrained by numerous factors, such as the laws in force, employment contracts, the skills of the workforce etc. The pursuit of efficiency is not therefore a mere attempt to reach optimal allocation of resources, but is rather an attempt to improve the organisation of the company step by step, increasing the productivity of labour, reorganising the production cycle, reducing stocks both in the purchasing and distribution phases, entrusting some production to outside suppliers whilst internalising other phases.

In this sense, efficiency confers competitiveness above all because it reduces production and distribution costs and thus allows the company to be competitive in terms of price.

The second factor that influences competitiveness positively is, as we have said, innovation, which is in many ways the complement to efficiency. While the first refers especially to the organisation of the resources available, innovation instead plays the role of creating new resources, new possibilities of success for the company. The difference between product innovation and process innovation has already enabled us to understand better its effect on competitiveness. Process innovation acts indirectly, for example by increasing the productivity of labour and, consequently, efficiency. Product innovation entails the creation of new products or making substantial modifications to existing ones that have an original and unique feature that can ensure the company a competitive advantage, at least until other manufacturers manage to produce the same item at lower costs (and thus more efficiently).

We have thus identified the two main elements that influence competitiveness, efficiency and innovation. Efficiency guarantees the company the possibility of selling a given product at lower costs (price competition), while product innovation enables the company to put new products on the market (product competition). In turn, these two factors are linked to each other and therefore also have an indirect effect on competitiveness. *Process innovation* can be used to increase company competitiveness, just as efficient organisation, through *imitation*, can allow even a company that is not innovative in itself to be competitive on the market of new products[1].

The traditional theoretical schemes maintained that only a large company was capable of having an efficient organisation and of generating innovation. Competitiveness thus became the prerogative of the corporations and in particular of transnational corporations (TNCs). Our analysis in the first part of the book argued that small companies can also organise themselves efficiently and be innovative. In particular, it was observed that small companies pursue these objectives not by operating separately from each other, but by developing local synergies that enable them to overcome the limits imposed by their small size.

6.3. From internal relations to external relations

We now need to see how competitiveness goes beyond the limited frame of the single company to affect places and territories.

This task demands looking at the company in *relational terms*. It can, in fact, be claimed that the activity of an economic agent consists in *organising the relations* between the many activities which constitute the object of its operations:

- between the various activities that make up the *production cycle*;
- between research activities and production, from the interaction of which the *innovation* process is triggered;
- between the return on capital and that of labour, whose difference determines company *profit*;
- between production and consumption, from which *market success* depends;
- between profits and *investments*.

Internal company relations as the foundation of company competitiveness

A company is competitive if it can organise these relations in such a way as to acquire and exploit an advantage over its competitors. The results obtained in the markets will depend on how economic agents organise these relations.

The questions of efficiency and innovation can also be seen in relational terms. Traditionally, it has been thought that competitiveness and thus success in the market depend on how the company organises four fundamental types of relations:

- *production relations*, i.e. the relations that define the production cycle;
- *procurement and distribution relations*, i.e. external relations;
- *technology relations* which express the way the company produces innovation;
- *relations with the workforce*, given essentially by national norms that regulate employment contracts.

In addition to these specific relations, what counts is the way in which these relations are co-ordinated, in other terms the general organisation of the company's activities.

In company theory, the prejudice that these relations are relatively independent of each other dominated for a long time. The ideal company to exemplify this perspective is undoubtedly the oligopolistic corporation. In it, technological activity is positioned upstream of the entire production process and consists essentially in research conducted within the corporation itself or in the acquisition of technologies produced by others (for example, through the acquisition of patents or the practical application of a scientific discovery). Only once the technology has been defined does production begin, organised essentially inside the company[2] through the vertical integration of the various phases in the production cycle. Relations with the outside world are reduced at this point simply to the pursuit of efficiency in logistics. The problem of procurement for a vertically integrated company is reduced to the need to manage incoming flows of

raw materials and standard semi-finished products, in that the control of production is almost total. As the oligopolistic corporation operates in mass markets, even relations with the final markets are reduced to distribution relations. In mass production, in fact, the relationship with the consumer is not part of the definition of technology and production relations. The manufacturer designs and creates a product that is then sold on the market.

As far as relations with the workforce are concerned, the principle of the functional and geographical division of labour simplifies the situation considerably. This principle separates, in fact, the production cycle into different functions, each of which requires a certain level of skills and specialisation of the workforce. At each of these levels, there is a corresponding price that is determined by the structure of the labour market and national regulations. To manage the problem of the cost of labour efficiently, the corporation must therefore base itself on the organisation of the production cycle. Through process innovation, the company can reorganise its production cycle by using more low-skilled labour and thus increasing the productivity of labour. At this point, the corporation can locate this part of the production cycle in a country where unskilled labour is abundant and cheap because of local legislation. Labour relations thus influence the organisation of production relations in a simple, clear and unambiguous manner.

The links between the different relations are thus of a simple kind. The heart of the company is given by the efficient organisation of production relations. The other relations are organised on the basis of this nucleus so as to provide input (technology, raw materials and labour) and to distribute output (the finished products).

If we want to grasp the logic underlying company activity, we must recognise that the characteristic feature of the corporation lies in the fact that these different types of relations must be organised mainly within the single companies. It is up to the company to decide how to organise the various phases of the production cycle (whether to produce all the components in a single plant or to turn to specialist suppliers), what investments to make to increase the productivity of labour or what qualities to give its products.

Obviously, the orthodox interpretation also recognises the existence and importance of the relations that the company has with the external environment, whether with other companies, the natural environment or the political world (see Chapter 2). To conceptualise the dynamic between internal relations and external relations, recourse is traditionally made to two fundamental concepts: *hierarchy* and the *market*. This distinction, as we have already seen, was originally introduced by Williamson (1975) to explain how companies choose between "make" (internally) or "buy" (from another company). In very simple terms, the choice to "make" is the equivalent of the predominance of the *hierarchy*, in the sense that production occurs within the single company in which hierarchical conditions between its various components prevail. The option to "buy" implies, in turn, that companies buy and sell the product in question on a competitive market. According to Williamson's original formulation, the organisation of production through hierarchical relations internal to the company structure assures the firm full control over the value creation process. However, the

hierarchy implies higher costs that can lead the company to delegate the production of particular goods and services.

The terms "hierarchy" and "market" will recur often in this book, but in a different meaning to that of the original context. Attention will not be turned to the conditions that guide the individual company in choosing between "make" and "buy". Hierarchy and market will, in fact, be interpreted as *two ways of organising relations external to the company*. In the case of the market, the reference to external relations is intuitive. In this situation, the identity of the company is clearly distinguished in the mercantile relationship. The organisation of internal relations in fact confers on the individual company an identity and a history which, at least in theory, are insignificant when it presents itself on the market. In the market, each company possesses a single identity (seller or buyer) and establishes an ephemeral relationship with another company that does not last beyond the mercantile transaction and does not involve the identity and history of the two parties. For the hierarchy, instead, the logical passage needs closer attention.

The prevalence of internal relations and vertical integration does certainly not mean that in the period of maximum expansion of the corporations smaller companies did not exist, operating as suppliers of semi-manufactured goods or of capital goods, such as machine tools. However, the relations between the leading company and its suppliers have traditionally been characterised by a state of *administrative, commercial and technological dependency*. Formally, these were, thus, market relations, but much more similar to relations of a hierarchical type, in which control was not exercised through shareholdings but through relations of another type. An example is the case in which the dominant company regulates relations with the environment from a position of strength that derives from being oligopolist and oligopsonist. Here, the leader projects its own internal organisation onto the external environment, for example by restricting its suppliers through exclusive supply contracts.

To summarise, the concepts of hierarchy and market have been interpreted as ways of organising relations between companies. In the first case, the relationship is one of dependency: the leading company imposes its own identity on that of its suppliers. In the second case, the relationship is purely mercantile: the identities of the parties involved in the trade remain extraneous to each other.

Rediscovering external relations

Some profound transformations have, however, made this interpretation of competitiveness and of relations between companies inadequate for the explanation of complex phenomena and processes.

- Firstly, there has been a progressive dissociation between the prosperity of regions and countries and the competitiveness of the companies located there. On the one hand, numerous areas of early industrialisation have seen a progressive reduction in their production capacity, while continuing to host the headquarters of important transnational companies. On the other hand, where the economy has given weak

signs of recovery, this has been accompanied by unemployment, stagnation in real wages and reduction in the welfare state.

- Economic development, even in rich countries, is distributed in a "patchwork" pattern, with the rise of areas highly specialised in the production of goods and services with high added value: luxury consumer goods, capital goods, scientific research, high technology etc. This growing *regional specialisation* can in fact appear curious in an era in which telecommunications, computers and the drastic reduction in transport costs should make the resources ubiquitous (Storper, 1997). If competitiveness depends on the company's relations, then each economic agent should be able to produce its goods successfully anywhere in the world. The fact that the regional specialisation and spatial concentration of competitive companies have, instead, increased should lead us to look for new interpretations of location advantages. It should also be observed that this patchwork industrialisation is not identified purely with the location of major transnational companies. More often, there is a concentration of small and medium-sized companies specialised in luxury consumer goods or highly sophisticated capital goods.

These transformations can be interpreted by reconsidering the *role of external relations* between companies and thus of physical proximity. The change appears evident if we consider these two processes in relational terms.

The separation between the competitiveness of the company and prosperity of the region clearly indicates that the company's internal relations no longer determine external ones. A company can, in fact, organise its internal relations effectively without this having a beneficial effect on the organisation of external relations. For example, the fact that a company invests its own profits in new machinery can give it a competitive advantage while, at the same time, damaging relations with the workforce. Similarly, the adoption of a particular production cycle can lead to the bankruptcy of numerous sub-contractors and an impoverishment of the local production system.

The production specialisation and success of well-defined areas in industrial countries attributes, in turn, greater importance to external relations and physical proximity. It is clear, in fact, that what drives specialised companies to concentrate in limited areas are particular benefits that are difficult to control and reproduce inside the individual company; they depend, on the contrary, on the establishment of certain relations between different companies, but contained within a given territory.

It follows that the relations that determine competitiveness are increasingly external instead of being managed inside the company. As an example, we can consider how the fundamental company activities have been changed by looking outside its boundaries:

- the *production cycle* increasingly involves specialised suppliers, many of which are no less important than the leader company;
- the *innovation process* is no longer contained within the company boundaries but is triggered by the interaction of various actors (often located in the same area): suppliers, customers, public and private research centres, designers, consultants etc.;

- as far as relations with the *workforce* are concerned, greater importance is now assumed by those outside the company, between the technicians and experts of customer and supplier companies. For example, deverticalisation now also involves the supply of services. Many companies have, for instance, entrusted logistics and procurement to specialist suppliers. In some cases, we have even seen workers transferred from the main company to service companies, with the consequent creation of considerable union problems, linked to the passage from one employment contract to another;
- the *markets* are becoming more and more differentiated, with needs and demands that cannot be controlled perfectly from inside the company: consortia and associations of companies are essential for success in global and complex markets (one example is the role of the chambers of commerce in the growth of the economy of the German *lander*);
- as a consequence, investments are not identified solely with the acquisition of resources inside the company, but assume the character of *investments in relations*. Establishing a relationship with a prestigious customer or participating in European Union innovation projects are no less important investments nowadays than the purchase of a new machine and demand a considerable commitment of financial and human resources.

Earlier we saw how all four types of relations that constitute the activity of the company (production, procurement and distribution, technology and workforce relations) are traditionally seen from the perspective of the individual company. We now need to see how the passage from internal relations to external ones radically changes these relations, attributing a complexity never observed before to economic and industrial activity.

The control of production is, for example, less and less concentrated within the company hierarchy, and so relations with other companies become of vital importance for competitiveness. As an example, we can cite the case of the industrial districts, which have occupied a key role in the contemporary debate. The now considerable literature on the Italian industrial districts has spread awareness that an important part of production in highly industrialised countries like Italy and Denmark occurs in small and medium-sized company systems, where, lacking a dominant company, the organisation of production depends on the interaction of numerous companies independent of each other.

The relations between production and consumption have gradually changed in recent decades. Companies no longer design and manufacture their products independently of the outlet markets. Success in the market demands specialisation and adaptation (customisation, in a word) of production to the needs of different customers and different markets. Whether the products are cars or luxury consumer goods produced in industrial districts, the specificity of local markets plays a fundamental role in the organisation of production. The traditional production cycle that envisages conception, design, production, stocking and only finally the distribution of

standardised products to a mass market seems to have been definitively snapped by two distinct mechanisms.

On the one hand, the new spread of international capitalist trade has reached almost all of the planet, spreading to countries once excluded from the mass consumption of goods and products. Above all, through the means of communication and advertising, this has created an intense process of sensitisation for consumer products assumed as full-blown status symbols. A global market has thus been created for the products of the Western TNCs. This market is not, however undifferentiated and uniform as at the advent of mass consumption. To penetrate local markets and create new needs in Western markets, saturated with products, the corporations have had to pay the price of adapting to demands from different local cultures.

On the other hand, technological development and the reduction in transport costs have made the production of differentiated and customised products compatible with the achievement of economies of scale. The adaptation of production to the changed needs has been pursued through a new functional and territorial division of labour. Production has largely been decentralised to developing countries, where low labour costs make an increase in competitiveness possible. The low intrinsic quality of the goods manufactured in this way has been compensated for by immense investments in advertising and design.

A fundamental role in determining the value of a product is played by creative activities, linked to design and communication, located in the major world cities and generously paid. The case of Nike is probably the most recurrent and emblematic example of how mass production can be pursued today through the division of labour (Donaghu and Barff, 1990). Nike occupies a leading position in the production of sports articles without effectively possessing a single production plant. The heart of this company is made up of a nucleus of top managers and designers who take great care in conceiving new products and launching them on the market. Production is instead entrusted to a vast number of sub-contractors located in countries of the Third World where Fordist-Taylorist production, far from disappearing, reaches a peak in the total absence of union protection and total dependency of the suppliers on the customer.

Something similar could be said about technology and workforce relations. Technology is no longer something extraneous to production. Product and process innovation does not occur upstream of actual production but is increasingly integrated with it. Design occurs by involving the operational units, whether they are internal to the company or represented by other companies. Similarly, the importance of the experience of those who have worked in production for years and years is acknowledged as they represent an important partner for technicians and engineers in the innovation process. It should also be observed that the innovation process cannot be rigidly confined within the boundaries of the individual company but often originates with the collaboration between different actors. This collaboration occurs on different levels. The formal contacts between the research centres of different companies and universities certainly play a leading role in this process, but the friendship and personal acquaintance of technicians should not be underestimated.

Innovation often starts out from personal contacts that go beyond the workers' functions and official roles. As an example, we can cite the case of Motor Sport Valley, a cluster of companies operating around Cambridge, which holds the world monopoly in research and production for sports cars and components, both for Formula 1 and the other minor formulas. As a recent study by Pynch and Henry (1999) has argued, despite the need for secrecy and the high level of competition between the teams in this industry, the network of acquaintances that each technician has built up in his career is mobilised incessantly to acquire new information on the most recent innovations. In the case of Motor Sport Valley, work and personal life overlap to such an extent that even gossip and the informal exchange of ideas and information at the pub or supermarket can play a key role in the innovation process. In this way, individuals' contribution to company competitiveness is not limited to the provision of their labour, but is fuelled directly by the complex network of the personal and social relations in which the workers are rooted. The workforce thus ceases to be a mere factor of production that must be managed efficiently through contracts, working hours, and functional division of labour. Workers become an essential element that links and co-ordinates the activity of the company with the external environment.

The consequence is that external relations tend no longer to be based on the mere efficiency of the organisation of logistics, in that the problem for the individual company is not just to ensure procurement and distribution, but to manage an increasingly substantial part of its activity outside its own boundaries.

The limits of the market and the growing role of co-location

It can thus be said that the growing importance of relations outside the company corresponds to an effective increase in the complexity of the economy and production which cannot be completely explained with the shift from the hierarchy to the market, from "making" to "buying". Competitiveness demands that there be stable and reliable relations between the various moments of economic activity which cannot be defined as mere market relations, by definition impersonal and changeable. When an automotive manufacturer and one of its suppliers enter into a relationship that embraces the entire production process, from design to manufacture, much stronger bonds are created than in a pure market relationship. It is much more unlikely that the customer will break off the relationship when a more economical alternative appears, in that a relationship with a wealth of shared experience and knowledge has been created between customer and supplier.

It emerges clearly from these considerations *that the external relations on which the competitiveness of companies increasingly depends are, generally, spatially contained.* As we have seen, they are not in fact immediately classifiable in the two traditional categories of hierarchy and market, but imply a greater degree of complexity. To establish collaboration between a company and a research centre, to exchange information between the customer's and the supplier's technicians, or to win high quality contracts, the relationship needs to have characteristics once neglected by

economic analysis: personal acquaintanceship, trust, continuity, shared values, skills and language etc. These characteristics clearly depend on the *location of the actors in the same territory*. This is not a question of the importance of mere physical proximity which allows transaction costs to be reduced. Geographical proximity counts as a vital condition for the creation of a community of economic and social actors based on local customs and values, on the continuity of personal relations, on acquaintanceship and trust. The importance of external relations is translated into the importance of local relations and defines the centrality of the territory as the "natural" place where the economic community consolidates its own competitive advantage in everyday practice. In this sense, competitiveness cannot be separated from *embeddedness* in the territory (Grabher, 1993b).

Consequently, *it becomes possible to talk about the competitiveness of territories instead of just the competitiveness of individual companies*. The separation between the fate of regions and that of companies has driven many local administrations to set up programmes to renew their manufacturing structure and to bring out the best in local resources. Thus, terms like "regional competition" and "urban marketing" have spread in urban and regional planning. Reduction in pay rigidities, assistance with location decisions, and improvement of disused industrial areas are only some of the measures adopted by local government to attract new investments that compensate for the crisis in the existing manufacturing fabric (Cheshire and Gordon, 1995).

The definition of competitiveness as an attribute of places is, however, an extremely delicate issue. As long as the question of competitiveness is referred to the individual company, there are no particular problems of an epistemological type. The company is, in fact, an entity with well-defined boundaries that can easily be assumed as a subject (e.g. the metaphor of "juridical person" to express the legal entity of a firm) operating with its own will and individuality. One also assumes that it is a purely or mainly economic subject, with clear and declared profit goals, for which talking of competitiveness has a legitimate and easily admissible meaning.

Referring the concept of competitiveness to a place means instead that some inescapable ambiguities need to be faced. The first problem is that of the borders of the place. On what geographical scale can competitiveness be attributed: to the city, the region or the nation? Or again, talking of the competitiveness of a territory can result in closure, verging dangerously on parochialism and chauvinism. Unsurprisingly, many discourses on local competitiveness have been accused of being a zero sum game, in that attention is not focused on creating new wealth but simply attracting inflow of existing capital to the detriment of other areas (Hudson, 1999). Talking about the competitiveness of places also implies attributing to a social entity, a territory, an explicit economic purpose. This is undoubtedly a dangerous metaphor. We have seen that the importance of the external relations of companies brings into play the entire fabric of social and cultural relations of a place. Talking about the competitiveness of places implies assuming that these relations have not only an economic meaning but also an economic purpose.

6.4. The cluster as the subject of economic activity: external economies and joint action

In this way, a discourse on territorial competitiveness risks discontenting both experts in economics and company organisation and scholars of human cultures and societies. For the former, shifting the discourse from the company to the territory means introducing into the analysis of the company factors that are not quantifiable and thus not controllable by the traditional categories and methods of economics. Talking of territory means, in fact, talking about identity, history, social cohesion and conflicts, in other words dimensions extraneous to the operational ends typical of the economy. For the latter, referring such a markedly economic and commercial concept as competitiveness to places can hide an attempt to subject social and cultural structures to the categories of economics, thus committing the sin of economicism (Crang, 1997).

In the coming chapters, we will attempt to outline a perspective on the relationship between competitiveness and places that does not mortify the wealth of symbols and meanings that are attributed to places and human societies. In this chapter, our aim is to offer economic arguments in favour of the attribution of the concept of competitiveness to places.

To do this, we will begin by considering some of the interpretations of the problem of external company relations, introducing in rapid succession two concepts which have radically changed the way of looking at production:

- external economies;
- joint action and co-operation.

The importance of external economies

The main concept with which economics has tried to systematise the problem of the external relations between companies is that of *external economies*, traditionally traced back to Marshall's studies of industrial districts. By external economies we mean the fact that part of the action of individual companies produces benefits which the company cannot appropriate entirely. These advantages thus become available for other companies located in the surrounding area, almost as if they were a common asset.

According to Marshall (1919) there are three types of external economies in industrial agglomerations:

- the creation of a vast, specialised labour market that offers the companies located there the advantage of easily finding skilled and already trained workers;
- the presence of producers of specialised intermediate and capital goods;
- the creation of technological spillover given by the fact that innovation spreads rapidly among the companies in the district.

Despite the contribution of Marshall to the definition of the principles of orthodox marginalist economics (1890), this approach has usually neglected the role of external

economies in determining the success of economic activities. The main reason for this disinterest is that, from the neo-classical point of view, externalities are judged to be *inefficiencies of the market* (Samuelson and Nordhaus, 1995). The inefficiency consists precisely in the nature of externalities, in the fact that the actions of a company produce effects external to the company and not appropriable by it. In an economy made up of individualist and maximising agents, the fact of not being able to fully appropriate the product of its action by stopping others from enjoying it is necessarily interpreted as an inefficiency. Thus, from the point of view of the individual company, external economies reduce the efficiency of entrepreneurial action with a negative effect on competitiveness. To understand this judgement better, a distinction should be made between *pecuniary external economies* and *technological external economies*:

- the former are characterised by the fact that they go to the advantage of companies located in the same area, cutting costs without reducing the efficiency of other companies. This is typically the case of the availability of a specialised labour market or of a machine: the individual company benefits from the reduction in the cost needed to find skilled workers;
- in contrast, technological external economies are not mediated by any market relation. They stem from the fact the individual company cannot maintain exclusive possession of the skills and knowledge that it generates. The latter "move" territorially with the passage of workers from one company to another, through the personal acquaintanceship of workers in different companies, and through all the social occasions which involve people working in the production of goods and services.

While the former play a positive role for the competitiveness of individual companies, the latter bring, according to neo-classical economics, a situation of under-investment, in that individual companies are less stimulated to invest and prefer to draw advantage from technological spillover. Consequently, technological external economies act to the detriment of the competitiveness of the individual company.

However, this consideration finds an important contradiction in numerous case studies. If we think again of the case of Motor Sport Valley, where the technological externalities are the main factor that explains the competitiveness and success of the Formula 1 companies located in close proximity to each other (Pynch and Henry, 1999). Or consider Silicon Valley, where the existence of technological externalities between high-tech companies has been a factor of attraction for companies initially located elsewhere (Saxenian, 1994).

From external economies to collective efficiency

To fully understand the role of technological externalities, it is necessary to shift attention from the relations internal to the individual company to the external relations between companies. If we no longer consider the question of efficiency as referring to the individual company but to groups of companies linked to each other by different types of relations, the meaning commonly attributed to external economies changes.

External technological spillover becomes internal to the group of companies that share the same location. In this sense, it is possible to talk of *collective efficiency* (Schmitz, 1995). This concept reflects the idea that efficiency and competitiveness should not be assessed exclusively within the company, but should be referred to groups of companies.

At this point, the *problem of the subject* arises. We have in fact seen that that one of the assumptions that supports the concept of company efficiency and competitiveness is the fact that the individual company can be considered an autonomous subject, with its own individuality. If we shift from the individual company to the group of companies, the problem is thus posed of how collective efficiency is expressed in a collective subject.

The exclusive reference to external economies evades, in reality, the problem of the collective subject, in that they operate independently of the will and consciousness of the individual companies. Externalities are in fact by definition something unexpected and not desired, through which a sort of invisible hand operates, producing a collective efficiency without any subject taking action. External economies thus finish operating above the economy and the company, without a deliberate will to act being expressed. This would lead to an underestimation of the capacities of self-control and self-regulation of the economic system (see Chapter 5).

On this point, Schmitz distinguishes between two elements that determine collective efficiency: external economies and *joint action*. This second element underlines the deliberate and conscious nature with which groups of companies undertake common action for the purpose of achieving complementary ends. Joint action can concern the most diverse aspects of company activities, from joint purchasing of machines to the creation of a research project, from the organisation of a fair to the creation of a body to support the export of SMEs.

What is important here is that joint action is distinct from external economies because of its *deliberate and voluntary* character. The importance of joint action and more in general of co-operative behaviour allows, in the final analysis, the consideration of groups of companies as full subjects of economic action. It is thus possible to refer the concepts of efficiency, innovation and competitiveness to this collective subject which, starting from the pioneering study of Porter (1990), has traditionally been indicated by the term *cluster,* intending by this a sectoral and geographical agglomeration of companies. The rise of the cluster as an intermediate entity between the individual company and the economy as a whole is, however, only an intermediate stage in the reasoning which will lead us to refer the concepts of efficiency, innovation and competitiveness to territories.

The central point is given by the geographical ambiguity of the concept of cluster. It is true, in fact, that talking of cluster means assuming geographical proximity as a fundamental element. If we are in the presence of mere functional proximity (thinking of two companies that operate in two different phases of the same production cycle) without physical proximity, then we are in the presence of a filière and not of a cluster. It is therefore undeniable that that the cluster has a geographical meaning that can only be defined with reference to the proximity between companies.

The relationship between cluster and the historically and geographically defined territory in which the cluster is located remains instead *vague* and *fuzzy*. In the final analysis, the cluster could be thought of as a way of organising relations between companies, founded on external economies and joint action, virtually reproducible in any place. The now extensive literature on the experience of clusters and industrial districts located in developing countries confirms in part this conclusion. From this perspective, the clusterisation of emerging economies would not represent anything other than the contemporary transposition of the processes of polarisation that characterised development policies in the seventies: proximity does not necessarily implies territoriality.

The attribution of the concepts of efficiency, innovation and competitiveness to places, instead of to clusters, is thus of great significance. It means abandoning the search for recipes for economic success that can be applied at any latitude. Above all, it means asserting the understanding of places as the starting point for any serious reflection on development

6.5. Territory and economic agency

To move from the individual company to the territory as the scale of analysis to understand competitiveness, it is necessary to take a step back and consider relations, on whose organisation the competitiveness of companies depends, as we have seen.

On economic institutionalism

Orthodox economics assumes that economic relations are organised in observance of a number of fundamental laws, the most important of which states that every economic agent acts to maximise its own utility.

This perspective is opposed by a vast movement which, oversimplifying, we could call *institutionalist* (Nelson and Winter, 1982; Hodgson, 1988, 1993 and 1999)[3]. Institutionalism in fact assumes an evolutive vision of economic relations for which relations are not organised according to the universal principles of marginalist and neo-classical economics, but in ways that are historically and geographically defined.

In general terms, we can call the various ways of organising relations *institutions*. From this perspective, capitalism does not develop by following "natural" and necessary laws, universally valid for any place and any time, but following instead institutions which are the product of a historically and geographically given *culture*.

Although this is an extremely elastic and general concept, it is possible to identify the institutions as *stable* and *shared* ways of organising relations. In other terms, the institutions are the ways of organising relations around which there is social consensus and whose value does not finish with the single relation but offers the basis for later organising other relations. Institutions can, moreover, assume many forms and contents. First of all, institutions can be either formal (for example, a contract) or informal (for example, habits and customs). For instance, employment agreements and

the recognition of property rights are two fundamental institutions of capitalism which are usually regulated formally by the authority of the state, thus taking the form of the employment and property contract.

Other institutions can be both formal and informal. Think of business ethics. The imperative that "business must be conducted ethically" is undoubtedly an institution, in that it contains a statement that regulates the organisation of economic relations. It can also take on a formal status (through the definition of legal norms that regulate competition and even through the creation of a body responsible for this) just as it can be informal through the social condemnation of the entrepreneur that acts improperly (Johannisson *et al.*, 1994).

It will be remembered that our analysis of the external relations between companies started from the realisation that economic success increasingly follows a "patchwork" pattern with great regional differentiation, both in terms of specialisation and of prosperity and competitiveness.

This apparent anomaly has been partially explained by the introduction of a new economic actor, the cluster. Through external economies, and especially through joint action, the cluster can be assumed as an actor to which the concept of competitiveness refers. We have also seen how the competitiveness of the cluster is at least in part due to the common action of its members. This common action takes the form of co-operative behaviour which is largely specific to a particular cluster and is therefore spatially and temporally contextualised. Expressing this concept in institutionalist language, we could say that joint action is supported by *local institutions*, which are in part supralocal and in part are local creations, the result of that particular historical and geographical context.

The question of the competitiveness of the cluster thus becomes a question of competitive local institutions, i.e. the local forms of organisation of relations between economic agents that confer a competitive advantage on the cluster. To complete the frame of interpretation, we must at this point introduce two other collective actors: the local community and organisations.

Economic, socio-cultural and political institutions

The joint action of the cluster is based, as we have seen, on institutions which are largely local and include non mercantile relations (such as co-operation between customers and suppliers to find product improvements). These institutions are thus grounded in factors like trust and the sharing of customs and values which depend substantially on the history and tradition of the local community.

Innovation and economic success thus seem to be influenced by what Marshall called "industrial atmosphere". This has a strong geographical connotation and leads us to think of a condition of marked irreproducibility of development and, at the same time, suggests an impalpable and inexplicable dimension, irreducible to the rigid models of orthodox economics.

However, this irreducibility does not mean that this metaphor cannot be used in a positive discourse which identifies with relative clarity the elements of this

atmosphere, reducing its complexity without subjecting it to distortion and simplification.

The local community, operating with continuity in the same place, gives rise to a series of norms, habits, forms of behaviour, customs and traditions that influence the action of the community itself. In this sense, the action of the subjects gives life to institutions that remain even after the disappearance of the subjects. In their turn, these institutions will condition the action of new subjects operating in the same place and will in turn be modified by them.

This cycle of transformation of the local institutions that underlie the web of social, cultural, religious and family relations etc. do not create a separate world, isolated from the economy. The institutions that regulate the external relations between companies are not detached from and independent of the broader socio-cultural institutions. The creation of trust between economic actors cannot ignore the presence of trust that may or not exist in the relations that regulate the social and cultural life of a community, the social capital available to society in everyday life (Putnam, 1993). In this sense, these institutions are the local memory.

However, not all the institutions assume the form of routine and unwritten rules. On the contrary, the tendency in society is to transform these immaterial institutions into codified rules and norms, for example regulations, laws and contracts. This process of codification of the institutions demands two conditions:

- a conscious and common desire must be present in society to transform the implicit into the explicit, the tacit into codified. The metaphor that describes the birth and maintenance of modern societies as a "social contract" is emblematic of this process;
- to make socio-cultural institutions explicit and codified, the work of *organisations* is almost always indispensable. These collective actors which represent different desires must reach a definition of the institutions through discussion and negotiation.

We will thus call "political institutions" the institutions that are formalised through this process of organisations building. They are political in the sense that they emerge from the confrontation between different desires and projects.

Any collective group always contains at the same time socio-cultural institutions, often unconscious and uncodified, and political ones, codified in norms and regulations. These different institutions not only co-exist but influence each other. Political institutions are often conceived starting from socio-political ones that existed before the norm and the law. Modern jurisprudence actually admits that custom can be considered as sources of law where formal laws are missing. Indeed, it is frequent for informal and unconscious socio-cultural institutions to stem from age-old political institutions fallen into disuse which continue to exercise an influence on society in the form of customs and habits.

It is now evident that economic institutions not only have relations with socio-cultural institutions but also with political ones. Of course, the relations with the most diverse organisations (public research centres, universities, local administrations, trade

associations and so on) are no less important than those between companies (Amin and Thrift, 1994). The orthodox economic perspective has often looked with suspicion on the public and administrative dimension of economic activity in that is considered extraneous to the laws of the market. In this way, all relations that link companies and organisations of various kinds (public administrations, universities etc.) are excluded from economic thinking in that they are accused of altering the rules of the free market and hierarchies. The relations with organisations have, instead, especially complex motivations and mechanisms, involving the fragile balances of public policy and planning. The relationship between companies and the public administration is certainly not a mere market relationship, but clearly depends on cultural, political and ideological variables. For instance, the urbanisation costs that a company pays to a municipality where it intends to locate are not set by market rules but depend more on the political will to facilitate or hinder the location of industrial plants.

To summarise, we have seen that the economic success of companies depends not only on their capacity to regulate relations internally but also to on their external relations. The organisation of these relations (which can essentially be traced back to the external economies and joint action) makes the understanding of economic success depend on the study of specific "competitive institutions". The latter are not, however, of a purely economic nature, but emerge more from the interaction of different types of local institutions: economic institutions, socio-cultural institutions and political institutions (Figure 6.1).

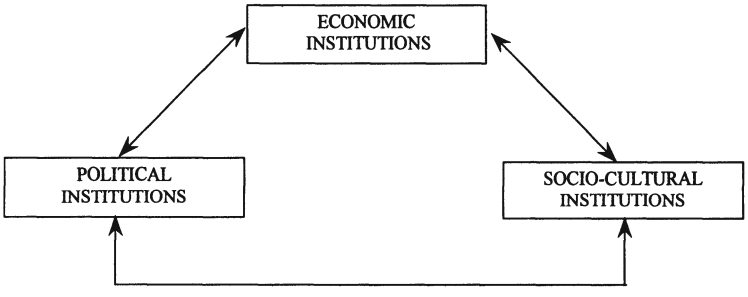


Figure 6.1 - The creation of competitive institutions

The introduction of these two further institutional levels has the effect of irremediably anchoring the action of the clusters to the history and geography of places.

6.6. Economic development and local development

From what has been said so far, a peculiar manner emerges of interpreting the competitiveness of territories, according to which a territory is competitive to the

extent to which it possesses and sustains the rich fabric of institutions on which the competitiveness of local companies depends. Contemporary location factors are no longer only physical (such as infrastructure, proximity to markets and sources, accessibility etc.) but above all involve not easily transferable relational and socio-cultural aspects: manufacturing tradition, skills, trust etc. A territory that possesses, defends and develops these "relational" factors supports not only the competitiveness of companies and local sectors but can also attract companies that need to *embed* themselves in order to enjoy local competitive advantages.

We now need to briefly evaluate how what has been said about local competitiveness can be applied to the second central concept in economic thinking around which our theoretical framework pivots: that of *economic development*.

The term "development" applied to society and economics has turned out to be a powerful biological metaphor, pregnant with implicit values and designs that it is useful to recall. The idea of development indicates the *passage of an organism through successive stages and transformations which lead it to maturity and fullness*. If we look closely, development implies the possession of two essential certainties:

- that there is a clear idea of what the final state should be, and
- that information is possessed about the stages that each organism should go through in order to reach it.

The possession of this information makes it possible to predict the development of the organism and to understand in which stage it is located, whether it is approaching the final stage or not. Another consequence is that the organisms which do not follow the path set become abnormalities, to be corrected or eliminated.

Adopting this method, economics has traditionally interpreted economic development as *necessary and continuous progress towards a condition of equilibrium in which market laws ensure efficiency and equity*. Naturally, in the literature on economic development there are numerous perspectives and nuances in which the solution of the inequalities is not automatic and necessary, in which equilibrium is not ensured and in which market mechanisms aggravate the conditions of underdevelopment rather than solving them (see Chapter 4). Nevertheless, the distinct perception of development as an intrinsically positive process remains, to which corrections can be made but whose goodness is unquestionable. Capitalist development remains, therefore, the model to aim for. A *historically and geographically circumscribed experience* (the economic growth of the Western countries in the last two centuries) becomes the turning point against which to measure the development of a civilisation (Sachs, 1992). All social, cultural and economic experiences are thus defined against the benchmark of economic growth: development on one side, underdevelopment on the other.

It has also been said that talking of development means having a clear idea of the whole process, of the successive stages in this ascendance, and not only of the final state to be reached. This elementary statement explains at least in part the hunger for indexes and data that scholars of development can never satisfy (UNDP, 1999). Inevitably, when faced with a complex "object" like a society, the need for controls

and measurement is necessarily translated into simplification and the loss of numerous elements of information. Normally, development indicators are obtained by calculating the *value produced within the economy*, on the basis of an elementary sophism: those who possess most value are the most developed, those who produce new value are developing better. The term *value* is understood here in a fairly broad sense: it can be gross domestic product, the balance of trade, the number of people in employment, years of education or life expectancy. The concept of development inevitably implies the idea of a value produced by society, however it is understood and measured.

The traditional approach to the question of development shows clear analogies with the perspective that views competitiveness as depending exclusively on the strategic decisions of individual companies. Firstly, there is a clear relationship between company competitiveness and the achievement of development goals. In fact, if competitiveness and the success of economic activities depend on the behaviour of individual companies, then economic development can be created "artificially" even in places which have not participated so far in the process of economic growth. According to the neo-classical theory of development, one of the main mechanisms of re-equilibrium between developed countries and underdeveloped ones is the following:

- companies would be attracted by developing countries with a low cost of labour in that they offer a higher return on capital;
- the consequent relocation would trigger processes of convergence between developed and less developed economies.

If we look closely, the condition for this to happen is that competitiveness depends exclusively on the internal relations of companies, which would thus be free to reproduce their own organisation anywhere in the world.

Secondly, focusing attention on the competitiveness of the individual company makes it easier to measure economic development:

- first of all, it is natural to observe that the purpose of competitiveness is to *produce value*, of whatever nature this is;
- if competitiveness depends principally on how companies organise production internally, then the production of value depends on these relations. In other terms, the value is what is produced by companies: profits, investments, jobs;
- if the contribution of external local relations is negligible, the value that they produce can be ignored: trust, traditions, personal acquaintanceship etc.;
- in this way, the measurement of the value produced within an economy is the sum of the value produced by the individual companies.

It is worth repeating that we can give the name we prefer to this value (gross domestic product, employment created, investments); nonetheless, it is the consequence of a particular interpretation that attributes unquestioned centrality to the company as the key element in the economy.

In contrast, if we refer competitiveness to the clusters of companies and to the territory, it is very difficult to quantify economic development. Paradoxically, a territory could have a lower performance than other countries in terms of GDP but

have developed its own local institutions. This development of institutions could be a success in itself but, above all, could constitute the base for relaunching local economic institutions and thus competitiveness. However, although important, the development of institutions is only partially measurable. How can one say that a certain institutional asset is better than another? And how is it possible to predict the future evolution of the institutions and their contribution to economic development?

To summarise, referring competitiveness to individual companies is consistent with the image of economic development as a mechanical process of growth towards a final equilibrium in which inequalities are eliminated. This consistency is given by two main reasons: if competitiveness depends solely on individual companies, these are free to locate in developing countries and regions and to begin processes of re-equilibrium; if the value produced in an economy is assumed as being produced within companies, then it will be sufficient to add up the results of the activities of the individual companies (in terms of product, exports, investments, employment) to obtain a measurement of development in that place and at that given time.

Traditionally, economic thought proposes a general and abstract interpretation of the organisation of societies, in which places and territories merely offer empirical comfort to the laws of the economy or, in the worst case, represent annoying exceptions, destined to be eliminated by economic development. Thus, development theories have usually been a-territorial or, at most, spatial, to the extent that they assume space (in terms of distance and proximity) as a variable capable of explaining given economic behaviour, such as the location of activities or the permanence of comparative advantages (Armstrong and Taylor, 1993).

If the concept of competitiveness is referred instead to the territory and not to the individual company, the perspective on development changes radically. The relations external to companies but internal to places, we have said, are of a profoundly different nature to those explained by traditional location factors. Elements like trust, personal acquaintanceship, tradition and know-how are not universal and ubiquitous. They define competitive advantages which are particular to individual territories and thus identify *multiple development paths*. If the competitiveness of a company does not depend on internal relations but on relations rooted in the territory, its contribution to development varies from place to place.

Development is then local in the sense that the development of prosperous regions does not represent the adaptation of the local economic community to the eternal laws of capitalism but depends on how relations internal to the territory are organised to confer competitiveness on actors operating there. Furthermore, local development is not even identified with the creation of income or jobs, however paradoxical this may seem. The subject of local development is the reproduction of the local conditions for the competitiveness of the companies located in the territory. Economic development is nothing other than a consequence of the maintenance or creation of local competitiveness and, therefore, of local development.

This logical step is fundamental for understanding how the relations between territories and the economy evolve. In fact, the local factors of competitiveness, in addition to being geographically specific, are produced and reproduced over the long

times of history, and are used by local companies to compete on global markets, in a changed context of competitiveness, determined by space-time compression. In this way, the perspective of local development offers a connection between the two speeds of the capitalist economy (the slow speed of the creation of resources and the lightning speed of space-time compression). In other words, it makes it possible to consider simultaneously the persistence of local traditions and identities and the frenzy of the global market. What must be clear is that local development is *not* a mere variation on orthodox theories of economic development, but an epistemologically and methodologically different perspective to what preceded it.

This radical leap must be explained in all its diversity and radicality for the change in method to become intelligible. In effect, overcoming the misunderstandings linked to the concept of local means going beyond the reductive and utilaristic interpretation of territory, recognising that it is not only the support for activities defined abstractly for the most diverse purposes. Territories must be considered as a *unicum*, as consistent systems of particular relations that link each community to its environment and, thus, cannot be judged according to their conformity with an abstract idea of development and centrality.

As an initial approximation, the concept of local development is imaginable in *evolutive* terms, as continuous transformation, in time and space, of territories (Hodgson, 1999). The very idea of development is strongly teleological and implies the perception of a positive change, of an improvement in material and spiritual conditions. In the case of local development, improvement is not identified, as in traditional theories of development, in the convergence towards a universal model of happiness and well-being. The "positiveness" of development is defined in the local, in every "local", in that the identity, tradition, ecosystem, culture and values expressed by that territorial community are fundamental parameters of development, however difficult to measure.

The fact that development is evaluated in the local context implies, as mentioned, that the concept of development must take into account the economic, socio-cultural and political institutions that the identity of places express. In this way, the debate on economic development is enriched by variables that had for a long time been excluded by conventional theoretical schemes.

6.7. Conclusions

At this point, we can summarise our reasoning so far.

To explain the changes that have characterised the contemporary economy in the last twenty years it has been necessary to shift attention from relations internal to the company to relations between companies and, in particular, the role played by external economies and joint action in explaining the competitive advantage of industrial clusters. This reasoning has led us to several conclusions:

1. competitiveness depends not only on the organisation of production inside the company but on a broader set of factors: trust, shared language and values, willingness to co-operate;
2. these factors can be traced back to the overlapping of three types of institution (i.e. ways of organising relations): economic, socio-cultural and political;
3. the fact that these three institutions act reciprocally in conferring competitive advantage on the cluster assigns protagonism to the territory, as the place where the institutions form and embed themselves: companies are embedded in the institutions which, in turn, are embedded in places (i.e. they are place-specific);
4. in this sense, the concepts of competitiveness and development can be referred to the territory in its entirety and uniqueness, thus making it possible to talk of competitiveness and local development.

Analysis so far has also attempted to clarify at least in part the complex relations between economy, society and territory. As said earlier, the economic perspective on development often comes into conflict with other more radical voices that claim the right to a more humanist and democratic vision of the themes of development and economic growth. It has also been said that examination of the problem of development by talking of the competitiveness of places and territories can displease both contenders.

In this chapter, we have tried to move in both directions. An attempt has thus been made to show the close bond between economic activity and the territory and the social action that is produced in that territory. To this end, it turned out to be essential to tackle the theme from an institutionalist perspective, i.e. by recognising that the economy is not a world apart but is based on institutions socially, geographically and historically determined. Secondly, this introduction of the concept of institution reduces the risk of economicism intrinsic in any discourse that uses economic metaphors (for example, that of competitiveness) to talk about structures and organisations (such as society and territory) which do not necessarily have economic and production ends.

In the task of demonstrating with increasing force and clarity the links that exist between the territory and the economy, it may be useful to dedicate more attention to one of the most widely-used instruments used in territorial study, the geographical scale. The next chapter will therefore concentrate on the concept of local, defining in what terms it is possible to talk of "local scale".

Notes

(1) One example of how the efficient organisation of production can allow a company to compete with innovative firms is represented by the post-war Japanese economy, where the imitation of high technology products at lower costs created strong competition for European and American companies.

(2) Even if not necessarily inside the same plant. The fact that TNCs produce in many plants and/or many countries does not contradict the principle that production must be controlled as far as possible by the corporation hierarchy.

(3) The reference is to the American institutionalist school which, at the turn of the $19^{th}/20^{th}$ century, challenged the nascent marginalist school for hegemony in economic thinking (Veblen, 1919 and 1924). The revival of themes typical of the institutionalist school to which we make reference in this book should not be confused with New Institutional Economics (whose most well-known exponent is Williamson) which attempts to conciliate reflection on economic institutions with the principles and methods of neo-classical economics.

CHAPTER 7

Time, scales and local systems. Theoretical foundations

7.1. Premise

The assumption of the perspective of local development to describe the features of the contemporary economy implies that the concepts introduced in the previous chapter must be further specified and that the instruments, the lens to observe reality, be identified. The shifts from the competitiveness of the company to that of the territory and from economic development to local development were described in the previous chapter from a relational point of view. In other terms, an attempt was made to demonstrate how, in contemporary capitalism, the balance between the relations internal to the company and external ones has changed radically compared to the past. The fact that the factors influencing competitiveness and the production of value are increasingly external to the individual company, but internal to the territories that contain them, leads to reconsideration of the role of places and the local dimension of development. It has also been argued that local competitiveness does not depend exclusively on the behaviour of economic actors, but on a complex play of relations between them and the institutions and organisations historically embedded in the territory

7.2. Individual, society and local system

To understand the local organisation of relations external to the company and how this relates to economic and other institutions, it is possible to start from an extremely generic consideration: life on earth cannot ignore the relations that are established between its parts. In every instant, billions of relations occur simultaneously. Even the simplest event like the movement of an object on the earth's surface can be seen in relational terms, in the sense that it relates two distinct points to each other. The theory of gravity is perhaps the clearest example of this principle: each mass, by existing, exercises an attraction towards any other mass and thus establishes a relation with it. The miracle that we can stand on our feet depends on the fact that there is a relation between everything that exists on earth!

The social sciences, and especially geography, have always aspired to the formulation of necessary and universal laws like that of gravity (Wilson, 1969; Barnes,

1996). However, their task is made thankless by a detail that is anything but negligible: people have their own intentions and motivations. This means that all individuals perceive and deliberately try to modify the flow of relations in which they are involved.

To understand how the social sciences consider this endless flow of relations, the starting point of social analysis must be represented by all the reciprocal relations between individuals. The infinite nature of these relations is the very definition of life on earth: *they exist* (Tuan, 1974; Sack, 1997). The problem for the social sciences is to understand how the multiplication and interweaving of the multitude of relations between a multitude of individuals is organised in such a way as to constitute stable communities and societies (Giddens, 1984). In every instant, some relations deteriorate, whilst others strengthen. Despite this continuous process of selection and transformation, society does not disappear but conserves its identity while changing.

It follows that the task of the social sciences is to understand how human societies change in the unceasing flow of relations. The nexus between free human agency and historical and geographical structures is well known in the social sciences as *structuration*. The process of structuring synthesises many of the questions that social scientists pose about the subject of their enquiry. Is there a relationship of determination between society and the economy? Can territories and communities, crossed by uncontrollable flows of goods and capital, influence their own destiny in some way? How do the continuity and stability of social structures co-exist with the endless drive towards change intrinsic to historical transformation[1]? In this chapter, we will try to tackle the problem from a relational and institutional perspective.

As we have said, each individual is at the centre of an inextricable network of places, people and organisations that represent his world, the world in which he formulates desires and plans action. The constitution and maintenance of a society implies the consolidation of a set of relations which defines the common heritage of the individuals of which it is composed, the context to which self-perception and perception of the world refer. A society can, in practice, be underpinned by a constitution or by simple *routines*. Moreover, the formation of a society can be interpreted as the expression of a fundamental need of man as a "social animal", or as the mere result of utilitarian and individualistic desires. In this context, however, it is not the form taken by the society or the reasons that determine its formation that matter, but the identification of society as the subject of study. For our purposes, the fundamental thing is the process through which the social sciences form their own concept of society, i.e. its subject of study.

In general, while the individual context is composed of all the relations that involve an individual, the definition of a social context is possible only by starting from a *selection* of the relations between individuals. The relations that form the foundations of a community or society must, in contrast to reciprocal individual relations, possess a number of characteristics: they must, first of all, be *shared* by the members, but must also be *stable*, so as to reduce the uncertainty of those who are part of it, and *defined*, in order to fix boundaries and exclude actors and relations which do not belong to it.

When a social science defines its object, it does nothing other than express its judgement about which of these relations really count in order to identify the society it intends to consider. It makes a fundamental *simplification, choosing and reducing* the multitude and wealth of bonds and relations between individuals. This is a subjective process of evaluation of the relations considered to be significant; they are artificially isolated – as they are not in the real world – from other relations and variables judged to be emotional, marginal, residual, insignificant or distorting.

7.3. The simplification of reality: abstract relational spaces, periods and scales

In this process of simplification, we can distinguish between two different processes, at least on the theoretical level:

- a progressive separation of the different types of relations, each of which is studied and analysed separately from the others;
- a division of time and space in which human relations happen incessantly.

We shall now examine both these processes in detail.

Abstract spatial relations

In their attempt to move closer to the "exact" sciences, social scientists identify *abstract spaces* where various types of relations occur and can be analysed. There is thus an economic space, where the economic relations between individuals are artificially isolated from other human relations. Similarly, there are social, cultural, family and political spaces in which the different individual relations are placed[2]. Although the breakdown of human agency into separate fields facilitates analysis of an otherwise complex and composite reality, this entails, nevertheless, numerous difficulties. Each individual acts simultaneously, in fact, in all these relational spaces, but this simplification does not capture the unitary nature of the action, in that the relations between different spaces are almost never considered, if not marginally[3].

In the case of neo-classical economics, the simplification has been particularly serious and definitive. The only relations considered are those that happen within a market where perfectly rational and informed individuals make the choice to maximise their utility in a context of perfect competition. At the centre of reflection is, in fact, the economic actor, described purely on the basis of its internal characteristics, without making reference to the many concrete relations in which it is involved[4]. It follows that the passage from the microeconomic dimension to a general interpretation of society (macroeconomics) appears more a question of mathematical mastery than of socio-philosophical thinking.

Thus, if reality can be seen as a weft of overlapping relational spaces, the orthodox economic vision limits itself to considering only the level made up of market relations and completely ignores the fact that each economic agent is at the same time involved in a network of relations of other kinds (Figure 7.1).

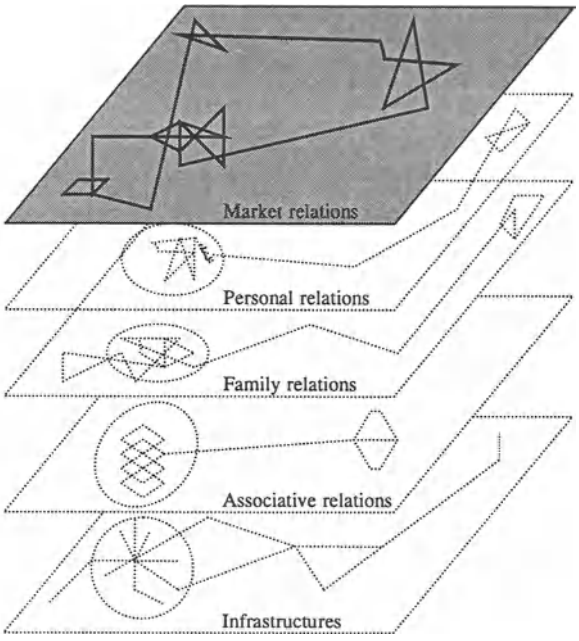


Figure 7.1 - The relational spaces of the economy

In this sense, the separation of economic relations, even if it has been the main simplification used to explain reality, it is not enough to explain the complexity of social life.

The breakdown of space and time

What holds the different relational spaces together is geographical space and historical time, in the sense that the different relations co-exist because they occur at the same time and in the same place. In order to master reality, it is also necessary, therefore, to control space and time, and conceptualise them in abstract and closed forms. From the point of view of the individual actor (whether an individual or a company), space and time are continuous. The actor in fact moves without breaks in time and space in a continuum that goes from the instant of its birth to that of its death. This continuum defines the bio-geographies of each actor and these can also be represented graphically as paths in time and space (Hagerstrand, 1970 and 1982; Thrift, 1983).

This restless floating has always been in contrast with a second simplification which tends towards selected breaks in time and space, identifying *periods* and *scales*. The historical period and the geographical scale set temporal and spatial limits in which the individual bio-geographies are contained and can be interpreted clearly and unambiguously. In other terms, period and scale present unvarying and common

characteristics that allow social scientists "to say something" about human agency without being forced to reconstruct the single spatial-temporal paths of individual actors.

Think of the division of human history into great astrological eras in which the domination of given astral influences constitutes the time of the destiny that it contains and gives a sense to the individual destinies that occur in the measurable time of bio-geographies. Or we could think of the geological eras that identify long periods within which the single movements of the earth's crust can be interpreted.

The same procedure of dividing space and time functions for the social sciences. One example is the division into periods of capitalist development by Kondrat'ev and Schumpeter (who we examined in the first chapter). The history of capitalism is divided into long cycles lasting approximately 45-60 years, each of them inaugurated by an epoch-making technological innovation which leaves its mark on both the organisation of production and that of the territory and society. According to this perspective, it is not necessary to reconstruct the existential development of individual actors in order to understand the history of capitalism. It is enough to define the general features of the cycle in which the individual actor operates.

In a similar way, the concept of Fordism identifies a period and a scale within which common laws are valid that suspend the flow of time and the unceasing movement in space of individual destinies. In this case, the period lasts about forty years (roughly from the great depression to the seventies) while the scale is represented by the nation state. In this period, it is thus assumed that a predominant system of accumulation existed, based on economies of scale, mass production and the functional and spatial division of labour (see Chapter 2 on this point). Corresponding to this is a specific form of social regulation, based on the intervention of the nation state to guarantee an adequate level of social welfare and to prevent inevitable social tensions.

In this way, period and scale define a portion of time and space that it is possible to analyse and interpret leaving out of consideration the individual biographies and destinies. This also implies that for each period and each scale a main *scientific discourse* asserts itself, entrusted with defining the major features and laws of the various historical cycles.

From the geographical point of view, the processes through which a meaning is attributed to the territory (territorialisation) have been studied with reference to some preferred scales. For example, Peter Taylor identifies three main scales to which capitalist modernity has attributed particular significance, the home, the city and the nation state (Taylor, 1999). Moreover, the theme of the spatial heterogeneity typical of the process of capitalist development has been analysed essentially on the regional scale, with the creation of fictitiously homogeneous scales, such as the dualism between the Italian "industrial triangle" and Mezzogiorno or between the Sunbelt and the Rustbelt. For a long time this impeded observation of their composite and differentiated nature in single places. Similarly, the problem of uneven development has been tackled by turning to the contrast between two macroscales, opposing the North and South of the world in a dialectic between centre and periphery where local identities and differences were hidden.

7.4. The end of certainties

In their attempt to grasp and reduce the complexity of reality, the social sciences have thus made two main simplifications:

- the breakdown of the inextricable weft of human relations into abstract relational spaces (economic space, associative space, cultural space, family space etc.);
- the containment of the unceasing flow of relations in time and space through the definition of rigid periods and scales.

Now, this dual simplification has given important signs of yielding in the last decade.

The defeat of periods and scales

In examining the defeat of the process of simplification described in the previous paragraph, we can begin by considering the effect of the process of globalisation and spatial-temporal compression on the traditional processes of construction of scales and periods.

Beginning with the latter, we observe that the cycles of the economy seem to be increasingly compressed by the endless succession of technological innovations. Even the "physiological" alternation between economic crisis and expansion identified by Keynes would seem to have changed in depth. While in the post-war period the average period of economic expansion was five years, the eighties were characterised by a decade of almost uninterrupted economic growth. On the other hand, the crisis of the nineties lasted longer and finished with a weak and uncertain recovery, whose successes have still not made it possible to reach the previous levels again.

In other terms, the consolidated division into periods is going through a time of crisis which does not depend solely on the passage from one period to another (such as from mass production to flexible specialisation or from Fordism to post-Fordism). What is in discussion is the very possibility of establishing periods and scales within which to construct a general theory free of ambiguities and contradictions. In our opinion, the debate on the information society, regulationism, post-Fordism and flexible specialisation shows in an exemplary fashion how difficult it is to establish clear periods of contemporary history. These different approaches, whose principles were presented in general terms in the previous chapters, are an attempt to describe the transformations of society as the passage from one period to another. In this sense, many of the theories about the contemporary world maintain the simplifying principle typical of modern social sciences. Again in this case, the identification of a divide means identifying unambiguously the new general features that regulate the economy and society in the new era[5].

In a similar way to what happens with the process of division into periods, the traditional processes of scaling are also going through a period of difficulty. This crisis is particularly evident in the debate on the role of the nation state which, as we have

seen, perhaps represents the scale most commonly used to describe and interpret economic and social phenomena.

In recent years, the debate on globalisation has become the terrain of battle between, on the one hand, those who maintain that the nation state has lost much of its significance and regulatory power (Ohmae, 1990 and 1995) and, on the other, those who claim that its centrality has been preserved, to the point of denying the existence of the process of globalisation (Hirst and Thompson, 1996).

What interests us is certainly not reconstructing the debate on the nation state as much as recognising that we find ourselves facing the need for a radical rethinking of the scales which the social sciences have traditionally adopted (Marston, 2000).

A similar criticism can also be found in the debate on the other traditional scales through which scientific simplifications have been made, the region and the city:

- the recognition that economic development follows a patchwork pattern has led to the re-emergence of regional economies as the preferred scale on which to interpret economic development processes. However, as was observed in the previous chapter, economic success does not involve regions as such and all of their manufacturing structure, but clusters of specialised companies strongly concentrated in part of the region. The literature even talks of industrial neighbourhood to explain the extreme concentration of competitive activities in some parts of the city. Think of the City of London (Thrift, 1994) or the audiovisual industry in Los Angeles;
- even the urban scale seems less and less imaginable in unitary terms. The effects of urban speculation and ghettoisation of ethnic and sexual minorities produce tensions in the urban territory in different ways and for different reasons compared to the traditional conflict between capital and labour (Harvey, 1982). One example is the Los Angeles riots in 1991 which led to violent confrontation between the African-American population and the police. It is perhaps no chance that Los Angeles has become the testing ground where post-modern geographies take new roads to explain the explosion of the urban scale into extremely fragmented and variable scales (Soja, 1996).

To explain the crisis of traditional scales, it may be useful to introduce some thoughts on the very meaning of scale. The fact that talking of territory inevitably implies the adoption of a scale could lead us to lose sight of the more profound meaning of the process of constructing scales.

Genesis and crisis of the scale

In a first generalisation, the scale is a convention that allows the observation of a portion of territory at a glance - from *one* perspective.

The principle that regulates the definition of the scale obviously operates in many areas of human knowledge. In general, the scale makes it possible to lay out the subject of enquiry on a flat surface. The surface can be of various kinds (paper, operating theatre table, microscope slide), as varied as the subject of the enquiry may

be (territory, human body, cell). What unifies these various examples and defines the meaning of scale is the possibility of perceiving the object as a *unicum*. Before proceeding with the analysis or dissection, it is necessary to take a glimpse at the object as a whole. The difference is that, while for medicine and biology it is possible to work on a 1:1 scale, the geographer has to mediate the relationship, representing it on an inevitably smaller scale.

The passage from the object to its representation has been traditionally governed by a demanding assumption, the uniqueness of the scale, i.e. the conviction that *one* perspective exists on which correct observation depends. The scale of 1:1 would be the right one, but as noted by Borges and Calvino, a 1:1 map would cover the earth's surface thus becoming useless and making the planet uninhabitable. When the 1:1 scale ceases to be possible, the problem of identifying the criteria for the identification of the correct scale becomes urgent.

In this way, the principle of the uniqueness of the scale is replaced by the principle of correspondence between phenomenon and scale – "every phenomenon has *its* scale", as if the scale was a property of the object (Bateson, 1979). The ambition is the same: to construct a scale which allows *faithful* reproduction of the territory. The scale is then no longer defined by a numerical ratio, but by a geographical adjective: regional, national, urban.

It is in this sense that the scale is a fundamental instrument for simplifying the relations between individuals. However, the rigid definition of the relevant scale is necessarily only a partial point of arrival. In fact, the basis of the concept of scale is of a cognitive nature: we can represent as a scale only what is perceived by society and/or by individuals as a *unicum*, as a phenomenon in which the perceptions of the unit prevail over the perceptions of difference.

Rapid cultural and social changes can radically change the spatial perceptions that underlie the identification of a scale. In the last twenty years, a radical transformation of the relations between cultures, societies, economies and individuals, synthetically identifiable as *space-time compression* (Harvey, 1989), has led to at least two radical rethinkings of the concept of scale.

The first revolution is the so-called "globalisation". Whatever the meanings and connotations this process can assume in different contexts, globalisation represents first and foremost a "problem of scale". The assumption of globalisation represents, in fact, the perception of the globe as a *unicum*, and the concomitant possibility, given above all by capitalist and technological transformations, of adopting strategies and behaviour consistent with this perception (Conti and Giaccaria, 1998). In this sense, the globe becomes the scale of reference for an increasing number of economic[6], social and cultural actors, as well as for scholars and analysts (Ohmae, 1990; Dicken, 1998).

On the other hand, the human body – the 1:1 scale, the foundation for any geographical description and any scale – ceases to be a neutral, objective scale. On the contrary it is assumed by post-modernism as the original scale on which the conflict between individuals and power occurs, the original scale on which all the conflicts of other scales are projected and concentrated (Foucault, 1980; Philo, 1992; Pile, 1996).

Bodily, sexual or racial differences and separations become an important key to interpretation of territorial difference and segregation.

In practice, the dissolution of a certain scale, the foundation of the positive understanding of reality, occurs simultaneously through the agency of these two great *golems* of the Western tradition: on the one hand, the global perception becomes pervasive and is transformed into unceasing action which changes the significance of all the scales traditionally used, while, on the other, the bodily scale abandons the age-old features of definition, closure and certainty to become open and embrace multiple meanings and discourses.

This dual earthquake radically modifies the traditional categories of geographical scale, above all the region and the nation state. On the one hand, socio-political demands are based increasingly on the overlapping of bodily criteria (ethnicity, sexuality etc.) and territorial ones (impenetrable ghettos or micro nation states). On the other hand, globalisation rises up to an inescapable socio-economic destiny, a fatal imperative to which individual states and communities are subordinated.

Above all, the presumption vanishes that for each phenomenon there is *one* right scale which reduces the complexity and ambiguity of reality. What appears increasingly evident is that a growing number of actors – individuals, communities, nation states, associations, supranational organisations, companies, banks etc. – have strategies whose effects do not finish on one particular scale. This dispersion of sovereignty, with different desires and actions that clash on each level, reveals itself to be a conflict of perceptions of space and territory, a conflict of scales.

It follows that each actor possesses its own scale to define, study and govern a territory, while agreement – consensus on the scale – appears more and more difficult to reach (Giaccaria, 1998b).

The crisis of the analytical method

The crisis of the traditional processes of division into periods and scaling is also accompanied by a crisis of the first simplifying mechanism used by the modern social sciences, i.e. the separation and analysis of the different types of relations in abstract spaces.

Starting in the eighties, the conditions that for decades had assured the consensus of the scientific community around the Cartesian analytical model that constitutes the theoretical assumptions of breaking down human action into separate spheres and realms gradually disappeared. Without making any claim to being complete, we can cite at least three different schools of thought which have eroded the solid foundations of certainty on which modern science was based.

The first of these, of an essentially epistemological nature, is given by the theories of complexity, which we have already mentioned in the chapter on systems theory. The acknowledgement that reality is formed by non banal, i.e. unpredictable, machines has led to the observation of physical reality, and with it also social reality, as irreducible to the methods of simplification typical of modern science. In particular,

the theories of complexity have led to a profound rethinking of the relations between the whole and the elements of which it is composed.

On the contrary, as has been recalled (see Chapter 4), the dominant idea in the functionalist vision was that reality could be broken down into simple components, easier to study and understand. In this way, it was possible to analyse first the single components and then the relations that joined them, thus reaching an understanding of the whole. As we have seen, this is the same principle that guided the breakdown of human relations into abstract spatial relations, each of which could be studied independently of the others.

With the explosion of complexity in the social sciences, attention shifted to more complex mechanisms of interaction between the elements. In particular, it is maintained that the unpredictability of the system stems from precisely the fact that the sub-systems interact with each other through different types of relations and that they cannot therefore be analysed separately.

The second challenge to modern science is, instead, of a *cultural* nature and is represented by the heterogeneous set of theories and attitudes that go by the name of *post-modernism*[7]. Precisely because of its composite and heterogeneous nature, it is not possible here to go into the debate on the relationship between modernity and post-modernism. Post-modernism is fundamentally the eclectic mixture of every tradition with that of the recent past: it is both the continuation of modernism and its denier. (Jencks, 1989).

What interests us here is to underline a peculiarity common to all the different threads that contribute to the debate on the end of modernity: the rejection of an all-comprehensive discourse that aspires to offering a neutral and unambiguous interpretation of social phenomena. In contrast to the organising and demiurgic discourse of modern science, with its laws and certainties, the post-moderns offer a plurality of discourses which underline the multiplicity and complexity of possible visions of the world, biased by gender, class, ethnicity etc.

This perspective entails two consequences of considerable importance for understanding of the crisis of scientific simplification that we introduced in previous pages:

- fi rstly, the rigid divisions between disciplines are shattered. Different areas of knowledge are mixed – and with them the abstract relational spaces – to find new perspectives from which to observe the many facets of reality;
- secondly, there is a rejection of the *hegemony* of economics over other forms of knowledge. This rebellion takes shape as much against neo-classical economics and its attempt to constitute itself as a science *ignoring* other relational spaces as against Marxist thought, with its utopia of *explaining* the different relational spaces (superstructure) by turning to a scientific interpretation of economic structure.

Finally, the third orientation is of a mainly *economic* nature, in that the breaking down of the barriers that separate the different relational spaces is pursued in the name of a better understanding of the economy and production. In recent years, both empirical analysis[8] and theoretical thought[9] have gradually debunked the myth of the

separation between the economy and society, abandoning the design of the construction of an economic science purified of any phenomenon that blurred the axiom of rationality. The awareness that economic behaviour does not respond fully to the laws that had until then supported the interpretation of abstract economic space so dear to orthodox economists has thus asserted itself. Emotions, habits, routines, traditions and affections are assuming increasing importance in the construction of an economics that attempts to reduce its distance from the real world.

> The complex economy, consequently, is a microcosm of criss-crossing organizational and institutional forms, logics and rationalities, norms and governance structures. It is difficult to grasp in anything like it is entirety by individuals and it escapes the reach of a central organization, but somehow, each economic system does possess a paradoxical "unity of diversity" that is characteristic of most vital organism (Amin and Hausner, 1997, p. 6).

From the discourse so far, one can clearly see the crisis of the mechanisms of simplification that dominated the practice of the social sciences in the 20th century. The fact that the crisis is the consequence of criticisms developed in intellectual and academic environments very distant from each other (post-modernism, systemic epistemology, heterodox economics) should make us reflect on the need to change at least in part the assumptions on which the social sciences have been based so far.

7.5. The local scale and the complexity of reality

It is now time to define better how the discourse on competitiveness and local development can be placed in the wider debate on the process of the structuration of society. In particular, it will be seen how the two traditional processes of simplification in the social sciences (the separation of relations in abstract spaces and the definition of fixed scales and periods) can be reformulated by using the concepts of "place" and "local".

The local: the point of encounter between multiple relational spaces

First of all, we have to recognise that even the perspective of local development implies a selection of only some relations judged to be suitable for explaining the evolution and functioning of socio-economic systems. However, this selection process is radically different to the one just mentioned. The importance assumed by the relations external to the company means that the concepts of competitiveness and development cannot be understood by making reference solely to brief and volatile market relations, but must be interpreted in the light of a complex interweaving of social, cultural, political, religious and family institutions. Economic actors do not appear on the market merely with their identity as a seller or buyer, just as relations between them do not finish with the mercantile transaction. On the contrary, different factors, difficult to quantify, come into play, such as trust, personal acquaintanceship, tradition and skills. These elements are the result of the individual history of the actors

involved and this history is formed through a multitude of other relations (Johannisson, 1994). Speaking the same dialect or having attended the same school, for instance, can influence the creation of trust between the technicians of two companies bound by a supply relationship. From this standpoint, *representative agents* no longer exist, but only historically and geographically determined agents which establish relations of a multiple nature.

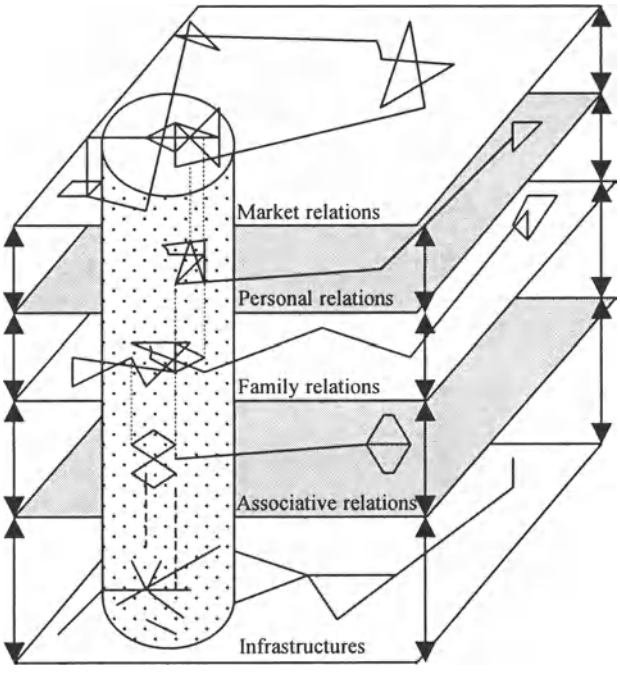


Figure 7.2 - The relational spaces of local development

The need to consider the number and complexity of bonds drives us towards a different type of simplification based on the criterion of *locality*. The principle of locality can be defined as the fact that *when the actors are in (spatial and cultural) proximity it becomes almost impossible to distinguish their economic relations from other types of relations*. When a community is looking for an internal, shared and exclusive[10] solution to a problem (such as competitiveness, development, regeneration of the production fabric), it mobilises all its resources and relations (solidarity, trust, reciprocal knowledge and respect) and not only economic ones.

The fact that multiple relational spaces are involved simultaneously underlines the existence of *vertical relations* that define the local dimension of our discourse (Figure 7.2). In fact, if we want to look at the relations that unite the various abstract spaces of

relations, we cannot but contextualise these relations in time and space. In other terms, to consider different types of relations simultaneously (economic, social, cultural, political etc.) it is necessary to look at the real acts of the social actors: acts that occur solely in a given place at a given time.

Vertical relations (of an economic, social, cultural, political nature and so on) express the complexity of the relations of the different social actors with their physical and social environment. These relations are historically and geographically defined, but, at the same time, are included in broader networks of relations that do not depend on history and geography. In other words, they can be interpreted as part of the broader networks of relations that identify the *horizontal level*, in which every actor establishes relations with other actors independently of their geographical location.

The multiscalarity of the local

Starting from "locality", we now need to look at the problem of the definition of periods and scales of analysis.

It seems obvious that in order to take into account both the dimensions of relational life it is necessary to bring to the fore the social actors involved *simultaneously* in vertical and horizontal relations (local and supralocal). An intermediate scale of analysis can thus be identified that does not coincide either with the traditional image of *local communities*, closed and hostile towards the outside in the fear of losing their own identity, nor with the *global village*, where vertical relations gradually lose their significance and are replaced by universal forms of relations and communication, independent of historical and geographical peculiarities.

The term *local system* (see Chapter 5) is given to this set of actors which operate within given historical and geographical confines (which could be those of a town, a metropolis, a village or region) and are members of larger supralocal networks. The multitude and complexity of relations confers two main characteristics on the system:

- *the whole possesses characteristics that do not derive from the mere sum of the properties of the single parts:* in our case, this is the equivalent of saying that the territory possesses an identity that cannot be grasped by considering only horizontal relations;
- *the behaviour of the system cannot be understood a priori*: this means that local development does not automatically obey the laws of economic development but presumes the existence of many development paths.

Following a different path, we have thus defined once again the concept of "local". After having discussed in the previous chapter in what terms and what conditions it is possible to talk about competitiveness and local development, it is now time to assume the local system as the privileged "place" where the dialectic between vertical relations and horizontal relations occurs.

We have seen how the definition of one or more privileged scales of analysis played the essential function of simplifying reality. The scale played a simplifying role as it was quite enough to cite the Fordist city, the peripheral region, the Keynesian

state etc. to make immediate reference to a shared context. Use of a particular scale meant immediate understanding of the spatial phenomenon underlying it, without having to reconstruct the weft of individual spatial behaviour.

The crisis of established scales in scientific analysis advises against merely replacing them with the local scale. The simplification to be avoided is that of attributing to the local scale significance and dimension decided a priori, once and forever. It follows that the essential concept for understanding the local must be that of *multiscalarity*.

The unconditional acceptance of a new scale of reference, for example the global and local, could in fact lead to the constitution of a new, unifying perspective, which would entail the loss of the fecundity of other scales, in other words the loss of the multiple senses of the world. Becoming aware of complexity does not mean seeking out a new universal scale, a simplifying point of view, but rather the search for a dialogue between different scales that increasingly overlap temporally and spatially.

The project of multiscalarity entails, in essence, the questioning of traditional geographical scales, the search for territorial and geographical perspectives that take into account the importance assumed by the extreme scales: the body and the globe. In this sense, the local scale should not limit itself to substituting the traditional scales of social and economic action, imitating their set and a priori characteristics. The ambiguity of the concept of "local" is undoubtedly of help in attributing a multiscalar nature to it.

The local is ambiguous above all in that it is difficult, if not impossible, to establish its borders, giving it a defined scale once and for all. The formal criteria for defining the local unambiguously are lacking. We can define the region on geomorphological bases (for example, a river basin), just as we can define the nation state on an ethnic basis (the territory occupied by a given ethnic group) or political basis (a territory within which a given power exercises the monopoly of violence). For the local scale, we do not possess an equally universal criterion.

This passage is fundamental for understanding how the use of the local scale makes a break with respect to the continuity of the definition of traditional scales. The discriminating point is that while for other scales *the borders of the system are defined first* and afterwards the relations that occur within these borders are studied, in the case of the local system the order is reversed. *It is necessary to start from the relations between actors* and only later is it acknowledged that social interaction creates borders, distinguishing the local system itself from its external environment

Real scale and ideal scale

To understand the nature of the local we thus need to start from the actors, from their perception of space and territory, from the mass of relations that are created incessantly in time and space.

Now, in the case of social actors (whether individuals or groups), multiscalarity is effectively the norm that regulates their behaviour in time and space. Daily life is conducted on the different scales that range from the body to the globe, passing from

the dwelling to the neighbourhood, the city, the town, the natural landscape, the region, the state, the continent, the Mediterranean. All of these are at the same time *real scales* (where our life happens) and *ideal scales*, which represent the context where we form our identity, aspirations and strategies. Thus Byron, who had spent his life in the drawing rooms of Europe, died fighting in a national war, the war of Greek independence, but with the perception of fighting for the roots of European civilisation. In this example, the scale of *real* action (the Greek nation) does not coincide with the perceived scale, of *ideal* action, which in the case of Byron was the European scale, in which his entire life as a sophisticated cosmopolitan dandy had been lived out. It is indeed possible to pass much of one's life in the same city and at the same time run the global supply chain of a TNC, with a rift between the scale of one's own daily life and that of one's economic strategies (Harrison, 1994).

The separation between real scale and ideal scale is well represented by the slogan "Think globally, act locally". The dichotomy between thought and action runs through all concepts of Western culture, if it is true, as Marx maintained, that the worst architect is superior to a bee, the creator of splendid geometries, in that he/she constructs the object in the mind before actually building it. In the same way, each of us sets our projects and strategies on a certain scale (which we have called the ideal scale) that does not necessarily coincide with the scale on which we act in practice.

In traditional theory, this dissociation between real scale and ideal scale was hidden very effectively. The relationship between national scale and regional scale is exemplary of this situation. For decades it seemed normal to think that the problem of regional imbalances should be viewed and solved on the national level. Friedman's theories of regional development, as we saw in Chapter 4, owe much to this approach. Regional imbalances are interpreted as necessary passages to functional integration on the national scale. What is experienced locally as humiliation, as devastating the local identity, is justified in a higher rationality that "sees" reality on another scale, the national one.

The process of separation between real scale and ideal scale is challenged by the process of globalisation. To clarify this point, we can refer to the definition of globalisation given by Robertson, as a process that "refers both to the compression of the world and the intensification of consciousness of the world as a whole" (1992, p. 8).

To express this definition in terms consistent with what we have said so far, we can define globalisation as:

1. the set of processes that allow
2. a wide range of actors (global organisations, transnational companies, networks of companies and banks, but also artists, consumers and tourists)
3. to translate increasingly easily
4. their perception of the world as a *unicum* (ideal scale)
5. in actions that occur on the global scale (real scale).

The capacity to conceive the world as a single place, and thus as an ideal scale, is not new but rather an innate human aspiration. What changes with globalisation is the

fact that, thanks to technological innovation, the perception of the world as a unicum can be easily transformed into behaviour and actions in line with this aspiration. In this sense, globalisation entails the crisis of the traditional scales in that it asserts the possibility of making the real and ideal scales coincide, and it does so in the most striking manner, realising one of the oldest human ideals. It is now possible both to *think and act globally*.

The local: putting ideal and real scale together

In our opinion, there is another perspective, apart from globalisation, that allows the unification of ideal scale and real scale. This is the local point of view which, as we have seen earlier, implies going beyond many of the limits of traditional scales.

The first thing that we must underline is that the passage from the local to the local scale does not occur through the identification of rigid boundaries[11].

To this end, we believe that the local scale can be described on the basis of two main features: embeddedness and the inevitability of the confrontation between one or more different scales.

Embeddedness can be defined as the prevalence of local relations within the community over external horizontal ones. The unpredictability of the system and development depend, therefore, on the fact that horizontal relations are mediated by the vertical ones that constitute the system's identity. The object of analysis is no longer the individual actor but the local system as a whole, understood as the set of actors (not only companies) which interact with each other in order to conserve their own identity. Embeddedness thus appears as an alternative to globalisation to unify the real scale (of physical action) and the ideal scale (of identity, design, strategy). If the identity is given by the vertical relations, then the hypothesis that actors interact with each other to preserve this identity is the same as saying that the actors perceive the local system as the scale on which they act. Going back to the example of Byron, the local scale on which his life was embedded was European, and not the urban scale on which he spent most of his life, nor the national scale for which he decided to die. This type of correspondence between real scale and ideal scale can thus be summarised in another maxim "Think locally, act locally" (La Cecla, 1993). This invitation to think locally does not aim at the realisation of a parochial society, closed in the defence of its traditional values. The meaning is quite different. The local scale is an invitation to unite the scale on which one lives everyday life with the scale on which one's desires are conceived and actions planned. The local scale is the one on which the actors realise that their actions are guided not by abstract laws, but by geographically and historically determined institutions. Every time that an actor acknowledges its rooting in a scale and acts as a consequence, we can talk of local scale.

In this framework, the local scale finds itself in a *dialogue with the global scale*. As we have seen, in fact, every human relation is a part of both a mass of locally defined, vertical relations, and of a network of a-spatial, horizontal relations.

Within this abstract space, the local scale identifies a concrete space where the intensity of relations produces embeddedness. However, together with this

phenomenon of *embedding*, the possibility continues to exist of perceiving the abstract relational spaces that we could define as global. In this way, vertical relations and horizontal relations always co-exist, and so the local scale and global scale co-exist. In other terms, the very fact that we have defined the local scale as a geographically and historically embedded portion of broader relations forces us to think of the local in a close-knit dialogue with the global scale.

At this point, we can draw a number of conclusions:

1. the local scale does not identify a portion of territory defined by universally valid exogenous criteria, but emerges from the nature of the spatial relations established by individuals;
2. more in particular, it is given by the overlapping between the scale of concrete, everyday action and the scale of design and strategy;
3. in this sense, the local scale does not merely replace the traditional scales but maintains intact the possibility of assuming their features and appearances: case by case, we can see the national scale, the urban scale or the regional scale as the local scale;
4. the local scale thus extends virtually from the body to the globe, from the city to the continent, from the neighbourhood to the nation. Wherever the condition of embeddedness is found, any traditional scale can be thought of as local;
5. every local scale necessarily has to be measured against the scales that can be traced, even arbitrarily, on abstract relational spaces;
6. the lowest scale *par excellence* is the global scale, the one which in a single glance can take in all the relations that occur on the whole of the earth's surface;
7. however, there are many "globals", in that this term indicates simply the whole within which local relations are contained;
8. the local-global relationship is thus a constant in the interpretation of the local scale as a means of interpreting the complexity of social and economic relations;
9. this local-global relationship is thus itself multiscalar, in the sense that we can refer many relations to it: region-nation, country-globe, city-continent, neighbourhood-city, body-city.

The local scale and the problem of periodisation

Finally, we need to consider how the local perspective allows us to reconsider the problem of periodisation. We have seen how the local scale is differentiated from the traditional scales of geographical analysis partly thanks to its dynamism. The local scale is in fact defined by starting from the interaction of economic and social actors. This action is deployed not only in space but also in time. In other terms, the existence of the local system cannot be framed in the usual periodisations, given that it *evolves in time* while maintaining substantial continuity with its past and traditions. In fact, various forms of organisation of production and social life co-exist and interact, giving rise to an *individual path*. This is different for each local system, which is thus freed from the general laws of the great economic periods.

The example of the Third Italy and the industrial districts can once again help to clarify the sense of our discourse. In recent years, numerous theoreticians of post-Fordism and flexible specialisation have sought inspiration and confirmation of their theories in the experience of the industrial districts. In this interpretation, the industrial districts, together with other comparable phenomena identified in other regions, have become the paradigm of these new times. Numerous theories have thus ended up unifying many differing experiences (such as the Italian industrial districts, Silicon Valley and Route 128 in the United States, Baden-Württemberg in Germany, or the Cambridge-Reading-Bristol complex in the United Kingdom) which find their own unitary and consistent interpretation in the theory of a great, epoch-making transition.

In the local development perspective, attention is instead focused on the path that has led these local systems to occupy a significant position in contemporary capitalism. If we abandon the vision of Fordism as the great, epochal, all-embracing narrative, the temptation also fades to interpret these successful local phenomena in the light of a new unifying theory (whether this be flexible specialisation or post-Fordism). What will interest us is not the understanding of whether these examples announce the advent of epochal transformations. Attention should be concentrated on the modes and times with which these local systems have shown themselves able to evolve in the broader context of contemporary capitalism, reproducing their own social and production organisation.

7.6. Scale and system: the identification of the local system

So far we have argued that the local development perspective enables us to overcome the crisis of the certainties typical of the modern social sciences without having to give up an overall representation of social and economic phenomena.

At this point, it is necessary to clarify how the necessarily fuzzy and ambiguous concept of local system can become a concrete subject of study for the social sciences. We now need to observe that the multiscalarity of the concept of local does not necessarily imply that any piece of territory can be seen indifferently as local or global, attributing a perhaps excessive degree of arbitrariness. The proliferation of development agencies and the competition between territories to attract investment is clearly a symptom of the fragmentation of regional development policies. Although implying a certain degree of competition between places, local development must not be a synonym of parochialism or of zero sum competition. In order to produce a serious discourse on local development, it is necessary to be extremely realistic in evaluating the possibilities of success of the local system.

Furthermore, we should not forget that the definition of a scale has in any case, a function in containing and ordering the complexity of reality. First and foremost, the scale has the task of freezing the unceasing flow of relations to make their description and representation possible. The introduction of qualitative, non-economic elements (such as trust or personal acquaintanceship) into the explanation of development

processes does not mean that every single relation within the local system is part of the definition of development processes.

In our opinion, the problem can be overcome by assuming that the local system must possess two minimum characteristics: *self-reflexivity* and *duration*.

- Self-reflexivity refers to the capacity of the system to represent itself. In other terms, it is necessary for the actors that compose it to be conscious of belonging to a larger whole that possesses given common characteristics. In operational terms, self-reflexivity represents the principle of embeddedness, i.e. the correspondence of the real scale and ideal scale. In effect, when the actors act and plan on the same scale, the condition is created for them to be able to represent themselves as part of the local system. If, instead, there is a split between the two types of scale (for instance, the manager who lives in one place but works for a transnational company and thus with global perceptions, strategies and projects) it would seem difficult for actors to be able to represent themselves as part of a local system.
- On the other hand, it is necessary for this self-reflexivity to be constant and to last in time. It is not enough to visit a traditional celebration to become part of the community which expresses that culture. Duration and continuity mean that embeddedness is formed day by day and that a common consciousness is created.

In contemporary society, the relationship between self-reflexivity and time is central. One of the characteristics of capitalism is, in fact, represented by the unending temptation to increase needs and through them increase demand and consumption. This creation of new needs often uses the creation of a fictitious identification with local cultures extraneous to the consumer as a lever. By consuming ethnic goods or products"made in Italy", the individual has the feeling of belonging to a community that is not his own, with the sensation of appropriating an identity and a consciousness that do not belong to him. What makes this phenomenon a fashion and, as such, ephemeral, is precisely the lack of duration and continuity. The bond between the consumer and the culture that he or she attempts to appropriate is strongly symbolic, in that it implies the recognition of a particular status (for example, elegance or membership of an elite). However, this status is totally separate from real membership of the culture that produced this particular sense of elegance, precisely because there is no relationship of continuity. Fashion is ephemeral and is consumed in an instant.

Paradoxically, it is the industrial districts, characterised by their high degree of self-reflexivity, sense of belonging, duration and continuity, whose economic success is based on the export of goods "made in Italy" (Becattini, 2000). It could even be said that the wealth of the industrial districts is not the capacity to produce goods, but the possession of an identity that is sold on the ephemeral market of symbols in the form of consumer goods (Giaccaria, 1998a).

One example can be drawn from the thesis on *social capital* (Putnam and Leonardi, 1993). In a now classic book on socio-economic development in Italy, Robert Putnam identified a strong correlation between the level of social and economic well-being reached by various Italian regions and their endowment of what he calls "social capital", meaning by this concept the set of collective values and behaviour that a

community expresses (thus a concept intimately linked to self-reflexivity). The results of his research show that the regions of the Third Italy possess a higher degree of *civicness* (measured by Putnam through variables such as associative thickness, participation of the local community in elections and political life etc.). At this point, Putnam tries to go beyond the empirical evidence by introducing, amongst his working hypotheses, a historical continuity between today's civicness and the communal and community tradition of the Renaissance and the Middle Ages. In this interpretation, the cities of central Italy are particularly well-endowed with social capital that they began to accumulate centuries ago. In contrast, the regions of the Mezzogiorno continue in their lack of social and economic development to pay the price of their feudal past of oppression and administrative inefficiency. It seems justifiable that this thesis has kindled a rather heated debate amongst scholars. From our point of view, this work is extremely important because it identifies in self-reflexivity and continuity two major elements for understanding the success of local economies while, at the same time, finding it impossible "in the field" to demonstrate the real continuity of the phenomena observed. In other terms, the continuity with the past is solely a hypothesis that cannot be demonstrated because of profound historical and cultural transformations. Putnam's theory does not explain, for example, why the temporal dominion of the Vatican, which functioned elsewhere as a deterrent to the formation of social capital, did not manage to uproot the civic traditions of Emilia Romagna.

In other terms, the weak point in Putnam's theories lies in the impossibility of demonstrating that local self-reflexivity (which is the basis of the concept of social capital) has maintained continuity between past and present.

7.7. Scale, system, competitiveness and development

It is now time to understand how the discourse on scale and the local system can be integrated with what was argued in the previous chapter. To this end it is worth summarising our reasoning so far.

In the previous chapter we tried to interpret some of the transformations of the contemporary economy from the point of view of relations. In other words, we interpreted those changes as a gradual shift in attention from relations internal to companies to external ones. The realisation that external relations have an unavoidable territorial significance, together with the importance given to factors such as socio-cultural and political institutions, led us to refer the concept of competitiveness to territories and places.

In this chapter, discussion has moved on to the theoretical plane, considering how the social sciences must necessarily make simplifications in order to offer an interpretation of the complexity of reality. We have seen, however, that the traditional process of simplification seems unable to explain the changes in the contemporary economy because of:

- the need to mix the abstract relational spaces and to introduce the social and cultural elements traditionally excluded by orthodox economics into the economic explanation;
- the increasing hegemony of some actors (essentially the TNCs) for whom the traditional scales and periods seem to have lost effectiveness and meaning.

At this point, bringing the concept of "local" to the forefront means going beyond this dual stalemate. On the one hand, in order to go beyond the separation between the various abstract relational spaces it is necessary to concentrate attention on the vertical dimension of relations, on the thickening of the relations of various kinds that co-exist in time and space – this is the local dimension.

On the other hand, the local scale seems to be able to go beyond the limits of the traditional scales in that it incorporates in itself the multiscalarity intrinsic to human action. The local scale is in fact defined by the concrete action of agents and is interpretable only in relation with the global scale. We thus no longer have a multitude of distinct scales contained one within the other like Russian dolls, but the dual concept represented by the local scale and the global scale. Starting from the dialogue between these two variable scales, it is therefore possible to reconstruct not only the traditional scales (the Home, the Region, the Nation, the Continent, the Globe) but infinite intermediate scales.

The next step concerns the identification of the local scale which, as we have said, depends on the identification of the local system. This passage is of key importance. Traditionally, the scale (political, urban, national etc.) was defined first, and only later were the relations between actors on that scale considered. In the case of the local scale, it is instead the existence of a local system that defines the scale.

Talking of local scale and system, we have brought four key concepts to the fore (embeddedness, local/global dialogue, self-reflexivity and duration). It is now a question of discussing how these concepts can help us to understand local competitiveness and development.

Embeddedness and self-reflexivity of economic activities

The first question that we have to ask concerns the relationship between the local system and its competitiveness. The life and identity of the local system are, in fact, something that also includes the economic activities to which the concept of competitiveness generally refers. In particular, if we think of the relationship between the identity of the local system and its competitiveness from the perspective of embeddedness, we must recognise that we find ourselves faced with a process of reciprocal determination.

Firstly, we observe that the local embeddedness of the actors can aid the competitiveness of the system. The maintenance of the identity and embeddedness means, in fact, that co-operation and competition between actors are kept in equilibrium within the local system. Competition and co-operation should not be considered concepts valid only in the economic sphere, as they express a broader vision of the world and human society. Each community must find an equilibrium

between competition and co-operation even in the everyday aspects of social life. Where conflicts prevail, the local system is in fact destined to collapse, in that its energies get dispersed in competition. For the local system to maintain its identity, it is thus indispensable for relations between local actors to be characterised by reciprocal trust and understanding, the sharing of values, traditions, skills and languages.

The prevalence of relations based on trust, in addition to helping the local system as such, achieves one of the conditions that helps the processes of local competitiveness and development. In this sense, we can say that, by reproducing its own identity, the local system reproduces precisely those *institutions* that favour the competitiveness of local actors. In this sense, the discourse on the embeddedness of local development leads us to recognise a substantial contiguity with the theories of social embeddedness of economic activities developed by Granovetter.

We must however also acknowledge the existence of an influence of local competitiveness on embeddedness. Local embeddedness plays an essential role in the life of individuals and communities. Simone Weil actually talked about embeddedness as a need and fundamental human right (Weil, 1949). At the same time, we know that capitalism, through the exploitation and appropriation of labour, has produced alienation and, as a consequence, uprooting. As observed by Relph (1976), the processes of deterritorialisation and uprooting are intimately linked to an alienated and inauthentic experience of places. The phenomena of ghettoisation and the consequent explosion of urban violence are one of the most evident symptoms of the spatial alienation that is inseparable from production alienation.

From this perspective, local development processes can be a remedy for this process of uprooting. As local development needs the sharing of values and skills by the various actors, it can lead to a reappropriation of the territory by its inhabitants.

The geographical dimension of development becomes, at this point, an essential requisite for the interpretation of the complexity of human societies. In other terms, the subject of analysis is the territorial community, while local development can be interpreted as the process through which the local community pursues both continuity with the past and adaptation to external stimuli.

The existence of *shared* economic institutions is, in fact, fundamental in order to enhance *self-reflexivity* in the system. As we have seen, the self-reflexivity of the system must not be understood as a mere rhetorical artifice that creates consensus inside the system. This concept implies the existence of a shared consciousness and sense of belonging that are expressed through the creation and maintenance of shared institutions: routines, habits, customs, laws and rules through the respect of which the actors express their own consciousness of belonging to the local system. In this sense, the overlapping of ideal scale and local scale, to which the concept of self-reflexivity refers, as we have seen, can mean overcoming spatial alienation and the processes of deterritorialisation.

The concepts of embeddedness and self-reflexivity allow us to understand more easily how in the local development perspective the institutions that define the identity of the local system overlap with those that support its competitiveness. In this way, the local development process is difficult to transfer in space and time. If the institutions

are historically and geographically bounded and if development depends on the intertwining of economic, socio-cultural and political institutions, it will then be necessary to be very cautious in drawing wide-ranging conclusions from the different local experiences of development. The change of perspective is radical. As we saw in Chapter 4, the history of development theories is marked by the search for solutions valid at all times and in all places. This task appears to owe much to the process of simplification, which has been typical of the modern social sciences. On the contrary, the local development discourse that we have demonstrated so far is based on overcoming precisely these simplifications.

We thus need to consider how the theories of local development, based on local institutions, relate to the great discourses on development that have characterised the history of the economic and social sciences. To do this, we need to go back to what we said about the local/global dialogue.

Multiscalarity: a dialogue between institutions

We have seen that the basis of both the identity of the local system and its competitiveness are local institutions. The reference to the global scale implies that we can imagine global institutions, which support the organisation of production relations at a *supralocal scale*, independently of places and territories. These are evidently institutions which have operated within the great periodisations and scales which we examined earlier. Within a given period and/or given scale, these global institutions come to possess a universal value and range that are not affected by either time nor space. For example, the institutions which characterised the Fordist period (mass production, functional division of labour, trade union negotiations at the national scale etc.) were characterised as universal institutions capable of supporting capitalist accumulation in any place and at any time.

With the crisis of the traditional scales and periods, this aspiration to nomothetic identification of general institutions, whose validity is not conditioned by space and time, has not disappeared. On the contrary, at this historical time, there is a proliferation of attempts by global actors, such as the World Trade Organisation (WTO), the World Bank (WB), the International Monetary Fund (IMF) and other supranational organisations, to define new supralocal institutions.

It appears clear at this point that the theme of the relations between local institutions (that define both the identity and competitiveness of the local system) and supralocal institutions becomes of key importance.

The first solution that comes to mind for the problem of the relations between these different types of institutions is usually given by the imposition of the fundamental institutions on the local institutions. In a top-down process that proceeds from the general to the particular, one might immediately think that the institutions of local competitiveness must adapt more or less passively to the fundamental institutions of capitalism and in turn radically modify the institutions that support the local identity (Figure 7.3).

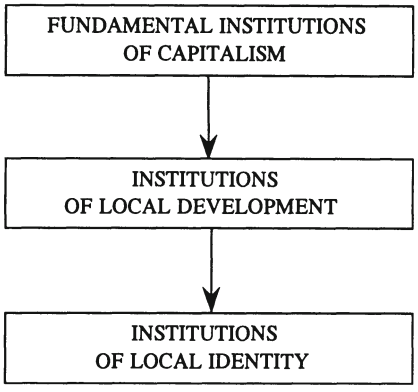


Figure 7.3 - The influence of contemporary capitalism on local identify

The debate on the flexibility of labour is emblematic of this way of thinking. Labour flexibility is assumed as a fundamental feature for success in the economy. This condition necessarily rewards the local systems that possess flexible institutions. However, a distinction has to be made between systems that possess this flexibility and the ones that are instead characterised by a rigid labour market. While the former already the possess the structural features to adopt flexible specialisation (for example, they operate in technologically advanced or high value added sectors, with a skilled and well paid workforce), for the latter the only way to economic success is to impose flexibility by force, modifying and reshaping the local institutions that are an obstacle to this reorganisation of production. For example, all forms of organisation of workers, from trade unions to the most spontaneous forms of worker solidarity and mutual aid[12], have always been seen as hindrances to economic development.

On this, Hudson observes:

> Successful regions in Western Europe tend to be characterised by particular forms of co-operative industrial relations and flexible working arrangements; they employ skilled and well paid workers, on permanent contracts, committed to the companies for which they work, compliant and flexible in their attitude to work. [...] It is, however, important to distinguish between regions in which there is genuine co-operation and commitment to common regional goals based on a shared understanding of the reciprocal relationship between cohesion and competitiveness and those regions in which there is a labour force that is malleable, flexible and compliant because of the fear of unemployment (Hudson, 1999, pp. 5-6).

Paradoxically, part of the literature on local development based on the experience of the industrial districts does not seem to have noted the fact that the blind attempt to adapt to the institutions of contemporary capitalism can radically undermine the local institutions on which the success of local systems of small and medium sized industry is based.

As a consequence, the local development perspective must entail profound reflection on how the various institutions interact. The adaptation to supranational institutions is not guaranteed a priori nor must it be pursued as an absolute imperative. In a genuinely institutionalist perspective, we must recognise that the success of capitalist institutions does not mean the affirmation of universally true rules, but is the consequence of a process situated historically and geographically (Veblen, 1924; Polanyi, 1957).

It is not possible to know with certainty at any given instant the potential of local institutions which are now fighting for survival and which appear threatened by the spread of supralocal institutions. Something happens to institutions that is in some way similar to the biological world. The maintenance of a wide variety of vegetable and animal species appears increasingly as an essential resource for the future of humanity. In this sense, it would not be wrong to talk of *institutional biodiversity* as an essential value to be defended.

There is no shortage of examples in this direction. The industrial districts themselves did not arise like radioactive mushrooms on the ruins of the old Fordist world. Their success is based on age-old institutions that survived in the shadows during the Fordist period. The fact that little attention was paid to them by policy makers during the seventies stopped these institutions being uprooted along with the olive and orange trees of the Mezzogiorno (Conti and Sforzi, 1997). The contribution that Muslim institutions are giving to the rethinking of the possibility of integrating the Arab world into the world economy (Choudhury, 1999), and the apparently enticing hypothesis that the age-old primitive institutions of African societies, based on gifts rather than mercantile trade, could offer a solution to the difficulties of the continent (Latouche, 1998) is very topical.

In conclusion, we can state that the confrontation between local scale and global scale is, in the end, a confrontation between local institutions and global institutions. We will come back to this issue in depth in the next chapter.

Local systems and the sustainability of development

We now need to consider what role is played by the fourth element introduced when talking of scale and local system, *duration* and *continuity*. We have said that in order for a place or territory to be seen as a local system the problem of duration and continuity needs to be posed. In other words, it is necessary for the characters that define the identity of the system (i.e. its institutions) to survive over time. This does not mean excluding transformations and changes. As was seen in Chapter 5, one of the main characteristics of the systems is structural coupling, i.e. the capacity to modify one's own *structure* while conserving the system's *organisation* (i.e. identity).

Designing local development in terms of duration, some important implications emerge. First of all, we observe that the concept of duration has some strong analogies with that of sustainability[13]. Both of these concepts refer to the reproducibility of the resources and conditions needed to keep the system efficient. Observing the problem of sustainability from the perspective of local development implies, however, some important differences compared to well-established approaches.

Traditionally, the problem of sustainability assumes a key role in attempting to find at least a partial remedy to ecological degradation and the waste of non-renewable natural resources. The idea at the basis of sustainable development is that, in a given period, economic development must not worsen environmental conditions and resources to the point of making development itself impossible in later periods.

In the almost thirty years of life of the concept, there has been a series of reflections and refinements[14] which, at least in orthodox economic thought, have not made substantial changes to the assumptions of the original formulation:

- that development and economic growth remain in any case the final goal and thus possess an extremely high intrinsic value;
- that the environment mainly acts as a *limit* to development and is, therefore, an exogenous factor in development processes.

We must now ask ourselves what relations exist between the discourse on local development and the concept of sustainability.

When the place and not just economic growth is put at the centre of attention, sustainability is no longer an accessory concept to that of economic development, but the condition for the survival of the local system. To be sustainable, the local system is no longer characterised by just one particular relationship (i.e.that between the production and consumption of resources), but the entire system of institutions.

In this sense, development is sustainable not only when it preserves resources for future generations, but when it *guarantees the duration and continuity of the institutions* that constitute the local identity, however they evolve.

We can thus distinguish between two types of local sustainability:

- *in the strict sense*: if economic development no longer depends on general laws but on local conditions, then the sustainability of development will not be objective and universal, but must be defined locally, in reference to the set of local relations that sustains local competitiveness and generates environmental problems. The set of relations between local society and the environment becomes central and the solution of problems is not purely the internalisation of costs off-loaded by the firm on the environment. Only in-depth understanding of the complex interactions that link the local socio-economic system and the local ecosystem (Dansero, 1996) makes it possible to define the agenda of environmental problems and to find a local solution;
- *in the absolute sense*: if we accept the hypothesis that, in a local system, sustainability does not refer only to the environmental impact of human activities but also, and above all, to the reproduction of the conditions that guarantee the needs of the local system itself, the concept of sustainable local development assumes a more general meaning. In this case, the subject of enquiry is not the corpus of relations between the socio-economic system and the ecosystem, but the identity of the local system as a set of cultural, production, landscape, social and environmental elements. The definition and evolution of this complex identity must be understood and investigated under the name of sustainability.

What has been said clearly shows that the local system's need for duration and continuity is reflected in the way of understanding economic development. In the local development perspective, *economic development is a means and not an end*. The meaning of local development includes and at the same time goes beyond the concept of economic development. The purpose of local development is the reproduction of the conditions of the existence and success of the local system. Local development must guarantee the duration of the system and to do this it must be sustainable; it must, in other words, conserve and reinforce local institutions.

7.8. Conclusions

In the course of this chapter, we have developed, in a markedly theoretical fashion, reflection on the concept of "local" introduced in previous chapters. In particular, we have argued how talking of local system and development represents a possible way of going beyond the traditional processes of simplification of realities made by the social sciences. In particular:

1. we contrasted *embeddedness* and *self-reflexivity* with the separation of the various frames of action into *abstract relational spaces*. The economic world is no longer viewed as if separated from or above society, but embedded in and intertwined with it;
2. we contrasted the principle of *multiscalarity*, especially the dialectic between local and global, with the *fixed traditional scales*;
3. we contrasted the principle of *duration in time* as a fundamental element of the local system with the division of human history into closed and defined *periods*.

This change of perspective obviously modifies our way of understanding local and regional development. This is no longer a question of adapting the local territory and economy to the imperatives of contemporary capitalism, but of concentrating attention on *local institutions*.

At this point, we need to proceed in this direction, looking in depth at the features of local development, constructing a language appropriate to this new perspective. The objective is to define a limited nucleus of concepts that enables us to describe and understand the evolution of the local systems without falling back in part into the determinism and simplifications that have marked the modern social sciences.

Notes

(1) It is certainly not possible to summarise here the very extensive literature on the subject. For a review of the literature on the structuration of society and its influence on geography, see the fundamental work by Richard Peet on contemporary geographical thought (1999, Ch. 5).

(2) Even in everyday and media language, the metaphor of space indicates a set of abstract relations: we talk of political space, family space, private space etc.

(3) Sociology is a partial exception to this, in that since its foundation as a social science its task has been to analyse exactly those relations that link different relational spaces. The exception is, however, only apparent. At least in its traditional form, of positivist and Cartesian inspiration, this attempt is based on the recognition of the fact that relations are of different natures and can be represented in distinct, if not separate, spaces. The nature of its enquiry has thus been purely analytical. The possibility is first established of separating the different types of relations, and then of studying them separately. Only later are the relations between the different spaces studied. The very fact that sociology has often spoken of influences and determinations between the different realms of economic and social action implies that the relations can be separated from each other; i.e. they possess their own organisation and only in a second phase interact.

(4) In the orthodox socio-economic interpretation, the representative individual is the unit of observation of the economic system. This term generally indicates the economic agent, normally an individual or a company, which possesses characteristics common to all other economic actors. In this way, it is enough to study the characteristics of just the representative individual to understand the functioning of the entire economy. Once the behaviour, desires, utility and rationality of this sample agent have been defined, it is in fact possible to understand the evolution of the economic system as a whole simply by making identical agents interact according to a priori and universally valid rules.

(5) It should, however, be observed that the arguments on which the "theories of the divide" are based have been thoroughly criticised by other scholars, rather more sceptical about the pervasiveness and radical nature of these transformations, which for the first time challenged the very logic of making a division into periods. In reaction to the theories of post-Fordism some authors have in fact developed a criticism of the very concept of Ford-Taylorism, denying that this is a category capable of fully representing an entire era of capitalist development (Clarke, 1991; Sayer, 1989). According to these critics, at the basis of this concept is a mythicisation of Fordism. Mass production, the main basis of Taylorism, would not in fact ever have been the exclusive and perhaps not even the predominant form of production. Alongside it small companies and craft production have survived and prospered.
The objective of Fordism is, also, the exercise of control over a growing number of aspects linked to production. In this sense the essence of Fordism would not lie in the discovery of a particular technique (in this case, the application of Taylorism to mass production), but in the systematic search for new techniques (social as much as scientific) that increase control over the organisation of production in all its realms. In this sense, Fordism can almost be seen as the essence of capitalism and not as simply a period of its history.

This is not the place to decide whether this criticism of post-Fordist theories is definitive or not. What really matter is recognising that these criticisms question whether Fordism is effectively a *homogeneous period*, defined once and for all and capable of offering a coherent and comprehensive explanation of economic and social phenomena. In other terms, these criticisms are not limited to denying that a post-Fordist transition is underway but go as far as doubting that the processes of division into periods provide an adequate explanation of reality.

(6) Especially in the last twenty years, there has been growing hegemony of transnational companies (TNCs) founded largely on their capacity to operate over and above the traditional periods and scales of social analysis. On the one hand, even during the recession of the nineties, the productivity and the profits of TNCs increased constantly. On the other hand, this growth has been largely independent of the dynamics of national economies. There has thus been a dual emancipation of the TNCs from both the cycles typical of capitalism and from the scales in which economic action was traditionally interpreted. This process was then translated into strategies that, through the almost total mobility in space of financial and production flows, tried to ensure a continuous trend to the growth of the TNCs unrestricted by economic cycles.

(7) For an analysis of the relations between modernity, modernism and post-modernism, see the fundamental Kumar, 1995. On the debate in geography, see Peet (1998, ch. 6), in addition to the now classic works by Soja (1989) and Harvey (1989).

(8) For instance the studies inspired throughout the world by the "discovery" of the Italian industrial districts (Becattini, 2000; Pyke and Sengembergen, 1992) and the later elaboration of the concept of cluster (Porter, 1990).

(9) As far as theoretical reflection is concerned, there have been very many contributions. Among the themes examined extensively in the first part of this book, we can cite the studies on the milieu innovateur (Maillat and Crevoisier, 1991), the elaboration of the theory of flexible specialisation (Piore and Sabel, 1984), reflection on the role of untraded relations (Storper, 1997), and the thesis of institutional thickness (Amin and Thrift, 1994). Above all, we must cite the two turning points that, in our opinion, are at the basis of the renewal of economic thinking in recent decades: the theory of the embedding of economic behaviour in the social fabric drawn up by Granovetter (1985) and the rebirth of institutionalist economic thought (Hodgson, 1988).

(10) Exclusiveness can derive from the specificity of the needs to be satisfied, by the non-transferability of the solution outside the local context or by the deliberate exclusion of third parties from the benefits of the locality.

(11) The difficulties encountered in English language literature on localities are well known, because of which it has never been possible to reach an agreed definition and an unambiguous identification (see Peet, 1998, pp. 176-191).

(12) The affair of the Liverpool dockers is emblematic in this sense. As long as the dockers enjoyed a monopoly position in providing labour to the shipping companies, it was possible to ensure workers an adequate level of pay, in addition to fundamental guarantees. The liberalisation of the labour market has instead encouraged the creation of fake co-operatives which have introduced lethal competition between workers. Very quickly, the fear of being sacked and unemployment was a serious blow to the institutions that sustained the local identity (for example, the moral norm not to substitute a fellow worker unfairly dismissed), assigning an arbitrary power to the companies.

(13) From the linguistic point of view, it is interesting to not that French translates "sustainable" as "durable", an adjective that corresponds more closely in English to "lasting" or "abiding".

(14) For two recent reinterpretations of the influence of ecological themes on economic theory and planning, see the recent works by van den Bergh (1996) and Barbier (1998).

CHAPTER 8

The relational economy: networks, space and knowledge

8.1. Premise

In the previous chapters we have seen how the concepts of competitiveness and development depend not only on internal company organisation, but can also refer to places and territories. In this way, it is possible to talk of:

- *local competitiveness*, in the sense that the competitiveness of companies depends increasingly on relational factors (trust, reciprocal understanding, skills, etc.) to which companies can gain access only by concentrating in particular areas;
- *local development*, in the sense that the process of development of a place does not depend on its ability to adapt itself to a single development path, but is linked to the capacity of the local communities to create and co-ordinate these particular relational factors.

This way of interpreting the relations between territory and industrial competitive dynamics has led to the introduction of new concepts and languages. In particular, attention has been focussed on two main concepts: the local system and local institutions.

We now intend to show how the theoretical scheme constructed so far can be used to understand the functioning and evolution of territories and local communities.

8.2. Identity, organisation and structure: the local road to development

The perspective of local development does not provide, as we have seen, a description of an abstract, horizontal space, defined a priori on the basis of universal laws. On the contrary, it integrates the abstract and the concrete, the objective and the subjective, the external and the internal, the horizontal and the vertical. A discourse on local development cannot, consequently, be expressed by referring exclusively to a particular scientific language, such as that of economics, linguistics, sociology or geography, in that the domain of each of these is a single relational space. It is instead

a discourse to be reinvented to express this interweaving of market laws, material culture, tradition etc.

The starting point is the concept of the *identity* and *uniqueness* of the local system, stemming from the features of self-reflexivity and duration. The dialectic between uniqueness and identity is central to the understanding of this passage. On the one hand, it is absolutely obvious to state that each place (and thus every local system) is unique. In the end, this is one of the foundations of geography as a descriptive science: as each place is unique, the only access to understanding of it consists in an accurate and *synthetic* description of the region.

On the other hand, it is well known that this problem was solved in a totally different way by the 20th century social sciences: for a long time, the uniqueness of places was interpreted as the result of contingent geographical and historical circumstances that "disturbed" the linearity and necessity of universal laws of social and economic action. It follows that the modern social sciences have for a long time evaded the problem of uniqueness, to concentrate on the search for laws that ignore the geographical and historical conditions of individual places. In the years of the quantitative revolution, geography itself denied the theme of the uniqueness of places, preferring abstract space as the object of enquiry (Harvey, 1969).

Posing the problem of uniqueness in terms of identity radically changes the perspective. Identity attributes to the local system an autonomy from the abstract laws of the economy. The search for identity means abandoning pure description. It also presumes that the characteristics of places are not listed pedantically, but selected. Finally, from the perspective of our reasoning, the assumption of places as active subjects means accepting the multiplicity of development processes.

The question of identity can be solved by using some of the instruments of systemic analysis, in particular the distinction between organisation and structure (see Chapter 5). Although both concepts are of a relational nature, the sense is profoundly different. The *organisation* is, in fact, given by the ensemble of relations between the elements of the system that makes that system what it is and not something else. The *structure* is, instead, given by the material and historical qualities of those relations. It is the structure that modifies itself more rapidly, following stimuli from inside and outside the system. The organisation maintains, instead, a greater degree of rigidity, in that a radical modification of the relations that compose it would mean the disintegration of the system. Obviously, the organisation evolves over time, but this happens according to its own laws (in this sense, as has been seen, the system is autonomous and autopoietic).

For our purposes, we can say that the organisation represents the identity of the system. To clarify this concept better, let us go back to the example of the industrial districts. In the industrial district, organisation is given by the relations between companies that make the districts different from other means of organising production. For example, the climate of trust and cohesion can be seen as an essential component of the organisation of the system. Vice versa, the existence of the individual company, with its own specialisation and biography, is a structural element, in the sense that it is a party to the realisation of district organisation. In addition, the high social mobility

that leads to a frequent exchange of roles between workers and entrepreneurs is not an element of organisation but of structure, in that it is simply an expression of something deeper, such as the presence of trust and of particularly close and cohesive social networks. This distinction can explain, for example, why the competitiveness of industrial districts depends on the internal organisation of production and less on the presence of a particular company. In the following pages, attention will be focussed particularly on organisation and identity and only to a lesser extent on the structure of the local system.

To tackle the problem of identity, it is necessary to return to the original simplification of every social theory, the selection of significant relations that define the identity of a place and a society. In the case of the local system, the object of enquiry is not the universal laws that organise social relations, but the specific vertical and horizontal relations (respectively between the various aspects of local life, and in the abstract and global network of economic, cultural relations etc.). They represent the identity of the local system, *the nucleus of essential local relations* through which a community keeps itself distinct from others[1].

Above all, it is necessary to underline that the selection of the relations that define identity is not made purely on the basis of rules external to the local system, for example on the basis of market rules.

The difference between our perspective and the evolutionist economics approach adopted in many studies of local development lies in this passage. According to evolutionist theory, the market plays a role analogous to that of the environment in biological evolutionism, selecting the companies fit to survive and prosper. In the transposition of this point of view to the study of places and territories, the ensemble of institutions of global capitalism (amongst which the market, but also the technological system) plays the role of selection of the winning local systems that can best integrate with the capitalist system.

The principle of self-reflexivity that we have adopted highlights a different perspective. The selection that leads to the emergence of local institutions must be a mainly internal process, the outcome of the interaction between the actors that make up the system. Only in a second phase does the system face the external world and adapt its own structure to the stimuli from it, maintaining its own organisation. It is, in fact, clear that the local systems must engage in dialogue with the external environment (the global scale) creating relations (not necessarily mercantile) of exchange with it.

In this perspective, the variety of development models does not derive from the *incapacity* of local actors to organise themselves in the most efficient manner and to adapt to a single model of economic development. It stems, on the contrary, from the fact that initiation of a development path depends profoundly on the perceptions and judgements that the actors have of the network of relations in which they are included.

These concern, in particular, the perceptions related to the vertical and horizontal networks. As far as the latter are concerned, the actors are involved in supralocal networks of relations which exclude territorial relations and define, for instance, the membership of a sector, a social class or a religion. They do not, however, have perfect understanding of these horizontal relations. In this framework, although it is

possible to hypothesise the existence of abstract mechanisms and laws, the perceptions of the actors are characterised by bounded rationality. The local actors have, in other words, their own perception of the horizontal (technological, financial, production, class etc.) relations which do not express perfect rationality, but which nevertheless do not conform to an optimistic "all is well" attitude. These perceptions are in fact influenced by what happens both outside and inside the local system. The local actors can insert themselves successfully in global networks of research, innovation, markets etc. and thus improve the local perception and interpretation of horizontal relations. The *dual identity*, local and global, of some local actors is indeed fundamental for competitiveness in that it makes available locally resources and information produced within the global networks of research and innovation, and not directly accessible to the local community.

In addition, it should not be forgotten that local actors have a perception of geographically circumscribed vertical relations which represent the concrete realisation in time and space of abstract horizontal relations. More than anything, the strength of vertical relations is much greater: what is close makes an impact, provides joy, hurts and gratifies much more than what is far away. The perception of local actors is, in this sense, part of the process through which these local relations are formed and modified. According to how they perceive these vertical relations, they feel desire and act in such a way as to reinforce and reproduce the relations they believe important for their own well-being and success. Vice versa, local relations that are judged to be uninfluential and superseded are soon abandoned and contained in the uncertain reign of memory and folklore.

It should be said that the importance assigned to the perception of local relations is not the same as free will. The perception that a local community has of its own identity is not enough to ensure success and not even survival. For this reason, the definition of identity is *not* based solely on vertical relations internal to the local system, but also on abstract relational spaces identified by particular functions (networks of production, innovation, culture etc.). In other terms, the relations cannot be active only inside the local system, but must also be active on other scales. In this way, the external environment (global capitalism) can influence the identification of the identity and the project of local development.

The fact that local actors organise their perceptions stably and socially allows us to talk of local identity as distinct from the abstract and general laws that regulate the functioning of a-territorial spaces. At this point it is necessary to define more clearly *the ways and times in which the local community organises perceptions, relations and strategies so as to maintain its own identity*.

8.3. The local value production system

As we have seen, the identity of the local system is given by the presence of institutions of various kinds (economic, social, political and cultural). Theoretically, it follows that *multiple perspectives* exist from which to observe the local system and

each of these offers a partial image that helps, however, to understand the local system as a whole. In this sense, we can talk of local tourism system, local urban system, local employment system or local ecological system. The local system is, in fact, a *complex system*, in which the economic dimension is interwoven with the cultural, social, ecological and political dimensions etc.

The economic dimension of the local system

The economic dimension of the local system is not a sub-set of the local system, otherwise we would fall back into the functionalist perspective on local development (see Chapter 4) and into the separation between economic behaviour and socio-cultural behaviour. It is rather one of the many descriptions of the local system, taken from an internal perspective, with the objective of explaining some of the conditions and mechanisms that allow the reproduction of its material culture.

Given these premises, our attention will now focus on the economic dimension (especially manufacturing) of the local system. Although, as we have seen, the identity of the system is not limited to its economic aspects, talking of development and competitiveness nevertheless implies the adoption of an economic perspective. In turn, the decision to observe the world of the economy through the lens of the *production of material goods* is a clear choice.

The production of material goods still keeps, in fact, its primacy over the production of services and immaterial goods (Best, 1990; Sayer and Walker, 1992). Although the weight of the financial and immaterial economy has increased in recent years, it is undeniable that it is based on an increase rather than a contraction of the material support it needs. An example is the dizzying obsolescence of electronic goods, especially personal computers. If we look around, we see an increasing quantity of goods and rubbish (i.e. goods that are no longer used). Again, the border sectors of scientific and technological research (such as materials science and genetics) are massively oriented towards the production of material goods. Moreover, it is from material goods (infrastructures, medicines, food, clothing etc.) that an improvement in the living conditions of the countries of the Third World is expected (an aspect that should not be neglected when talking of development).

At this point, we need to introduce a concept that enables us to observe the local manufacturing systems without betraying the holistic and systemic principles that have guided our reasoning so far: the *local value production system*, which we can define as the set of local institutions that generate value within the system.

The different terms used to identify this concept refer back to clear characteristics:

- the idea of *system* is different to analogous concepts like *cluster* (Porter, 1990; Held, 1996), and filière in that it does not refer to the mere functional relations between companies belonging to the same industry, but rather to all the relations on which local competitiveness is based. These will thus be supplier relations, but also all the other relations on which the circulation of innovation and knowledge are founded;

- the emphasis on the *local* dimension of economic activity is intended to underline how attention is concentrated on the specific and non transferable resources that increase, within an international context, the competitive capacities of the co-located companies;
- the concept of *production* refers to the dynamic aspect of the industrial and economic process, considered in all of its aspects (innovation, growth in jobs, exports etc.). In this light, competitiveness can be planned, constructed and acquired over time, in a process of increment and adaptation of the knowledge needed to compete on the international markets;
- the explicit reference to *value* highlights the fact that added value must be formed and maintained inside the local system. In fact, one of the main limits of policies aimed at attracting foreign investment consists in the fact that the high added value activities of the production chain often remain located outside the region[2]. In this context, in particular, the concept of value must be interpreted in the broadest possible meaning, making reference not only to the concept of added "production" value and, therefore, of productivity, but also to the added "social" value. This can be expressed as employment, local growth, pay levels and so on. In this sense, the value we refer to is not merely company profit but rather the capacity of the local actors to reproduce the conditions (institutions and knowledge) on which local identity is founded.

Understanding of the local value production system will obviously be achieved through analysis of the factors that express the identity of the local system:

- the organisation of the networks of market relations and other relations (*untraded relations*, in the terms used by Storper, 1997) represents the local connection between the different relational spaces that contribute to the production of value: production, innovation, training, the transmission of values and knowledge etc.
- the dialogue between the local manufacturing system and global capitalism is a fundamental condition for the maintenance of the autonomy of the local, which cannot be hermetically closed to the outside without disintegrating;
- finally, the functioning of the networks of relations and the local/global connection is explained through a resource-based approach. In line with the geographical tradition, we maintain the assumption that local resources are the element that attracts capitalist companies to places. The break with traditional location theories is that here a key position is given to a particular type of resource, knowledge.

This perspective demands that the concepts typical of the discourse on local development (the network nature of relations, the global/local connection, the local learning process) be examined in depth and specified better with reference to the viewpoint through which the local system is observed. To do this, use will have to be made of reflections and thoughts developed mainly outside the disciplinary boundaries of geography, in particular in economic sociology and studies on the organisation of production.

The metaphors of local development

The concepts of *identity* and local value production system do not yet allow us to throw light on how local relations are activated and organised in concrete terms in order to create a competitive advantage in the local system. This fact drives us to go into greater detail, introducing three metaphors already encountered in the course of this book: network organisation, the local/global dialectic and the dynamics of learning.

First of all, we need to understand better how the institutions that make up the local identity organise social relations in a coherent and durable manner, producing embedding. To this end, we will use the *metaphor of the network*. Whether this is a physical network (railways, roads, communication networks etc.) through which goods and people transit, or a metaphorical network (family, friends, politics etc.) through which emotions and information are conveyed, the concept of network is by definition relational, just as the concept of identity is. However, while the latter is limited to identifying the significant relations, the network *describes* how they are organised inside the local system. Network organisation implies two hypotheses on local relations:

- *horizontality*: talking of networks assumes that the components of the system are not linked to each other by hierarchical relations, in the sense that communication is not principally of a top-down type;
- *mobility*: the network, although not implying rigid relations of a hierarchical type, must guarantee the stability and duration of the organisation. These are ensured not by the robustness and rigidity of the bonds, but rather by their concentration and variety, i.e. the density of relations of different kinds that constitutes the essence of the local system (Becattini and Rullani, 1995).

The network metaphor makes it possible to represent characteristics of local relations that could not be grasped otherwise. The relations that we have talked of here do not, in fact, always and only materialise in market transactions or in the transmission of orders from one level to another of the hierarchy. They are not, therefore, fully describable by turning to the two classical institutions of capitalism (the market and the hierarchy). The network metaphor makes it possible to represent all the relations that occur in the local system and not only mercantile or hierarchical ones (Granovetter, 1985). This metaphor is fundamental precisely because it makes it possible to express both vertical relations and horizontal relations through the same image. In this way we can identify the *same organising principle* (that of the network) for both dimensions of the local system. As in the exact sciences, two sizes are comparable if expressed in the same unit of measurement, so when talking of local development, the vertical and horizontal dimensions, a-territorial space and that of places are expressed through the same metaphor. Imagined as different levels of a single cognitive process, they can thus be described and understood together. However, it still needs to be clarified how the connection between local networks and supralocal networks occurs.

To this end, taking a further logical and metaphorical step forward, we can imagine a *network of networks*, in which the local networks constitute nodes in a network spread out on the global scale (Dematteis, 1999). This is the second element in our discourse, the metaphor of the network of networks as the image of the *local/global dialogue*[3]. If, as we have seen, the essence of local identity is the co-existence of vertical and horizontal relations, each of which can be represented as a network, then this connection must also find its own metaphor. The objective is to re-introduce the spaces of a-territorial horizontal relations, where much knowledge is produced (networks of universities, private research centres, international institutions), without giving up the complexity of the vertical relations that embed individuals and organisations in territories.

With the metaphor of the network, the local maintains its own identity without being determined by the organisation of global capitalism. Thus, even the command centres of contemporary capitalism, the global cities, can be thought of as local systems, as networks of relations that embed economic actors in their context (Thrift, 1994). In this sense, the global becomes a "place" of interaction between places, without this presuming the absolute equality between local systems, nor their rigid hierarchical positioning. Indeed, because of the systemic qualities intrinsic to the metaphor of the network, the global is much more than the sum of the locals.

The position of the local system can be observed from the outside or the inside. The external point of view is typically that of the global on the local, in which it is the strategies and actions of global actors that create and disintegrate the local systems, establishing case by case the scale of interpretation of socio-economic phenomena that is best adapted to their objectives and perceptions (Giaccaria, 1998b). This is the perspective of economic orthodoxy and, in general, of all the policies *for places* defined *outside the places*. From this standpoint, places justify their own existence as containers of factors of production – whether these are physical resources (like capital or raw materials) or relational resources (such as specific competencies and specialisations) – and, in exchange, obtain access to the global networks. The emphasis on only the local relations that are successful in the global economy thus means admitting implicitly that it is the global scale that selects the local factors.

The internal point of view is, instead, the one that opens up the possibilities of local development in that it refers to the perception that the local system has of itself and to the ways in which these perceptions activate and reinforce the local relations needed to ensure both its own autonomy and dialogue with the global scale. This system of perception of one's own locality and the process of the transformation of the perceptions into competitive advantages implies the times and ways in which the local system runs its own activities. The perspective is cognitive and can be summarised as follows:

- the local system is the place where certain relations external to companies can be developed and transformed into competitive advantages;
- these resources have conferred over time a competitive advantage to the local actors and are therefore attractive to global actors;

- these resources (trust, professional skills, personal acquaintance, industrial atmosphere, manufacturing tradition etc.) are by their very nature untransferable, in that
- the exploitation of these resources depends on a process of *localised learning*, in the sense that local actors, through the continuity of their collaborative relations, learn to transform local resources into competitive advantages (see Chapter 1);
- global actors can take possession of these resources in various ways: embedding themselves in the local fabric, acquiring products from local companies or by involving local actors in global networks of research and innovation;
- that fact that it is difficult for the local system to be stripped of these resources, as their activation depends on the close-knit network of non mercantile relations that defines the identity of the system itself, keeps the two dimensions of the system (local and global) in equilibrium with each other.

The problem of *learning*, which represents the third metaphor which we will use, is thus central for the maintenance of the equilibrium of thee two dimensions of the local system (Asheim and Dunford, 1997). If horizontal relations prevail, then there will be phenomena of uprooting and loss of significance of places (deterritorialisation): relocation of production activities, disappearance of languages and traditions, emigration, consumerism, alienation etc. If, instead, the vertical relations come to the fore, the local system is closed, and attempts to maintain its identity artificially will proliferate.

It is now time to consider how these three metaphors can be applied to the economic dimension of the system so as to understand better the development and competitiveness of the local value production system.

8.4. The organisation of production networks

As has been said, the network is a type of organisation that exists alongside the market and hierarchy while at the same time being distinct from them.

Thanks to this characteristic, the "network" lends itself well to explanation of the territorial embeddedness of economic activities. In this sense, embeddedness goes beyond the mere location of plants: this is a metaphor that expresses a fundamental concept of contemporary socio-economic thinking, i.e. that production, like all human activities, is part of a fabric of economic and other relations. These relations have a vertical dimension that makes them specific to the place in which the activity is physically located. Other relations, as we have seen, are instead of a horizontal type, in other words extraneous to the territorial dimension.

The network metaphor allows us to consider vertical and horizontal relations simultaneously in that the individual actor belongs to networks of both types. Logically, a metaphorical transposition is made, in the sense that embeddedness in networks of local relations is assumed as embeddedness in the territory. In this paragraph, we will attempt, first, to define better the characteristics of socio-economic

networks and then demonstrate how this metaphor can explain the way in which the relations between companies have evolved, consequently modifying the relations between territory and competitiveness.

The network of companies as an organisational principle

In general, every organisation can be represented as a web, a reticular or network structure, without this meaning a clear reference to the themes of geographical embeddedness. The world financial system, for example, is itself represented as a network that connects the different points of a globe where the traditional geographical representations seem to lose their power and meaning.

In the field of organisational studies, the metaphor of the network usually assumes a rather limited meaning, constituting a *specific form of economic exchange* (Grabher, 1993a), *alternative to* – but not necessarily a substitute for – *the market and the hierarchy* (see Chapters 2 and 3). From now on, therefore, the term network will be used in this sense. Following Grabher, socio-economic networks must share at least *four fundamental characteristics*: reciprocity, interdependency, loose coupling, and management of power. All of these characteristics imply an important cognitive dimension, in the sense that the actors' perception modifies the structure and the transformation of the network (Håkansson 1989).

1. *Reciprocity* refers to the fact that economic transactions do not occur either through discrete exchanges (as in the markets) or through administrative decisions (as in the hierarchies). In particular, reciprocity is based on the expectation of a desired reaction and on the non occurrence of the main action when the reaction does not occur. The principle of reciprocity does not mean, for example, equivalence (as in pure market exchanges) given that the equilibrium of the exchange is not achieved in every single transaction but in the framework of the entire relationship. The role of non economic exchanges (Easton and Araujo, 1992) in the formation of reciprocity is important, in that they do not involve discrete goods, but a long term commitment that entails reciprocal expectations. Given that this principle does not mean equivalence but a fuzzier evaluation of the actors' expectations, the judgement of the functioning and utility of the network is based fundamentally on the perception of each actor, who compares the actions of the other actors with his own expectations and predictions moment by moment. The maintenance of the network obviously depends on the judgement of the utility of the network itself. It is clear that, when an actor feels that benefit cannot be drawn from participation in a given network, it is abandoned. If this judgement is shared, then the very existence of the network is threatened. However, the utility of the network is not measured exclusively by profit. The purpose of the network is not, in fact, to make each single relation between actors advantageous but to ensure the reproduction of the relations which support the competitiveness of the local system.

2. *Interdependency* is the second characteristic that helps to distinguish the network from the market and the hierarchy, as the network is characterised by independence while the other two institutions imply dependency. The cognitive aspect of interdependency is evident, as Håkansson and Johansson have pointed out (1993). When two actors perceive their activities as interdependent, they tend to set up an exchange with the other. When they make an exchange, they know their reciprocal capacities and needs and use and reinforce the interdependency of their activities.

Interdependency entails two main aspects:

- the existence of a *reciprocal attitude*, understood as the knowledge that each one has of the other, and on which communication and problem solving are based (Grabher, 1993a);
- the existence of bonds between the actors is the concrete reflection of the reciprocal attitude of the members of the network, creating a more *stable and predictable* structure.

3. The third feature characterises bonds in a network is *loose coupling*, perhaps the most important. It allows participants to maintain a certain degree of autonomy in taking the decisions fundamental to their economic activity without losing the benefits of reciprocity and interdependency. Loose coupling is the result of two contrasting trends which govern changes in the network (Håkansson, 1992): the tendency to structure and the tendency to diversify. The process of *structuring* makes it possible to render the network more solid and stable, and thus to exploit to the best given advantages both of a technical nature (e.g. improving the exploitation of the opportunities of scale and specialisation) and of a relational nature (e.g. persuading the actors involved to give up part of their autonomy). The process of *diversification* refers, instead, to the tendency to seek out new activities and resources that can be managed efficiently inside the network, or to construct a new network that includes actors belonging to other networks.

Both these tendencies can cause the end of the network, with an excess of rigidity in the structure (which makes it too similar to a hierarchy) or with excessive emphasis on individual entrepreneurship (which, in contrast, would turn the network into a market). The specific characteristic of loose coupling is the equilibrium of these tendencies. Numerous other aspects of the structure of the evolution of networks can be traced back to loose coupling:

- the networks are open to a *broader range of interactions* than hierarchies are, and at the same time offer conditions of stability and trust that are not available in blinkered market relations. Both the diversity and the stability of the interactions are fundamental requisites for interactive learning and innovation;
- the second aspect that can be traced back to loose coupling is the *longevity* of the network. The persistence of personal relations in a loose configuration based on different bonds (personal acquaintances, social and family relations etc.) make changes unpredictable. The relations between the intensity of links and the longevity of the network are not predictable a priori and depend on the environment

in which the network operates. External perturbations can break up strongly interconnected networks, while apparently fragile networks can survive successfully if they know how to relate favourably with their external environment[4];

- loose coupling also has effects on the identification of the *boudaries of the network*. The borders are a very important characteristic of the network as they define its exclusiveness, which means the capacity to render the benefits of the network inaccessible to others. Obviously, the external economies cannot be contained perfectly within the structure of any organisation, even of a hierarchy. This fact is a key problem for networks, a context in which many characteristics such as the industrial atmosphere, the milieu or the social capital appear to be almost public assets. On the one hand, limiting attention only to the most important bonds increases certainty about the borders, but it also means hiding and mutilating the potential of networks, which depend fundamentally on the wealth and abundance of relations. On the other hand, loose coupling implies an inevitable uncertainty of the borders, in that loose links are extremely difficult to recognise, as they are the result of perspectives, intentions and interpretations.

4. Finally, the characteristics of reciprocity, interdependency and loose coupling do not imply symmetry in the relations. *Power* is essential to the exploitation of the interdependencies inside the network, but also to stopping other actors gaining access to the network (Powell, 1990; Semlinger, 1993). The question of power refers to both the control of resources (for example between competitors) and the running of activities (for instance, buyer-supplier relations). Easton and Araujo (1992, pp. 72-81) identify five types of power relationships:

- *Competition* occurs when two actors share a common goal that is under the control of a third actor. The typical case is that of two suppliers who work in the same industry and have a common customer;
- *Conflict* implies the situation when the goals of the actors are reciprocally exclusive because they both want to destroy the other. Destruction means excluding the other actor from a specific relation or even from the network. A typical case concerns access to a scarce resource;
- *Co-existence* is defined as a situation where the goals and purposes of the actors could be independent, or are perceived as such. The perception that the actors have of the relation and the consequent strategies are central to keeping this situation stable, without it evolving towards conflict or competition. One of the things that determines this behaviour is represented by physical distance. Another case is found when an influential customer sets niches or shares for its suppliers; in this case, a change in the behaviour of the customer, such as a reduction in the number of suppliers, can make the situation of co-existence impossible;
- *Co-operation* occurs when two or more parties have goals that are reciprocally dependent. There are various forms of co-operation, such as the co-operation needed to reach different but complementary goals, but there are also cases of co-

operation in which the relation finishes in that particular transaction, such as the case of actions between occasional suppliers and buyers. Significantly, co-operation in networks also extends to relations between competitors;

- *Collusion* is defined as co-operation between actors intended to cause direct damage to a third party. Although this type of co-relation could have a negative significance, it is inevitable in the power structure of the network. The formation of lobbies or the reduction in the margin of suppliers, are examples of collusion in this sense.

The network as a local institution

The four characteristics of the network discussed above assume particular meaning if referred to the local value production system. The very concept of network implies a strong reference to the principle of locality (see Chapter 7). Network organisation, even if referred to a network company or to a network of research centres, identifies a "place", a community where the members look for solutions to problems on the basis of the sharing of experience and common values (an example is the scientific community). When the principle of locality assumes a strictly territorial meaning, as in the local value production system, the characteristics of the network assume even greater complexity and importance.

Let us look at the features of *reciprocity* and *interdependency*. When economic actors involved in the network belong to the same local system, the expectation of reciprocity does not involve only the economic aspects. Every actor also expects reciprocal behaviour from the others for reasons that lie outside the realm of production and the economy, such as friendship and mutual respect. Opportunism may be punished with exclusion not only from the economic network but also from the social network. In a community, the reputation for disloyalty and impropriety spreads much more rapidly and damages the entire network of relations in which the actor is rooted.

Similar considerations can be made for interdependency. For there to be interdependency, each network participant must *perceive* the others as necessary. In the local value production system, this perception of the others transcends mere economic interdependency. Self-reflexivity (which is, as we have seen, one of the fundamental features of the local system) means that the individual sees himself as part of a larger whole. In addition, the originality of the local development perspective lies in the fact that attention is not concentrated on the single company but on the cluster of activities and companies. It follows that the individual company cannot be seen as anything but co-evolutive in relation to the local system of which it is an expression.

The characteristic of *loose coupling* (in other words, the "strength of weak bonds" to use Granovetter's famous expression) can also be easily understood by making reference to the self-reflexivity and duration of the local system. Within a local system, the formal economic bonds can even remain relatively unformalised precisely because they are flanked and supported by non economic bonds. Paradoxically, a company can loosen economic bonds and reduce production interdependency with other companies

(for example by internationalising or internalising some functions such as research and development) and at the same time remain an important element of the local system. The intensity of non economic relations and the awareness of belonging to a community can compensate for the deterioration of economic relations. The fact that some links with the local value production system are maintained (for instance, personal acquaintances and friends) and that the system continues to function despite the defection of some members means that it is possible to keep open the chance of re-entry into the network for actors who leave it. This is a very different mechanism compared to what happens in other network organisations, such as joint ventures between transnational companies, where the defection of one or more of the members implies the disintegration of the network itself and the abandoning of all relations.

The importance of the principle of locality for the functioning of the network can be grasped better through reference to the concept of *context* (Johannisson et al., 1994). In Johannisson's approach, the context represents the socio-economic fabric (i.e. the set of institutions) in which the entrepreneur and enterprise activity are embedded. It is important to note that the relation between the context and the network is circular. On the one hand, the context offers support for the process of organisation of resources for constructing the network's objectives. On the other hand, the action of the network – just as with that of the hierarchy and market – modifies the structure of the context itself, strengthening some relations and weakening others, exploiting some resources and enriching others.

For Johannisson, the network organisation of production relations stems necessarily from the realisation that in small and medium sized company systems the entrepreneur cannot neglect the judgement (approval or disapproval) of the community in which he operates. The functioning of the company is, from this standpoint, necessarily "interwoven" in a network of relations which assumes different levels of potential and significance according to its institutional context.

To this end, the author highlights three main contexts: the industrial district, the science park and the innovative company. Attention remains concentrated on the entrepreneur's network of personal acquaintances that binds the social realm to that of enterprise, as each of them supports both the person and the company.

It is important to observe that the network acquires different meanings in different contexts. The role of socio-cultural and political institutions will be greater, for example, in an industrial district compared to the other two forms. In the science park, the relations that constitute the network are, in fact, more formalised and mediated through the prestige that surrounds the scientific community and the innovative company. The scientific community and the innovative entrepreneur are less subject to social judgement in that they are depositories of exclusive knowledge within the local system and cannot therefore be easily assessed and judged by political institutions. In the industrial district, the relations between companies are instead mediated by a broader set of socio-cultural and political institutions. In this context, economic relations overlap more easily with relations of a political rather than family nature, attributing different features to the network of companies than those it might assume in another context.

This leads us to consider the network organisation as something that transcends the mere organisation of production and embraces the very identity of the local system. For example, the political institutions play a fundamental role in the establishment of a network organisation. The presence in Germany of chambers of commerce that are particularly active in the promotion of opportunities for contacts and collaboration between local companies has been recognised as one of the key drivers of the competitiveness of local manufacturing systems such as Baden-Wurttemberg (Cooke and Morgan, 1991 and 1998). In a similar way for the industrial districts, local authorities have played an active role in promoting the creation of consortia which offer companies in the district services that the individual companies would not otherwise have had access to.

As Amin and Hausner observe:

> [...] what counts also, importantly, is the institutional set-up of networks, which we could define as the enduring collective practices and organizations within networks. This includes formal rules and institutions of regulation and governance, as well as the embedded cultural and social practices, and conventions which constitute the reproductive framework of networks. Institutional set-up, thus, defines the enduring qualities of networks, their stability and degree of coherence, their collective efficacy, and above all their governance structure. Institutions – hard and soft – constitute the web and the nodes of networks, the channel of collective organization and communication, as well as the point of intersection and encounter. In a sense, they are the architectural frame of networks (Amin and Hausner, 1997, p. 14).

The fact that production assumes a network rather than a hierarchical organisation within the local value production system thus depends on the local institutional assets. Presented in reference to the internal organisation of the system, it is perhaps now time to look at how the local value production system communicates with the external environment.

8.5. Interpreting the local in the global

As has been seen, companies do not communicate with each other solely to exchange goods or to transmit orders, but also to develop common projects, to organise strategies, to improve products and processes. The success of the relationship demands the presence of factors like reciprocal trust and understanding, which by their very nature cannot be transmitted purely through the relations typical of the market and hierarchy.

To understand this better, it may be useful to exemplify the relationship between networks of relations and the local and global dimensions through a scheme (fig. 8.1) that takes into account the three characteristics highlighted above:

- the *spatial dimension of relations*, i.e. the fact that each relation can be seen as local or global[5];

- the *nature of relations*, according to whether they are production relations or market relations;
- the *form of relations*, according to whether the organisational principles of the market and hierarchy or those of the network prevail.

First of all, we shall consider the spatial dimension of relations. The horizontal axis represents the two spatial dimensions, the local in the left half-plane, and the global in the right. Naturally, these terms must not be interpreted as physically circumscribed areas. On the left, where locally dense vertical relations predominate, the relations between the actors that perceive themselves as locally embedded are represented. To the right, on the global scale, are the actors who increasingly perceive the world as a *unicum*, as an immense *tabula rasa* on which to achieve their goals (Conti and Giaccaria, 1998). Membership of the local or global scale thus depends on the way in which actors superimpose the ideal scale and the real scale.

The vertical axis represents the nature of the relations: at the top are the relations between companies that characterise the industrial world; at the bottom are the relations that companies which produce machine tools and equipment maintain with customers.

It should be noted that the two axes are radically different. The local/global axis implies a certain contrast between the two extremes: each individual company or group of companies is considered as local *or* global according to its relations. Conversely, the production/market axis possesses no nuance of contrast: each economic actor has relations in both the half-planes according to whether its production relations or its relations with the market are considered. For example, a Fordist company can organise its own production hierarchically on the global scale and sell consumer goods on a local market. This is the case with a transnational company that establishes a local branch so as to serve a local market in a country in which there are strong customs barriers.

It is thus possible to identify four main spaces:

1. *space of local production relations:* this is the operating space of companies which organise their production above all by using the leverage of intense local relations;
2. *space of global production relations:* this is the space of actors in whose production horizontal relations prevail. This does not mean that the global company does not have supply relations with local companies but that, more simply, its choices and strategies depend to a lesser degree on the vertical relations it has with the environment. The behaviour of a Fordist company exemplifies this logic, being able to generate a localised supply chain and thus be inserted in a fabric of local relations. However, these relations depend on strategies internal to the leader company which could even shift part of its production and supplies to other places at any time;
3. *space of relations with the local market:* this is the area of companies or groups of companies whose competitiveness is defined with respect to the local market;

4. *space of relations with the global market:* this is the area of economic actors which produce for a global market. The reference is to the expansion of international trade as one of the characteristics of the globalisation process.

To these two dimensions, space and the nature of relations, we need to add a third regarding the form of relations (market, hierarchy and network). To this end, the half-planes that represent production relations and the market ones have been divided again by two horizontal axes.

Hierarchical relations have been made distinct from network ones within the space of production[6]. Hierarchy characterises the production relations typical of Fordism in which the leader company possesses its own suppliers and keeps them very dependent (through monopsony contracts[7] or transfers of financial and/or innovation resources). The antithesis to this is, as has been reiterated, the network organisation of production relations in which the relations between companies imply forms of co-operation that transcend mere mercantile relations and avoid the strong concentration of power that characterises the Fordist approach.

For market relations, we can distinguish between two organising principles: the market and, once again, the network. The first case occurs when the company maintains relations with customers purely at the time of sale. In this case, supplier and customer assume the identity of only seller and buyer, without personal involvement or the sharing of information except for the quantity and price of purchase. The second is the case of network, amply illustrated in the previous paragraph, in which the nature of the item exchanged demands more profound relations between the two parties, characterised by trust, continuity and frequency of relations, sharing of skills and experience.

Having introduced the form of relations, our space is now divided into eight areas:

1. *space of local production networks*, typical of actors which produce through local networks. This is typically the case of industrial districts, in which competitiveness is achieved by networking local factors, such as the trust between the companies in the district or the sharing of skills and values;
2. *space of global production networks*, in which production or part of it is managed by global networks. A characteristic example is that of European Union research projects which involve companies from the various phases of the production cycle and different nations, with the purpose of encouraging the manufacture of new products as well as innovation;
3. *space of local production hierarchies*, where production is organised locally through hierarchical relations. This is the case of Fordist organisation in its "golden age", in which the production cycle and strategies were locally concentrated and held rigid within the hierarchy imposed by the leader company;
4. *space of global production hierarchies*, i.e. the space of major transnational companies that manage production on the global scale, exercising in any case extensive control over local plants and suppliers;
5. *space of local commercial networks*, in which the actors sell to a local market and relations between producer and user are of a network type. In this case, the nature

of the market means that the products must be customised with regard to both the local specialisation and the needs of individual customers;

6. *space of global commercial networks* in which, although the market is global, the relations between companies show features typical of network organisation. One example is the case in which a company sells customised machine tools and equipment to a multinational;
7. *space of local markets*, where the products are intended for local markets without there being any other relations between producer and user other than market ones;
8. *space of global markets*, where the markets are not locally differentiated and relations are simply of the sale of non-customised products: the mass market is perhaps the most eloquent example.

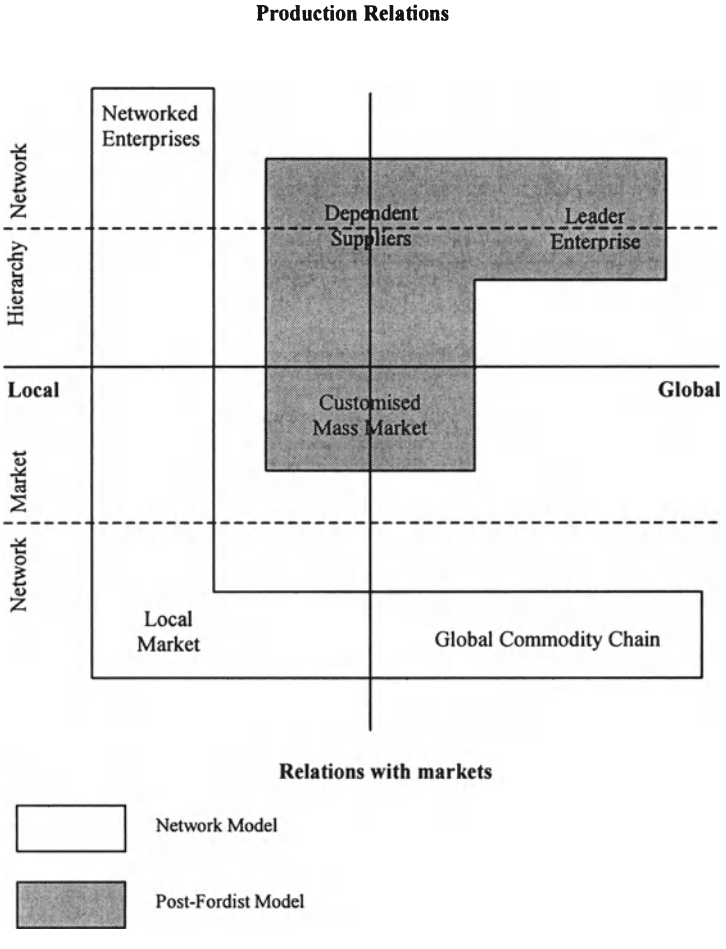


Figure 8.1 - The identification of a manufacturing system: relations and actors

We have thus obtained a scheme of interpretation in which it is possible to place the various economic actors according to vertical and horizontal, hierarchical and network, production and sales relations. It should also be remembered that each actor (company, group of companies, sector, industry) occupies its own position in both the space of production relations and in that of relations with the market, as the two dimensions are not mutually exclusive. If attention is focused on machine tools and equipment, each company maintains relations with other actors both upstream (suppliers) and downstream (customers) of its own production cycle. By representing the production and market relations in this way, we can identify many types of manufacturing structure.

For our purposes, it can be useful to represent the models most widely discussed in the previous chapter: the Fordist System and the Local Value Production System (Figure 8.1).

The Post-Fordist system

Beginning the analysis from the point of view of the organisation of production, the Post-Fordist model can be broken down into two components.

- *Leader company*: this is the undoubted protagonist of the Fordist era. Irrespective of the form and denomination that it assumes (oligopolist or monopolist company, multinational or transnational company), it is characterised by its capacity to keep control of its own organisation and of the environment (suppliers, territory, local community) through strategies internal to its own hierarchy. In our scheme, it is an actor that operates in a global decision-making context and is organised in an intermediate form between the network and the hierarchy. In fact, while it is true that the literature on the *network company* has underlined that modern transnational companies are organised on a worldwide scale through relatively autonomous, networked local units (Vaccà, 1995), it is equally true that the inspiration is still hierarchical. The single units and divisions respond, in fact, for their own strategies and results, to a central management which has the last word on their survival.
- *Dependent supply*: this is the set of suppliers of machine tools and equipment linked by an exclusive relationship, or at least one of dependency on the leader company. The changes in the relations between companies have also concerned, however, the production of these goods and components, making the classification of these actors more difficult. For this reason, they have been represented as half-way between global and local, network and hierarchy. Traditionally, in fact, suppliers are local, often with little autonomy and competitiveness, organised hierarchically under the control of the leader company.

  However, following the restructuring and globalisation of the Fordist economy, the individual companies in this group have had different fortunes: some have grown and become globalised, assuming a position as partner of the leader, others have been acquired by multinational network companies interested in becoming suppliers of the same leader company, and yet others have kept the same position or have been absorbed by the fabric of local sub-contractors. Nonetheless, what

characterises this group is that the individual local units remain highly dependent on the strategies and organisation of the leader company in order to gain competitive advantage (Nishiguchi, 1993).

Considering the situation from the market point of view, the production system constituted by the leader company and its suppliers targets the customised mass market (Pine, 1993) which represents the evolution of the Fordist mass market. However, it is no longer a case of selling a single product on all markets: the products, mainly durable consumer goods but also at times machine tools and equipment, are customised for each market of a certain size.

This form of integration between local and global, network hierarchy and market can be traced back to the concept of meso-economic system or *mesosystem* (Gilly, 1994). The identification of a meso-economic level stems from the need to identify an intermediate level where it is possible to define, within a given production system (for example, a national one):

> sub-sets of economic actors endowed with their own and/or significantly interactive, coherent and long term dynamics, with the strategic behaviour of organisations, the structural economic conditions and institutional rules of play (Gilly, 1994, p. 296).

The objective is to explain the innumerable situations in which local solutions, not general ones, are found. In reality, the mesosystem has some of the features of the local system: the importance of the regularity and permanence of relations; the role of the territory; the network nature of relations; the importance of external economies of scale; the historical dimension. If, following Gilly, we define the production mesosystem as an "organised, historically constituted complex of long-term relations between production organisations, endowed with an overall production dynamic" (Gilly, 1994, p. 298), it becomes clear that the concept of intermediate scale is extended to the point of attributing to it even the behaviour of the large network company, multinational or global supply chains. In this sense, the concept of mesosystem is similar to that of the a-territorial local system cited earlier.

Consequently, this first organisational model will be indicated as a *post-Fordist meso-system*:

- *meso-system*, in that its behaviour is not dictated by the behaviour of a single company but by the relations between a number of economic actors. This collective actor can be imagined as a *system*, in that it possesses its own identity half-way between the individual company and the global economy as a whole, but not as a *local* system, in that this identity is not defined in relation to the territory and does not depend principally on local relations;
- *post-Fordist*, in that the system derives from the evolution of the Fordist oligopolistic company and represents in a certain sense an organisational response to the changes that have characterised contemporary capitalism.

The local value production system

The second model, the local value production system, is characterised by a completely different form of production and market organisation.

From the point of view of production, there is no longer a dichotomy between the leader company and dependent supplier companies. The actor is not the company but the *network of companies*. The classic example is the industrial district: there is no leader company but a number of companies, linked by supply relations, which mobilise a series of local resources and are organised so as to balance competition and co-operation. The result is that it is not possible to talk of the competitiveness of the individual company, but of the network of companies as an actor with its own local identity[8]. Obviously not all production relations are contained inside the system. Some of the actors are part of the local network but also of other supralocal networks (for instance, research networks). These are actors which can be defined as the "sentinels" of the local value production system which, as we shall see in the next paragraph, play a fundamental role in connecting the system to the external environment.

As we saw in the previous paragraph, network organisation should not be viewed as simply the manner of organising production relations. It must instead cover all that has been said about the embedding of the production network in a thick fabric of institutions and untraded relations that characterises the system.

From the market point of view, the situation is more complex as it is composed of two elements:

- a *strong relationship with the local market*: this point highlights an important difference with the Fordist organisation of production. In this case, in fact, the commercialisation outside the network of companies is not undertaken by a leader company with considerable resources and thus able to tackle the mass market. An opportunity for growth is therefore offered by customers belonging to the same local system, with which the network of companies has relations, again of a network type (Porter, 1990). Only at a second stage can the production network develop relations with
- the *global market*, by increasing exports. Again in this case, the customer, although choosing its suppliers on the world scale, usually demands high customisation of the goods in question, and this cannot be satisfied by major oligopolistic manufacturers (Gereffi et al., 1994). Relations are created between the local network of companies and the global customer that go beyond mere market relations and involve trust, understanding of reciprocal needs and abilities, and customs.

There are numerous examples of these network systems of production and commercialisation. The latest figures on international trade have shown that many industrial districts have increased their exports of industrial goods used to produce the final goods that constitute the district's production specialisation[9]. This means that local producers have initiated a process of specialisation guided by the needs of local

users. Later, thanks to these local relations, they have perfected their products to the point of acquiring competitiveness on the world markets (Becattini, 1998).

In conclusion, in the scheme of interpretation proposed, starting from the nature, spatial dimension and form of relations between economic actors, it is possible to represent the organisation and territoriality of the various local manufacturing systems. At this point, it is necessary to specify what form of behaviour and local factors enable local manufacturing network systems to maintain their own identity and competitiveness when faced with hierarchical and global systems that can deploy undoubtedly greater economic, financial and political power. To do this, it is necessary to introduce the last metaphor of local development, that of the localised learning processes that allow local systems to organise local factors so as to ensure competitiveness and an equilibrium between the local scale and the global scale.

8.6. The learning economy

In the previous paragraphs, we have examined the organisation of relations internal to the local value production system through the concept of network and, later, the organisation of the relations between the system and the environment, through the dialectic between local and global.

At this point, we need to take a closer look at the functioning of the local value production system. In particular, we will state that the equilibrium between the local scale and the global scale (i.e. between vertical and horizontal relations) can be interpreted as a learning process, in which the economic actors transform local relations into factors of competitiveness to be used in the global markets.

This transformation of local relations into competitive advantages necessarily means rethinking the concept of localised resources.

The economic world described by classical economics and the early models of economic geography saw the fundamental distinction between ubiquitous resources (available everywhere and perfectly mobile) and localised resources (i.e. available only in certain places and characterised by high transport costs). Among the former, we traditionally find factors like the availability of labour and technological know-how. Among the latter are physical resources (energy, raw materials etc.) whose unequal distribution and the consequent transport costs are an important constraint for the location of economic activities.

The transformations of the capitalist economy have radically changed this picture. Technological development, especially in the means of communication and transport, have made economic actors increasingly independent of the location of physical resources which are transported more and more easily and at lower costs.

Parallel to this, the awareness has grown that the maintenance of a competitive advantage demands highly specialist knowledge. This need radically changes the interpretation of the factors once considered ubiquitous. The skills of the workforce have been "honed" by decades of functional and spatial division of labour leading to a considerable segmentation of the skills available in the various industries. The

concentration of research and governance activities in certain places has provided valuable skills and knowledge to satisfy the high quality standards of the contemporary economy. In a similar fashion, the conviction that knowledge is ubiquitous has been abandoned. The hypothesis of perfect rationality and full access to information has been gradually abandoned in favour of a meaning of limited and procedural rationality.

The idea has thus established itself that the new localised resource is represented by learning, in other words the capacity to organise local skills and knowledge to create innovation.

We now need to define what relational processes amongst those that occur in the world of production and consumption can be interpreted as processes of territorial learning.

Knowledge, learning and evolutive capitalism

The definition of the problem takes us immediately to the growing role that knowledge and learning are assuming in contemporary thinking about capitalism (Dosi, Pavitt et al., 1990; Antonelli, 1999).

The idea that human knowledge is a fundamental component of the economy (in terms of competitiveness, but also of the creation of high paid jobs and social welfare) has also become central to the thinking of global institutions like the OECD (OECD, 1996a, 1996b and 1997) and the World Bank (1998). In these bodies' most recent policies, knowledge and technology are central factors as much for economic development and job creation as for the governability of the world system. The literature on the knowledge-based economy has been traditionally characterised by *two prejudices* which lead to emphasis on the role of the hierarchies and markets as the main forms of governability of the contemporary economy.

The first traces the role of knowledge in the economy to the growth of *high technology sectors*: the knowledge that most of the literature talks about is identified simply with the most advanced technology which makes earlier knowledge obsolete. This leads to the widespread opinion that increasing investment is required for the development of knowledge. However, only major organisations can invest large amounts of capital and operate successfully in high-tech sectors. The conclusion is thus reached that innovation occurs mainly in highly integrated organisations (and consequently in hierarchies) such as public sector research or leading private companies.

The second prejudice concerns the *static nature of the concept of innovation*. This is, in fact, interpreted as a stock, i.e. an amount of information and skills available on the market at a given time. It is commonly thought that the knowledge available is growing more and more and is of increasingly better quality, while little attention is paid to how this knowledge is formed. This lack of sensitivity for the processes of knowledge formation (i.e. *learning*) drives many observers to consider purely the final form of the knowledge produced, codified in theories, laws, patents, manuals and formulas. At the same time, the availability of communication and information systems that increase the ability to transmit knowledge leads to it being considered as more and

more similar to other commodities and, thus, emphasises the role of the market in the dissemination and application of knowledge.

This perspective could explain the changes that have occurred in contemporary capitalism. According to the OECD figures, more than 50% of the gross domestic product in the major economies is knowledge-based, meaning by this exclusively high-tech activities. In the same way, the development of information technologies has profoundly changed the production of goods and thus the logic of the division of labour (Sayer and Walker, 1992).

This reductive interpretation of knowledge is not, however, capable of fully explaining truly complex processes, such as the relations between the local scale and the global one of the contemporary economy. In fact, the knowledge and innovation that orthodox socio-economic thought refers to are produced essentially on the global scale by large public and private research centres. For these organisations, the production of knowledge is merely a source of revenue to the degree to which it is codified and circulates on the global scale through patents, copyright and royalties. Given that the local value production systems do not possess the resources to commit themselves successfully to research, they are passive actors that can at most purchase at a high price the results of research and innovation produced elsewhere. From this standpoint, it cannot be explained how many local value production systems can compete successfully against oligopolies and transnational companies not only in sectors like fashion or the production of semi-craft luxury consumer goods, but also in high technology fields, such as the production of industrial goods (one example already mentioned is the producers of machine tools in the Italian industrial districts, or the Swiss producers of special machines for precision engineering).

In this context, we intend to go back to the perspective, widely discussed in the literature, that interprets the competitive advantage of local value production systems as the consequence of particular *learning processes* that arise from the intense relational life of local communities (Storper, 1996; Malmberg, Solvell et al., 1997). In order to apply the concept of learning to the territory, it is first necessary to change two of the prejudices traditionally shared by many scholars of the knowledge economy.

The separation between high-level knowledge and low-level knowledge, between high and low technology, between science and practical know-how, is the first prejudice to fall. In the case of Italy, the change of perspective is staggering. If we accept the identification of the knowledge-based economy as high-tech activity, as proposed by the OECD and the World Bank, the percentage of high-tech industry out of total manufacturing would come to only 15.3% of exports and 12.9% of added value, much less than in the other industrialised countries. If instead we also include design and traditional skills of a craft type, the proportion of production based on learning reached 82.29% of exports (Storper, 1997, p. 214).

Secondly, *the production of knowledge must not be seen as a pure process of searching for truth conducted through the powerful tools of logic and reasoning.* As, in fact, Lundvall underlines:

> it is necessary to insist on the fact that not all the input important to the innovation process derives from science and research efforts. Thus, we shall assume that learning occurs in relation to *routine* production, distribution and consumption activities, and that it produces important input for the innovation process. The daily experience of workers, production engineers and sales agents influences the programme, determining the direction of innovative drive. In this way, all actors produce knowledge and input crucial to the innovation process (Lundvall, 1992c: 9).

Research into the knowledge base of the contemporary economy has investigated the relation between the creation of knowledge and the different development paths of different nations and regions. The debate developed, especially in Scandinavia, around the concepts of the *national innovation system* (Lundvall 1992a) and the *learning region*, (Malmberg, Solvell et al. 1996; Asheim, 1997; Maskell, Eskelinen et al., 1998). Both these concepts imply a cumulative interpretation of the innovation process, where the knowledge available is not given once and for all, but depends on a learning process influenced by various factors, amongst them the internal organisation of companies, the relations between companies, the role of the public sector, the institutional set up of the financial sector, and the intensity and organisation of research and development activities.

In this perspective, nations and regions represent the geographical scale on which the relations between actors create knowledge specific to each nation and region that confers on economic actors located in that area a particular competitive advantage. There are, of course, important differences between the two concepts. The first is connected primarily to the planned dimension of knowledge creation processes and thus finds its natural scale of reference in the nation state, which is presumed to be capable of influencing the creation and co-ordination of a system of innovation. The second underlines instead the social and territorial network of relations that can support economic development, adapting the local systems to contemporary technical changes. The national innovation system also presumes greater attention to high technology sectors, while the second concept includes the relations between low technology activities and regional competitiveness. In both cases, the local context does not represent a mere container of given and unchangeable values and knowledge, but evolves through communication and synergetic interaction, as if it were a laboratory that produces an accumulation of knowledge. In particular, going back to what was said in Chapter 1, the local dimension of the production of knowledge can be identified with a dialectical process between tacit and explicit knowledge, the dichotomy on which this final element in the theoretical framework is based.

Tacit knowledge and codified knowledge: the foundations of local learning

The basis of this theoretical scheme is the distinction between tacit and explicit knowledge, already introduced in Chapter 1.

These two forms of knowledge accompany any cognitive process, on whatever scale it occurs, in that, in a certain sense, they refer to a full vision of humanity that asserts the inseparability of perception and knowledge, rationality and emotion, logic

and inspiration. Scientific knowledge, codified in laws and patents, is not that dissimilar to the know-how of expert artisans. If tacit knowledge is always present and fundamental, it must nevertheless be combined with codified knowledge. For this reason, in the dialectic between tacit and explicit knowledge, there are at least three good reasons that drive actors to codify tacit knowledge (Maskell, Eskelinen et al., 1998): the possibility of commercialising knowledge depends on the degree of codification; this reduces the internal costs of training and learning, enabling greater feedback from the creation of new knowledge.

As we have already seen, Nonaka has identified four main processes that connect tacit and codified knowledge: socialisation, codification, combination and internalisation.

The turning point is marked by the awareness that the creation and use of tacit knowledge depends largely on the presence of factors that facilitate interpersonal contacts between actors: trust, personal acquaintanceship, sharing of values and skills. Attentive readers will recall that the presence and development of these factors are "geographically sensitive", in the sense that they depend very much on the regularity and constancy of relations that are developed more easily on the local scale: knowing others personally, meeting daily, building relations that lie outside the economic sphere (friendship, education in common, associations etc.). In this sense, despite the fact that codified knowledge is exchanged every day on the global markets,

> what is *not* eroded, however, is the non-tradeable/non-codified result of knowledge creation – embedded tacit knowledge – that at a given time can only be produced and reproduced in practice (Maskell, Eskelinen et al., 1998, p. 41).

The local system therefore assumes a dual function:

- first of all, it transforms the explicit knowledge generated outside its borders into knowledge that can be used for local production. During this process of translation, tacit knowledge filters and transfers the codified knowledge in line with the needs of the local system. The importance of this process in helping innovation is proven every day[10];
- in a similar way, the local system transforms contextual knowledge into explicit knowledge. In other terms, the capacity to transform local factors into a competitive advantage depends on the embeddedness of production actors in a particular territory[11].

At this point, we can reconsider the delicate array of relations between the local and the global. It may be useful for this to go back to Nonaka's model of the *knowledge spiral* and reinterpret it in the light of what has been said above on the relations between companies, their form and spatial dimension. As an example, attention will be focused on the producer/user relations often used in the literature to exemplify the importance of informal relations and spatial proximity (Gertler, 1993 and 1996)

In local networks, tacit knowledge becomes collective through a process of *socialisation*, through forms of collective learning that increase personal capacities

through interpersonal relations: learning by experience, relations between master and apprentice, family tradition etc. (Salais and Storper, 1993).

Codification occurs through the commercialisation of goods produced locally, given that tacit knowledge is not fully transferable through manuals and patents. Depending on how inadequate the channels of information and communication are for the transfer of tacit knowledge, we can, in fact, hypothesise that the latter flows into the production process and can be transferred outside the local system through the commercialisation of goods.

Combination recalls once again the role of relations between user and producer (Lundvall, 1992b). Using a machine tool or integrating a component into a final product demands that explicit and implicit knowledge be combined. In fact, as highlighted by Gertler, the full exploitation of the potential of a relation between user and producer demands face-to-face contact and co-operation between the parties precisely because acquaintanceship allows the producer to convey tacit knowledge about the machine to the user.

At the same time, the relation between producer and user will allow the former to improve knowledge of its own product. Understanding how one's own equipment is used in everyday practice will presumably enable it to make improvements in future products. In this way, the *internalisation* of codified knowledge by the local actors becomes possible.

8.7. Conclusions

The central step forward in this chapter has been the introduction of the concept of *local value creation system* as the synthesis of the reflections in the previous chapters. In particular, this concept has been used as the means to grasp the manufacturing dimension of the local system. Later we introduced three metaphors to describe the organisation and evolution of the system.

At this point, it remains to be demonstrated how this theoretical framework can be used to evaluate economic and social transformations today.

Notes

(1) Identity as conceived in this way draws considerably on the concept of *milieu* (Maillat, Crevoisier and Lecoq, 1991) and of *industrial atmosphere* (Becattini, 1998), concepts familiar to local development scholars.

(2) The failure of investments in the electronics sector in Scotland to create autonomous entrepreneurship and development is eloquent on this (Turok, 1993 and 1997; McCann, 1997).

(3) The term "dialogue" is preferred here to "dialectic". The latter carries a clear meaning of "opposition" between the dialectical terms that, traditionally, follow each other. In the perspective adopted, in contrast, local and global are not seen as opposing or alternatives, but as two dimensions of the same phenomenon.

(4) It should be noted that the traditional conclusions of the *product life cycle* cannot be applied to networks of companies. Within the production organisation of the network, there is no clear and mechanical succession of phases (each of which corresponds to a territorial production structure and a specific location) as envisaged by the life cycle theory. This characteristic has strong implications for activities conducted through the network: shifting activities and resources outside the network always has powerful consequences on the structure of the network and even on its existence. Thus, where the maintenance of the network is considered indispensable by the actors that participate in it, we could find behaviour that openly contradicts the predictions of the life cycle model. This is the case of an industrial district where production phases are kept inside the local system even if decentralisation to emerging countries would be more efficient economically.

(5) Numerous models of contemporary economic geography use these two dimensions to define a general framework of interpretation of the relations between territory and company organisation. For more in-depth studies, see Conti, 1997; Julien 1995.

(6) It has traditionally been said that when a company needs a machine tool or equipment it can choose to "make" it internally or "buy" it externally. This distinction is replaced by hierarchy and network. Obviously, the "make" option in our terms is the equivalent of the prevalence of the hierarchy, in that production occurs inside the company, under its full control. The "buy" option is instead much more ambiguous: on the one hand, production can be delegated to companies that, although formally autonomous, can be highly dependent on the main company; on the other hand, the supply relation increasingly involves not purely mercantile aspects, so it is preferable to talk of network relations rather than market relations.

(7) Monopsony is the situation in which a number of potential sellers find a single buyer.

(8) Not as legal entities, as companies are not linked to each other through shareholdings.

(9) One example is the growth in production of packaging machines in Bologna, where there has always been specific domestic demand from the local food processing industry (Capecchi, 1997).

(10) An example here is the situation in which local practice and tradition help companies to modify and adapt the technology contained in their industrial goods. Once again, this relation between tacit and codified knowledge plays an important

role in the transfer of appropriate technology to developing countries (Ramanathan, 1994).

(11) It is clearly necessary to take into consideration the attempts to appropriate local tacit knowledge by external actors. The process of ubiquitousness increasingly involves tacit knowledge. This can happen, for example, in the transfer of local skills through formal contracts (Arora, 1996), or the development of expert systems, which can sometimes replace human knowledge and experience (Hatchuel and Weil, 1995).

CHAPTER 9

The local value production system: empirical evidence

9.1. Premise

In the previous chapters we attempted to show how the profound transformations that have changed the face of the economy in the last thirty years have gradually assigned a more important role to the territory and to the geographical dimension of social and economic action. The observation of production processes from the point of view of places and the territory has allowed us to talk about local competitiveness and development, embeddedness and institutions, to the point of introducing the concept of the local value production system.

As we saw in the previous chapter, the local value production system is given by a set of actors which, thanks to their geographical, institutional and organisational proximity, establish relations of co-operation and collaboration that furnish a competitive advantage to the system as a whole. In particular, to understand how the local value production system functions, we have used three metaphors: network organisation, the local/global dialectic and learning. The introduction of this theoretical framework enabled us to distinguish between the behaviour of a Fordist or post-Fordist system and that of a local value production system.

In order to make this reasoning more practical, it seems useful to introduce a case study that allows the reconstruction of at least part of a history of local production systems, transcending the facile contrast between Fordism and post-Fordism.

In many ways, Turin is the ideal example on which to check the hypotheses put forward in the course of this book. In the 20th century, the presence of Fiat and its capacity to organise and profoundly structure the local territory gave Turin its most well known image. Over time, the identity of Turin was condensed into that of a car-producing city, the city of Fiat (Volpato 1996). The name Turin evokes Dickensian scenes and arouses comparisons with the grey centres of early industrialisation, such as Manchester, Liverpool or Lyon.

Starting in the eighties, Fiat's strategies have led to a gradual bifurcation between the corporation and the changes in Turin's manufacturing system. As we will see, this rift opens up the possibility of a new interpretation of Turin's local system, using the scheme developed in the previous chapters. First of all, however, we need to clarify how Turin and Fiat tied their fates to each other under the banner of Fordism.

9.2. Spatial strategies and re-organisational strategies

We shall now look directly at aspects of the territorial organisation of the company, going back to the fundamental bond that exists between strategic behaviour, industrial policies and the spatial dimension of development. The result that will emerge is a model of the production system within which it will be possible to reorganise the wide variety of questions which have been discussed in the previous chapters and to open up new discussion (Cerutti and Reiser, 1991; Conti and Enrietti, 1995; Enrietti and Fornengo, 1989).

From expansion to crisis

The years immediately following the Second World War were crucial for the future development of Fiat. Working in a rapidly expanding market like the Italian one, without any significant import penetration and with few local competitors, Fiat focused its market strategy on small and medium-sized models. It also organised production in a way which paid little attention to R&D, planning or scientific activity. Fiat's entire strategy was directed towards quantitative expansion, both in terms of employment and productive capacity, paying little attention to its internal organisation.

These technological and product decisions were accompanied by a spatial strategy which deliberately enhanced the relative advantages of concentration and mass production. This had two main features: the concentration in the north-west of the country and in the city of Turin in particular; and concentration of production in a few large, vertically integrated, factories. In the Turin area, Fiat has in fact found, produced or has seen others produce (the public administration) a large part of those "territorial conditions" which marked the establishment of the system of mass production (Castronovo, 1971; Gabetti, 1977).

Turin is rightly seen as representing the model of the factory town, albeit with its own specific features and connotations. It is no surprise that even in international literature Turin has been a favoured area of study for the relationship between industry and the city in the era of the second industrial revolution (Gabert, 1964; Jalabert and Gregoris, 1987).

This technical and location decision defined a company strategy which was not to change right until the late sixties. With a few exceptions and timid processes of internationalisation, Fiat's industrial investment was identified with the boundaries of the Turin agglomeration: this area not only contained the entire car production cycle (in 1968, about 1,300,000 out of 1,550,000 cars came from the Turin area), but Fiat also participated in the whole range of production based on the internal combustion engine, involving a close-knit network of small and very small supply companies, often completely dependent upon Fiat.

While at the end of the 1960s there were over 125,000 employees working in Fiat's Turin factories, at least an equal number worked in production units which directly or indirectly were part of its network of subcontractors. In reality, it has never been possible to delimit exactly the boundaries of this network because its composition was

in a state of constant flux, especially as regards the smaller suppliers. Fiat drew on around 1,200 direct contractors, about a third of the 3,500 units (often small and very small) linked in some way to the automobile industry. Under these conditions, despite the high internal integration, during the 1960s Fiat acquired on average over 50% of its total turnover from external companies, of which about half were located in the Turin agglomeration.

As a result of the automobile industry's strategy towards indefinite output expansion and a consequent, and sometimes uncontrolled, enlargement of production capacity, the Turin area became one of the most sectorally specialised regions in Europe, comparable to just a few other international examples such as Detroit and the West Midlands. In Turin, in contrast to these other areas, all these activities were concentrated within a single corporation, while the company's control extended deeply into the labour market and was at the centre of intense interlinking of political and economic roles (Borlenghi and Dematteis, 1982; Conti, 1986).

The first turning point

The first great wave of reorganisation of the Italian automobile industry – and of Fiat in particular – started in the 1970s and can be largely explained by the environmental crisis produced by the location and organisational "model" followed until that time. The rigidity of the connections between the city and the company created conditions which challenged the network of co-operation that had previously ensured successful accumulation. It developed, in fact, an entropy of the social environment which made the process of change triggered by the company increasingly difficult to foresee and control.

For Fiat, this form of production rapidly became impracticable for reasons of a social and political nature. The reorganisation of the sector thus implied a profound change in the economic and territorial development model, expressed in:

- a profound internal reorganisation of the conglomerate, involving the transformation of Fiat from a traditionally integrated company, with a very rigid and pyramid managerial structure, into a "divisional" structure. Initially, in 1972, it was split into three operational sectors (cars, industrial vehicles and tractors, miscellaneous activities) and then in 1976 into eleven sectors;
- in constant attempts to regain control of the production process through the introduction in the "old" Turin factories of electronic technologies, accompanied initially by considerable falls in employment;
- in a changed policy of industrial location, put into practice in 1970 with a two-year investment plan for the construction of nine factories in southern regions (for a total of about 17,000 employees, a figure which was to double by 1981, mainly financed by regional policy legislation in favour of the Mezzogiorno). The other element of the new location policy involved even more substantial projects on an international level. During this period, construction was completed of a car factory in the Soviet Union, and a share of Citroen was purchased. In 1971 an agreement was signed to build a new production plant in Poland, and a massive plan for investment in Latin

America (mainly Brazil and Argentina) got underway. In Western Europe, most production remained in Italy and Spain (Seat) with significant exceptions in Ireland and Portugal.

The overall goal of reorganisation was to seek maximum flexibility in production methods and locations, which in turn implied operational objectives: first, to move into a new market area and, later, to structure the decentralised plants as a function of the whole system. The new organisation of production was thus not limited to the mere duplication of plant, but aimed at the decentralisation of specific stages of production to dispersed medium-sized and specialised factories which were functionally and strategically connected (Amin, 1986). The strategy was, in other words, to "lighten" the Turin area - accompanied by the standardisation of some manufacturing processes and some intermediate products without undermining the continuing technological and organisational "centrality" of Turin, which does not in itself deny the continuing technological and organisational "centrality" of Turin.

9.3. The eighties: The great rationalisation

At the beginning of the 1980s Fiat Auto found itself in difficult conditions in its national market. Domestic demand for cars was slower than in other European countries (only in 1979 did Italy return to the pre-crisis sales levels of 1973, while in the rest of Europe this happened in 1976). To this must be added low productivity and difficulty in managing labour, inadequacy of the components supply industry, absence of an industrial policy and high inflation.

In order to regain operating conditions comparable to its competitors, a complex defensive strategy aimed at restructuring was designed (Balliano, 1986). Apart from a decisive cost-cutting policy (the company reduced its workforce by over 40% in seven years, from 134,621 in 1980 to 77,910 in 1986, and productivity doubled in the same period), the main elements of which were: a) plant reorganisation, b) technological strategy, c) restructuring of supply.

Plant reorganisation and the new geography of production

The sudden introduction of technology necessarily had to be accompanied by technical reorganisation: the almost immediate closure of three engineering factories was followed by the decision to allocate highly innovative investments to the South (automated and robotised manufacture and assembly in Termoli and automated vehicle assembly in Cassino).

On the whole, this reorganisation of the production structure led to a reduction in the number of active factories, to a growth in the degree of saturation in the remaining ones and, above all, to the reduction in the break-even point from the more than 1.5 million cars of the early eighties to the 1.2 million at the end of the decade (Scott, 1991: 258). In addition, the decision has reinforced the move of the centre of production towards the South, also taking into account the closure of two plants in the

North in 1992, those of Desio (Milan) and Chivasso (Turin). In any case, the central company functions (top management, research, management training, purchasing) have stayed concentrated in the North; it was only in the nineties that some segments of research began to be moved to the South.

The overall rationalisation of the system would thus seem to be going in the direction of a production structure based on new forms of "polarisation" around a few highly integrated plants: Mirafiori and Rivalta in the Turin area, Arese in Lombardy (formerly Alfa Romeo), which, with the southern factories of Cassino, Termoli, Melfi, Pratola Serra and Pomigliano d'Arco (again formerly Alfa Romeo), will constitute the key nodes in the Italian automobile production system.

In conclusion, the progressive location of factories in the South expresses "discontinuity" in Fiat's strategy, with the consequence that since 1994 more than 60% of Italian production comes from this area. The position may be summarised as follows.

First, the policy of relocation towards the South represents a break with the past compared to Fiat's classic location policy, an organisational structure centralised and concentrated in Piedmont. Production is now scattered in factories distributed throughout many regions.

Secondly, since the 1980s, the southern factories, both old and new, have been the places where Fiat Auto has experimented and introduced not only process innovations, but also new models of production organisation and of industrial relations.

Thirdly, until the 1970s, Fiat's production location was polarised, with the North constituting an integrated system and the South specialised in only a few functions. In the 1990s, there was a single integrated model nationwide, with "sub-integration" in North and South.

Fourthly, in the context of the changes just described, continuity is represented by the company's central functions (top-level management, research, management training, purchasing) remaining concentrated in the North. In the "historic" region of Turin, there was a strengthening of the strategic metropolitan role (management functions, R&D, marketing) and the trend towards specialisation in production with a highly innovative content. This can be deduced from analysis of investment plans made public by the company for 1992-1996: investment aimed at process innovation and for maintenance of production efficiency were concentrated in Piedmont with, respectively, 36% and 52% of the company's total investments. A much higher investment share (about 80%) went to Piedmont for new products.

The technological strategy

Technological transition was ensured by an intense process of capital investment. The number of robots in use rose from 225 in 1980 to 2,500 in 1992; in some factories and some production segments automation was almost total (Enrietti, Follis and Fornengo, 1988).

With the gradual rise in the number of production plants in the South, this area has become increasingly important in the dynamics of the technological and organisational

development of Fiat Auto. During the 1980s, with the factories in Termoli and Cassino, the Highly Automated Factory (HAF) was introduced. This marked the passage from the traditionally rigid automation to a flexible form.

The reorganisation of these plants was in fact in the direction of high flexibility, i.e. the possibility of producing more models and versions in the same factory at the same time, increasing the degree of differentiation of the various models, adapting them to the needs of specific market segments. Thus, at Cassino, flexibility, in terms of the possibility of alternating production of different models during the same day, was almost double at the end of the 1980s compared to the "old" plants in the Turin metropolitan area, where the same car models were produced. Unsurprisingly, the productivity analysis carried out in 1988 on a sample of 38 world car production plants showed that Fiat had the best performance in Europe, even though there was still a gap between it and Japanese manufacturers.

In effect, in the traditional production structure, each Fiat plant is divided into three parts: manufacturing, which controls production and maintenance; technical services, including the planning of maintenance and technology link-ups; production services, including logistics.

With the Integrated Factory, the plants are re-organised around just two operating units: the "common services and plants" units for activities that cannot be decentralised, such as energy production, and the operational production units, which are independent from the technical and management points of view. Production units are, in turn, divided into "Production", responsible for manufacturing itself and for materials management and planning, and "Production Engineering", which ensures the effectiveness of the technical system through maintenance staff and specialists and also manages the evolution of products and processes.

The basic operating structure of the production unit is the Elementary Technical Unit (ETU), which is entrusted with running elementary technological sub-systems, characterised by a homogeneous process and/or product (for example, in the case of engine production, the ETU manages, in addition to assembly, the production of the engine block, the driving shaft, the distribution shaft, the piston rod and the cylinder head), with the aim of optimising production processes, to improve results in terms of competitiveness, quality, costs, mix and quantity. From the organisational point of view, the number of hierarchical levels within the ETU is reduced: non-hierarchical forms of organisation of work are present, such as the "technological team" (made up of the elementary technical unit manager, the line technologist, the maintenance man and operators), and for workers, the multi-functional, regulation and process micro-management aspects are increased within a model which demands co-operation.

There were heavy side effects of this technological reorganisation for the competitiveness of the Turin plants, as the integrated factory was experimented mainly in the plants of the South, especially Cassino.

Restructuring of supply

A further problem was the generalised reorganisation of the supply system, given that Fiat currently has a level of vertical integration of about 45 per cent of turnover. It purchased 13% of requirements directly abroad, another 25% from Italian branches of foreign multinationals, another 35% from independent Italian manufacturers and 27% from elsewhere within the Fiat group.

This is perhaps the most visible aspect of the eighties and nineties, and thus explains some of the most visible transformations in the Turin production system. It also represents an extreme case in the map of European car manufacturers. It is for this reason that it is necessary to look at this in detail.

The changes in the relationship between Fiat and components suppliers involved a great selection in terms of numbers and the pursuit of increasing co-operation and partnership between the two parties, attributing broader design functions to the suppliers. Some phenomena, in particular, are capable of explaining together the fundamental processes underway.

1. At the beginning of the eighties, there were about 1,200 direct Fiat suppliers. In the early years of the decade, a process of *selection* began based on the capacity to ensure innovation, competitive prices and reliability, with the result that in 1987 about 350 companies had already disappeared. From that year on, the fall in the number of suppliers increased notably, falling to a little less than 400 in 1997. At the same time, an intense process of concentrating on a limited number of suppliers was underway, within which a limited number of companies – 138 in 1994 – provided 90% of supplies (83 of these companies are from Piedmont).

They make up 60% of the overall number of suppliers, and provide 40% of purchases. Furthermore, they are heavily concentrated in the Province of Turin (about 90%) and represent a strong financial concentration: 75 of them (90%) belong to 57 groups, and only 8 companies, in any case characterised by fairly low levels of sales to Fiat, are independent. The economic concentration of supplies is also high: the first company covers 15% of total supplies, the first four 33%, and the first ten 51%.

For the purposes of examining the Turin vehicle cluster, the selection process that has involved the sector in the past fifteen years, is therefore of fundamental importance. Its rationale can be explained by the following factors:

- reduction in the number of supplier companies;
- increase in production volumes for the remaining companies;
- growing use of economies of scale;
- increase in productivity;
- reduction in costs;
- reduction in component costs;
- reduction in costs for the final producer.

2. The process of selecting component manufacturers is closely related to the *deverticalisation* of Fiat Auto and thus the increase in outside purchases.

It is necessary to specify, however, that a considerable part of the components produced by suppliers is still designed inside Fiat, which assigns contracts with its own designs, and in some cases even with its own equipment, such as dies. In fact, if we consider the division of the value of the parts designed, it can be seen how Fiat's level of vertical integration was still very high at the start of the nineties, and has fallen decidedly in recent years. For example, the share of components designed outside Fiat for the Uno (1983) was 30%, going up to 55% for the Punto, and to 60% for the Lancia K (Table 9.1).

Table 9.1 - Fiat Auto: component design (%)

	1991	1992	1993	1994	1995	1996
Internal	76	70	60	50	40	30
External	24	30	40	50	60	70

Source: Fiat Auto.

The objective of selection is to reach the situation of only one supplier, or at most two, for each product line, in other words, the extension of the relationship of mono-supply: in the case of the Punto, for instance, 88% of components purchased were done so in this form of supply.

3. From the technological point of view, the selection is linked to the transformation of the components manufacturers left into suppliers of *complex systems*: a single supplier, acting as main contractor, thus unites the functions previously played by several companies. This passage also implies that the Fiat/supplier relationship is becoming increasingly co-operative, seen in the attribution to suppliers of advanced tertiary functions, such as research and development and design.

The first level suppliers were also entrusted with the task of co-ordinating the sub-contractors: all sub-contracting thus ended up converging on the companies which had responsibility for assembly and testing before delivering the component to Fiat.

From the standpoint of the supplier, however, the situation of the sub-contractors themselves changed: these were not just small companies, without any particular design capacity, but even leading firms in their field, whose product was inserted into a system supplied to Fiat by another company. This has stimulated, and will continue to stimulate even more, companies to move towards establishing groups and towards a policy of technology and research agreements.

The size of sub-contracting (there are 14,900 sub-contractors of the first 140 Italian suppliers of Fiat Auto) and its importance in the filière make this segment of companies a field of intervention for Fiat itself from the perspective of rationalisation and cost reduction: in effect, the dispersion is very high (only 12% of sub-contractors' sales is made through relations within the top 140 Fiat suppliers, and only another 12%

concerns purchases from suppliers shared with Fiat Auto), encouraging action to concentrate sub-contracting in a smaller number of companies, in order to achieve economies of scale both in production and design. It is worth underlining that a "spontaneous" process of selection of sub-contractors is already underway: in the last five years, the first level suppliers have reduced the number of their suppliers by 23% on average.

To summarise, what Fiat has asked its suppliers has been: a) improvement in levels of quality, promptness and reliability; b) increase in their design capacities; c) higher capacity of co-ordination with Fiat technicians, both in times and methods; d) the consequent development of investment capacity in machinery, technology, research and development.

The final image is not dissimilar to the arrangement that its competitors have adopted: from the hierarchical filière of ten to fifteen years ago, to a structure that can be broken down into at least three levels, with the formation of a fabric of large first level suppliers (almost equals with the final producer) to whom management of sub-contracting is delegated.

For suppliers, the need to sustain high levels of investment (machines, research and development, property, organisation, information system, training) thus becomes crucial, resulting in a process of selection on the basis of which it is likely that only the most financially and economically solid first level suppliers will survive. In terms of size, this tends to be translated into the marginalisation of small and medium-small companies from the direct relationship with the manufacturer and their relegation to a second level of supply.

9.4. In search of a new image of Turin's industry

The radical change in the location and organisational strategy of Fiat has produced a deep crisis in Turin's manufacturing fabric.

Numerous public initiatives have been launched in recent years to try to find a remedy to the now evident industrial decline. The inclusion of large areas of the city and province under European Union Objective 2 programmes for areas in industrial decline has led institutions and scholars to reflect with greater urgency on the manufacturing identity of the Turin area (Bagnasco, 1986 and 1990; Bruzzone, 1993). From the establishment of the first local agency in Italy to attract investment to Torino Internazionale, from the revision of the City Master Plan to the Territorial Co-ordination plan for the Province of Turin, all these public initiatives constituted an occasion for radical rethinking of the manufacturing structure.

Starting from these studies (Città di Torino, 1997 and 1998; Provincia di Torino, 1999), it has been possible to rethink the images of Turin as a manufacturing centre. A new description of the production system has emerged that highlights, alongside the area's traditionally strong sectors, other specialisations and activities that constitute important factors of diversification. In particular, these analyses have made it possible to distinguish four groups of specialisation in the Province of Turin.

The first is made up of the three systems of strategic significance: the vehicle sector, traditionally central to Turin's economy; the system of capital goods, which is a fundamental alternative for the engineering sector; finally, design and engineering (D&E), a system that is at the heart of innovative activities in Turin's manufacturing system. The three strategic systems are profoundly rooted in the area and traditionally represent the core of its industrial organisation.

The second group includes activities which are peculiar to the local Turin system[1]. Understanding of these specialisations entailed the adoption of scales larger than just the province, in that the companies with a certain autonomy and size appear to be concentrated in one or more neighbouring towns, as are their supplier systems. As far as the city is concerned, five specialisations were identified:

- aerospace, especially space components;
- the telecommunications system, which, despite alternating fortunes, is one of the most innovative activities in local manufacturing;
- the printing and graphics system, which includes some of the oldest activities embedded in the metropolitan area;
- the anti-theft and burglar alarm systems, with the presence of several companies that occupy leading positions in Europe;
- the ballpoint pen system, rooted through a close-knit network of production and supplier relations, characterised by the presence of small and medium sized companies (although it should be noted that the leading companies have specialised so as to avoid both competition and collaborative relations).

The third system that emerged from the analyses conducted in recent years is made up of vertically integrated sectors and specialisations. These sectors (chemicals, pharmaceuticals, production of food packaging and containers, livestock, food and confectionery industry, industrial felt, textiles) cannot be considered as depending on other specialisations, nor do they possess their own sub-contracting sector, in that production is usually vertically integrated in large plants. It follows that these specialisations have few relations with the other systems present in the area, whether upstream or downstream of their own production cycle.

To these specialisations, we must add a vast support system, made up of two increasingly integrated components. The first involves electronics and specialised services; the second, more traditional one includes engineering and rubber and plastics processing. In contrast to the other systems, this is not defined by reference to specialisation in a sector, but rather to the skills and know-how that it embodies. In particular, these are SMEs that do not have their own product, as their function is to offer given skills embedded in the Turin area to the other systems.

As is easy to observe, the basis of almost all these sectors lies in a type of skill traditionally strong in the local system: that of engineering, dating back centuries, with the important presence of the Savoy arsenals, and which has traditionally been expressed in the automotive industry.

It thus seemed that an analysis of the processes of transformation of Turin's manufacturing structure should start from the engineering sector. This is, in fact, the

specialisation where we find the encounter between local institutions (especially the presence of embedded know-how) and the epochal changes that had led to the crisis of local manufacturing (primarily the changes in the automotive sector and the Fiat Group's new strategies). This encounter could lead to a regeneration of the production sector or to an irreversible crisis.

9.5. The survey

To examine the transformation of Turin's manufacturing structure, a questionnaire survey of engineering companies was undertaken. The survey covered 150 companies operating in five local production systems in the province of Turin - Torino, Avigliana, Pinerolo, Ivrea and Rivarolo. The engineering companies were producers of:

- industrial goods (44 interviews), including makers of machine tools and measuring machines, but also companies engaged in related activities such as the design and manufacture of industrial plant, and the design of integrated production systems;
- vehicles (62 interviews), including specialist vehicle components producers and also producers of boats; and
- non-specialist engineering products (44 interviews), some of whom have historical and geographical ties to car production, but who work for numerous firms in other sectors including household appliance manufacturers, aerospace companies, and machinery producers and companies making finished goods such as locks and handles.

Table 9.2 - The selected variables

Perspectives	Variables
Local/global relations and competitiveness	Export Presence of TNCs Role of internal and external sources of information
Inter-company relations	Role and intensity of informal communication Role of untraded relations Dependency on suppliers and customers Role of the local institutions and organisations Role of trust in supplier agreements
Learning process	Linkages with suppliers and customers Existence of innovation networks Relations with design and engineering Role of know-how and know-who

The questions focused on:

- local/global relations and competitiveness- especially the internationalisation of the local manufacturing structure;
- inter-company relationships - the continuing existence of hierarchical forms of organisation (particularly among multinational groups) and the formation of networked clusters of companies; and
- learning processes - and the increasing importance of Turin's designers and engineers and their relationships with engineering companies.

Table 9.2 shows the variables that have been used to analyse these three features of the local manufacturing system. The companies that were interviewed were asked their opinion on the role that traditional local factors play in determining competitive advantage: logistics and accessibility; the presence of other local agents; training; relations with the workforce; and institutional support. They were also asked their opinion on the local business environment and local "industrial atmosphere".

Competitiveness of the local in the global

The analysis of Turin's engineering sector necessarily began by considering the competitiveness of the three groups into which it has been divided, taking three variables into account: the propensity to export, the type of competition (if based on the needs of one or few main customers) and the evaluation of whether there was any increase in competitiveness in the course of the 1990s.

The figures (Table 9.3) show fairly clearly how there is a clear-cut difference between the competitiveness of producers of industrial goods and that of companies belonging to the automotive sector.

Table 9.3 - The competitiveness of Turin's manufacturing industry

	Propensity to export		Type of competition		
	High	None	Price-based	Innovation-based	Increase in competitiveness
Generic engineering	1 (3.9%)	19 (31.1%)	7 (23.3%)	14 (20.9%)	16 (24.3%)
Automotive	9 (34.6%)	29 (47.5%)	18 (60%)	28 (41.8%)	23 (34.8%)
Industrial goods	16 (61.5%)	13 (21.4%)	5 (16.7%)	25 (37.3%)	27 (40.9%)
Total (out of 150)	26	61	30	67	66

For example, 61.5% of companies that export more than 50% of their sales produce industrial goods. On the contrary, almost half (47.5%) of the companies that

do not export belong to the automotive sector, demonstrating that most Turin companies linked to the car industry still maintain an exclusive bond with the Fiat supply chain. A confirmation of this indication is given by the type of competition: 60% of the automotive companies competes essentially by trying to satisfy the price standards of the main customer, a percentage that drops to 16.7% for the manufacturers of industrial goods.

It can also be seen that 40.9% of companies showing an increase in competitiveness belongs to the cluster of industrial goods (27 out of 44 manufacturers of machine tools and similar have become more competitive in the last ten years).

Finally, the marginal position of generic engineering should be noted, both in terms of propensity to exports and in innovation capacity. This is explained by the fact that this category is made up of third or even fourth tier supplier companies, often small ones that play mainly a support function.

Networks and trust: the local organisation of production

The organisation of the manufacturing structure was assessed principally by examining the nature of the communication between the various local actors, assuming that the prevalence of formal communication (manuals, technical specifications, contracts) indicates a prevalence of hierarchical relations. On the contrary, the use of more informal means of communication (for instance, personal visits and the exchange of technical staff) has been considered as a sign of the presence of a network organisation. Similarly, trust in the technicians of the customers and suppliers has been considered an important factor for the creation of trust-based relations in the local system.

Again in this case, the companies belonging to the automotive sector are clearly distinguished from manufacturers of industrial goods. Two main conclusions can thus be drawn:

- the first concerns the producers of industrial goods and establishes a relation between the intensity of informal communications with customers, trust in suppliers' technicians and competitiveness. In this activity, the local knowledge relationship that is the basis of competitive advantage seems to be of a strictly technical type. In other terms, local learning occurs upstream (in the supply relationship) through trust in the suppliers' technicians, and downstream (in market relations) through the close collaboration between the producer's technicians and those of the user of the product;
- the second refers mainly to the automotive sector and underlines the intensity of supply relations (based on price) and its relations with competitiveness. In this sector, the learning process is still organised according to the hierarchy typical of Fordism, in that it connects the hegemonic company, its first tier suppliers and sub-contractors in a hierarchy: the leading company transmits orders to those below through forms of communication that become more and more informal as one descends the tiers in the hierarchy. As this is a sub-contracting chain, the asymmetry between relations up and down stream may be surprising: the individual

company seems to perceive its own relationship with its suppliers as more intense than with its customers. However, when it has to express the perception of its own relations with its main customer, it describes it in terms of relative dependency. This is typically hierarchical behaviour, in that there is a clear perception that the information and decision-making flow is top-down, from the main customer to the supplier, and from there in turn to the sub-contractors.

Thus, as we move down to the lower levels of the hierarchy, the use of informal methods of communication reflects the need of sub-contractors to adapt flexibly – or, better, to bend over backwards – to the highly codified flows of orders and information that arrive from above[3].

Design, engineering and learning

One of the principal hypotheses formulated about the transformation of Turin's manufacturing structure is that design and engineering activities (hereon D&E) are fundamental to the definition of the identity of the local system. These are activities of great interest from the point of view of learning processes:

- because of the high level of tacit knowledge: although the growing importance of computer-based design and engineering tools (CAD, CAM) has introduced a process of codification of the knowledge required, D&E activities still depend on forms of tacit knowledge, linked to experience and to the sharing of aesthetic and technical understanding, reproducible only through intense personal relations of collaboration and apprenticeship[4];
- because of the close bonds with production: most of Turin's historical designers combine design and engineering work with the production of special, high quality bodywork. The tacit knowledge immanent in D&E activity is thus easily codified in products that are exported worldwide;
- because of the immaterial and symbolic nature of design, which makes it similar to the production of luxury consumer goods in the industrial districts. In both cases, in fact, tacit local knowledge is translated into style, taste and sophistication that confer a particular symbolic value on the products. In other terms, in the case of design, the transfer of knowledge between local and global, between the tacit and the explicit, occurs through the creation of sign-value.

It can be noted that it is the vehicle sector that uses design the most: 22.5% of companies in this sector regularly use more than three forms of design, against the 15.9% of producers of machine tools and equipment and just 6.8% of generic engineering (Table 9.4).

Nevertheless, this relationship has a contradictory aspect. In fact, almost half the companies that do no design work (48.1%) belong to the vehicle sector and only 14.8% to the industrial goods sector. We can thus say that the vehicle sector is the most design-intensive in Turin, but it is also the one with the greatest number of companies that do not undertake any design work first-hand and is, therefore, in a situation of total dependency on the customer. In contrast, the production of industrial

goods sees the use of design as an activity needed by almost all the companies in the sector, even if less intensively than the vehicle sector[5]: 75% of industrial goods manufacturers regularly undertakes one or two forms of design.

Table 9.4 - Intensity of design and specialisation

Specialisation	Intensity of design (1)			
	None	*Average*	*High*	*Total*
Generic engineering	10 (22.7%)	31 (70.5%)	3 (6.8%)	44 (100%)
Vehicles	13 (21.0%)	35 (56.5%)	14 (22.5%)	62 (100%)
Industrial goods	4 (9.1%)	33 (75.0%)	7 (15.9%)	44 (100%)
Total	27 (18.0%)	99 (66.0%)	24 (16.0%)	150 (100%)

Note: (1) $\alpha = 0.081$

The difference between the vehicle and the industrial goods sector is clear even when considering the different ways in which the companies conduct their design work. It can be seen, firstly, that industrial goods producers usually maintain control of design, whether internally or delegated to external consultants (Table 9.5).

Table 9.5 - Autonomous design and manufacturing specialisation

Specialisation	Autonomous and internal design (1)		Autonomous and external design (2)		Total
	No	*Yes*	*No*	*Yes*	
Gen. Engineering	26 (59.1%)	18 (40.9%)	41 (93.2%)	3 (6.8%)	44 (100%)
Vehicles	27 (43.5%)	35 (56.5%)	52 (83.9%)	10 (16.1%)	62 (100%)
Industrial goods	8 (18.2%)	36 (81.8%)	34 (77.3%)	10 (22.7%)	44 (100%)
Total	61 (40.7%)	89 (59.3%)	127 (84.7%)	23 (15.3%)	150 (100%)

Note: (1) $\alpha = 0.00041$
(2) $\alpha = 0.11$

As far as autonomous and internal design is concerned, the difference is unequivocal: only 8 industrial goods producers out of 44 (18.2%) do not do design work internally, a percentage that rises to 43.5% for vehicles and 59.1% for generic engineering. Again in the case of design entrusted to external studios and professionals, the industrial goods producers are the ones that use the tradition and skills of Turin designers most intensively (22.7% against 16.1% for vehicles and 6.8% for generic engineering).

If we consider the design done by the customer, the situation is reversed: only 6.8% of industrial goods producers works to customer designs, against the 21% of components manufacturers and 31.8% of companies operating in generic engineering[6].

We can thus conclude that the production of industrial goods implies greater design autonomy and greater use of resources external to the company, but internal to the local system in which it is rooted. Naturally, the dependency of the vehicle sector on the main customer does not concern only the outlet market but also design.

When Fiat make difference

The empirical analysis has identified two different components of Turin's manufacturing industry, characterised by their own production and competitive behaviour, the vehicle and industrial goods sectors. Before recomposing the results of this analysis into a new image of Turin's manufacturing industry, it is however useful to look more closely at the vehicle sector.

The feeling of there being a radical transition in Turin's vehicle industry is backed up by some profound transformations in the local manufacturing structure. The location of numerous components multinationals, the growing importance assumed by the quality of sub-contractors, the progressive involvement of suppliers in research and design, and significant symptoms of entrepreneurship shown by small and medium sized companies raised to the rank of first tier suppliers are all evidence that suggest a radical transformation of the vehicle sector. In particular, they suggest that this transformation has assumed traits of innovativeness, participation and competitiveness that justify talk of a full-scale auto district, of a post-Fordist organisation of the sector no longer guided by the hierarchical principle that saw the absolute hegemony of Fiat. In this interpretation, new economic actors (first tier suppliers, transnational companies, research centres, designers) are acquiring new significance. These are connected to each other by relations of co-operation and collective learning that confer new competitiveness on Turin's vehicle industry.

Above and beyond the specific traits that the auto district assumes in the various interpretations, it is important to observe that they bear out in any case the hypothesis that the vehicle sector still represents a strongly homogeneous set of activities which, despite the profound changes of recent decades, possess a common identity. However, this hypothesis makes it difficult to explain some phenomena, the most important of which is the polarisation of the behaviour of companies totally dependent on Fiat and of those which had become independent of the hegemonic company. Among the former, the formation has been seen, for example, of a nucleus of small first tier

suppliers that depend totally on the relationship with Fiat and which show little territorial embeddedness. Among the latter, instead, the conquest of autonomy has often meant abandoning OE production, with an orientation towards the vehicle after-market, and abandonment of the auto sector, with the consequent specialisation in the production of components for motorcycles, boats and agricultural machinery (Città di Torino, 1998). The most interesting aspect is that both of these types of behaviour have been translated into an increase in competitiveness: in the period 1990-1997 the growth in exports was high above all among companies that were no longer first tier Fiat suppliers and which, in contrast, had moved more decidedly towards supplying Fiat (Enrietti, 1999).

Table 9.6 - Non Fiat vehicle sector and Fiat suppliers

Characteristic	Non Fiat vehicle sector	Fiat suppliers
High propensity to export	10 (23.3%)	0 (0%)
Informal communication with suppliers	2 (4.7%)	7 (21.2%)
High intensity of design	5 (11.6%)	7 (21.2%)
Total absence of design	7 (16.3%)	11 (33.3%)
Customer's quality standards	28 (65.1%)	28 (84.8%)
Price competition for the customer	8 (18.6%)	12 (36.4%)
Membership of a group	6 (14%)	11 (33.3%)
Prevailing use of local information	11) (25.6%)	17 (51.5%)
Fundamental role of logistics	7 (16.3%)	3 (9.1%)
Negative role of logistics	8 (18.6%)	2 (6.1%)

Note: All relations are statistically significant ($\alpha <= 0.1$).

At this point, the key question is to understand whether such a profound divergence of behaviour can be interpreted within a coherent framework, such as the one proposed by the image of the car district. Is there one car district or should we consider there to be a profound rift between the galaxy of companies that still orbits around Fiat and the vehicle nucleus that has tried different roads to independence from Fiat? Posing this

question is the same as asking whether the vehicle companies dependent on Fiat and those that have become autonomous show different forms of behaviour that imply two distinct ways of organising production, embedding themselves locally and achieving competitiveness.

The absolute figure indicates how many companies possess a given characteristic, while the figure in brackets indicates the percentage of companies that possess the characteristic in question, taking 100 as the total companies belonging to the cluster.

To investigate these differences, the generic engineering companies were reclassified into two groups: companies integrated in the Fiat mesosystem and companies extraneous to it. This division is obviously not intended as absolute: within the Fiat mesosystem there are companies which have tried to diversify their production, especially by increasing exports; vice versa, other companies extraneous to the Fiat supply chain may in the past have used relations with the Fiat mesosystem to acquire knowledge and skills later used for their own purposes.

76 companies were identified in this way, 54[7] of which belonging to the vehicle cluster and 22 classified previously in the generic engineering group (of these, 9 belong to the hot pressing system of the Rivarolo local system). Table 9.6 summarises the differences between the two groups, with reference to some of the main characteristics of the vehicle cluster.

The comparison clearly brings out how the characteristics of the vehicle sector are in fact those of the Fiat mesosystem. The first significant fact is that, despite the government incentives to trade in old cars, companies in the Fiat supply chain have not seen a significantly higher increase in competitiveness than others. This is particularly interesting if we consider that many of the companies which have left the Fiat orbit work in the after-market, a sector damaged by the trade-in incentives, as the incentives encouraged motorists to buy new cars rather than repair old one. As far as the role of groups is concerned, we can see that it has been above all Fiat suppliers that have been the targets of takeovers. This fact underlines once again that the main reason for the presence of multinational groups is still access as a supplier to Fiat.

The processes of value creation also differ profoundly:

- the Fiat supply companies have an ambiguous relationship with design: on the one hand, they are the companies that do most design; on the other, numerous companies depend entirely on Fiat for design (one third of companies has no design activity);
- the hierarchical production chain that binds each single firm closely to the main customer (on which it depends) and its supply chain is specific to the Fiat system, and not of the vehicle sector as a whole;
- it is above all the companies of the Fiat mesosystem that depend very much on local information, and they also show less propensity to export: these are two symptoms of the mesosystem's relative closure, but also of embeddedness.

The empirical analysis thus leads us to the fact that the Turin vehicle sector can no longer be seen as a cohesive set of activities and actors. Our hypothesis is, in contrast, that two different systems have formed within it, each of them characterised by its own

behaviour. The Fiat supply chain, despite its important transformations, still appears as a hierarchically ordered system, within which positions of innovation and production excellence co-exist with situations of precariousness and dependency on the decisions of the hegemonic companies. The non-Fiat vehicle sector has instead gradually differentiated itself from the rest of the system, to the point of assuming an alternative identity: this, although not characterised by its own behaviour and perceptions as happens with the producers of industrial goods, can no longer, in our opinion, be traced back to the Fiat system. The next paragraph will recompose these results in an attempt to offer a partially new image of Turin's manufacturing industry.

9.6. Post-Fordist Mesosystem and Local Value Production System: a new dualism

The empirical analysis highlights how change in Turin's engineering industries is part of a more radical reorganisation of the system's production. The system now comprises three distinct sub-systems: an industrial goods system, a vehicle production system dependent on Fiat, and a vehicle system independent of Fiat (Figure 9.1).

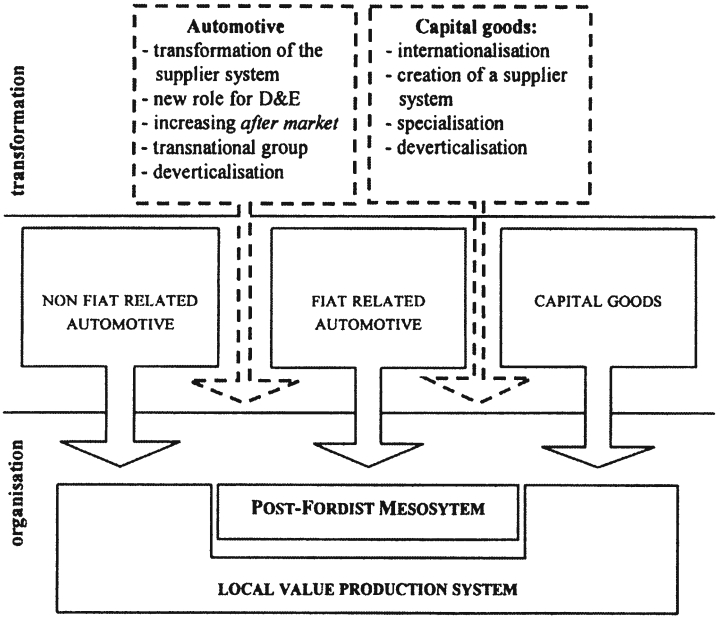


Figure 9.1 - The Turin Manufacturing System

Each of these systems has its own distinctive form of organisation that goes beyond Fordism and assumes the characteristics of the previously described concepts of the Post-Fordist mesosystem and the Local Value Production System. The first of these

concepts describes the "Fiat galaxy" while the second encompasses the transformations that have occurred in both the industrial goods system and the vehicle and components production system that is independent of Fiat (Figure 9.2).

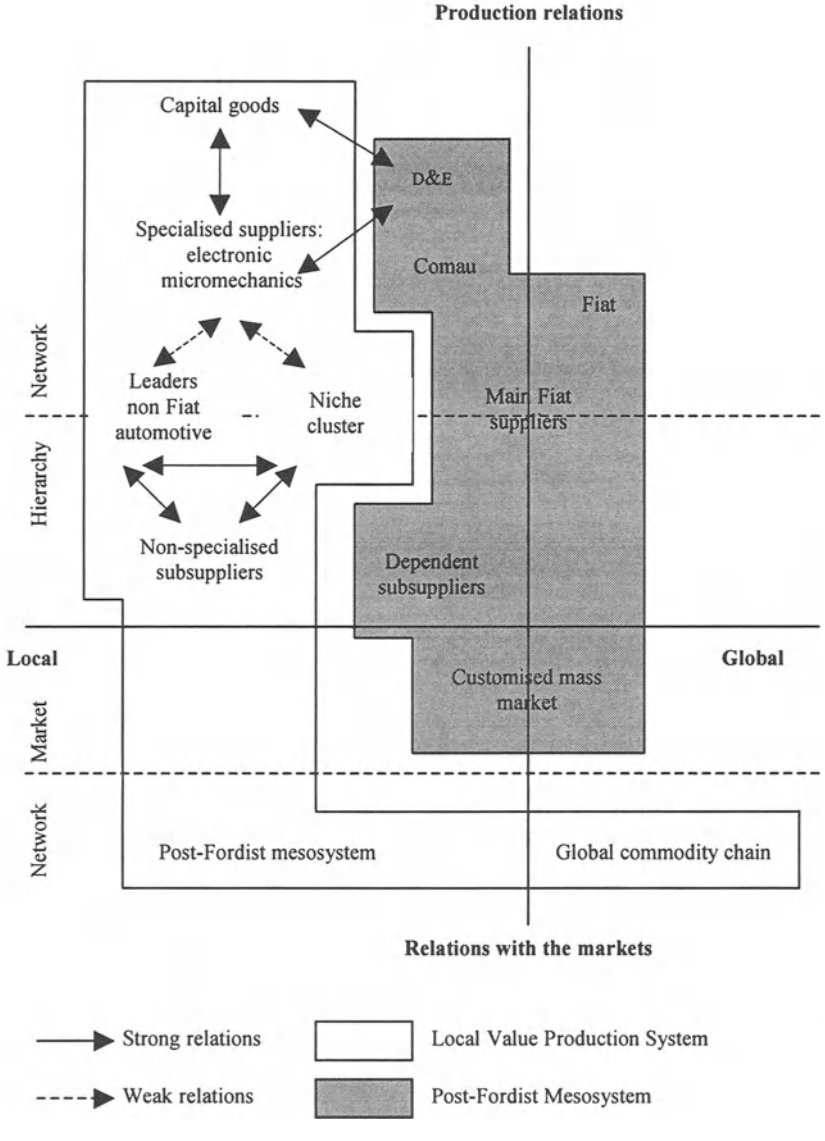


Figure 9.2 - The organisation of production in Turin

The Post-Fordist Mesosystem

The empirical analysis shows that the relationships in the Fiat mesosystem have declined, questioning the traditional assumption that Turin's manufacturing base pivots exclusively around automotive production in general and Fiat in particular. The hierarchical production system that remains is, however, typical of Fordist Turin.

The competitiveness of the mesosystem still depends on companies having preferential relationships with major corporations, principally Fiat. It is true, nevertheless, that change has progressively empowered first tier suppliers. However, these relationships remain profoundly hierarchical, with decision-making and innovation flowing through various levels, from Fiat at the top to small and medium sized subcontracting companies at the bottom.

This continuity of Fordist organisation is particularly evident in four aspects of current relations. First, the relations between companies show the emergence of network characteristics in addition to the persistence of hierarchical features. On the one hand, this involves the transformation of the Fordist multinational, Fiat, into a networked transnational corporation (TNC). On the other hand, there are also signs that innovation is spreading to small enterprises as networks centred on Fiat develop to embrace design and engineering studios (D&E), first tier suppliers and Fiat Research Centre programmes. Nevertheless, dependency on Fiat remains. Second, hierarchical relationships still provide the frame to local and global interactions. Either Fiat or first tier suppliers mediate access for firms to international markets. But, the international groups that act as nodes in both local and supra-national networks are shown in survey responses not to be embedded at both scales, but now progressively to be less locally embedded as their exports expand. Indeed, the rise of national and international groups appears to diminish territorial embeddedness without bringing the benefits of connection to global markets. Third, the learning relations linked to design and engineering work are still channelled primarily through companies' main customer, Fiat. In this mesosystem, the use of D&E for product and process innovation is less frequent than in the system making industrial goods. Perversely, while components manufacturers linked to Fiat make greater use of D&E, many of them have no design and engineering activities and depend entirely on those of their customers. In this hierarchical decision-making chain, knowledge and information is in the hands of the dominant firms. Fourth, the final product of the mesosystem, the automobile, is sold on the customised mass market which, as we have seen, has evolved from the Fordist mass market.

From this analysis of milieu relations, it is reasonable to conclude that the Fiat supplier system, despite continuing local bonds, is structured as an a-territorial economic mesosystem. The organisation of the Fiat mesosystem appears to be in a process of transition from old Fordist arrangements to a post-Fordist identity that is still to be defined, but which is somewhere between the global and the local and between hierarchy and network.

The emerging post-Fordist mesosystem is made up of various actors each following different trajectories of change and each of which will contribute differently to the

system in the future. At the centre of the system is Fiat, which is becoming increasingly transnational, and assuming a global network form. Its territorial embeddedness in Turin is increasingly ambiguous and controversial. On the one hand, it is part of a network of local co-operation, especially for decision-making, innovation and engineering activities, because the designers and first tier suppliers it uses are strongly embedded locally in Turin. On the other hand, the locations of production plants are now seen in a global perspective, with little concern for Turin.

First tier suppliers appear increasingly to be on the borderline between hierarchy and network forms of organisation - between local embeddedness and a-territorial dependency. However, the inter-firm relationships of these enterprises are still evolving. Their progressive involvement in co-design networks with Fiat has increased their autonomy and facilitated the consolidation of network relations. But, their acquisition and take-over by multinational groups has meant that many first level suppliers have become part of a new hierarchy. Ambiguity can also be seen in their evolving relationships with the local area. While these networks embed companies in a close-knit fabric of untraded relations, it is still true that many of these companies are willing to relocate their manufacturing activities close to the new globally distributed plants of their main customer (see Chapter 6).

Subcontracting is the component of the system that most closely reproduces the characteristics of the old Fordist form of organisation. Subcontractors remain largely excluded from the restructuring processes of the Fordist hierarchy and are unaware of the birth of new relational networks with either first tier suppliers or other subcontractors. From a territorial point of view, subcontracting acts within a mainly local context in contrast to the findings reported in Chapter 4. These small firms can gain access neither to global production and innovation networks nor to foreign markets.

Finally, there are two other important sets of actors that "network" with Fiat and its first level suppliers. These are the design and engineering companies and Comau, the group controlled by Fiat that makes industrial goods for the holding company (especially robots and integrated production systems). In both cases, these are actors whose competitiveness and excellence are based on local factors which cannot easily be found outside the Turin area (tradition, know-how, experience, skilled personnel, trusted suppliers).

The image that emerges from this analysis is that of a system shifting towards the globalisation of the relations of production and, therefore, towards potential uprooting from the Turin milieu. The rooting of the mesosystem in Turin depends, in fact, on the balancing of two opposing forces:

- a centrifugal force, resulting from the strategic decisions of global actors – the buying up of local suppliers by outside interests, and Fiat's global decentralisation that encourages its suppliers to follow; and
- a centripetal force, linked to specific localised knowledge-based processes, the most important of which is the close connection between D&E activities and production.

A balance between these forces has yet to emerge.

The Local Value Production System

The empirical analysis also underlines the emergence of another local system characterised by a stratification of local and global relationships which sets it apart from the system discussed previously. This is the local value production system identifying those activities and sectors which, starting from the engineering tradition that is the heart of Turin's know-how, have been able to activate the local factors (trust, personal acquaintance, sharing of values and skills etc) that play a fundamental role in supporting the competitiveness of local manufacturing systems.

The heart of the local value production system is a nucleus of relationships that link D&E, the manufacture of industrial goods and a close-knit network of companies specialised in micro-mechanics and information technology (IT). This is the first and principal element of the local value production system. The competitiveness of this system arises from its propensity to export and the increased competitive capacity of the firms involved in recent years. They tend to have a multitude of customers, rather than one or two key ones. They are highly specialised and globally market oriented. At the same time, they see the role of the local economic environment of Turin in a positive light in terms of "industrial atmosphere", manufacturing tradition and so on.

The milieu of the industrial goods system derives from three aspects of the interactions between companies that define the identity of the local manufacturing system. First, companies are involved in networks of informal relationships, especially with their customers. Products are tailored to the highly specialised needs of customers who are mainly located abroad. As far as supplier relations are concerned, a distinction can be made between those with IT consultants (for software) and those with the micro-mechanics sector. Here, quality is a major issue, and more so than in the vehicle sector. Second, local/global connections are radically different to those of the Fiat mesosystem. In the absence of major international groups, the link to the global network is through numerous small and medium sized companies that sell directly on international markets. Here, market access is not mediated through a few large actors. Most of the manufacturers and their suppliers of tools and components are export oriented. The informal and co-operative nature of their commercial relationships facilitates the transfer of skills and knowledge and provides access to innovation. Third, inter-firm relationships involve learning through customer-focused transactions centred on co-design and co-engineering. With customers located abroad, these are not entirely local learning processes, though firms in the local value production system make intensive use of the D&E skills in Turin. Thus, in part, territorially embedded learning processes persist.

In the design and engineering element of the local value production system, firms are therefore strongly embedded in the local Turin context (Brosio, 1994). They draw their competitiveness from the continuity of the Turin manufacturing tradition, of which they have been able to build advanced and innovative competencies in micro-mechanics (especially in aerospace production), mechatronics and IT (Ceris, 1990; Rolfo, 1993).

A second element of the local value production system centres on vehicle production activities not linked to Fiat. In some cases, firms have shifted to producing components for motorbikes and agricultural machinery, others to producing for the automotive spare parts market. The drivers of this transformation are medium sized and large internationalised companies, some of whom were formerly first tier suppliers to Fiat which have adopted diversification strategies. They have drawn around themselves significant parts of the Fiat supplier system, nurturing the formation of Turin's third engineering system (Figure 9.1). From a territorial point of view, this engineering system has features half-way between those of the Fiat-centred mesosystem and the industrial goods system:

- relationships between companies remain fundamentally hierarchical;
- yet, they make greater use of information external to the local system, depend less on one main customer, are more market oriented, export more, are more dependent on local logistics support and have fewer corporate groups in their ranks; and
- design and engineering activities are in a phase of incipient diffusion amongst the companies in the system.

These characteristics make this vehicle segment (not linked to Fiat) one of the critical kernels of local development in Turin. The manufacturers of the industrial goods system and the Fiat mesosystem possess their own clear development trajectories; the former based on embeddedness and the latter on globalisation. For the vehicle segment not linked to Fiat the situation is more critical. It appears to be in a delicate phase of transition in which the supportive network of personal and entrepreneurial relationships has not yet been formed. At the same time, the globalisation of the automotive sector and the desire of local entrepreneurs not to belong to the Fiat supply system are weakening their ties with the Fiat mesosystem.

Thus, the local value production system has two components. One comprises companies that constitute the industrial goods system, and the other comprises the firms of the non-Fiat vehicle system. In the first, businesses have a very local production perspective and are linked into networks based on trust and the sharing of specialist skills. They appear to be strongly embedded in the territory from which they draw the resources needed to maintain their own competitiveness in international markets. In the second, only some businesses in the system are strongly locally embedded. Others are not. This is an unstable component of the local value production system that is going through profound transformation.

Overall, the markets for the output of the local value production systems discussed here are highly specialised and serve personalised international markets, where networks of relations between producers and users are created that are decisive for the competitiveness of both. These are predominantly global markets: the vehicle spare parts market, the non-Fiat vehicle sector, and niche markets for consumer goods and intermediate goods.

Nevertheless, it is still clear that local markets remain important. The Fiat group and its suppliers have played a dual role. While they created a large pool of demand,

they have also functioned as a "technological incubator" in the sense that many new entrepreneurs are technicians or workers who have left the Fiat mesosystem.

Obviously, the local value production system and the Fiat mesosystem are not reciprocally closed systems. In addition to the market relations already mentioned, there are various other points of contact between the two. First, in recent years, Comau has progressively reduced its exclusive bond with Fiat, establishing itself as one of the world leaders in the design and manufacture of integrated production systems. Parallel to this, it has intensified its untraded relationships with local and global company networks. This transformation makes Comau a potentially important catalyst of knowledge creation and innovation in the Turin area, generating positive externalities for the local value production system. Second, the design and engineering studios, although based on skills profoundly rooted in the Fiat mesosystem, are also important actors in the local value production system. Third, some first tier suppliers are gradually breaking free from Fiat and many small subcontractors who formerly worked exclusively for Fiat are now sometimes accepting contracts from these companies.

9.7. Conclusions

The aim of this chapter was to focus on the links between the organisation of buyer-supplier relations, the scale of these relations and their contribution to the creation of competitive advantage.

First we considered how the organisation of external relations (market, hierarchy and network) and the scale (local and global) influence the whole organisation of the production system. This leads us to distinguish two main styles of organising external relations, the Fordist (and post-Fordist) model and the network model. Finally, we used the case of Turin to show how the theoretical framework developed in the first paragraphs can be throw light on the transition of a Fordist system towards new forms of industrial organisation.

The main conclusion we can draw is that this framework allows us to overcome, at least partially, the dualism between Fordism and post-Fordism and the one between local and global. The legacy of Fordism will not disappear in the short term, also because the local value production system has its roots in the cognitive and social environment of the Fordist system. What we are facing is probably not a radical divide but the rebirth of Janus (see Chapter 2) with his two faces, one looking to the transformation of TNCs and the Fordist system and one looking towards the creation of local value production system. A closer look at the issues of scale and organisation can help us understand which face we are looking at.

Notes

(1) In addition to the regional capital, it is worth mentioning at least the local system of Avigliana, characterised by the presence of two local niche specialisations: boat-building and the production of handles and locks.

(2) Through the concepts of *active versatility* and *passive pliability*, Semlinger (1993) provided a useful starting point for the classification of the customer-supplier relations that characterise small and medium sized companies.

> With the first type of flexibility, mall and temporary market niches can be quickly recognized and exploited and rush orders can be responded to quickly. It is based on a high capacity to react and adapt, resulting from efficient information-processing and quick decision-making. [...] Craftsmen, who often account for an above average share of the personnel in small enterprises, are able to cope with different tasks and tools and, in this way, provide in-house flexibility. [...] In comparison, the second type of flexibility is characterised by the ability and readiness to submit to outside pressure and to accept long-term risks and/or cutbacks to existing company goals and standards (Semlinger, 1993: 166-167).

The predominance of one or other type of flexibility implies the predominance of interdependency or mere dependency in the supplier-buyer relationship. Although these are inextricably intermingled and, in a certain sense, both innate to the small enterprise, we can say that the former is typical of the local systems, and that the latter tends to characterise the market institution.

(3) Examples are prototypes and short-run production, craft productions that are literally "hand made".

(4) This difference between the vehicle and industrial goods sector can also be observed when considering design, although in this case the relationship is not statistically significant.

(5) $\alpha = 0.0132$

(6) For 8 companies previously classified as "components manufacturers" it was not possible to attribute a new identity in the dichotomy of "Fiat suppliers" versus "extraneous to the Fiat mesosystem".

Conclusions

CHAPTER 10

A story still to be told

Stupidity consists in wanting to reach conclusions.
(G. Flaubert)

We have attempted in this book to reconstruct the reasons for the importance assumed in the last twenty years by territories and places in the explanation of economic and social phenomena, in particular of competitiveness and economic development.

After what has been argued, it seems necessary to draw conclusions on the meaning of "local development", one of the terms most (ab)used in the contemporary scientific and political debate.

10.1. What is local development?

One first perspective sees local development as a mere response to exogenous changes that demand a reorganisation of economic and social space. Paradoxically, again in this area, the Marxist interpretations overlap with free market and neo-classical ones. For the regulationist school, we are facing an epoch-making change in the organisation of capitalist production, which imposes the need for new scales and new ways in which to regulate the economic realm. In a similar way, the supporters of the free market maintain that only through the local/regional (de)regulation of investments and the labour market is it possible for the local economies to fit well with the flows of capital and innovation that characterise advanced capitalism.

In both cases, the local scale assumes importance only in that it guarantees financial capital greater freedom of movement compared to the national scale. The foundation of local development is thus represented by the maximum "openness" of the territory to the dynamics of capitalism.

With different nuances, the other approaches that make up the archipelago of theories on local development (from the studies of industrial districts to Porter's theories on competitive clusters and the theses on the *milieu innovateur*) have a common starting point, i.e. the acceptance of the laws and dynamics of contemporary capitalism This obviously does not mean downplaying the role of these channels of analysis. As we saw in the first part, these perspectives have given a fundamental contribution in highlighting the transformations of capitalism and unveiling the role assumed by territories and places in the economy. More than anything, these approaches, together with current orientations of economic sociology and the reflowering of institutionalism, have opened up the ivory tower of orthodox economics

to ideas that were traditionally extraneous. Social and cultural factors find more and more room in the explanation of economic phenomena and, especially, of production.

There is nevertheless a fairly widespread economic bias in the contemporary debate on the relationship between local development and economic development.

In most interpretations, local development is a simple specification of economic development. In this case, although turning attention to places modifies our vision of development processes, it can *not* change the conception of development itself. To state that places and territories play a fundamental role does not yet mean stating their centrality. The centre of attention is still economic development, with its aspects of abundance and necessity. This does not diverge from the organicistic vision that sees development as a positive process of growth and accumulation of assets, whether monetary (as with GDP) or not (such as education or life expectancy).

This perspective becomes clear if we consider the relationship between competitiveness and local development. These two concepts are often treated as if they were synonyms: if the local manufacturing structure is competitive, then processes of local development are triggered. However, the arbiter of competitiveness, and thus of local development, remains the global market, in other words an element exogenous to the place.

Throughout the book, our attempt has been to overturn the relationship between competitiveness and local development. The latter has been assumed in a systemic perspective as the process through which a place reproduces its own identity. If the identity of a place is given by the organisation of those social, cultural and economic relations that make that place "unique", then development necessarily concerns those relations and their evolution. In this case, the arbiter of development is no longer the market, but the local system. The benefits of economic development are evaluated in terms of the maintenance of the system's identity. Competitiveness thus becomes an instrument of local development and not a synonym for it or, even less, a prerequisite for it.

Focusing attention on the place and territory also means building a bridge with the other social sciences in that it downplays the importance attributed to the economic dimension and the production of goods. This bridge is provided, in our opinion, by two central concepts in the idea of local development: the *multiplicity of development paths* and *institutional biodiversity*.

The first concept that emerges from this treatment so far is that no special path of development exists that is valid on all scales, nor does there exist a temporal succession of hegemonic models of development each of which dominates a given historical period. We should speak rather of multiple development paths that co-exist at the same time and in the same place. The study of the Turin case has shown sufficiently clearly that the post-Fordist model and what we have called the local value production system cannot be grouped under the generic label of flexible specialisation, nor do they represent incompatible development models. These two models on which we have focused our attention (and which do not complete the range of possible development paths) can co-exist in the same place and at the same time.

What appears before us when we reason about development is to all effects a karstic landscape, where numerous alternative patterns run underground, mixing together and contaminating each other like subterranean rivers, to then emerge into the light when the right social and economic conditions occur. Thus the crisis of Fiat's Turin site has allowed the emergence of an alternative industrialisation that formed over time during the unquestioned hegemony of the Fordist model. We have even seen how the local value production system has drawn on the same local resources on which the Fordist system was founded. What is important to observe is that starting from these resources two distinct organisations have arisen that differentiate and characterise themselves more and more. This bifurcation is due to the fact that the different actors belong to different institutional contexts, to networks that express different perceptions, objectives and strategies.

This observation leads us to consider the second key concept elaborated so far, that of *institutional biodiversity*. The multitude of development paths depends irrevocably on the multiplicity of local institutional assets. These in fact define the way local actors organise socio-economic relations internally, the exploitation of local resources and the relationship with the other scales.

In this sense, the maintenance of institutional biodiversity (i.e. of a vast range of different institutions) represents a fundamental condition for ensuring the availability to the local system of the greatest possible number of development paths. This need is closely linked to the issue of learning, one of the three main metaphors we have used to describe the dynamics of the local value production system. Institutional biodiversity implies a selection process of the institutions that could be considered as a process of learning, remembering and forgetting. If it is necessarily true that learning implies the capacity to forget, then it is equally true that the process of forgetting institutions and traditions that appear obsolete can threaten institutional biodiversity. Forgetting in fact means reducing the variety and wealth of local institutions: in a situation of an uncertain future, this cancellation can prejudice the capacity of the local system to find alternative development paths.

10.2. Questions open

It appears clear from these first conclusions that the perspective of local development is not without ambiguities that demand further debates and reflections. Here we would like to concentrate attention on three problems for which there was no room in the preceding treatment:

a. the profound meaning of the metaphors for expressing local development processes;
b. the political implications of local development theories;
c. the reformulation of policies aimed at encouraging local development processes.

Metaphors and local development: Pandora's box

The theories that have tackled the problem of local development have undoubtedly been zealous creators and users of new categories and metaphors. Flexible production, glocalisation, learning, industrial district, local system, relational assets, social capital and milieu are some examples of the metaphors that economic geography has drawn from other disciplines (especially from biology and the cognitive sciences) to express its own "otherness" with respect to economic orthodoxy.

The production of new metaphors was the necessary consequence of the changed perception of the role of places in influencing (and being influenced by) the economy. An example is the need to explain hybrid behaviour, neither purely local nor exclusively global, by economic actors, that has led to the invention of the concept of *glocalisation*, or to the search for new intermediate scales. Or again, the traditional focus of neo-classical economics on the extreme scales (micro at the level of the individual versus macro on the national or supranational scale) does not evidently make it possible to identify phenomena as recognisable solely on an intermediate scale. This has led to the adoption of metaphors drawn, for example, from political geography (such as the "district", qualified as "industrial").

The objection could, however, be made that these concepts can be imagined by referring to other relationships between reality and its representation that are not metaphors, for instance analogies or even homologies. The choice of considering them metaphors stems from a number of considerations.

Relations of an analogic or homologic type establish a relation between object and representation, reality and theory, that is undoubtedly more solid than that of the metaphor. However, the validity of the application of analogic reasoning is based on a metaphor of a visual nature, according to which "science mirrors reality". Only by accepting this assumption is it possible to think of stable relations between reality and representation. However, as Rorty (1979) noted, this metaphor is historically and geographically given. If we abandon the metaphor of the mirror, then the validity of the use of strong logics of correspondence between reality and representation also disappear. This is true above all for the social sciences, where a careful analysis of the discourses used opens up a Pandora's box (Sayer, 1989b; Barnes, 1997).

Consider the metaphor of the city or the local system as an enterprise which is the basis of the discourses on competition between territories and the aggressive policies of urban regeneration which have had so much success in recent years. If we want to consider it as an analogy, we have to recognise that it is unsustainable. The analogy only stands up if we assume a priori that both the city and the enterprise are economic organisations. Only in this case can we attempt to establish analogies between city and enterprise. However, to maintain that the aims of the city are of an economic nature is so clearly false that it makes the position unsustainable. It is not a question of deducing that the image of the city as an enterprise is false and must be abandoned, but simply that it does not have the explanatory force of an analogy. Acknowledging that we are faced with a metaphor enables us to consider it as what it is, a cultural product and not a scientific truth. As such, this metaphor cannot be detached from the critical analysis

of the projects and ideologies that underlie it. What was the foundation of this analogy that compares city and enterprise ceases to be a foundation and becomes a consequence of the metaphor: thinking that the city has economic goals is essentially a consequence of the metaphor used.

This consideration attributes a political, cultural and moral dimension to the use of metaphors (see Lee and Wills, 1997, particularly section one). What was taken for granted, thanks to the use of analogies, is now recognised as a historically and geographically given discourse and its consequences must therefore be discussed.

When the discourses of economic geography lose their status as an analogical mirror of reality to become metaphors, it is necessary that these metaphors be mercilessly stripped down and contextualised. This is not a question of opposing correct metaphors to bad ones, but of recognising the relations of power that metaphors imply and reinforce. The metaphors which make up the discourses of the social sciences act on reality by modifying it in its own image and through this causal circuit become "more true", and realise themselves.

Similar care should be taken in the use of systemic metaphors. One of the main breaks within the social sciences is undoubtedly the introduction of the concepts typical of systemic and cybernetic theories (see Chapter 5).

The key element in considering the contribution of systemic theories to the definition of the problems of local development is given by the recognition that these theories have gained in the fields of the *natural sciences*, especially chemistry and neurobiology, and *information sciences*, especially cybernetics and studies on artificial intelligence. The transposition of these theoretical tools to the fields of the social sciences, in particular those linked to territorial analysis, can happen analogically or metaphorically.

The analogical path starts from the understanding that the systemic theories applied to chemistry (Prigogine, 1980) or neurobiology remain in any case rooted in the context of the "strong" sciences and are characterised, among other things, by the use of mathematical models and experimental methods. On the contrary, the return to systemic and complexity theories attempted by local development theories is of a metaphorical nature, since the derivation is limited to a few questions of principle (such as the statement "the whole is more than the sum of the parts") without extending it to the analytical and experimental tools deployed by the "strong" systemic theories. There is therefore an interdisciplinary borrowing that concerns much more the epistemological aspects and scientific language than the methods of analysis. In this way, concepts such as "operationally closed" system or "structural coupling" function in an essentially metaphorical field.

Which politics for local development

The second problematic aspect we intend to examine, already implicitly mentioned when speaking of the use of metaphors, concerns the ambivalent relationship that local development theories have with the themes of politics.

Stating that economic development does not depend exclusively on the eternal laws of capitalist accumulation but is conditioned by the relations between the various local actors (companies, associations, interest groups, administrations) cannot but have major implications when one asks "What is to be done?".

The perspective of most literature on local development on this point can be described fairly effectively by two shifts:

a. from government to governance
b. from politics to policies.

While the concept of government refers to a form of management of the public sector entirely entrusted to local and national political administrations, the idea underlying governance is based on a radically different perspective. When we talk of governance, attention is focused on a form of local government and management that is based on the interaction of many actors on the local scale: local and transnational companies, associations, labour unions, universities and research centres, in addition, obviously, to local and national institutions.

This transformation is also the origin of the shift from politics to policies. The centre of attention is no longer the political discussion – or conflict – between actors representing alternative projects for constructing social structures. The interest is rather in the construction of concrete policies to encourage the development of local communities. As has been observed in speaking of the systemic metaphors used in local development theories, the definition and solution of the problems of local communities occurs with respect to the process of structuration defined by contemporary capitalism. This means that the main preoccupation in the formulation of policies is to make the local system as consistent as possible with the needs and practices of contemporary capitalism.

Looking more closely, this risk is intrinsic to the concept of governance. The Keynesian state, the protagonism of government, in fact, guaranteed the political representation of the various social and economic projects and power was redistributed, even if minimally, between the various actors. The concept of governance claims, at first glance, greater democracy, with the first hand participation of the different local actors in forming the policies needed for common welfare. However, with the fall of government, its effect of redistributing power also disappears. In effect, a governance that does not challenge the functioning of capitalism necessarily leads to the dominion of those actors whose *raison d'être* is the reproduction of capital, enterprises in other words.

What we would like to suggest is that the local development perspective can have more explosive consequences in a political reading of the relations between competitiveness and society. As an example, we could consider the importance that the functional and spatial division of labour assumes in the learning process.

By abstraction, we can identify three chief groups involved in the learning process: the entrepreneur and managers; technicians and designers; employees (blue and/or white collar). As a general rule, we can say that the learning process is at its maximum the more *proximity and organisation* there is between these three groups.

Proximity has a positive influence on the learning process in that it facilitates the transmission of information and, above all, the sharing of the codes and institutions (which also means the sharing of values, routines and motivations) needed to interpret and use the knowledge transmitted. There are numerous examples of how spatial and institutional proximity influence the innovation and learning process. The Schumpeterian theory of the innovative entrepreneur can, for instance, be read as a maximum case of integration and proximity, in that the figure of the entrepreneur and that of the creative inventor coincide. Numerous other examples of the importance of proximity can be found to support this idea, from the "made in Italy" design label to technology centres.

Naturally, the communication and learning process must be *organised* in order to produce value. Historically, the division of labour represents the attempt to organise the relations between these three groups so as to optimise information flow and help the codification of information and knowledge available in order to create new information and new knowledge. The functional and spatial division of labour known as Ford-Taylorism traditionally represents the most important attempt to scientifically organise the relations between these groups.

In our opinion, the turning point in the reasoning is given by the perception in modern capitalism of a trade-off between proximity and organisation. Looking closely, company organisation is a particular type of proximity (not by chance do management studies speak of organisational proximity) that tends to replace other forms of proximity (especially geographical). This separation between organisational proximity and other types of proximity has led to the creation of a *dualism* between the systems of value creation based on organisation (like the early industrialised Fordist areas) and those based on proximity (such as industrial districts).

What has been said so far here on local development makes it possible, however, to suggest an alternative interpretation to this dualism. As we have seen, the perspective of local development is based on the hypothesis, argued in the previous chapters, that the territory (and thus physical proximity) plays a fundamental role in the production of value. This role helps establish a fundamental bond between local institutions and competitiveness. In this sense, we can say that geographical proximity counts also and above all in that it implies an institutional proximity that increases the competitiveness of the local value production system. The step that is now fundamental is the recognition that institutional proximity allows the identification of a virtually infinite number of possible organisations of production and other relations. It follows that no single organisation exists that is valid for the production of knowledge and innovation.

We can therefore state that the conflict between proximity and organisation depends on the *rigidity* of the capitalist organisation of work. In reality, the organisation of the learning process (as with the more general one of production) must emerge from the institutional identity of the individual local value production systems. Where this has happened, the emergence has been seen of virtuous processes of simultaneous creation of value and local identity. The existence can therefore be admitted of an alternative system to capitalism of organising work that facilitates learning and thus the competitiveness of companies (Laville, 1989). In addition to the case already cited of

the industrial districts, there is also the co-operative system of Mondragon in the Basque Country. In this case, the very strong institutional proximity (the shared Basque identity and rejection of mechanisms of capitalist exploitation) has led to a radical form of organisational proximity in high technology sectors, with the creation of a co-operative that now operates on a global scale, maintaining the values of equity and democracy that are the origin of the entire experience (MacLeod, 1997; Cheney, 1999).

Another example is the experience of the Jura Federation that started out from the initiative of craft watchmakers who, faced with the threats of the industrial revolution, organised themselves into a federation, of an anarchist and libertarian inclination, in order to maintain their own economic, social and cultural identity (Enckell, 1991; Vuilleumier, 1988). Regarding this experience, it would be useful to conduct a study that clarifies the role of the federation in the reproduction and conservation of learning processes that still today make the valleys around Neuchâtel one of the greatest concentrations of precision engineering companies.

Which policies for local development

The local development perspective also makes a definitive break with many consolidated categories that have dominated the foundations and policies of regional development for many years.

That the traditional principles of regional development had been in an irreversible crisis for some time is well known. It is sufficient to note that the most recent European Community strategies have focused on two new and crucial concepts that have together been assumed (and made official): competitiveness and cohesion (CEC, 1994).

If for decades Community policy was directed more at curing the symptoms of regional problems (such as unemployment) rather than the causes (such as low innovation potential) (Dunford, 1994; de Vet, 1993), more recent strategies have tended to provide a practical expression of network logics (innovation networking and social capital), officially recognising the need to link supply side strategies with the local demand side conditions. Admitting the errors of the past (when the saga of regional subsidies ended up by encouraging infrastructural policies), the most recent best practice guidelines aim to: i) stimulate processes of collective learning; ii) prepare a sufficient stock of social capital; iii) fight institutional inertia (Morgan, 1997).

It is now recognised that the keys to success in the global economy, summarised in the concept of *local development*, can be traced back increasingly to intangible factors: technological and organisational learning is now the acknowledged expression of values, conventions and tacit knowledge (Asheim and Isaksen, 1997; Doeringer and Terkla, 1990). This awareness is not found only in Community programmes or in the elegant logical schemes of the "new" ethic of regional development. Faced with the crisis of Fordist and Keynesian structures, innovative capacity is no longer embodied in machinery, but in the result of positive externalities and localised, collective

learning that transcend individual (or company) technical abilities. These new logics of regional development, based on the construction and consolidation of *network relations* within a defined institutional framework, are being established inexorably.

The analyses discussed so far give a central role to actors and their capacities to design and run new forms of intervention. From these, it is immediately clear that a profound transition is underway, from precisely the viewpoint of the needs expressed by the actors. This change marks the shift from a "functional" policy - usually expressed in undifferentiated support from both the economic and infrastructural standpoints, paying attention mainly to solving company logistics problems - to one of network policy, whose priority is support for collaborative (as well as competitive) relations between actors.

This network policy should involve simultaneously all the types of institutions that facilitate economic success. When it is recognised that economic relations are rooted in institutions of not only an economic but also social, family, cultural and political nature, it should also emerge equally clearly that the creation of networks is not purely the result of traditional industrial policy (Lambooy and Boschma, forthcoming). In this sense, the networking policy should involve the three levels on which the co-operative institutions that facilitate competitiveness are formed: companies; communities; political organisations and associations.

If it is true that the creation of non-hierarchical networks between companies is based on trust and reciprocal expectations, then it is equally true that these characteristics cannot be referred exclusively to the business world but must also involve the socio-cultural institutions of the entire community. As has been stated clearly by Putnam and Leonardi (1993) the atmosphere of trust and willingness to co-operate that is found in the industrial districts of central Italy is intimately linked to the presence of a similar attitude throughout the local society, in other words to the availability of important reserves of social capital. It will thus be difficult to implement network policies only on the economic level without concerning oneself with the socio-cultural institutions that support it. Much the same can be said for the actions of organisations. The debate on the importance of the partnership between the public and private sectors (Laville, 1997) expresses this need that the organisation of the network should not be limited to the realm of economic relations but be extended to the agency of collective organisations (trade unions, employers' associations, local administration).

The network shape of local relations must, therefore, be understood in two joint senses: the relations must be organised in a network form within each economic, social and political realm; the links between the three different realms must also be organised in a network format, in the sense that it is not possible to ignore the influence and feedback that socio-cultural and political relations have on economic relations (and vice versa).

Bibliography

Ackerman, E.A. (1958), *Geography as a Fundamental Research Discipline*, University of Chicago Press, Chicago.

Ackoff, R.L. (1974), *Redesigning the Future. A Systems Approach to Societal Problems*, Wiley, New York.

Alvstam, C.G. (1995), "Spatial dimensions of alliances and other strategic manoeuvres", in: S. Conti, E.J. Malecki and P. Oinas, eds., *The Industrial Enterprise and Its Environment. Spatial Perspectives*, Avebury, Aldershot, pp. 43-55.

Amendola, M. and. Gaffard, J.L. (1988), *The Innovative Choice. An Economic Analysis of the Dynamics of Technology*, Basil Blackwell, Oxford.

Amin, A. (1986), *Restructuring in FIAT and Decentralisation of Production in Southern Italy*, Mimeo, Paper presented at the London School of Economics.

Amin, A. (1994), *Post-Fordism*. A Reader, Balckwell, Oxford.

Amin, A. and Hausner, J. (1997), *Beyond Market and Hierarchy. Interactive governance and social complexity*, Elgar, Cheltenham.

Amin, A. and Thrift, N. (1994), "Living in the global", in: A. Amin and N. Thrift, eds., *Globalization, Institutions, and Regional Development in Europe*, Oxford University Press, Oxford, pp. 1-22.

Ansoff, H.I. (1965), *Corporate Strategy*, Mc Graw Hill, New York.

Antonelli, C. (1999), *The Dynamics of Technological Knowledge*, Routledge, London.

Arena, R. et al. (1988), ed., *Traité d'économie industrielle*, Economica, Paris.

Armstrong, H. and Taylor, J. (1993), *Regional Economics and Policy*, Harvester Wheatsheaf, New York.

Arora, A. (1996), "Contracting for tacit knowledge. The provision of technical services in technology licensing contracts", *Journal of Development Economics*, 50, pp. 233-256.

Asheim, B.T. (1997), "Learning regions in a globalised world economy. towards a new competitive advantage of industrial district?", in: M. Taylor and S. Conti, eds., *Interdependent and Uneven Development*, Ashgate, Aldershot, pp. 132-176.

Asheim, B. and Dunford, M. (1997), "Regional Futures", *Regional Studies*, 31, 5, pp. 445-455.

Asheim B.T. and Isaksen, A. (1997), "Location, innovation and agglomeration. Towards regional innovation systems in Norway?", *European Planning Studies*, 5, 3, pp. 299-330.

Atlan, H. (1972), *L'organisation biologique et la théorie de l'infomation*, Herman, Paris.

Attali, J. (1975), *La parole et l'outil*, P.U.F., Paris.

Averitt, R.T. (1968), *The Dual Economy*, Morton, New York.

Aydalot, Ph. (1985), *Economie régionale et urbaine*, Economica, Paris.

Aydalot, Ph. (1986), *Les technologies nouvelles et les formes actuelles de la division spatiale du travail*, Dossier du Centre Economie Espace Environnement, 47, Paris.

Aydalot, Ph. and Keeble, D., eds., (1988), *High Technology Industry and Innovative Environment. The European Experience*, Routledge, London.

Bagnasco, A. (1986), *Torino. Un profilo sociologico*, Einaudi, Torino.

Bagnasco, A. (1990), *La città dopo Ford. Il caso di Torino*, Bollati Boringhieri, Torino.

Balliano, P. (1986), "Crisi e ritrutturazione del settore automobilistico negli anni 80", in: A. Michelsons, *Tre incognite per lo sviluppo*, Angeli, Milano.

Barbier, E.B. (1998), *The Economics of Environment and Development. Selected Essays*, Edward Elgar, Cheltenham.

Barnes, T.J. (1996), *Logics of Dislocation. Models, Metaphors and Meanings of Economic Space*, Guilford Press, New York.

Barnes, T.J. (1997), "Introduction. Theories of accumulation and regulation. Bringing life back into economic geography", in: R. Lee and J. Wills, eds., *Geographies of Economies*, Arnold, London, pp. 231-247.

Bateson, G. (1979), *Mind and Nature. A Necessary Unity*, Wildwood House, London.

Becattini, G. (1990), "The Marshallian industrial districts as a socio-economic notion", in: F. Pyke, G. Becattini and W. Sengenberger, eds., *Industrial Districts and Inter-Firm Co-operation in Italy*, International Institute for Labour Studies, Geneva, pp. 37-51.

Becattini, G. (1998), *Distretti industriali e made in Italy. Le basi socioculturali del nostro sviluppo*, Bollati Boringhieri, Torino.

Becattini, G. (2000), *Il distretto industriale*, Rosenberg & Sellier, Torino.

Becattini, G. and Rullani, E. (1995), "Système local et marché global. Le district industriel", in: A. Rallet and A. Torre, eds., *Economie industrielle et économie spatiale*, Paris, Economica, pp. 173-92.

Berger, S. and Piore, D.J. (1980), *Dualism and Discontinuity in Industrialised Societies*, Cambridge University Press, Cambridge.

Bergh van den, J.C.J.M. (1996), *Ecological Economics and Sustainable Development. Theory, Methods and Applications*, Edward Elgar, Cheltenham.

Bertalanffy von, L. (1972), *General System Theory. Foundations, Development, Applications*, Allen Lane, London.

Best, M. (1990), *The New Competition. Institutions of Industrial Restructuring*, Harvard University Press, Cambridge, Mass.

Beynon, H. (1984), *Working for Ford*, Penguin, Harmondsworth.

Blackbourn, A. (1974), "The spatial behaviour of American firms in Western Europe", in: F.E.I. Hamilton, ed., *Spatial Perspectives on Industrial Organisation and Decision-Making*, Wiley, London, pp. 245-62.

Bolton, J.E. (1971), *Small Firms. Report of the Committee of Inquiry on Small Firms*, HMSO, London.

Bonazzi, G. (1993), *Il tubo di cristallo*, Il Mulino, Bologna.

Borlenghi, E. and Dematteis, G. (1982), "Localizzazione industriale e politica territoriale nell'area torinese", in: *Torino-Detroit. Due città a confronto*, Città di Torino, Torino, pp. 109-131.

Boudeville, J.R. (1964), *Note sur l'intégration des espaces économiques*, Cahiers de l'ISEA, Paris.

Boulding, K. (1972), "Towards the development of a cultural economics", *Social Science Quarterly*, 53, 2, pp. 267-284.

Boyer, R. (1986), *La théorie de la régulation. Une analyse critique*, La Découverte, Paris.

Brookfield, H. (1975), *Interdependent Development*, Methuen, London.

Brosio, R.G. (1994), *Giugiaro. L'auto e Torino*, Sole 24 ore, Milano.

Brusco, S. (1989), "A policy for industrial districts", in: E. Goodman, J. Bamford and P. Saynor, eds., *Small Firms and Industrial Districts in Italy*, London, Routledge, pp. 259-69.

Bruzzone, E., (1993), ed., *Torino: una città incompleta*, Franco Angeli, Milano.

Butera, F. (1990), *Il castello e la rete. Impresa, organizzazioni e professioni nell'Europa degli anni '90*, Angeli, Milano.

C.E.C. (1994), *Competitiveness and Cohesion. Trends in the Regions*, E.U., Brussels.

Camagni, R. (1989), "Cambiamento tecnologico, *milieu* locale e reti di imprese: verso una teoria dinamica dello spazio economico", *Economia e politica industriale*, 16, 64, pp. 209-16.

Capecchi, V. (1997), "La ricerca di flessibilità. L'industria meccanica bolognese dal 1900 al 1992", *Sviluppo Locale*, 4, 4, pp. 131-171.

Castells, M. (1985), "High technology, economic restructuring, and the urban-regional process in the United States", in: M. Castells, ed., *High Technology, Space and Society*, 28, "Urban Affair Annual Review", Sage, Beverly Hills, pp. 11-40.

Castells, M. (1989), *The Informational City. Information technology, Economic Restructuring and the Urban-Regional Process*, Basil Blackwell, Oxford.

Castronovo, V. (1971), *Giovanni Agnelli*, UTET, Torino.

Ceris (1990), *Struttura industriale e mercato delle macchine utensili*, Ceris, Torino.

Cerutti, G. and Reiser, V. (1991), *Fiat: qualità totale e fabbrica integrata*, Ediesse, Roma.

Chandler, A.D. (1962), *Strategy and Structure*, MIT Press, Cambridge, Mass.

Chandler, A.D. Jr. and Deams, H. (1980), eds., *Managerial Hierarchies. Comparative Perspectives on the Rise of the Modern Industrial Enterprise*, Harvard University Press, Cambridge, Mass.

Chapman. K. and Walker, D. (1987), *Industrial Location. Principles and Policies*, Basil Blackwell, Oxford.

Cheney, G. (1999), *Values at Work. Employee Participation Meets Market Pressure at Mondragón*, Cornell University Press, Ithaca.

Cheshire, P. C. and I. R. Gordon (1995), eds., *Territorial Competition in an Integrating Europe*, Avebury, Aldershot.

Choudhury, M.A. (1999), *Comparative Economic Theory. Occidental and Islamic Perspectives*, Kluwer, Dordrecht.

Ciampi, F. (1994), *Squilibri e assetto finanziario nelle P.M.I. Finanziamenti e contributi della Comunità europea*, Studi e Informazioni, Quaderni 45, Banca Toscana, Firenze.

Città di Torino (1997), *Ricerca relativa al comparto produttivo e artigianale*, (eds. E. Barone, S. Conti and A. Pichierri), Torino.

Città di Torino (1998), "Potenziale economico e industriale" (S. Conti and P. Giaccaria, eds.), in: *I dati fondamentali. Informazioni sintetiche di base per la costruzione del Piano*, Progetto Torino Internazionale Torino, pp. 165-221.

Clarke, L. (1991), *Building Capitalism. Historical Change and the Labour Process in the Production of the Built Environment*, Routledge, London.

Coleman, J.S. (1988), "Social capital in the creation of human capital", *Americal Journal of Sociology*, 94, pp. 95-120.

Conti, S. (1986), "Il caso di Torino. La fase urbana e metropolitana della localizzazione industriale", in: S. Conti and G. Lusso, eds., *Aree e problemi di una regione in transizione*, Patron, Bologna

Conti, S. (1994), "The network perspective in industrial geography. Towards a model", *Geografiska Annaler, Series B*, 75, 3, pp. 115-30.

Conti, S. (1997), "Global-local perspectives. A review of concepts and theoretical proposals", in: M. Taylor and S. Conti, eds., *Interdependent and Uneven Development*, Ashgate, Aldershot, pp. 15-56.

Conti, S. and A. Enrietti (1995), "The Italian Automobile Industry and the Case of Fiat. One Country, One Company, One Market", in: R. Hudson and E.W. Schamp, eds., *Towards a New Map of Automobile Manufacturing in Europe? New Production Concepts and Spatial Restructuring*, Springer, Berlin, pp. 117-146.

Conti, S. and Giaccaria, P. (1998), "Globalization: a geographical discourse", GeoJournal, 45, 1-2, pp. 17-25.

Conti, S. and Julien, P.-A., eds., (1991), *Miti e realtà del modello italiano. Letture sull'economia periferica*, Pàtron, Bologna.

Conti, S. and Sforzi F. (1997), "Il sistema produttivo italiano", in: Coppola, P. ed., *Geografia politica delle regioni italiane*, Einaudi, Torino

Cooke, P. (1995), ed., *The Rise of the Rustbelt*, University College London Press, London.

Cooke, P. and Morgan, M. (1991), *The Intelligent Region. Industrial and Intitutional Innovation in Emilia Romagna*, Regional Industry Research Report, 7, University of Wales, Cardiff.

Cooke, P. and Morgan, M. (1998), *The Associational Economy. Firms, Regions and Innovation*, Oxford University Press, Oxford.

Crang, "Introduction. Cultural turns and the (re)constitution of economic geography", in: R. Lee and J. Wills, eds., *Geographies of Economies*, Arnold, London, pp. 3-15.

Cyert, R. and March, G. (1992), *The Economic Theory of Organization and the Firm*, New York, Harvester Wheatersheaf.

Dansero, E. (1996), *Eco-sistemi locali. Valori dell'economia e ragioni, dell'ecologia in un distretto industriale tessile*, Angeli, Milano

Darwent, D.F. (1969), "Growth poles and growth centres in regional planning: a review", *Environment and Planning*, 1, pp. 5-31.

De Rosnay, J. (1990), *L'écologie et la vulgarisation scientifique*, Fides, Saint Laurent.

Dematteis, G. (1994), "Possibilità e limiti dello sviluppo locale", *Sviluppo locale*, 1, 1, 1994, pp. 10-30.

Dematteis, G. (1995), "Le trasformazioni territoriali e ambientali", in: F. Barbagallo, eds., *Storia dell'Italia repubblicana*, Vol. II, Einaudi, Torino, p. 688.

Dematteis, G. (1999), *Progetto implicito*, Angeli, Milano

Dicken, P. (1971), "Some aspects of the decision making behaviour of business organisations", *Economic Geography*, 47, 3, pp. 426-437.

Dicken, P. (1976), "The multinational business enterprise and geographical space: some issues in the study of external control and regional development", *Regional Studies*, 19, pp. 401-412.

Dicken, P. (1998), *Global Shift*, Guiford Press, New York.

Doeringer, P. and Terkla, D. (1990), "How intangible factors contribute to economic development", *World Development*, 18, 1, pp. 295-308.

Donaghue, M.T. and Barff, R. (1990), "Nike just did it: international subcontracting, flexibility and athletic footwear production", *Regional Studies*, 24, pp. 537-552.

Dosi, G. (1988), "The nature of the innovation process", in: G. Dosi et al., eds., *Technical Change and Economic Theory*, London, Pinter, pp. 221-38.

Dosi, G. and Orsenigo, L. (1988), "Coordination and transformation. An overview of structures, behaviours and change in evolutionary environment", in: G. Dosi et al., eds., *Technical Change and Economic Theory*, Pinter, London, 1988, pp. 13-37.

Dosi, G., Pavitt, K. et al. (1990), *The Economics of Technical Change and International Trade*, Chapman, London.

Duijn van., J.J. (1983), *The Long Wave in Economic Life*, Allen and Unwin, London.

Dunford, N. (1994), "Winners and losers. The new map of inequality in the European Union", *European Urban and Regional Studies*, 1, 2, pp. 95-114.

Dupuy, J.-P. (1982), *Ordres et désordres. Enquête sur un nouveau paradigme*, Seuil, Paris.

Easton, G. and Araujo, L. (1992), "Non-economic exchange in industrial networks", in: B. Axelsson and G. Easton, eds., *Industrial Networks. A New View of Reality*, Routledge, London, pp. 62-84.

Edwards, R., Reich, M. and Gordon, D.M. (1975), *Labour Market Segmentation*, Heath, Lexington.

Elster, J. (1983), *Explaining Technical Change. A Case Study in the Philosophy of Science*, Cambridge University Press, Cambridge.

Enckell, M. (1991), *La Fédération jurassienne. Les origines de l'anarchisme en Suisse*, Canevas, Saint-Imier.

Enrietti, A. (1999), *La dinamica innovativa nel distretto tecnologico dell'auto in Piemonte*, Quaderni di ricerca del Dipartimento di Economia "Cognetti de Martiis", 01/99, Torino.

Enrietti, A. and Fornengo, G. (1989), *Il gruppo Fiat*, La Nuova Italia Scientifica, Roma.

Enrietti, A., Follis, M. and Fornengo, G. (1988), *Innovazione tecnologica e potere di mercato nei rapporti tra imprese. L'industria dei componenti per auto*, Angeli, Milano.

Erickson, R.A. (1980), "Corporate organisation and manufacturing branch plant closures in non-metropolitan areas", *Regional Studies*, 14, pp. 491-501.

Ewers, H.J. and Wettmann, R.W. (1980), "Innovation-oriented Regional Policy", *Regional Studies*, 14, pp. 161-179.

Foerster von, H. (1982), *Observing Systems*, Intersystems Publications, Seaside.

Foucault, M. (1980), *Power/knowledge*, Harvester, Brighton.

Freeman, C. (1987), *Technology Policy and Economic Performance*, Pinter Publishers, London.

Freeman, C. (1988), "Japan: a new national system of innovation?", in: G. Dosi et al., eds., *Technical Change and Economic Theory*, London, Pinter, pp. 330-48.

Friedmann, J. (1972), "A general theory of polarized development", in: N.M. Hansen ed., *Growth Centers in Regional Economic Development*, The Free Press, New York, pp. 82-107.

Friedmann, J. (1992), *Empowerment. The Politics of Alternative Development*, Basil Blackwell, Cambridge (MA).

Friedmann, J. and Alonso, W. (1964), eds., *Regional Development and Planning. A Reader*, M.I.T. Press, Cambridge, Mass.

Friedmann, J. and Weaver, C. (1979), *Territory and Functions. The Evolution of Regional Planning*, E. Arnold, London.

Gabert, G. (1964), *Turin. Ville industrielle*, PUF, Paris.

Gabetti, R. (1977), *Architettura, Industria, Piemonte negli ultimi cinquant'anni*, Cassa di Risparmio di Torino, Torino.

Galbraith, J.K. (1967), *The New Industrial State*, Hamish Hamilton, London.

Galbraith, J.K. and Nathanson, D.A. (1978), *Strategy Implementation. The Role of Structure and Process*, West Publisher, New York.

Garofoli, G. (1991), *Modelli locali di sviluppo*, Angeli, Milano.

Geertz, C. (1983), *Local Knowledge. Further Essays in Interpretative Anthropology*, New York, Basic Books.

Gereffi, G. and Korzeniewicz, M. (1994), eds., *Commodity Chains and Global Capitalism*, Praeger, Westport.

Gertler, M.S. (1993), "Implementing advanced manufacturing technologies in mature industrial regions. Towards a social model of technology production", *Regional Studies*, 27, 7, pp. 665-680.

Gertler, M.S. (1996), "Worlds apart. The changing market geography of the German machinery industry", *Small Business Economics*, 8, pp. 87-106.

Giaccaria, P. (1998a), "Fashion between Local and Global", in: T. Unwin, ed., *A European Geography*, Addison-Wesley Longman, London, pp. 232-234.

Giaccaria, P. (1998b), "Mediterranean policy. A geographical discourse", in: S. Conti and A. Segre, *Mediterranean Geographies*, Società Geografica Italiana and CNR-Italian Commettee for IGU, pp. 43-60.

Giddens, A. (1984), *The Constitution of Society. Outline of the Theory of Structuration*, Polity Press, Cambridge.

Gilly, J. P. (1994), "Dinamiche industriali e meso-analisi. Il caso dei sistemi di innovazione", *L'industria*, 2, pp. 295-309.

Goldenberg, S. and Haines, V.A. (1992), "Social networks and institutional completeness: from territory to ties", *Canadian Journal of Sociology*, 3, pp. 301-12.

Gordon, R. (1991), "Innovation, industrial networks and high-technology regions", in: Camagni, R., ed., *Innovation Networks. Spatial Perspectives*, Belhaven Press, London, pp. 174-95.

Gordon, R. and Kinball, L.M. (1986), *Industrial Structure and the Changing Global Dynamics of Location in High Technology Industry*, University of California, Silicon Valley Research Group, Working Paper, 3, Berkeley.

Gore, C. (1984), *Regions in Question. Space, Development Theory and Regional Policy*, Methuen, London.

Grabher, G. (1993a), "Rediscovering the social in the economics of interfirm relations", in: G. Grabher, ed., *The Embedded Firm*, Routledge, London, pp. 1-31.

Grabher, G. (1993b), *The Embedded Firm. On the Socioeconomics of Industrial Networks*, Routledge, London.

Granovetter, M. (1985), "Economic action and social structure. The problem of embeddedness", *American Journal of Sociology*, 91, 3, pp. 481-510.

Granovetter, N. and Swedberg, R. (1985), *The Sociology of Economic Life*, Westview Press, Boulder.

Hagerstrand, T. (1970), "What About People in Regional Science", *Papers of the Regional Science Association*, 24, pp. 7-21.

Hagerstrand, T. (1982), "Diorama, Path and Project", *Tidscrift voor Economische en Sociale Geografie*, 73, pp.323-339.

Håkansson, H. (1989), *Corporate Technological Behaviour. Cooperation and Networks*, Routledge, London.

Håkansson, H. (1992), "Evolution processes in industrial networks", in B. Axelsson and G. Easton, eds., *Evolution Processes in Industrial Networks,* Routledge, London, pp. 129-143.

Håkansson, H. and Johanson (1993), "The network as a governance structure. Interfirm cooperation beyond markets and hierarchies", in: G. Grabher, ed., *The Embedded Firm*, Routledge, London, pp. 35-51.

Håkansson, H. and Shehota, I. (1995), *Developing Relationships in Business Networks*, Routledge, London.

Håkanson, L. (1979), "Towards a theory of location and corporate growth", in: F.E.I. Hamilton and G.J.R. Linge, eds., *Spatial Analysis, Industry and the Industrial Environment. Vol. I - Industrial Systems*, J. Wiley, Chichester, pp. 115-38.

Harrison, B. (1994b), *Lean and Mean. The Resurrection of Corporate Power in an Age of Flexibility*, Basic Books, New York.

Harvey, D. (1969), *Explanation in Geography*, Arnold, London

Harvey, D. (1982), *The Limits to Capital*, Blackwell, Oxford.

Harvey, D. (1985), "The geopolitics of capitalism", in: D. Gregory and J. Urry, eds., *Social Relations and Spatial Structures*, Macmillan, London, pp. 128-163.

Harvey, D. (1989), *The Condition of Postmodernity*, Blackwell, Oxford.

Hatchuel, A. and Weil, B. (1995), *Experts in Organizations. A Knowledge-based Perspective on Organizational Change*, Walter de Gruyter, Berlin.

Hayter, R. and Watts, H.D. (1983), "The geography of enterprise. A reappraisal", *Progress in Human Geography*, 7, 2, pp. 157-181.

Held, J.R. (1996), "Clusters and economic development", *Economic Development Quarterly*, 10, 3, pp. 249-261.

Hermansen, T. (1972), "Development poles and related theories: a synoptic review", in: N.M. Hansen, ed., *Growth Centers in Regional Economic Development*, The Free Press, New York, pp. 160-203.

Hicks, J. (1979), *Causality in Economics*, Basil Blackwell, Oxford.

Hirschman, A.O. (1958), *The Strategy of Economic Development*, Yale University Press, New Haven.

Hirst, P. and Thompson, G. (1996), *Globalization in Question: The International Economy and the Possibilities of Governance*, Polity Press, Cambridge.

Hodgson, G.M. (1988), *Economics and Institutions. A Manifesto for Modern Institutional Economics*, Polity Press, Cambridge.

Hodgson, G.M. (1993), *Economics and Evolution. Bringing Life Back into Economics*, Polity Press, Cambridge.

Hodgson, G.M. (1999), *Evolution and Institutions. On Evolutionary Economics and the Evolution of Economics*, Edward Elgar Publishing, Northampton.

Holland, S. (1976), *Capital Versus the Region*, Macmillan, London

Holmes, J. (1986), "The organisation and locational structure of production subcontracting", in: A. Scott and M. Storper, eds., *Production, Work, Territory*, Allen and Unwin, Boston and London, pp. 80-106.

Holton, R.J. (1992), *Economy and Society*, Routledge, London.

Hudson, R. (1997), "Regional Futures: Industrial restructuring, new high-volume production concepts and spatial development strategies in the new Europe", *Regional Studies*, 31, 5, pp. 467-478.

Hudson, R. (1999), *What Makes Economically Regions in Europe successful? Implications for Transferring Success from West to East*, EGRG Working Paper, 99/01, Durham.

Imai, K. (1988), "Industrial policy and technological innovation", in: Komiya, R., Okuno, M. and Suzumura, K., eds., *Industrial Policy of Japan*, Tokyo, Academic Press, pp. 205-229.

Indergaard, M. (1996), "Making networks, remaking the city", *Economic Development Quarterly*, 10, pp. 172-187.

Itami, H. (1987), *Mobilizing Invisible Assets*, Harvard University Press, Cambridge, Mass.

Jalabert, G. and Gregoris, M. (1987), "Turin. De la ville-usine à la technopole", *Annales de Geographie*, 538, pp.670-704.

Jencks, C. (1989), *What is Post-modernism?*, Academy, London.

Johannison, B. (1990), "Community entrepreneurship. Cases and conceptualization", *Entrepreneurship and Regional Development*, 2, pp. 71-88.

Johannisson, B., O. Alexanderson, et al. (1994), "Beyond anarchy and organisation. Entrepreneurs in contextual networks", *Entrepreneurship and Regional Development*, 6, 3, pp. 329-356.

Joignaux, G. and Rohaine, S.M. (1986), "Conditions d'optimisation d'une structure d'interface recherche-industrie dans la région Nord-Pas-de-Calais", in: *Technologies nouvelles et développement régional*, GREMI, Paris, pp. 189-201.

Juillard, E. (1967), "Histoire de la notion de région dans la géographie française", in: *Région et régionalisation dans la géographie française et dans d'autres sciences sociales. Bibliographie analytique*, Dalloz, Paris.

Julien, P.-A. (1995), "Mondialisation des marches et types de comportments de PME", *Entrepreneurship and Regional Development*, 8, 54, pp. 57-74.

Julien, P.-A. and Maurel, B. (1986), *La belle entreprise*, Boréal, Québec.

Julien. P.-A. and Marchesnay, M. (1988), *La petite entreprise*, Vuibert, Paris.

Kaldor, N. (1954), "The relation of economic growth and cyclical fluctuations", *Economic Journal*, 64, pp. 53-71.

Kamien, M. and Schwartz, A. (1982), *Market Structures and Innovation*, Cambridge University Press, Cambridge.

Keeble, D. (1967), "Models in economic development", in: R.J. Chorley and P. Haggett, eds., *Models in Geography*, Methuen, London, pp. 243-302.

Krugman, P. (1986), ed., *Strategic Trade Policy and the New International Economics*, MIT Press, Cambridge, Mass.

Kumar, K. (1995), *From Post-Industrial to Post-Modern Society. New Theories of the Contemporary World*, Blackwell, Oxford.

Kuznets, S. (1969), *Modern Economic Growth. Rate, Structure and Spread*, Yale University Press, New Haven.

La Cecla, F. (1993), *Mente locale. Per un antropologia dell'abitare*, Eleuthera, Milano.

Lambooy J.G., Boschma, R.A. (forthcoming), "Evolutionary economics and regional policy", *The Annals of Regional Science*, forthcoming.

Lapierre, J.-W. (1992), *L'analyse de systèmes. L'application aux sciences sociales*, Syros, Paris.

Lash, S. and Urry, J. (1987), *The End of Organized Capitalism*, Polity, Cambridge.

Latouche, S. (1998), *L'autre Afrique. Entre don et marché*, A. Michel, Paris.

Laufer, J. (1975), "Comment on devient entrepreneur?" *Revue française de gestion*, 2, pp. 13-15.

Laville, J.-L. (1989), *L'évaluation des pratiques de gestion participative dans les PME et les coopératives*, Centre de recherche et d'information sur la démocratie et l'autonomie, Paris.

Laville, J.-L. (1997), *Les initiatives locales en Europe. Bilan economique et sociale*, CRIDA, Paris.

Le Moigne, J.-L. (1977), *La théorie du système général. Théorie de la modélisation*, P.U.F., Paris.

Leborgne, D. and Lipietz, A. (1988), "New technologies, new modes of regulation: some spatial implications", *Environment and Planning D: Society and Space*, 6, pp. 263-280.

Lecoq, B. (1993), "Proximité et rationalité économique", *Revue d'Economie Régionale et Urbaine*, 3, pp. 469-486.

Lee, R. and Wills, J. (1997), *Geographies of Economies*, Arnold, London.

Lipietz, A. (1987), *Mirages and Miracles: The Crisis of Global Fordism*, New Left Review, London.

Lorenzoni, G. (1985), *Le innovazioni nel comportamento strategico delle imprese italiane*, Laboratorio di politica industriale, Nomisma, Bologna.

Lorsh, J.W. and Allen, A.A. (1973), *Managing Diversity and Interdependence. An Organisational Study of Multidivisional Firms*, Harvard University Press, Cambridge, Mass.

Loverige, R. and Mok, A.L. (1976), *Theory of Labour Market Segmentation: A Critique*, M. Nijhoff, The Hague.

Lundvall, B.-A. (1992a), *Natural Systems of Innovation. Towards a Theory of Innovation and Interactive Learning*, London, Pinter.

Lundvall, B.-A. (1992b), "User-producer relationships, national systems of innovation and internationalisation", in: B.-A. Lundvall, ed., *National Systems of Innovation*, Pinter, London, pp. 1-19.

Lundvall, B.-A. (1992c), "Introduction", in: B.-A. Lundvall, ed., *National Systems of Innovation*, Pinter, London, pp. 1-19.

Lundvall, B.-A. (1994), *The Learning Economy. Challenges to Economic Theory and Policy*, EAEPE Conference, Copenhagen 27-29 October.

Lundvall, B.-A. and Johnson, B. (1994), "The learning economy", *Journal of Industrial Studies*, 1, 2, pp. 23-42.

MacLeod, G. (1997), *From Mondragon to America. Experiments in Community Economic Development*, University College of Cape Breton Press, Sydney.

Maier, H. (1982), "New problems and opportunities of government innovation policy and company strategy", in: H. Maier and J. Robinson, eds., *Innovation Policy and Company Strategy*, I.I.A.S.A., Luxemburg, pp. 7-30.

Maillat, D. and Perrin, J.-C., (1992), eds., *Entreprises innovatrices et développement territorial*, EDES, Neuchâtel.

Maillat, D. Crevoisier, O. and Lecoq, B. (1991), "Réseaux d'innovation et dynamique territoriale. Un essai de typologie", *Revue d'économie régionale et urbaine*, 3-4, pp. 407-408.

Maillat, D., Quévit, M. and Senn, L.,(1993), eds., *Réseaux d'innovation et milieux innovateurs: un pari pour le développement régional*, EDES, Neuchâtel.

Malecki, E. J. (1997), *Technology and Economic Development. The Dynamics of Local, Regional and National Competitiveness*, Longman, Harlow.

Malmberg, A., Solvell, O. and Zander I. (1996), "Spatial clustering, local accumulation of knowledge and firm competitiveness", *Geografiska Annaler*, 76B, pp. 85-97.

Marshall, A. (1890), *Principle of Economics*, Macmillan, London.

Marshall, A. (1919), *Industry and Trade*, Macmillan, London.

Marston, S. A. (2000), "The social construction of scale", *Progress in Human Geography*, 24, 2, pp. 219-242.

Martinelli, F. and Schoenberger, E. (1992), "Oligopoly is alive and well: Notes for a broader discussion of flexible accumulation", in: G. Benko and M. Dunford, eds., *Industrial Change and Regional Development. The Transformation of New Industrial Spaces*, Belhaven Press, London, pp. 117-133.

Maskell, P., Eskelinen, H., Hannibalsson, I., Malmberd, A. and Vatne, E. (1998), *Competitiveness, Localised Learning and Regional Development. Specialisation and Prosperity in Small Open Economies*, London, Routledge.

Maturana, H. and Varela, F. (1980), *Autopoiesis and Cognition. The Realization of the Living*, D. Reidel Publishing Co., Dordecht.

Maturana, H. and Varela, F. (1987), *The Tree of Knowledge. The Biological Roots of Human Understanding*, Shambhala, Boston.

McCann, P. (1997), "How deeply embedded is Silicon Glen? A Cautionary note", *Regional Studies*, 31, 7, pp. 695-703.

McNee, R.B. (1974), "A system approach to understanding the geographic behaviour of organisations, especially large corporations", in: F.E.I. Hamilton, ed., *Spatial Perspectives on Industrial Organisation and Decision-making*, J. Wiley, London, pp. 47-76.

Meadows, D.H. et al. (1972), *The Limits to Growth. A Report for the Club of Rome's Project on the Predicament of Mankind,* New American Library, New York.

Michalet, C.A. (1976), *Le capitalisme mondial*, P.U.F., Paris.

Miller, R. and Côté, M. (1987), *Growing the Next Silicon Valley*, D.C. Heat, Lexington (Mass.).

Miyakawa, K. (1964), "The dual structure of the Japanese economy and the growth pattern", *Developing Economics*, 2, pp. 147-70.

Molle, W.T.M. (1986), "Potenziali regionali di innovazione nella Comunità Europea", in: R. Camagni, R. Cappellin and G. Garofoli, eds., *Cambiamento tecnologico e diffusione regionale*, Angeli, Milano, pp. 109-27.

Morgan, K. (1997), "The learning region: institutions, innovation and regional renewal", *Regional studies*, 31, 5, pp. 491-504.

Morin, E. (1977), *La méthode. 1: La nature de la nature*, Seuil, Paris.

Moulaert, F. and Swyngedouw, E.A. (1989), "A regulation approach to geography of flexible production systems", *Environment and Planning D: Society and Space*, 7, 3, pp. 327-45.

Myrdal, G. (1957), *Economic Theory and Underdeveloped Regions*, Duckworth, London

Nelson, R. and Winter, S. (1977), "Towards a useful theory of innovation", *Research Policy*, 6, pp. 36-76.

Nelson, R. and Winter, S. (1982), *An Evolutionary Theory of Economic Change*, Belknap Press, Cambridge (Mass.).

Nishiguchi, T. (1993), *Strategic Industrial Sourcing. The Japanese Advantage*, Oxford University Press, Oxford.

Nonaka, I. (1991), "The knowledge-creating company", *Harvard Business Review*, November-December, pp. 96-104.

Nonaka, I. (1995), *The Knowledge-creating Company. How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York.

North, D.C. (1955), "Location theory and regional economic growth", *Journal of Political Economy*, 69, 4, pp. 319-349.

Norton, R.D. and Rees, J. (1979), "The product cycle and the spatial decentralization of American manufacturing", *Regional Studies*, 13, pp. 141-51.

Oakey, R. (1985), "High-technology industry and the development of science parks", in: P. Hall and A. Markusen, eds., *Silicon Landscapes*, Allen and Unwin, Boston, pp. 94-177.

OECD (1996a), *The Knowledge-based Economy*, OECD, Paris.

OECD (1996b), *Employment and Growth in the Knowledge-based Economy*, OECD, Paris.

OECD (1997), *Industrial Competitiveness in the Knowledge-Based Economy. The New Role Of Governments*, Stockholm, OECD.

Ohlin, B. (1933), *Interregional and International Trade*, Harvard University Press, Cambridge, Mass.

Ohmae, K. (1985), *Triad Power*, The Free Press, New York.

Ohmae, K. (1990), *The Borderless World*, Fontana, London.

Ohmae, K. (1995), *The End of The Nation State: The Rise of the Regional Economy*, Harper Collins, London.

Parsons, T. (1951), *The Social System*, The Free Press, New York.

Passet, R. (1979), *L'économique et le vivant*, Payot, Paris.

Pavitt, K. (1984), "Sectoral patterns of technical change: towards a taxonomy and a theory", *Research Policy*, 13, 6, pp 343-373.

Peet, R. (1999), *Modern Geographical Thought*, Blackwell, Oxford.

Penrose, E. (1959), *The Theory of the Growth of the Firm*, Basil Blackwell, Oxford.

Perrin, J.C. (1990), *L'environnement des entreprises innovantes. Réseaux et districts*, Centre d'Economie Régionale, Aix-en-Provence.

Perroux, F. (1950), "Economic space: theory and applications", *Quarterly Journal of Economics*, 64, pp. 89-104.

Philo, C. (1992), "Foucault's geography", *Environment and Planning D: Society and Space*, 10, pp. 137-161.

Pile, S. (1996), *The Body and the City: Psychoanalysis, Space and Subjectivity*, Routledge, London.

Pine, B.J. (1993), *Mass Customization. The New Frontier in Business Competition*, Harvard Business School Press, Boston.

Piore, M.J. and Sabel, C.F. (1984), *The Second Industrial Divide*, Basic Books, New York.

Polanyi, K. (1957), *The Great Transformation*, Gower Beacon Press, Boston.

Polanyi, M. (1967), *The Tacit Dimension*, Routledge and Kegan, London.

Polanyi, M. (1973), *Personal Knowledge. Towards a Post-critical Philosophy*, Routledge & Kegan Paul, London.

Porter, M.E. (1985), *Competitive Advantage*, The Free Press, New York.
Porter, M.E. (1986), *Competition in Global Industries*, Harvard Business School Press, Cambridge, Mass.
Porter, M.E. (1990), *The Competitive Advantage of Nations*, The Free Press, New York.
Powell, W.W. (1990), "Neither market nor hierarchies. Network form of organisation", *Research in Organizational Behaviour*, 12, pp. 295-336.
Pred, A. (1977), *City Systems in Advanced Economies*, Hutchinson, London.
Premus, R. (1982), *Location of High Technology Firms and Regional Development*, Government Printing Office, Washington. D.C.
Prigogine, I. (1980), *From Being to Becoming. Time and Complexity in the Physical Sciences*, Freeman, San Francisco.
Provincia di Torino (1999), *Ricerca sul sistema produttivo della Provincia*, (eds. E. Barone and S. Conti), Torino.
Putnam, R. D. and Leonetti, R. (1993), *Making Democracy Work. Civic Traditions in Modern Italy*, Princeton University Press, Princeton.
Putnam, R.D. (1993), "The prosperous community. Social capital and public life", *The American Prospect*, 13, pp. 35-42.
Pyke, F. and Sengenberger, W. (1992), eds., *Industrial Districts and Local Economic Regeneration*, International Institute for Labour Studies, Geneva.
Pynch, S. and Henry, N. (1999), "Paul Krugman's Geographical Economics, Industrial Clustering and the British Motor Sport Industry", *Regional Studies*, 33, 9, pp. 815-828.
Radice, H. (1975), ed., *International Firms and Modern Imperialism*, Penguin, Harmondsworth.
Rallet, A. and Torre, A. (1995), "Economie industrielle er économie spatiale: un état des lieux", in: A. Rallet and A. Torre, eds., *Economie industrielle et économie spatiale*, Paris, Economica, pp. 3-37.
Ramanathan, K. (1994), "An integrated approach for the choice of appropriate technology", Science and Public Policy, 21, 4, pp. 221-232.
Rapaport, A. (1968), "Foreword", in: W. Buckley, ed., *Modern Systems Research for the Behavioral Scientist*, Aldine, Chicago, pp. xiii-xxi.
Rees, J. and Stafford, H. (1983), *A Review of Regional Growth and Industrial Location Theory: Towards Understanding the Development of High Technology Complexes in the United States*, Report Prepared for the Office of Technology Assessment, U.S. Congress, Washington.
Relph, E. (1976), *Place and Placelessness*, Pion, London.
Richardson, H.W. and Richardson, M. (1974), "The relevance of growth centre strategies to Latin America", *Economic Geography*, 51, pp. 163-178.
Robertson, R., (1992), *Globalization. Social Theory and Global Culture*, Sage, London.
Rolfo, S. (1993), *The Italian Machine Tool Industry*, Ceris, Torino.
Rorty, R. (1979), *Philosophy and the Mirror of Nature*, Princeton University Press, Princeton.

Rosenberg, N. (1976), *Perspectives on Technology*, Cambridge University Press, Cambridge.

Rosenfeld, S. (1992), *Competitive Manufacturing. New Strategies for Regional Development*, Center for Urban Policy Research, Rutgers University, New Brunswick.

Rothwell, R. and Zegveld, W. (1985), *Reindustrialization and Technology*, Longman, Harlow.

Sabel, C.F. (1989), "Flexible specialization and the re-emergence of regional economies", in: P. Hirst and J. Zeitlin, eds., *Reversing Industrial Decline? Industrial Structure and Policy in Britain and Her Competitors,* Berg, Oxford, pp. 17-70.

Sachs, J. (1976), *Stratégies de l'écodéveloppement*, Les Editions Ouvrières, Paris.

Sachs, W. (1992), ed., *The Development Dictionary. A Guide to Knowledge as Power*, Zed Books, London.

Sack, D. (1997), *Homo Geographicus. A Framework for Action, Awareness, and Moral Concern*, Johns Hopkins University Press, Baltimore.

Salais, R. and Storper, M. (1993), *Les mondes de production, Enquête sur l'identité économique de la France*, Editions de l'Ecole des Hautes Etudes en Sciences Sociales, Paris.

Samuelson, P. and Nordhaus, W. (1995), *Economics*, McGraw-Hill, New York.

Santos, M. (1979), *The Shared Space*, Methuen, London.

Saxenian, A. (1985), "Silicon Valley and Route 128: regional prototypes or historic exceptions?", in: M. Castells, ed., *High Technology, Space and Society*, 28, "Urban Affairs Annual Review", Beverly Hill, Sage, pp. 81-105.

Saxenian, A. (1994), *Regional Advantage. Culture and Competition in Silicon Valley and Route 128*, Harvard University Press, Cambridge, Mass.

Sayer, A. (1989a), "Post-Fordism in question", *International Journal of Urban and Regional Research*, 13, 4, pp. 666-695.

Sayer, A. (1989b), "The *New* Regional Geography and problems of narrative", *Environment and Planning D: Society and Space*, 7, pp. 253-276.

Sayer, A. and R. Walker (1992), *The New Social Economy. Reworking the Division of Labour*, Blackwell, Oxford.

Schmitz, H. (1995), "Collective Efficiency. Growth Path fort Small-Scale Industry", *Journal of Development Studies*, 31, 4, pp. 529-566.

Schmookler, J. (1966), *Invention and Economic Growth*, Harvard University Press, Cambridge, Mass.

Schultz, T.W. (1951), "A framework for land economics: the long view", *Journal of Farm Economics*, 33, pp. 204-215.

Scott, A.J. (1983), "Industrial organisation and the logic of intra-metropolitan location: 1. Theoretical considerations", *Economic Geography*, 59, 3, pp. 233-250.

Scott, A.J. (1988), *New Industrial Spaces*, Pion, London.

Scott, W.G. (1991), *Innovazione e mercato nell'industria automobilistica*, Iedi, Milano.

Screpanti, E. (1998), *The Fundamental Institutions of Capitalism*, Collana del Dipartimento di Economia Politica, 9, Siena.

Semlinger, K. (1993), "Small firms and outsourcing as flexibility reservoirs of large firms", in: G. Grabher, ed., *The Embedded Firm*, Routledge, London, pp. 161-178.

Sforzi, F. (1989), "The geography of industrial districts in Italy", in: E. Goodman, J. Bamford and P. Saynor, eds., *Small Firms and Industrial Districts in Italy*, Routledge, London, pp. 153-173.

Sforzi, F. (1991), "Il distretto industriale marshalliano: elementi costitutivi e riscontro empirico nella realtà italiana", in: S. Conti and P.-A. Julien, eds., *Miti e realtà del modello italiano. Letture sull'economia periferica*, Pàtron, Bologna, pp. 83-115.

Silverberg, G. (1988), "Modelling economic dynamics and technical change. Mathematical approach to self-organisation and evolution", in: G. Dosi et al., eds., *Technical Change and Economic Theory*, Pinter, London, 1988, pp. 531-559.

Simon, H.A. (1960), *The New Science of Management Decision*, Harper and Row, New York.

Slater, D. (1975), "Underdevelopment and spatial inequality: approaches to the problem of regional planning in the Third World", *Progress in Planning*, 4, 2, pp. 137-162.

Soja, E. (1989), *Postmodern Geographies: The Reassertion of Space in Social Theory*, Verso, London.

Soja, E. (1996), *Thirdspace. Journeys to Los Angeles and Other Real-and-Imagined Places*, Blackwell, Cambridge.

Stöhr, W.B. (1984), *Selective Self-reliance and Endogenous Regional Development. Preconditions and Constraints*, Interdisciplinäres Institut für Raumordnung, Wien.

Stöhr, W.B. (1985), *Industrial Structural Change and Regional Development Strategies. Towards a Conceptual Framework*, Interdisziplinäres Institut für Raumordnung, Wien.

Stöhr, W.B. (1986), "Territorial innovaton complexes", in: Ph. Aydalot, ed., *Milieux innovateurs en Europe*, GREMI, Paris, pp. 29-56.

Stöhr, W.B. and Taylor, D.R.F. (1981), eds., *Development from Above or Below? The Dialectics of Regional Planning in Developing Countries*, J. Wiley, Chichester.

Storey, D.J. and Johnson, S. (1986), "Job generation in Britain. A review of recent studies", *International Small Business Journal*, 4, 4, pp. 29-47.

Storper, M. (1985), "Technology and spatial production relations: disequilibrium, interindustry relationships and industrial development", in: M. Castells, ed., *High Technology, Space and Society*, 28, "Urban Affair Annual Review", Sage, Beverly Hills, pp. 265-283.

Storper, M. (1992), "Regional 'worlds' of production: learning and innovation in the technology districts of France, Italy and the USA", *Regional Studies*, 27, 5, pp. 433-455.

Storper, M. (1996), "Institutions of the knowledge-based economy", in: OECD, *Employment and Growth in the Knowledge-based Economy*, OECD, Paris, pp. 11-32.

Storper, M. (1997), *The Regional World*, Guilford Press, New York.

Storper, M. and Walker, R. (1989), *The capitalist Imperative. Territory, Technology and Industrial Growth*, Basil Blackwell, Oxford.

Tarrow, S. (1996), "Making social science work across space and time. A critical reflection on Robert Putnam's *Making Democracy Work*", *Americal Political Science Review*, 2, pp. 389-397.

Taylor, M. (1975), "Organisational growth, spatial interaction and location decision-making", *Regional Studies*, 9, 1975, pp. 313-323.

Taylor, M, (1995), "The business enterprise, power and patterns of geographical industrialisation", in: S. Conti, E.J. Malecki and P. Oinas, eds., *The Industrial Enterprise and Its Environment*, Avebury, Aldershot, pp. 99-122.

Taylor, M. and Thrift, N.J. (1982), "Industrial linkage and the segmented economy: I. Some theoretical proposals", *Environment and Planning A*, 14, pp. 1601-1613.

Taylor, M. and Thrift, N.J. (1983), "Business organisation, segmentation and location", *Regional Studies*, 17, 6, pp. 445-165.

Taylor, P. J. (1999), "Places, spaces and Macy's: place-space tensions in the political geography of modernities", *Progress in Human Geography*, 23, 1, pp.7-26.

Thomas, M.D. (1980), "Explanatory framework for growth and change in multiregional firms", *Economic Geography*, 56, 1, pp. 1-17.

Thomas, M.D. (1985), "Regional economic development and the role of innovation and technological change", in: A.T. Thwaites and R.P. Oakey, eds., *The Regional Economic Impact of Technologcal Change*, Pinter, London, pp. 13-35.

Thompson. J.D. (1967), *Organisation in Action*, McGraw-Hill, New York.

Thorelli, H.B. (1986), "Networks: between markets and hierarchies", *Strategic Management Journal*, 7, pp. 37-51.

Thrift, N. (1983), "On Determination of Social Action in Space and Time", Environment and Planning D: Society and Space, 1, pp. 23-57.

Thrift, N. (1994), "On the social and cultural determinants of international financial centres", in: S. Corbridge, R. Martin and N. Thrift, eds., Money, Power and Space, Blackwell, Oxford, pp. 327-355.

Thwaites, A.T. (1982), "Some evidence of regional variations in the introduction and diffusion of industrial products within British manufacturing industry", *Regional Studies*, 16, 5, pp. 371-381.

Tödtling, F. (1995), "The innovation process and local environment", in: Conti, S., E.J. Malecki and P. Oinas, eds., *The Industrial Enterprise and Its Environment: Spatial Perspectives*, Avebury, Aldershot, pp. 171-393.

Törnqvist, G. (1970), "Contact systems and regional development", *Lund Studies in Geography, Series B*, 35.

Törnqvist, G. (1977), "The geography of economic activities. Some critical viewpoints on theory and application", *Economic Geography*, 53, 2, pp. 153-162.

Townroe, P.M. (1971), *Industrial Location Decision. A Study in Management Behaviour*, Centre for Urban and Regional Studies, Occasional Papers, 15, University of Birmingham.

Tuan, Y. F. (1974), *Topophilia. A Study of Environmental Perception, Attitudes and Values*, Prentice-Hall, Englewood Cliffs.

Turok, I. (1993), "Inward investments and local linkages. How deeply embedded is *Silicon Glen*", Regional Studies, 27, 5, pp. 401-417.

Turok, I. (1997), "Linkages in the Scottish electronic industry. Further evidence", *Regional Studies*, 31, 7, pp. 705-711.

UNDP (1999), *Human Development Report*, United Nations Development Programme, New York.

Utterback, J.M. (1979), "The dynamics of product and process innovation in industry", in: Hill, C.T. and Utterback, J.M., eds., *Technological Innovation for a Dynamic Economy*, Pergamon, New York, pp. 40-65.

Vaccà, S. (1986), "L'economia delle relazioni tra imprese. Dall'espansione dimensionale allo sviluppo per reti esterne", *Economia e politica industriale*, 51, pp. 3-41.

Vaccà, S. (1989), *Scienza e tecnologia nell'economia delle imprese*, Angeli, Milano.

Vaccà, S. (1995), *L'impresa transnazionale tra passato e futuro*, Franco Angeli, Milano.

Vallega, A. (1990), *Esistenza, società, ecosistema*, Mursia, Milano.

Varaldo, R. (1995), "Dall'impresa localizzata all'impresa radicata", *Economia Marche*, 14, 1, pp. 3-25.

Varela, F. (1979), *Principles of Biological Autonomy*, North Holland, New York.

Veblen, T. (1919), *The Vested Interests and the Common Man*, Thoemmes Press, London.

Veblen, T. (1924), *The Theory of the Leisure Class. An Economic Study of Institutions*, Allen and Unwin, London.

Vennin, R. and de Banville, E. (1975), "Pratique et signification de la soustraitance dans l'industrie de l'automobile en France", *Revue économique*, 26, 2, pp. 280-306.

Vernon, R. (1979), "The product cycle in a new international environment", *Oxford Bulletin of Economics and Statistics*, 41, pp. 225-267.

Vet de, J. (1993), "Globalisation and local and regional competitiveness", *STI Review*, 13, OECD, Paris.

Volpato, G. (1996), *Il caso Fiat*, Isedi, Torino.

Vuilleumier, M. (1988), *Horlogers de l'anarchisme: émergence d'un mouvement. La Fédération jurassienne*, Payot, Lausanne.

Walker, R.A. and Storper, M. (1981), "Capital and industrial location", *Progress in Human Geography*, 5, 4, pp. 473-509.

Wallerstein, I. (1974), *The Modern World System. Capitalist Agriculture and the Origin of the European World-Economy in the Sixteenth Century*, Academic Press, London.

Watts, H.D. (1980), *The Large Industrial Enterprise*, Croom Helm, London.

Weil, S., (199), *L'enracinement. Prélude à une déclaration des devoirs envers l'être humain*, Gallimard, Paris.

Wells, P.E. and Cooke, P.N. (1991), "The geography of international strategic alliances", *Environment and Planning A*, 23, pp. 87-106.

Wiener, N. (1956), *Cybernetics*, MIT Press, Cambridge, Mass.

Williamson, J.G. (1965), "Regional inequality and the process of national development: a description of the patterns", *Economic Development and Cultural Change*, 13, 2, pp. 3-45.

Williamson, O. (1975), *Markets and Hierarchies. Analysis and Antitrust Implications. A Study in the Economics of Internal Organization*, The Free Press, New York.

Williamson, O.E. (1980), "Emergence of the visible hand: implications for industrial organisation", in: A.D. Chandler, Jr. and H. Daems, eds., *Managerial Hierarchies, Comparative Perspectives on the Rise of the Modern Industrial Enterprise*, Harvard University Press, Cambridge, Mass., pp. 178-197.

Wilson, A.G. (1969), "Notes on some concept in social physics", *Papers of the Regional Science Association*, 22, pp. 159-193.

World Bank, (1998), *Annual Report: Knowledge for Development*, World Bank, New York.

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