

LOCAL SYSTEMS AND KNOWLEDGE ECONOMY

Enzo Rullani

1. Local systems and knowledge economy

It is unusual that today, with a certain emphasis, we are discovering the basic importance of knowledge in economic development. For two and a half centuries, that is from the beginnings of the industrial revolution, economic growth has been closely tied to advances in knowledge, on the technical-scientific levels, in professional skills, education and general culture (of workers, consumers and citizens).

The entire modern era has been characterized by a very close relationship between forms of development and forms of knowledge. However, over the years the forms of knowledge that have fueled economic growth have changed considerably.

In the free capitalism of the nineteenth century, the knowledge used for economic growth was mainly of the type incorporated in machines, direct descendants of research and innovation in the scientific-technological fields.

During the last century, that was dominated by the Ford production model, key knowledge became the type – mostly tacit and contextual – that was taken over by the large organizations. Individuals gradually delegated responsibilities for production, welfare, standardization procedures and control of social life to the huge export systems (Giddens) of Fordism. During the golden age of Fordism (up to the nineteen seventies) managements, organization leaders, decision-making processes in public and private techno-organizations concentrated the knowledge useful to economic growth and left the rest in the shadows.

As Fordism declined, alternative solutions to the concentration of intelligence, power and risk within the large public and private techno-structures were sought. The territories offered a useful platform for supporting these functions that the large organizations were no longer able to support on their own. Thanks to outsourcing by large enterprises and the birth of the territorial systems of small enterprises, knowledge began to cross the organizations' boundaries and became partly market knowledge (that could be freely purchased and sold on the market) and partly locally shared knowledge. Supply chains are not suspended in the air, they rest on well-defined supports. Physical contiguity is not absolutely necessary, but it is useful for both the communications and logistics aspects.

It is no coincidence that economic theory discovered the critical role of knowledge (two centuries late) in relation to its becoming local knowledge, supported by the territory and its fabric. In the past knowledge could be encapsulated in the

container (first in the machine, then in the organization) and treated as a “piece” of useful property. Knowledge did not circulate as such (except for public knowledge, that is freely accessible information and science). Rather, it was incorporated in material things (machines, materials and technological products) that could be bought and sold together with the knowledge they contained. Or, it was built into organizations (corporations) with well-defined proprietary boundaries – and this too could be bought and sold, so that the purchaser also acquired the knowledge contained therein.

When knowledge becomes a locally shared resource it can no longer be replaced by its container. The access to this type of knowledge is not governed by private ownership (market), nor by public ownership (science), it is a given: experiences shared in the local context. One “learns” by working in a certain context, in contact with others who act in the same context and focus their attention on the same problems. Hence, the solutions to those problems are easily identified, interpreted, copied and imitated by those who work and live in the common context of experience. Those who remain on the outside have trouble identifying the knowledge that emerges from the local learning circuit with the necessary speed and accuracy. Consequently, they also have trouble correctly interpreting, copying and imitating the efficacious solutions that come from collective learning.

2. Uniqueness: the dark side of the local economy

Local knowledge, therefore, is a *sui generis* resource because it is not governed by classic proprietary institutions (markets, hierarchies). Accessibility comes from sharing experiences and sharing is a localized quality, specific to a place, to an area.

It is precisely the ties with the local context and the experience of the local context that give the knowledge that is shared in this way a mostly tacit, informal nature that escapes codification and transfer to the outside. And it makes each place different from the next.

The post-Fordist knowledge economy, distributed and differentiated throughout the area is returning to situations of uniqueness that had “belonged” to the land in the pre-industrial economy. Each area has its own “fertility” and therefore collects its rent in market relations with the other areas. The protection of the local specificity that often becomes cultural identity and institutional uniqueness comes from tacit knowledge, sedimented in the physicality of the place, in the social capital produced by history, in the culture and *civiness*.

We must not forget that modernity tried, in every way to rid itself of the territory since it was a source of uniqueness, scarcity and rent in the pre-industrial economy. It did so by making techniques into abstractions and in this way transformed space (areas measured in square meters, distances in kilometers), products and factors (labor, capital) into reproducible resources. Deprived of its uniqueness space became overly abundant and no longer scarce, and it lost the rent income that accompanied it. The people and enterprises of nineteenth century liberal capitalism were freed from the restriction of the lack of space that limited their possibilities of movement and reduced the local *rent seekers* to lesser expectations..

The economy of machines and abstractive technology is governed by a plan for rendering the world artificial, that is rational production that expels not only tradition, but also the *complexity* of local phenomena, their insuppressible *variety* (in space),

variability (in time) and *indetermination* (in cause-effect relationships).

For this, the rediscovery, two centuries later, of the uniqueness of the area and its sedimented knowledge is the *dark side* of the new economy of localized development. It is a dark side that has both a practical and a theoretical facet.

On the *practical* level, uniqueness means the scarcity and irreproducibility of the solutions adopted in each place. The economy of totally different and totally irreproducible territories is an *economy of positions* where there is no free space for growing and experimenting from the bottom up. All the room for possibilities is taken and each area monopolizes one of the possible variants. Those at the fore collect the rents of their differential advantage, those who behind are locked into their positions: and cannot easily scale the competitive or political-social pyramid. The area, with the uniqueness that comes from its history and social complexity in this way seals the static nature of the economy of positions that are not imitable, reproducible, contestable. In other words: to each his own.

On the *theoretical* level, the uniqueness of the area contradicts the general principle of scientific knowledge which, in order to verify or disprove a theory requires that the phenomena it describes be reproducible. Unique phenomena that cannot be reproduced in the laboratory or in practice can only be observed and rationalized *ex post*. They cannot be causally “explained.”

Therefore, the territory’s uniqueness makes it impossible to pronounce theories or make verifiable (or disprovable) predictions on *each localized economic system*.

And, in fact, after we are convinced that the areas matter we still do not know even today:

- how to *reproduce* territorial development, for example by “exporting” it to regions or countries where it is not spontaneously manifested;
- how to *modify* the trajectory of development in a predictable manner when we believe it is about to stumble or we fear that the outcome will be undesirable.

3. *Serendipity: seeking the territory, we discover complexity*

We can say that, with the re-emergence of the territory – from which we have tried to abstract ourselves for so many years, the historical cycle of the *first modern age* has come to a close. It tried to make the world artificial through rational, abstract and determinist projects aimed at containing complexity and reducing it to calculable risk. In the *second modern age* that we have been experiencing for a few years, the basic logic is moving in the opposite direction: it is not a question of reducing the complexity of the possible, but of harnessing it and directing it towards useful purposes (learning) and transforming it into an explorative power that makes contact with the new, with the surprising and with the unexpected.

In our quest for the territory we have found more, according to the golden rule of *serendipity*. We have discovered the complex nature of the production of value, the impossibility of reducing it to a rationalistic design and deterministic calculations.

The territory is the foundation for a basic change anchored in complexity. It is not merely a matter of acknowledging variety, variability and indetermination that we once thought could be eliminated or rendered irrelevant. It is a matter of organizing curricula of learning, imagination and risk sharing. The economy of complexity – and the territory falls into this category – is the economy of shared experimentation, of a

quest for identity and social bonds for dealing with the exploration of the possible.

4. Territory lost and regained

Nineteenth century liberal capitalism and twentieth century Fordism are the heralds of this design for rationalizing space that puts the needs of the machine above all else. But today if we are again talking about territories and “natural” complexity that are beyond the control of the first modern age’s economic and political system, it is because the design of artificialization has failed. It imploded under the weight of its own rigidity and its centralized command.

The page was turned in the nineteen seventies. With the re-emergence of the territory production and daily life are once again “living” a *natural* context, not one that was prepared on a drawing board – rather it is the fruit of *evolutionary do-it-yourselfing* that has combined tradition, culture, prejudices, personal motivation and economic propensities.

The territory, is not a place, or a group of places; rather, it identifies the *local society* that is permanently settled in an area. As the abstract *homo oeconomicus* populates the artificial economy of the first modern age, “concrete”real man (flesh and blood) with his specific anthropology and history, populates the territory of the second modern age.

Development has become “localized”, but in so doing it has lost contact with the determinism of the traditional views of the economy. Although it has “theoretical eyeglasses” that try to grasp it as a complex, emerging reality, it has become difficult to predict it, test it, reproduce it, and modify it in a controlled manner.

Regarding these points, that are essential for a “scientific” theory that wants to make reliable predictions, we are not at zero – but almost.

In general, we know that it is impossible to reproduce and modify the trajectories of territorialized development in a *deterministic* (calculable) manner. We implicitly admit that, with localized development the economy is forced to make a leap of complexity.

This is a *problem* but it is also an *opportunity* of first magnitude.

First of all it is a *problem* – not often faced, but latent – of clarity and meaning for a discipline that is leaving the harbor of determinism to be carried by the currents of complexity. This is by no means easy if the discipline’s DNA has a mechanistic base (the Newtonian equilibrium) which, for one century applied a reductionist (methodological individualism) and deterministic (optimization of the *rational choice*) approach to all economic problems, development included.

But the territory’s relationship with the complexity it embraces is also an extraordinary opportunity for innovation and experimentation, only if we look at the territorial economy in a new way and accepts its variety, variability and indetermination as a ground for learning and exploration.

The territories’ evolution towards complexity removes them from their economic traditions, creating a certain difficulty in the relationship with the new “knowledge economy” that is not always easy to overcome. However, for the same reason, the *shift* of the analysis towards complexity places the territories at the center of a new concept of development. It is a concept in which the starting point is the idea that generating value through knowledge (localized and not only) is a complex, non-

deterministic process that cannot be reduced to individual behavior.

In this sense, even local policies have to be rethought: they cannot be aimed at constructing standardized solutions (identical for all places) or solutions that are predefined from the start. In an economy of complexity, the territories contribute an added value to the economy, if, with their cognitive, social and institutional resources they contribute to the exploration of the possible, to the sharing of projects and the collective assumption of risks. The key resources are those which make it possible to define an identity suitable to the local-global connection in a planned and shared mode. From this standpoint, critical knowledge is the knowledge that develops in the territory in the form of shared visions and common projects, completion and fulfillment of which implies being part of a shared trajectory.

However, the territory must also be capable of allowing a pluralism of sensitivity and planning horizons that spring from contiguity or overlapping into its “gates”, along with modes of belonging to different multi-territorial networks. Sharing does not mean reducing differences *ad unum* it means, rather, enrichment and integration of the diversity easing conflicts and planning possible integrations among the diversities.

It is only under these conditions that the territory and local policies contribute added value; through local mediation they supply the cognitive and political resources needed to explore and govern complexity.

5. The local added value

Why localization matters?

The mere acknowledgement that post-Ford knowledge is localized in various areas, tied to the tacit knowledge and experience (unique, but locally shared) of the context is not enough to give the territory a central role in the dynamics of real development.

From the standpoint of real economic growth, the territory – and the shared knowledge it hosts – does not have the monopoly over the cognitive resources that make it possible to deal with complexity.

In fact, it has many fearsome competitors that have quickly adapted to growing complexity and to the management of high indeterminate situations.:

- a) the *market* which, though working primarily with codified forms of knowledge, has the strength from the division of labor that extends over distances and thanks to globalization and the ICTs can achieve huge volumes and at large economies of scale.
- b) the *hierarichy* that no longer uses the closed schemes of the Ford era, but works through *outsourcing* with supply networks (the *extended enterprise*) the advantage is that it can easily expand to the global economy and can be coordinated by a center that plans, orders and finalizes.

The territorial systems, which during the crisis of Fordism, developed as local systems can meet this evolution of competition only if by innovating their organization and identity, they position themselves on the foundations of *local/global* relations, i.e. using those features of the local identity that have value and provide competitive advantages on the field of global competition.

In other words, the territories are consistently and increasingly prompted to become open systems, nodes or junctions of *multi-localized networks* that are supported not by one, but by a differentiated plurality of places.

6. The cognitive functions of the territory

The territory contributes to *knowledge sharing* and to the division of *cognitive labor*. But, as we have said, this is not the sole way of achieving this goal.

What does the territory contribute that has not already been brought in – and abundantly so – by global market transactions or by the command hierarchies of the huge multinational corporations?

There are three specific contributions that give the territory an added value with respect to the other competitors:

- 1) *local society*, embedded in the territory, contains and develops excess knowledge that goes beyond the instrumental relationship of means-end and utilitarian calculations. Social life, with its large variety, variability and indetermination of intelligences and routes, has the virtue (and vice) of going beyond the horizon bounded by the instrumental means-end rationality. These comprise a basic reservoir of knowledge that can be tapped when unpredicted and surprising situations arise that must be quickly interpreted and processed by the actors;
- 2) in the territory, sharing the context and experiences gives rise to an invisible yet strong *epistemic community* that allows knowledge used for productive purposes to be multiplied and propagated in an ever larger user basin, thus creating advantages in terms of product value and competition;
- 3) in the territory, the task of *governance* carried out by the institutions and the continuous *regeneration of the shared identity* gives the economic actors a *self-referencing* ability that is necessary for thoughtful innovation on its history while at the same time conserving the differences that distinguish it from other territories..

Excess knowledge, *epistemic communities*, and *self-referencing circuits* are the essential elements for each knowledge system that wants to deal successfully with high levels of complexity.

The market does not supply this type of resource. In fact, it reduces excess knowledge (knowledge that is not immediately useful) to a minimum; it de-personalizes knowledge-exchange relationships preferring formal codes to the dialogical recognition as achieved by the epistemic community; it breaks the self-referencing social circuits and transfers the burden of meanings and values to the individual level.

And not even the hierarchy of the huge multinational provides this type of resource. First of all, the rational design that comes down from the vertex of the big organization, does not have room for excess knowledge planned as useful investments rather than wastes to be eliminated. Secondly, the multiplication process are not based on an epistemic community, but rather on imperative chains of command that must be obeyed before criticism or sharing can take place. And finally, it is difficult to speak of self-referencing – except for the Japanese company, as long as it remains an open and

unresolved dialectic among persons situated at different levels of autonomy, intelligence and risk.

7. Work in progress

The territory, on the other hand, has supplied these three resources up to now (excess knowledge, epistemic communities and identifying self-referencing circuits) thanks to its relative “immunity” to the urgencies and rigidity of economic and utilitarian rationality in the strict sense.

In the territory, the social actors are people rooted in their history and culture, so that, through them it is the “local society” as a whole that is put to work. The people mobilize their networks of social capital and their intelligence. The enterprises support the people’s projects and ambitions.

However, today, even the territory is called upon to perform these functions in a *different* way from the past, for three major reasons:

- 1) local society must become *a hybrid with global society* that is no longer outside the territory, it works inside it in the myriad local-global relationships that are part of daily life and work;
- 2) local knowledge must shift from the grounds of objects and *material* transformations to that of products and *intangible assets*, because it is on this scale that competition with developing nations is measured and the future of the local communities is being written;
- 3) the territory must open itself to the *long networks* that allow it to acquire knowledge from the outside, in the global system and to sell it in a circuit that is just as big.

8. The Reasons and aims of local policies

We often demand that the territory be the tool of the individual rationality of the enterprises, providing resources, services and knowledge at lower costs with respect to the market or the large corporation.

This is not a good idea. Much ex post monitoring of policies for incentives or promoting innovation have shown that businesses rarely opt for the more demanding choices over the existence of contingent advantages offered by public policies. Partly because these advantages are uncertain and dependent upon bureaucratic or political circumstances that are difficult to predict and control, and partly – especially with the restrictions introduced by the European Union, it is often simply not worth the effort. The result is that public transfers rarely change the strategic choices they would like to influence and they resolve themselves into supporting the profits of business and a reason of merit of the association, the professional or the local agency that provided them.

Instead, through experimental programs, intervention policies in the territory should aim at strengthening infrastructures and services, the peculiar roles of the territory – those in which it has a distinct advantage over the competitive forms (market and hierarchy).

The territory, does indeed have significant chances for the intelligent

management of complexity. Public policies must defend and develop these prerogatives that give it a role and a distinct advantage over other forms of organization.

Regional policy programs focused on knowledge should, therefore, be assessed on the basis of the contribution they make not so much in terms of instrumental use – for the production of goods – of the knowledge in the territory, as in terms of the development and growth of excess knowledge, knowledge-sharing epistemic communities, and self-referencing identity and institutional circuits that put thought behind the innovations and solutions created within the more successful territorial communities.

In parallel, we must ask ourselves how to trigger a dynamic of learning in this direction, in the territories where the above cognitive functions seem weak or poorly protected.

The key element in the process of selecting the policies to implement is an evaluation or assessment process *during the task* and that fulfills the requirement of *ex post* assessments of solutions of interpreting and exploring the complexities that cannot be established beforehand.