

Territory and Industry: from the method...

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The premises of the analysis of the territory-industry relationship have their origins in the work on growth poles, initiated by François Perroux and prolonged by Destanne De Bernis, who studied the nature of industrial exchanges and their organization in the territory by describing local economies as complex systems of actors. The configuration of the local economy into poles of actors favors intensive interaction and allows for the accumulation of surpluses favorable to the development of spillover effects that are a source of growth for the entire territory and beyond. This representation of the local economy in clusters has been materialized, for example, by the creation of competitiveness poles structured by public policies to accelerate the production of innovations through the networking of private and public actors (companies of all sizes, laboratories, training centers, associations, and public institutions) to develop areas of excellence and innovation in specific territories.

The territorial dimension of industry has gained ground with the emergence of the concepts of industrial districts, innovative milieus, local productive systems, clusters, and regional innovation systems. These concepts are based on Alfred Marshall's theories on the effects of agglomeration and industrial atmosphere, which show that economic development is not limited to market relations between customers and suppliers, but also involves a set of non-market relations (associative, social, educational, administrative, etc.) between private and public actors. It thus describes the development of a local industrial environment, which is essentially translated into the form of industrial organization of a district, a place where companies gather and cooperate in an industrial atmosphere, and which makes the territory emerge as a construction of actors benefiting from the effects of geographical proximity.

More recently, the notion of innovation ecosystem has been increasingly developing to refer to new dynamics of innovation and creativity in the territories carried by and for communities of users who are co-creators of new values within the territory. These innovations are developed around physical spaces (such as third places, coworking spaces...) and sometimes virtual spaces (e.g.: territorialized digital platforms that promote the development of short supply chains) that allow for exchange and reflection and demonstration around new innovative solutions to technical and societal problems. At the center of these territorial models, the notion of territorial development emerges, which links the economic performance of territories to their capacity to foster innovation, which is becoming a major socio-economic issue today.

The integration of the notion of territorial development since its emergence in development and planning policies reflects the desire to give a voice to local actors and to take into account territorial particularities. This approach is opposed to/complementary to the implementation of centralized macro-economic policies decided by States, which are often unsuited to environments with different resources and activities; particular cognitive, recognition and inter-recognition relationships (according to Bourdieu). Many decentralized policies have been put in place to encourage the economic development of cities and regions. This industry-based approach to territorial development is not limited to manufacturing industry but includes the productive sphere as a whole, which includes all sectors of economic activity (primary, secondary and tertiary) with significant spillover effects (multipliers) and socio-economic-technical impacts at the local level and beyond. In sum, territorial development policies aim to build endogenous economic dynamics, promoting

inclusive economic growth and reducing the unequal distribution of innovation dynamics in the territories.

This model of territorial development is today confronted with new challenges that go beyond the productive sphere to integrate areas rarely considered by the earlier models of territorial development. Indeed, territorial development based on industry in its strictest sense has led to an accumulation of environmental problems and poor resource management, which calls for a new organization of productive and human activities that takes into account the environmental and social dimensions. To respond to these economic and environmental challenges, policies have called for an "industrial renaissance" (European Commission, 2014) and supported reindustrialization initiatives such as the circular economy, Industry 4.0 and more recently Industry 5.0.

It is true that since the rise of the modern economy, industry has been a driving force behind the prosperity and development of territories. However, it is becoming imperative to better manage its negative externalities and to better direct the evolution of innovation trajectories in territories by ensuring that industry evolves in line with ecological and digital transitions that require new organizational, production and consumption models, as well as new industrial policies and investments in research and innovation.

In this context, it becomes necessary to extend the reflections on territorial development through industry by integrating the challenges faced by both territories and industry itself:

Crises and territorial resilience: resilience, i.e., the ability of a system to withstand and recover from disruptions, has become a critical factor in addressing the complex and interrelated challenges facing territorial systems today, such as the impacts of climate change, natural disasters, and social and economic changes. There is a need to understand the response of industry and local economies to different crises (political, monetary, technological, climatic, etc.). The effects of these crises, whether national or global in origin, directly affect local ecosystems (such as industrial ecosystems) generating societal consequences (recessions, unemployment, pollution, relocations...). Several specialists in territorial economics have taken up the issue by focusing their analyses on the capacity of territories to recover from major economic crises. The notion of resilience thus seems relevant to analyze the way in which industry and local economies react to shocks and recover from them. A resilient industrial territory should have a multidimensional capacity to absorb shocks, to adapt or to embark on a new path of sustainable development.

New alternative models of territorial development: industry is often considered a major emitter of greenhouse gases and pollution (air, water and soil pollution, traffic congestion, noise and degradation of natural and cultural heritage...). However, industry can also be a key activity in the ecological transition of territories, by developing cleaner technologies, improving energy efficiency and adopting more sustainable practices. The development of new economic models combining competitiveness, innovation and sustainable development, based on a circular economy becomes a necessity in the current context. Circular practices allow us to move from a linear economy, in which resources are considered unlimited, to new ways of organizing economic activities inspired by the functioning of the natural ecosystem thanks to flow looping systems (industrial ecology, bioeconomy, economy of functionality...). The implementation of the circular economy on a territorial scale should result in the creation of networks of actors sharing common territorial projects around the valorization of territorial resources.

Space occupation, flexible production, and industrial relocation: the advantages of agglomeration and the increasing decentralization of manufacturing activities have driven manual jobs, technical knowledge, and industrial innovation capacity out of cities. This delocalization of production has externalized environmental problems while contributing to increased pollution from transportation and mass production. In this context, the notion of urban factories is gaining interest. Urban factories are production systems located in an urban environment that use local resources and characteristics to create products locally with a potentially high degree of consumer ("prosumer") involvement, with a lower environmental impact. The accelerated development of advanced technologies such as the Internet of Things (IoT), 3D printing, immersive technologies, Peer-to-Peer (P2P), and the interconnection between digital and physical environments offer the possibility of a transition to new, innovative and sustainable hybrid modes of innovation, production and consumption. Thanks to these digital technologies and the skills they require, these new modes of production can give rise to a new entrepreneurial dynamic among small businesses (especially crafts). Indeed, this mode of production can be adapted to small-scale production on local sites and offers a significant potential for new business opportunities and new innovative activities, especially for small craft enterprises that face many difficulties to engage in innovation processes in a context of strong competition established by mass production.

Stakeholder networks and innovation ecosystems: In industry, stakeholder networks and the formation of innovation ecosystems play an essential role in stimulating innovation. These networks foster collaboration, knowledge sharing, creativity and entrepreneurship, which leads to the creation of new ideas, products and services. However, building sustainable and inclusive networks requires coordination, effective governance and a shared vision among all stakeholders. It is therefore essential to foster a culture of collaboration and a common vision among the different actors involved in the development of innovation ecosystems in territories. It is also crucial to measure the impact of innovation ecosystems on industrial development in order to understand the extent of their contribution. By fostering collaboration and innovation, these networks of actors and innovation ecosystems have become essential to the success of industries, creating opportunities for growth and development.

Territorial policies, attractiveness and innovation dynamics: territorial policies can have a significant impact on the establishment and development of industry. They can encourage the establishment of sustainable industries, the transition to greener industrial models and the encouragement of cooperation between territorial actors or the development of local sectors. Territorial policies can influence industry, for example by offering an environment favorable to innovation, cooperation or the creation of networks of actors. However, it is important to rethink territorial policies to adapt them to the challenges of the 21st century, such as the transition to a sustainable economy, the digital transformation and the challenges of globalization. Territorial policies should be flexible and adaptable, favoring the emergence of new innovation models such as collaborative platforms and open innovation ecosystems. They should also be based on reliable data and relevant performance indicators, to allow regular evaluation and adaptation of policies to new challenges.