

SESSION
TECHNOLOGY, INNOVATION AND BUSINESS DEVELOPMENT:
THEORETICAL PERSPECTIVES

by

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ABSTRACT

The concept of innovation is usually restricted to the technology or technical field. Until the 1990s, scarcely anybody talked about social innovation except, in certain cases, to refer to the likely effect of society on the emergence of technical innovation. The analysis stopped there. Thus, this article aims to broaden the analysis of innovation by examining not only its technological dimension, but also its social and territorial dimension, a notion that has recently come into use in the theories of “new economic sociology” and “socio-economic geography”. The paper is divided into three parts. Part One will review the bases laid by Schumpeter and Veblen’s founding analyses in reference to technology, innovation and entrepreneurship. Part Two will address innovation from the perspective of evolutionary economists. We will reconstruct an explanation of social innovation as a cognitive process confronted with localized social resistance, thus posing the problem of social and territorial diffusion of innovation. Part Three concludes by emphasizing the strong link between sociality, territoriality and market.

INTRODUCTION

The concept of innovation is usually restricted to the technology or technical field. Until the 1990s, scarcely anybody talked about social innovation except, in certain cases, to refer to the likely effect of society on the emergence of technical innovation. The analysis stopped there. Thus, this article aims to broaden the analysis of innovation by examining not only its technological dimension, but also its social and territorial dimension, a notion that has recently come into use in the theories of “new economic sociology” (Levesque et al. 2001) and “socio-economic geography” (Benko and Lipietz, 2000).

From our perspective, innovation is not considered to be the simple mechanical insertion of technical novelty into production. This perspective extends beyond the idea that there is, downstream of the invention, a social usage that is ready or naturally disposed to integrate a

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technique, a process or a particular type of organization of social relations. We argue that the continuous presence of society must be taken into account throughout the “process of innovation production,” starting with the inventor’s instinct, the different mechanisms leading to its institutionalization, the necessary efforts to construct the social usage of the invention, and ending up with its diffusion.

This perspective does not deny the role of the market in the production of innovation, but argues that the latter is embedded in society. It is essential to examine this link in order to understand the different dynamics of development which take place in territories which, while certainly specific, are related to global processes. In this paper, our analysis of the role of society in innovation processes consists of an overview, indeed a summary, of the different perspectives developed to study the innovation process. We suggest an approach that will allow us to revisit some of the different stages marking the evolution of the concept of innovation.

The article is divided into three parts. Part One will review the bases laid by Schumpeter and Veblen’s founding analyses. Part Two will address innovation from the perspective of evolutionary economists. Part Three will conclude by emphasizing the strong link between sociality, territoriality and market. In this perspective, we consider that innovation and innovative business development constitute a social and territorial construction, whose production and effects depend on local and global socio-economic contexts that are conflict ridden and hierarchical. From this perspective, the territory mediatizes and structures arrangements of production actors, organizations and decision makers, thus allowing for the emergence of specific innovation cultures but that are not isolated from nor independent of more global contexts.

INNOVATION AND SOCIETY: FOUNDING ANALYSES

It must first be specified that the works by classical analysts of society and its evolution did not focus much on the notion of innovation. This lack of interest is explained, in our view, by the deterministic and unilinear conception of social change held by these authors. This conception, against which Braudel (1985) rebelled, was held by important authors such as Durkheim, Weber, Spencer and Marx. It was only towards the end of the 19th century that the concept of innovation entered into the language of sociology in a veiled way. This occurred when the notion of “imitation” was used by Tarde (1890) who explained that societies evolve through the daily accumulation of inventions -- “innovations”-- which gradually alter the lot of human behaviour. According to Tarde, the distinctive feature of human beings is to imitate fellow human beings and therefore when a new behaviour appears, it entails an “epidemiological” reaction whereby “the innovation” is imitated as soon as conditions permit. However, Tarde did not dwell on the conditions of this imitation and this vision remained marginal. It was not until the analyses by two trail-blazing authors, namely Schumpeter and Veblen, that a more comprehensive conceptualization of innovative processes emerged.

Schumpeter's entrepreneur-innovator

Schumpeter's main contribution to the analysis of innovation is the entrepreneur- innovator. He borrows his vision of the entrepreneur or business leader from the notion of *Führerschaft* which refers to the fact that in all fields of social activity, the leader has a special role. The abilities of this leader essentially amount to initiative and will. By transposing this notion into the field of economics, Schumpeter derives from it the notion of business and entrepreneur. Business is the act of achieving and the entrepreneur is the agent who carries out new combinations of production factors (Tremblay, 1989).

For Schumpeter, the entrepreneur is not the inventor of a discovery but the one who introduces this discovery into the firm, the industry, the economy, that is, strictly speaking, the person responsible for its diffusion. In his view, economic society is run by human decisions, those of entrepreneurs, and not by ideologies or abstract social classes. This is what basically distinguishes Schumpeter's theory from the deterministic and macro-social perspectives mentioned above. Thus, change stems from the concrete exercise of a function and not from the function per se, which means that when somebody is an "entrepreneur," it is because he implements new combinations; he creates a context through which the framework of social intervention broadens and is transformed. Only this act of entrepreneurship corresponds to the role and function of an entrepreneur. Schumpeter constructs his analysis in the economic environment and sees an actor-transformer in anybody who can implement a new combination of arrangements in a firm, an organization with an economic vocation. (Tremblay, 1989)

From this perspective, the function of the entrepreneur consists in overcoming a series of obstacles. According to Schumpeter, innovation is a creative response to these obstacles. Three major types of resistance to innovation can be identified. First, the entrepreneur-innovator acts in a context of uncertainty, that is, given the information that he has, he is not sure that his project will be successful. He may use retrospective data, but these bring little certainty since nobody is using them the way he suggests. The second type of obstacle appears to be fairly obvious and was described by Schumpeter in 1935 as follows: "It is objectively more difficult to innovate than to use what is usual and proven." (translation) Lastly, the third type of obstacle -- in our view, the most important-- involves the reaction of the social milieu to the innovation, or "to anybody who wants to innovate" (Schumpeter, 1935) (translation). Thus, Schumpeter said: "It is not enough to produce satisfactory soap, it was also necessary to induce people to wash."⁴ This metaphor still applies to the present day since it raises the issue of the social construction of usage of the invention, which is the specific feature of innovation. (Tremblay, 1989)

Although Schumpeter's works have made it possible to isolate the role of the entrepreneur as a key agent of change in economic organizations, he did not broaden the role of the entrepreneur to other types of actors in the social, political and cultural spheres. To grasp

4. This is an excerpt of *Business Cycles* (pp. 243-244) taken up again in Marty (1955: 92).

the full complexity of the recognition of usage, the link must be made between Schumpeter and Veblen's works.

Veblen and the role of technology

Veblen makes an important contribution to the economic analysis of innovation, but especially to the global and interdisciplinary examination of this subject. For Veblen, just as for Schumpeter, technology or, in his words, "the state of the industrial arts," is the key and determining economic factor in social evolution. What Veblen meant by "technology" can be summed up in two series of elements: on the one hand, a system of tools, instruments and machines, and on the other, what we consider to be the most important aspect – know-how. Veblen also used the terms "intangible assets," "collective assets" and "immaterial wealth" while referring to this technical know-how that he deemed to be more important than the tools and instruments which make up physical capital. Veblen viewed technology as an "indivisible possession of the community at large, whereas the instruments created by this technology can become man's individual property" (Corbo, 1973; Tremblay, 1989, 1992).

For Veblen, technology will only be effective if it finds the appropriate material conditions, if the required material forces are available, and if it is located in an appropriate diffusion or "propagation environment." To a certain extent, Veblen's theory is thus imbued with a degree of "technological determinism." However, Veblen brings other forces into play which will help to tone down this determinism that tends to be emphasized. Among these other forces is "culture." Indeed, Veblen views technology not as a static reality but a dynamic reality "that continuously evolves and whose effectiveness depends on a number of specific conditions." "Although it is true that technology influences culture, it is also true that culture can facilitate as well as inhibit the effectiveness and progress of technology" (Corbo, 1973, p. 295) (translation). Once again, we are getting closer to a global rather than a solely economic vision of technology.

Thus, to sum up, for Schumpeter, innovation lies in the process that leads to the generalization, even the creation of the social usage of invention. Although the entrepreneur is in charge of constructing the usage, he does so by creating on his own something that the inventor did not have, which in itself also constitutes an invention. In this respect, Veblen completes and even goes beyond Schumpeter's analysis by bringing out the effects of reciprocity between technique/technology and the social environment. For him, not only do technologies have an effect on the cultural and institutional environment, but this institutional environment itself exerts an effect on the technologies. Thus, a form of reciprocity of effects exists between the social context and the technologies (or innovation, a term that we prefer but Veblen hardly uses).

THE EVOLUTIONARY APPROACH: FROM CYCLICAL TO SPATIAL EFFECT

As we have just seen, Schumpeter and Veblen's works constitute important background for the development of an analysis which embeds innovation in society. However, it was the "evolutionary" economists who completed their work by proposing a global vision of

innovation. For this movement, innovation is a *process* (Freeman et al., 1982), a “process which transmits and receives impulses, connects new technical ideas to the markets” (Le Bas, 1995) (translation), a process of problem solving, a learning process which brings into play knowledge, skills, competencies, know-how, capacities and abilities (Winter, 1987).

Cyclical effect of innovation

According to evolutionary economists, the innovation process occurs in an organization or a firm; thus, their vision is closer to that of Schumpeter (Dosi, 1988). For Schumpeter, at first small or medium-sized firms were the initial sites of innovation, whereas the concentration of capital over the years has given rise to the domination of large firms and their research and development departments. However, for the evolutionary economists, these two places (SMEs and large enterprises) do not necessarily succeed one another in time but can, on the contrary, co-exist.

This seems to correspond better to today’s reality in which, depending on the sectors and the degree of maturity of the sector involved, it is in some cases SMEs and in other cases large enterprises which dominate the innovation process. Moreover, these two innovation regimes can be explained by the phase a given industry is going through (Dosi, 1988). As observed by Dosi, when an industry is in an emerging phase (for example, multimedia, biotechnology, optronics, etc.), innovation tends to proceed by trial and error. Entrepreneurs take risks and new technologies appear, leading to the creation of new enterprises. On the contrary, during the maturity phase --for example, the steel and automobile sectors where markets are quite saturated and generally oligopolistic -- technological changes and innovation in general constitute one of the, if not the main, weapons of competition.

The revitalizing potential of an innovation thus does not last forever. It runs out, which explains technological revolutions as well as the appearance of new technological cycles and the obsolescence of former technologies. As explained by Vernon (1976), whose analysis is similar to those by Dosi (1988), the revitalizing potential of an innovation is closely related to the life cycle of a product. Vernon’s works show that there are five phases to a product initiated through innovation: novelty, growth, maturity, standardization and decline.

The revitalizing effect of innovation is felt during the first phases when the manufacturing of the new product creates new market opportunities, attracts capital and thus generates new enterprises, including small ones, where new usages and types of the product are developed. The creation is subsequently replaced by mass production with stricter and more intensified standards, and the revitalizing potential of the innovation diminishes. Based on his analysis of the United States, Vernon put forward an explanation of the effect of innovation on economic development. According to this explanation, development is linked to the capacity of a country, or a regional or local milieu, to specialize in the manufacturing of products which are still in their first phases and then to withdraw from it as the cycle advances in order to redirect its economic specialization towards other emerging products.

It thus paves the way for a new development strategy centred on the capacity to innovate, where growth depends on the specialization in the first phases of goods production.

The spatial effect of innovation

As highlighted by the evolutionary perspective, innovations have an effect on temporal dynamics. However, they also have a major effect on the territory. This spatial effect is due to the fact that an innovation stems from the combination of the technical discovery or invention with a community's organizational and economic capacity to develop it. Yet, this combination is a specific phenomenon. As Perroux (1986) asserts, innovation does not appear everywhere nor at the same time. It appears in specific places where it brings about changes in the methods of production and therefore of consumption, where it changes production standards and from where it is diffused.

Perroux puts the diffusion of innovation in the context of a process which brings into conflict production and consumption practices induced by innovation on the one hand with, on the other hand, a community's potential to adapt to them. But to adapt to innovation does not simply mean to imitate it, as suggested by Rostow (1960) in his study on the stages of economic growth. It also and especially refers to the voluntary actions taken jointly by entrepreneurs and organizations to appropriate the innovative process, develop it, extend it, and generate a recurrent dynamic capacity. This obviously implies various types of innovation (Perrin, 1985).

Thus, a question arises: How can a milieu adapt so as to create productive groups capable of taking advantage of the effect of innovations? To pose this problem means to turn the question around. Thus, we must examine how communities react to the diffusion of the innovation. Rather than considering what effect the innovation has, we must consider how to move over to the new production practices induced by the innovation, either by specializing in the types of production that have a revitalizing potential, or by putting forward social conditions that allow the community to innovate.

Based on the evolutionary analysis, innovation is thus viewed as a social process that is linked with technologies or technical systems, as well as with the goods market and the labour market (Le Bas, 1995). This process is therefore uncertain, although not entirely so. The firm acts as an interface between these elements, mediating and making choices within the context of this set of social facts of which it is part. According to this vision, the diffusion of new production practices induced by innovation occurs through changes in production standards – changes that are passed on from firm to firm, and thus from place to place, through their productive interrelations. This diffusion is carried out within the boundaries of the firms which contribute to the innovation-induced production and is then generalized across the industries which include combinations of firms and actors.

The systemic territorialized effect of innovation

The diffusion of change is accompanied by or confronted with social changes which are related to the social structure and the cultural characteristics of the different milieux. These

changes have to do with the communities' ability to adapt to the technological change induced by the different types of innovation and to appropriate them, thus in turn generating a recurrent capacity to develop innovations and produce growth. The combination of social changes which include the organizational and social structure of a community as well as the capacity to get in step with the innovations diffused throughout the industries, are conditions for the emergence of production systems characterized by innovation in specific regions and milieux (Lundvall, 1988; Wolfe, 2002; Braczyk, Cooke, Heidenreich, 2003).

Several studies have addressed the relationships between innovation and territory in this type of place by using the notions of "innovative milieux" (Aydalot, 1986; Maillat, 1992), industrial district (Becattini, 1991; Piore and Sabel, 1984) and technopole (Benko, 1991). In all cases, despite the different approaches, these notions have been used to designate the methods of arranging a community's technology, territory and organizations (Storper, 1997). The result is communities where production and society are interlinked by configuring territorial production systems. Territorial proximity allows the territorial system of firms to practically rely on economies of scale linked with the entire production process while not losing their flexibility and adaptability to the vagaries of the market owing to the segmentation of this process (Klein, Tremblay, Fontan, 2003).

The agglomeration effect of these territorial systems encourages the establishment of local forms of co-operation so as to collectively take charge of a series of individual production problems and thus ensure local governance. Therein lies the synergy induced by this type of system. This synergy is made possible by the fact that firms are part of comparable production processes and the goal of the established collective learning processes is to solve common difficulties. The implementation of these solutions means new infrastructures and is expressed through the will to strengthen the partnerships between the large enterprises, SMEs, institutions of higher learning (universities, research institutes), local authorities (municipalities, local organizations) and government institutions.

The analysis of the relationships between innovation and territory highlights the system effect created by the strengthened links between the economic, social, political and cultural actors sharing the same geographical space within a context of reticular interrelations constructed at the global level. The place is more than a localization, it is a system. There is a "place effect" which directs the action of actors. This effect is economic, political, social, cultural and ideological. It is the effect of place which leads to the hierarchical structuring of local systems, as a result of the territorial arrangements of stages and actors of a globalized network (De Bresson and Amesse, 1991; Holbrook and Wolfe, 2002).

INNOVATION EMBEDDED IN THE LOCAL, THE GLOBAL, THE INDIVIDUAL AND THE COLLECTIVE

To study innovation is to explain a process with dimensions that become determining factors and eclipse others, depending on what is being innovated. Though certainly technical and economic, the innovation process is just as social as it is political and obviously has a cultural impact. To study an innovation is to shed light on the social,

technical, economic, political and cultural characteristics that are put forward by individual and collective actors. This set of factors is significant in that it occurs in a specific place and time. Therefore, it is important to take into consideration both the territory and the temporal dimension.

We hypothesize that innovation is conditioned by a social context. Therefore, for us, the dynamic of social innovation brings into play actors who hold positions within a set of institutional arrangements. Since these groups, as demonstrated by Hollingsworth and Boyer (1996), are geographically structured on the basis of different but complementary regulatory modes of social systems, social innovation operates on the basis of these regulatory levels. Therefore, reference can be made to the existence of a set of social innovation systems that belong to geographical spaces ranging from the global space to the local space, transiting through the intermediary spaces (continental, national and regional). We are thus faced with a spatialized map linking a combination of innovation systems, some of which are moreover cross-border. Thus, innovation cannot escape from the cultural determinism of the world and the social system which embeds it, but this cultural determinism is itself organized into a hierarchy around the reality of the global economy.

Our vision of innovation emphasizes the social construction of innovation and the processes and interrelations which come into play at all levels. Our main intention was to put forward an overall perspective which views actors as well as territories as interrelated elements that are sometimes under tension. From this perspective, innovation does not in itself have a positive function linked to social progress. Social usage becomes positive or negative for a community, depending on what the social actors will do with it. Socially innovative action pertains to the field of strategy since it works on the action system of an organization or a community. Socially innovative action implies a greater structuring of the social milieu (1) prior to the innovation, through a redefinition of cultural orientations; (2) during its implementation, through the new methods of managing social relations, consultation and partnership for example; and (3) following its implementation, through pressures exerted in order to change individual and collective consumption habits. This is how 'milieux' are constructed where invention and novelty can emerge more easily and where the cycle leading to the recognition of its social usage and institutionalization speeds up, thus establishing innovation systems.

This brief overview of the different approaches to the role of society in innovation processes and business development leads us to conclude that innovation results from acts that are certainly individual, in the sense of a leadership exerted by an individual, but that are reticulated, framed and made possible by a favourable or unfavourable cultural and social context, by a fairly conciliatory economic context and by negotiations taking place between actors who are more or less in agreement with the definition of a new social usage. Therefore, social innovation encompasses both the fact of innovating, that is, a culturally-oriented inventive act, a product of the imagination or chance, and the institutional process of social recognition of its usage, that is, as it becomes established.

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