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Il territorio è un'opera d'arte: forse la più alta, la più corale che l'umanità abbia espresso

— Alberto Magnaghi, *Il Progetto locale*

Con i libri pubblicati in questa collana s'intende contribuire al dibattito scientifico, a livello sia nazionale che internazionale, su una gamma di argomenti inerenti in particolare le relazioni che intercorrono fra:

— le attività produttive, con particolare attenzione a quelle di carattere innovativo e di piccola dimensione;
— il territorio, nelle diverse accezioni assunte nelle discipline in cui esso è oggetto di studio;
— l'intervento di regolazione svolto dall'operatore pubblico, con prevalente riferimento a quello regionale e locale;
— il ruolo esercitato dall'Unione europea nel contesto mondiale e il suo impatto sulla regolazione nazionale ai diversi livelli territoriali.

Tale campo d'indagine, vasto e multidisciplinare, attiene a problematiche estremamente rilevanti nell'ambito dei moderni sistemi economici in cui le complesse reti di relazioni intrecciate sul territorio risultano determinanti ai fini del successo delle iniziative imprenditoriali e tali da richiedere metodi di studio tendenzialmente innovativi.

Web content

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Creativity, entrepreneurship and absorptive capacity

Endogenous aspects of territorial innovation

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Introduction

ANA DIAS DANIEL[1]

Innovation is considered the fuel of modern society as we know it. From the 1st industrial revolution until today, the pace of innovation has become incredibly faster since the demand for creative solution to fulfil daily problems or societal challenges is also increasing. From the conceptual point of view, the term innovation still lacks a clear and generally accepted definition. One of the first and most prominent authors working on innovation was Joseph Schumpeter (1883–1950), have defined innovation phenomenon as the setting up of a new production, covering new commodities as well as new forms of organisation. Although multiple contributions from different authors, it is commonly accepted that innovation is the application of new ideas to products (the development of newly products or the improvement of existing ones), processes (development of new or improved processes), or other aspects of the company's activities, such as management and marketing. Nowadays, the concept of innovation has span the whole chain of knowledge production from fundamental research to market launch, and it is seen as the result of the cooperation and interaction of a multitude of various actors, including government, academia and companies. Therefore, the notion of innovation policy is not restricted to promoting innovation as an end in itself, or for purely economic motives, but it considers innovation as an important tool in overcoming major social challenges (Meissner, Polt, Vonortas, 2017).

The importance of innovation to Europe's economic growth, as well as Europe's ability to compete effectively in the global economy, has been highlighted both by the European Commission and the

[1] University of Aveiro, Aveiro (Portugal), Research Unit on Governance, Competitiveness and Public Policies (GOVCOPP), email: anadaniel@ua.pt.

OECD (European Commission, 2010). One the one hand, the link between innovation and firm performance has long been discussed in the literature, and several studies have argued that innovation enhance firms' market power (Wong, Ho, Autio, 2005), dynamic capabilities (Teece, Pisano, Shuen, 1997), and absorptive capacity (Zahra, George, 2002). According to the Innobarometer 2016[2], more than two thirds of EU companies have introduced at least one innovation since January 2013 (67%). This is a decrease of five percentage points since the survey in 2015, but slightly ahead (+1 pp) of results in 2014. Also, this report has identified the most common problems related to the commercialization of innovative goods and services, that are dominance of market by established competitors, lack of financial services, cost and complexity or meeting regulations or standards and lack of human resources. In this case, human capital is crucial for fostering innovation since the innovation process starts with ideas, which is a human endeavour. Thus, creativity and creative climate within firms' innovation processes are linked to innovation outputs (Amabile, Conti, Coon, Lazenby, Herron, 1996).

On the other hand, regional growth is dependent on region's capacity to support innovative firms, institutions and people (Chung, 2002). Thus, at regional level, innovation performance results from a systemic process that relies on the concentration of economic activities, geographical proximity and interaction between elements of the innovation system, such as firms, university and government (Asheim, Coenen, Moodysson, Vang, 2007; Cooke, 2001; Tödtling, Trippl, 2005). The role of universities in the promotion of regional development has been widely acknowledged both in the academic and political arena. Concepts such as "innovation systems" (Lundvall, 2007), "learning regions" (Florida, 1999; Morgan, 1997), "innovative milieu" (Crevoisier, Camagni, 2001) have stressed the systematic relationships among territorial actors, including universities, for the generation of innovation and competitive outcomes. There are several studies aimed at understanding the drivers and constraints underlying the engagement of universities in the territories where those are based (Boucher, Conway, Van Der Meer, 2003; Foray et al., 2012; Goddard, Puukka, 2008).

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[2] http://ec.europa.eu/COMMFrontOffice/publicopinion/index.cfm/Survey/getSurveyDetail/instruments/FLASH/surveyKy/2064.

Usually, that engagement is framed in terms of university's "third mission", and often focused on the role of science and technology as key sources of knowledge. Nevertheless, universities may play a wider role in leverage social and economic development, such as i) being a catalyst of change (Etzkowitz, Webster, Gebhardt, Terra, 2000); attraction of talent (Uyarra, 2010); and shape the region's network of learning and innovation (Bathelt, Malmberg, Maskell, 2004). Such a broad role of universities is very much in line with the focus of current European regional policy structural funds, which is an important political instrument aimed at maximizing regions' economic growth and "knowledge-based" development (European Commission, 2014).

This book aims at providing a broad view of the different sources and type of innovation enablers, considering the perspective of communities, organizations and regions. Therefore, the book will contribute to a major gap in literature which is the dispersion of this research field, in terms of number and sources of information, through a systematic approach and critical assessment of most relevant topics related to innovation enablers.

The first chapter addresses the multiple aspects and definitions of innovation. Also, this chapter presents and extensive bibliographic analysis regarding the evolution of the different innovation models, which provides the theoretical background to comprehend the different contributions of the book. The discussion about the factors determining firm's innovation performance is also useful to understand the role of organizational characteristics in the innovation performance.

In turn, Chapter two provides an overview about the role of universities in the promotion of innovation, both at companies and regional levels. The role of the university has changed in the last decades, and currently those organizations are recognized as catalysts of economic development and growth. Thus, on top of their knowledge production activities and education, many universities also promote the transfer of knowledge and technologies to the business sector, as well as the creation of new companies. This has fueled the development of the so called Entrepreneurial University. This chapter discusses in detail the different perspectives regarding the concept of Entrepreneurial University, as well as its impact on regional development and innovation. Also, this chapter discusses the main factors that have fostered the development of the Entrepreneurial University in Portugal.

Chapter three discusses the relationship between creativity and innovation within organizations, considering aspects of creativity development and its relation with cognition and emotions. As mentioned in this chapter: «all innovation begins with creative ideas» (Amabile et al., 1996, p. 1154). Even considering innovation in the organizational context, it is relevant to considered that a person's creativity is crucial, and it is the result of cognitive abilities and personal characteristics, such as background knowledge, perseverance, and ability to take risk. Moreover, a person's creative thinking may be influenced by affect, mood and emotions. A large amount of studies, with experimental and correlational designs, have been relating positive and negative affect with different aspects of the creative processes and producing a wide range of contradictory results. For instance, Baas, De Breu, Nijstad (2008) mentioned that people in positive mood tend to perform better in creativity tasks related with cognitive flexibility, such as insight problems and ideation tasks. This chapter provides also an interesting discussion about what foster or hinders creativity within organizational contexts and within working teams.

In the case of chapter four**,** it is addressed the role of cooperation, absorptive capacity and trust in innovation generation and diffusion. In this case, the promotion of horizontal (for instance, between firms and suppliers and clients) and vertical (between firms and universities) collaborations have a positive impact on the firm's innovation process and outputs. Several models are presented that aim at explaining the impact that internal and external factors may have on firms' cooperation ability, as well the role of trust in the development of regional innovation systems through strengthen regional innovation networks. Other relevant factor in firms' innovation capacity is its absorptive capacity which is defined as the firms' ability to «recognize the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities» (Cohen, Levinthal, 1990, p. 128). The absorptive capacity, in turn, influences the cooperation process and results, because it is related to the partner's capacity to perceive and apply the new knowledge that is transferred during the cooperation process.

The last chapter five discusses the efficiency and effectiveness in the use of structural funds allocated to Italy in the programming period 2007–2013, and the initial phase of the current programming period of 2014–2020. Structural funds are key to reduce economic and so-

cial disparities and to promote sustainable development within Member States, in order to achieve the objectives of Europe 2020 strategy for generating smart, sustainable and inclusive growth in the European Union (EU). Also, the European Structural and Investment Funds are an important mechanism to support the development of research and innovation capacities at local levels. The case of Italy is clearly an interesting one since it reflects on the role of administrative institutions' absorption capacity in managing the structural. In this case, absorption capacity is defined has the ability of a country or region to spend its assigned resources in order to meet the requirements of the operational programme in due time. Moreover, the chapter provides relevant clues for the improvement of administrative institutions' absorption capacity, and consequently foster innovation in the Italian context.

The different chapters share in common the intention of the different authors in providing a clear, but comprehensive, overview about the innovation enablers taking in consideration different perspectives, as well as levels of analysis, such as individual, firm and territory. Based on a diversity of papers from different authors and research groups and from different geographic locations, the authors of this book were able to provide a holistic understanding about innovation, and the role it plays in our global society.

References

AMABILE T., CONTI R., COON H., LAZENBY J., HERRON M., *Assessing the work environment for creativity*, «The Academy of Management Journal», vol. 39, 5, New York 1996, pp. 1154–1184.

ASHEIM B.T., COENEN L., MOODYSSON J., VANG J., *Constructing knowledge–based regional advantage: implications for regional innovation policy*, «International Journal of Entrepreneurship and Innovation Management», vol. 7, 2–5, Genèva 2007, pp. 140–155.

BAAS M., DE BREU C., NIJSTAD B., *A meta–analysis of 25 years of mood–creativity research: hedonic tone, activation, or regulatory focus?,* «Psychological Bulletin», vol. 134, 6, Washington 2008, pp. 779–806.

BATHELT H., MALMBERG A., MASKELL P., *Clusters and Knowledge: Local Buzz, Global Pipelines and the Process of Knowledge Creation Cluster and Knowledge: Local Buzz, Global Pipelines and the Process of Knowledge Creation*, «Progress in Human Geography», vol. 28, 1, California 2004, pp. 31–56.

BOUCHER G., CONWAY C., VAN DER MEER E., *Tiers of engagement by universities in their region's development,* «Regional Studies», vol. 37, 9, Abingdon 2003, pp. 887–897.

CHUNG S., *Building a national innovation system through regional innovation systems*, «Technovation», vol. 22, 8, New York 2002, pp. 485–491.

COHEN W.M., LEVINTHAL D. A., *Absorptive Capacity: A New Perspective on Learning and Innovation,* «Administrative Science Quarterly», vol. 35, California 1990, pp.128–152.

COOKEP., *Regional innovation systems, clusters, and the knowledge economy*, «Industry and Corporate Change», vol. 10, 4, Oxford 2001, pp. 945–974.

CREVOISIER O., CAMAGNI R., *Les milieux urbains: innovation, systemes de production et ancrage* (O. Crevoisier and R. Camagni, Eds.), EDES, Neuchâtel 2001.

ETZKOWITZ H., WEBSTER A., GEBHARDT C., TERRA B.R.C., *The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm*, «Research Policy», vol. 29, 2, Amsterdam 2000, pp. 313–330.

EUROPEAN COMMISSION, *Europe 2020 Flagship Initiative–Innovation Union*, Brussels 2010.

FLORIDA R., *The Role of the University: Leveraging Talent, Not Technology*, «Science and Technology», vol. 15, 4, Dallas 1999, pp. 67–73.

FORAY D., GODDARD J., BELDARRAIN X.G., LANDABASO M., MCCANN P., MORGAN K., NAUWELAERS C., ORTEGA-ARGILÉS R., *Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3),* European Union, Luxembourg 2012.

GODDARD J., PUUKKA J., *The Engagement of Higher Educational Institutions in Regional Development: An Overview of the Opportunities and Challenges*, «Higher Education Management and Policy», vol. 20, 2, Paris 2008, pp. 3–33.

LUNDVALL B.Å., *National innovation systems – Analytical concept and development tool*, «Industry and Innovation», vol. 14, 1, Abingdon 2007, pp. 95–119.

MEISSNER D., POLT W., VONORTAS N.S., *Towards a broad understanding of innovation and its importance for innovation policy*, «Journal Technology Transfer», vol. 42, Indianapolis, 2017, pp. 1184–1211.

MORGAN K., *The learning region: institutions, innovation and regional renewal*, «Regional Studies», vol. 31, Abingdon 1997, pp. 491–503.

TEECE D., PISANO G., SHUEN A., *Dynamic capabilities and strategic management*, «Strategy Management Journal», vol. 18, Chicago 1997, pp. 509–533.

TÖDTLING F., TRIPPL M., *One size fits all? Towards a differentiated regional innovation policy approach*, «Research Policy», vol. 34, 8, Amsterdam 2005, pp. 1203–1219.

UYARRA E., *Conceptualizing the Regional Roles of Universities, Implications, and Contradictions*, «European Planning Studies», vol. 18, 8, Abingdon 2010, pp. 1228–1246.

WONG P.K., HO Y.P., AUTIO E., *Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data*, «Small Business Economics», vol. 24, 3, Heidelberg 2005, pp. 335–350.

ZAHRA S.A., GEORGE G., *Absorptive capacity: a review, reconceptualization, and extension.* «Academy Management Review», vol. 27, New York 2002, pp. 185–203.

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Evolution of Innovation Theory and Practice

From Firms to the Territory

FILIPA BRANDÃO[1], CARLOS COSTA[2]

1. Introduction

Innovation, although not being a new phenomenon, since it may be consider as old as mankind, has not always received the necessary attention. Studies on economic change focused primarily on issues related to capital accumulation or on market behaviour, rather than on innovation. However, this situation has change in recent years, as the research on the role of innovation is proliferating, mainly within the social sciences (Fagerberg, 2006).

In result, several concepts and definitions have been emerging along the years, depicting the evolution of the theory and practice of innovation. From the early linear, neoclassical models, innovation is evolving into open, systemic, and holistic processes, based on collaboration, and on inter–organisational and inter–sectoral links fostered by networks.

In this chapter, the theoretical background of innovation as a scientific domain and economic phenomena is analysed. In the first section the concept of innovation and the diversity of approaches are discussed, and it is concluded that the innovation framework is increasingly considering the necessary openness of firms. A review on the evolution of innovation models and practice confirms this trend. Six generations of innovation models are analysed, culminating in a collective learning process based on networks, connectivity, and strongly attached to the territory. The final section presents a systematic analy-

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sis of the factors determining innovation performance of firms which may allow to obtain competitive advantages.

2. What is Innovation?

As other areas of study in social sciences, innovation lacks a common and consensual definition, remaining rather ambiguous, which challenges the understanding of its own nature (Adams, Bessant, Phelps, 2006). This results from the fact that the concept is applied to different disciplines and, that in order to innovation to occur, a very complex process takes place. To this matter, Kline and Rosenberg (1986) refer that innovation is an ill–defined and heterogeneous phenomenon and that it cannot be identified as entering the economy at a specific time. Innovations go through important changes during their lifetimes, transforming their economic significance.

One of the first and most prominent authors working on innovation was Joseph Schumpeter (1883–1950), frequently called as «the Prophet of Innovation» (McCraw, 2007). Schumpeter focused on the importance of innovation in economic analysis and defined the phenomenon as the setting up of a new production, covering new commodities as well as new forms of organisation. Innovation is «[…] the carrying out of new combinations» (Schumpeter, 1934, p. 66) and covers:

a) the introduction of a new good or of a new quality of a good;
b) the introduction of a new method of production;
c) the opening of a new market;
d) the conquest of a new source of supply;
e) the carrying out of a new form of organisation.

The assumption, by many, that innovation and invention were synonym concepts lead Schumpeter to elaborate the distinction between them. Inventions are usually restricted to new ideas, sketches, or models of mechanical and technical nature for a product, process, or system, not leading necessarily to innovations. Innovations involve necessarily the commercial application of any new idea, accomplished through commercial transactions of the new product, process, or system (Freeman, 1982). Basically, if inventions are not applied and

placed successfully in the market (that is, transformed into innovations), they are economically irrelevant.

Innovation is considered as the ultimate determinant of economic change and development. Schumpeter argues that the starting point of the development process is an economic system in equilibrium or in a stationary state, characterised by the absence of variation or development (although not necessarily of growth) in result of the inexistence of innovation. This economic system is also called «[…] "circular flow", running on in channels essentially the same year after year — similar to the circulation of the blood in an animal organism» (Schumpeter, 1982, p. 61), as it remains a constant recurrence of a cycle always identical to itself. The beginning of the development process occurs with the rupture of this circular flow from the production/supply side (and not on the demand side), changing the previous production systems through innovation —— the creative destruction:

> These spontaneous and discontinuing changes in the channel of the circular flow and these disturbances of the centre of equilibrium appear in the sphere of industrial and commercial life, not in the sphere of the wants of the consumers of final products (Schumpeter, 1982, p. 65).

Bearing this in mind, the author emphasizes the role played by the entrepreneur, a talented and motivated man, capable of introducing successful innovations in the productive system. These innovators are then followed by other innovators and the previous equilibrium is disrupted.

The relevance of economic cycles is also stressed by the author, who argues that they are a crucial condition for development to happen. The period between the moment of introduction of one innovation and the moment in which it begins to produce results varies according to the nature of the innovation itself, leading to the existence of different length cycles. The author quotes three business cycles, or economic waves: the *Kondratieff* waves (also called super cycles or long waves), lasting from 50 to 60 years, *Juglar* cycles (from 9 to 10 years) and *Kitchin* cycles (40 months).

The approach made by Schumpeter to the nature of innovation differs between his early and later writings, leading to a division of his studies in *Schumpeter* "Mark I" (related to is work *The Theory of Economic Development*, dated from 1934) and *Schumpeter* "Mark II"

(associated to 1942's *Capitalism, Socialism and Democracy*) (Freeman, 1982).

His first approach ("Mark I") characterises innovation as a linear process where entrepreneurs play a vital role. Inventions are exogenous to the economic system and disrupt its balance when they occur. The process then settles down until the next wave of innovation appear, creating different business cycles (the "creative destruction" concept). In sum, the old ways of doing things are endogenously destroyed and replaced by new ones. Within "Mark II", the author incorporates endogenous scientific and technical activities conducted and controlled by large firms, improving their competitive advantages. The "creative accumulation*"* concept embraces science, technology, innovative investment, and market. That is, innovations are introduced by large firms with accumulated stock of knowledge. The existing knowledge and innovation activities form the basis on which future innovations are created (Freeman, 1982; Korres, Lionaki, Polichronopoulos, 2003). According to Freeman (1982), the change in the American economy at the time of Schumpeter's writings and the fast growth of Research and Development in large firms were the main reasons that lead to the shift of his approach to the nature of innovation.

Schumpeter, as a pioneer on innovation studies, was responsible for placing innovation in the centre of economic thinking and theory. After his writings, innovation issues were given a higher importance in economic literature.

In 1965, Thompson defined innovation from a very clear and simple perspective, incorporating the diffusion and commercialisation of the idea, in order to transform it into an effective innovation, and also applying it to processes, products and services: «Innovation is the generation, acceptance and implementation of new ideas, processes, products or services» (Thompson, 1965, p. 2). This classification as to its nature, regarding processes, products or services, is integrated in technological definitions of innovation (Afuah, 1998) that dominated the early studies on this matter.

Following Schumpeter's conceptualisation, Freeman (1982) considers that innovation includes the technical, design, manufacturing, management, and commercial activities involved in the marketing of a new or improved process or equipment. Innovating requires the coupling of an invention with a potential market. This matching evolves