Triple Helix Model: a Device for Social Construction of Knowledge and Innovation

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Abstract

Second modernity, late modernity, risk society, sur-modernity, network society, liquid society ... Whatever definition is attributed to current Western societies (post-industrial, post-fordist, post-modern), the signs of the fracture with the past are traced back to the accelerated technological change (ICT revolution), to the economy globalization, to the increase in the competitiveness of the large companies (Gherardi, Nicolini 2004).

Particularly, new information technologies have changed the ways of working, learning and communicating on a global level, with obvious impacts on the relationship between economy and society. The information society has now given way to the *knowledge society*, in which "the key factors are represented by knowledge and creativity and, therefore, the formation of human and social capital becomes the most powerful investment to produce value and respond to the challenges of global competition" (Vespasiano 2005: 23).

In this scenario, individuals and organizations have had to review and refine their psychosocial behaviors and seek completely new strategic practices.

As is known, for example, the creation of innovations today takes place more and more within networks of enterprises, universities and other national and international bodies, as well as through stable collaborations between producers and users. "The added value offered by the network is to facilitate the meeting between the innovation needs expressed by enterprises and the offer of innovative methodologies and technologies by research organizations; this reticular system is rich in potential, not only with respect to the creation of new knowledge and the management of technological knowledge, but also with respect to the process of circulation and dissemination" (we think about communities of practice - Wenger, 2006) (Martini 2011: 16).

Obviously, carrying out the transfer of knowledge through very different cultural, social and political systems is not a very simple thing. The sociological nature of the problem highlights difficulties related to the possibility of creating a shared culture and the ability to establish relationships between partners, ensuring that "mutual learning becomes a useful resource for the entire network-system, where learning does not it means only the cognitive activity that produces images, representations, causal attributions but also that objectified learning in norms, procedures, routines and standards" (Gherardi, Nicolini 2004: 10).

Therefore, the sense of identity and collective development produced by the network becomes relevant here; and it is what allows the network to grow beyond spatial boundaries that are not always well defined. Hedberg and Holmqvist (2001) speak, in this sense, of 'imaginary organizations' referring to a way of looking at organizations that goes beyond physical boundaries and real forms of exchange and where the distinctive feature is the idea of sharing and sociality.

For these reasons, the concept of technology also takes on a new role: it is not simply a tool that must be introduced into a given production cycle, but it is a process that needs to be developed through reciprocity and interchange mechanisms. In other words, what characterizes technological innovation is not so much and only the centrality of knowledge and information, but also the

cultural processing and the social effect that it will cause within the community in which it will be adopted and spread (Martini 2011)[1].

On the other hand, the social constructivist approach (of psychological origin) not only emphasizes that the shape of technical objects is influenced by the social dimension, but also supports the 'strong sociality' of each object: natural phenomena, social interests, technical artefacts are socially constructed. In this constructivist perspective (basically common to the socio-constructionist perspective, of psychological origin) even knowledge is no longer analyzed as the representation of an objective reality, but as an interpretation and therefore construction of it, linked to processes of sense making of the collective (we think about SCOT or ANT).

These considerations, combined with the constraints of the global market and those generative of new technological knowledge, suggest converging towards an ever greater socialization of knowledge and towards the synergistic integration of the three worlds of research, business and government (Viale 2001: 56). In this triple angle, knowledge is the main tool for removing the obstacles that prevent a full and substantial equality between the social partners, in terms of balance between opportunities and positive actions in order to compensate for forms of social, cultural and economic disadvantage.

It is possible to socially build knowledge and innovation starting from the awareness that "the generation of knowledge, its being encapsulated in a professional competence or in a technology and its becoming innovation, is a process that is socially constructed, since each component it brings with it a social dimension, that is the contribution deriving from the participation of a community and the relationships that it manages to activate" (Martini 2011: 20).

Therefore, sociability (Simmel 1983) becomes the critical variable of the entire process that is analysed here and therefore it becomes necessary to identify a model that makes this sociality the starting point for analysing and supporting a type of three-way relationship.

Considering the current economic context - increasingly knowledge based - the objective, here, is to try to identify this model with what in the international literature goes by the name of Triple Helix Model (THM) (Etzkowitz 1997, 2004a, 2004b, 2008; Leydesdorff 2005a, 2005b 2006, 2010; 2013; Etzkowitz, Leydesdorff 1995, 1998, 2000, 2001, 2003). The model is considered as a new paradigm of socio-economic development and innovation for the analysis of relations between universities, enterprises and governments, i.e. those relationships that offer an infrastructure network for knowledge-based innovation systems[2].

Starting from the analytical description of the model, we will try to reflect on how innovative processes, that is the concrete application of new knowledge, develop on an essentially local basis. "In fact, it is on the restricted territorial scale that the collaboration processes between subjects are most effectively triggered, leading to the creation, hybridization and, finally, to the transfer of knowledge and technologies from the world of scientific research to that of companies" (Boschma 2005).

In this perspective, the formation of a community, of a territory, can be interpreted as the result of a dynamic of interactions developed by individuals, families and organizations within a system of defined constraints and defined rules governing the social and economic activity in and of the territory. In this perspective, the notable social, economic and cultural dynamism of the last times imposes a more and more organized management of knowledge in order to guarantee the development; this involves ample and complexes processes of social interaction, in which the

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[1] Already in 1988 Ardigò (in his book Per una sociologia oltre il post-moderno) sensed that society was destined to be more and more pervaded by cognitive information systems and invited to dwell more on the broader theme of the "sociality" of science and technological creativity.

[2] Graphically, the figure of the Borromean knot is used to illustrate this type of mode (also used in Lacan's reflections). When we talk about a Borromean knot we mean a knot formed by three rings that remain united because they are tied to three: just one is cut and the bond that unites them dissolves. It is a very nice metaphor to explain a particularly complex bond and how the well-being of this bond depends on the balance between the parts.

individuals redefine the acquired knowledge, activating and supporting innovation processes (Martini, Vespasiano 2015)

This underlines the importance of the social capital nets and it induces to review the models of governance, according to a reading key that involves the cognitive socialization and transfer of competences among all the local helices: government, university, enterprises (THM) but also the civil society and the natural environment (Carayannis *et alii* 2012).

Keywords: knowledge, socialization, innovation technology, sustainable development

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