Chapter 3
From Network Builders to Knowledge Clusters:
A Value-Based Transborder-Region

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ABSTRACT

This chapter aims to explore the central notions of the Knowledge-City paradigm in which complex cluster concepts provide a perspective of the interdependencies between the many and diverse dimensions of urban value-based categories that co-exist in the northern city-region of Monterrey, Mexico, in the Mexico-Texas Borderland. The chapter succeeds to advance and further contribute to the development of the knowledge-based urban development (KBUD) paradigm by showing a hierarchical framework of knowledge units from the individual Urban Citizen-Entrepreneur to Cluster Partnerships from a Knowledge City-Region perspective. It attempts to describe their spatial footprint, their activities, and their socio-economic impacts. Then, based on a case study in the Mexico-Texas borderland, it is advanced that a multi-variable framework holds promise for the analysis of knowledge-based development initiatives and possibly for future developing regions at a global scale.

1. INTRODUCTION

Social Development Theory advances that constant social interaction precedes development; and that it is clearly a building block for learning. In 1985, Lev S. Vygotsky first coined this idea in his *Theory of Social Learning*. In it, Vygotsky advances that individuals learn through the dialogue and personal interrelations within groups in society, in order to develop understanding of new knowledge. Environment or *entourage* seemingly determines people's learning as well as their proximal development zone (PDZ) which is explained as the distance between the levels of development, through the resolution of a problem under the guidance of another person or in collaboration with another more capable partner. The concept of PDZ would facilitate capacity development according to the situations of interaction (dialogue) and support we receive and the ability to take advantage of the skills and abilities of people from which

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we can learn through the collaboration and cooperation with others. Another constructionist scholar, Bente Elkjær (1999), embraces these concepts in her *Workplace Learning theory* of work, advancing models of productive organizations as emerging learning spaces in which they become organizations of learners. However, in the context of the Knowledge Economy, it has been argued that for cities and regions to experience sustained development, they have to link research, infrastructure and manufacturing activities — namely, innovation and production — in the same space. Hence, new approaches such as the Innovation System Approach and Knowledge city-region planning and development contemplate learning and knowledge-generating activities as life-long processes for productive skill and expertise development in emerging spaces such as systems, networks and clusters.

Following these lines of thought, this chapter will first attempt a literature review and reflexion on how knowledge agents and actors engage in social learning interactions. The review focuses on contexts that can eventually become knowledge-generating spaces: e.g., knowledge networks, hubs and clusters, networked cities, and similar concepts, where knowledge transforms into value within the macro-systems that would eventually benefit the city and the region (Carrillo, 2004, Carrillo, et. al., 2014). This review will be followed by a deeper inquiry on the role of knowledge networks in cluster formation, on how they add value to innovation processes through access negotiation, autonomy and participation, and how they actually create physical and intangible infrastructure. The last part of the chapter will introduce and discuss a regional case of clustering processes, in which clusters could become the kind of networked knowledge that builds a case for sustainable development. Following such concepts, this paper aims to underline the importance of clustering in knowledge/generating processes in the Mexico-Texas borderland and in the city-region of Monterrey under the lens of the Knowledge City paradigm.

2. KNOWLEDGE NETWORK BUILDERS: AGENTS AND ACTORS

Networked communities, although technology-dependent, are clearly the reflection of the structures already existing in their contextual workplace. The communication and interactions in the virtual space are 'part of the relationships developed in a given community, and reveal their social infrastructure' (Huysman and Wolf, 2005). That might be a reason for the hype in the literature during last decade, which reports an iconic fully networked, full-time job with m-learning (mobile learning) capabilities, such as PDAs, Laptop work stations, mobile-phone conferences and team-shared calendars. However, such hype is sadly not yet justified for many developing economies. However, networked workplace aspirations create a sense of a (real or imaginary) supporting 24/7 virtual community. A support that could enable practitioners to be in permanent dialogue with other people, connect and "download" solutions to tackle the complex challenges of workplace assignments. However, the phenomenon of flowing communication at work is yet to be explored at its different levels: from personal to organizational and regional levels for sustainability.

However, these visions of learning have affected developing economies under the influence of technology and the developments of the global society. They have indeed become progressively subject to twenty-first century notions of knowledge. George Siemens (2006) has characterized knowledge as a continuous suspended certainty, which describes the fact that we no longer learn or gather knowledge (i.e. getting a degree) for an indefinite period of time: our societies are thought to be continually learning and each of us have seemingly become life-long learners. In terms of development, practitioners are increasingly dependent on others' knowledge, instead of their own. Seemingly, practitioners' knowledge

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