Chapter 14
Revising the Framework of Knowledge Ecologies: How Activity Patterns Define Learning Spaces

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ABSTRACT

This chapter describes the Web of social software tools with its inhabitants as an evolving and ecological environment, discussing and elaborating the connectivist framework coined by George Siemens in his book Knowing Knowledge. This new perspective to ecological learning in social software environments resides on the ideas of Gibson’s and his followers approach to ecological psychology, the rising theory of embodied simulation and Lotman’s theory of cultural semiosis. In the empirical part of the chapter, we focus on the methods of investigating how social software systems become accommodated with their users forming learning spaces. Analysis discusses such ecologically defined spaces for individual and collaborative learning.

INTRODUCTION

Recently, the widespread public use of social software in Web has triggered for the need to theoretically ground the learning phenomena in this new environment using the ecological view. Favouring the biological human-centred understanding of information systems, Davenport and Prusack (1997, p. 11) primarily used the information ecology as a metaphorical term to capture holistic and human-centred management of information. Next, the knowledge ecology and knowledge ecosystem terms were coined, which started to mark the rapidly developing area that binds knowledge creation and utilization with the social and management aspects in human networks (Pór & Malloy, 2000; Pór & Spivak, 2000). The Web visionaries like John Seeley Brown (1999; 2002), and George Siemens (2005; 2006) related knowledge ecology and knowledge ecosystem terms with weaving information and artefacts, meanings and knowledge, networks and connections. G. Siemens published a book “Knowing Knowledge” (2006), which received wide public recognition in social Web communi-
ties. He suggested Connectivism as the learning theory for new Digital Age. While the book captures a new knowledge ecology vision, it has yet several limitations, which will be discussed in this chapter.

G. Siemens formulated that Connectivism is the assertion that learning is primarily a network-forming process (Siemens, 2006, p. 15). He relies on the ideas of Downes (2005) who wrote that: *A property of one entity must lead to or become a property of another entity in order for them to be considered connected; the knowledge that results from such connections is connective knowledge.* The act of learning is one of creating an external network of nodes – where we connect and form information and knowledge sources (Siemens, 2006, p. 29). Connectivism focuses on the knowledge, situated externally from people in the web. Several authors address this knowledge using different terms e.g. cultural knowledge (Heft, 2001); semiotic niche (Hoffmeyer, 1995) or cognitive niche (Magnani, 2008; Magnani & Bardone, 2008). These terms will be elaborated in the further parts of the paper.

G. Siemens (2005; 2006) assumes that creating meanings and relations publicly in social software environments would aid through connective processes the formation of new knowledge ecologies and learning cultures. In the Connectivism framework Siemens takes an approach that is strongly tilted towards knowledge, meanings, communities and networks and their spaces – knowledge ecosystems. However, the Connectivism framework is inconsistent in elaborating the ecological role of tools, activities, and communities in the formation and evolvement of knowledge ecologies. Siemens writes: *The pipe is more important than the content in the pipe. ‘Know where’ and ‘know who’ are more important today that ‘knowing what’ and ‘how’* (Siemens, 2006, p. 32). In this chapter we attempt to argue against this metaphoric claim. We suggest that the use of static ‘pipe’ metaphor, and diminishing the role of activities, the ‘knowing how’ part, may theoretically lead to losing the ecological nature of knowledge ecologies framework.

Studies of communities and networks assume that these are formations of people (Lin, Sundaram, Li, Tatemura & Cheng, 2006; Kumar, Novak & Tompkins, 2006) or their artifacts in the Web (Klamma, Spaniol, Cao & Jarke, 2006). What yet is missing is seeing Web 2.0 as a united ecological system with its inhabitants. The interrelations between communities, the environment and the culture left there by people - the traces of meanings (Llor’a, Imafuji, Welge, & Goldberg, 2006; Magnani, 2008) and the traces of activities - are important in the ecological framework. Similar tiltedness towards artifacts and meanings appears in the development of most of the social software tools. In social software systems we can find several possibilities of organising and filtering content by socially defined meanings, however, to see what activities take place in the communities that use these systems is often possible only if participating in the communities. We assume in this chapter that the ecological formation of common places, where communities and networks exist and take action, needs to be integrated into the theoretical explanations about connectivist learning in these systems.

The remaining chapter is organized in the following order. We introduce the enlarged ecological framework of learning in social software systems. The ecological learning framework is illustrated in the case study from formal higher education. This study is discussing the methodologies of detecting ecological learning spaces of the communities that use social software. The analytical part demonstrates learning spaces of individual and collaborative learners who use social software at the course. The analysis focuses on the importance of activity-related aspects in the ecological model. We provide answers to the two research questions:

What characterizes the learning spaces of individual and collaborative learners who use social software at the formal higher education course?
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