

Chapter 2

Omissions in Managing Knowledge in Innovation Processes or How to Handle Knowledge, Humans and Tasks: A Semio-Cognitive Approach

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Abstract

In organizations, innovation is a long-lasting process that is difficult to manage. Innovation is characterized by the use of new (combinations of) knowledge. Innovation, as knowledge creation, is also an activity of individuals. However, neither the individual nor knowledge is studied as appropriate unit of analysis in innovation and knowledge management literature. In this chapter, we start with two cases from the literature that indicate problems with respect to knowledge in innovation projects. In a more fundamental review of the literature, we identify five serious omissions with respect to the management of knowledge in innovation processes, such as the difficulty to deal with the dynamics of knowledge and the lack of dealing with task dependencies between individuals. In order to repair these problems, we introduce a cognitive framework in which knowledge content (domain) and type (the way knowledge is presented) are distinguished. In the conclusion, we benchmark the cognitive framework with the current methods using the five omissions as guidelines. This contribution is analytical, diagnostic, and conceptual. In the conclusion a framework is designed that is empirically tested in various innovation projects (Cijssouw 2006).

Keywords: knowledge management, innovation, semio-cognitive framework, project management.

2.1 Introduction: Motive and Structure

2.1.1 Motive and relevance

Knowledge is an important resource in business processes, especially in innovation and research and development (R&D). Compared to most “routine-based”, or repetitive, processes, innovation itself is a business process with a high level of uncertainty. In innovation processes, uncertainty may negatively influence the ability to realize the desired output, the process duration, the necessary input, and the architecture of the innovation process. These difficulties are often visible in long throughput times, in changes of staff members or task roles, in redoing knowledge activities, in gaps in task and knowledge connections, and in inability to coordinate and plan. We argue that these negative aspects of innovations result from negligence of fundamental knowledge dynamics at the level of description of the individual.

Innovation at the organizational level is characterized by the use of new (combinations of) knowledge. For this reason, the dynamics of knowledge is of interest for the management of innovation processes. That is, it is important to manage the creation and transfer of knowledge in innovation contexts.

At a lower level of description, individuals always create knowledge. Without human cognition, there is no knowledge creation. We take this individual perspective for granted. However, the success of knowledge creation in innovation is realized by the cooperation of individuals, especially when after the invention the implementation phase has to be realized. Therefore, we include the individual as well as the group level in our analyses, but we consider individuals to be the lowest (ontological) level in these organizational discussions. Therefore, it is surprising that the individual is not also the unit of analysis in old and new literature on innovation management, project management, and even knowledge management (e.g. Brown and Eisenhardt 1995). Instead, teams or organizations are the units of analysis in this literature. To put it differently, old and current literature on innovation and knowledge management does not use the individual level – including the tasks individuals perform – to describe, analyse, and determine what is going on in innovation processes.

A remark of caution is necessary. The literature on innovation and R&D does not completely neglect knowledge (e.g. Tijssen 2001; Frederiksen,