

Telecommunications, Multiple Criteria Analysis and Knowledge Theory

Andrzej P. Wierzbicki¹

COE Program: Technology Creation Based on Knowledge Science
Japan Advanced Institute of Science and Technology (JAIST)
1.1 Asahidai, Tatsunokuchi, Ishikawa 923-1211, Japan
<mailto:andrzej@jaist.ac.jp>

Keywords: decision support, intuition, knowledge creation, knowledge integration and management, tacit knowledge, ontology and epistemology, technology creation, telecommunications

Summary: *Telecommunications requires multiple criteria analysis and decision support. We can list diverse problems from telecommunications that need formulation with multiple criteria: in network design, in routing, in telecommunication data mining, in interconnection agreements, in strategic management of telecommunications. However, telecommunications and other informational sciences influence also our way of understanding the world in the new civilisation era of informational and knowledge-based economy. This understanding is systemic and chaotic, assumes the emergence of qualitatively new properties of complex systems which cannot be reduced to the properties of system components. On this background, it is necessary to reflect anew on the theory of knowledge. It is shown how some basic facts from telecommunications and informational sciences can be used to formulate a rational theory of intuition, developed as a complement of multiple criteria decision support. In fact, multiple criteria decision support developed, during several decades of research, methodologies that are useful in knowledge representation and creation today. During the last decade of 20th century, several new approaches explaining knowledge creation processes were published. The first of them, **Shinayakana Systems Approach** of Sawaragi and Nakamori (1992), originated in multiple criteria decision support. Much better known become another approach, originating in management science, **The Knowledge Creating Company** with **SECI Spiral Process** of Nonaka and Takeuchi (1995). Several other approaches were developed and published parallel; this signified a paradigmatic change in epistemology. This paper presents a method called **Creative Space** used for integrating various approaches to knowledge creation and based on **SECI Spiral**, **F System** (Nakamori, 2001) and **Rational Theory of Intuition** (Wierzbicki, 1997). Questions of supporting new technology creation by constructing specialized creative environments similar to decision support environments are also indicated.*

¹ Also at National Institute of Telecommunications, Szachowa 11, 04-894 Warsaw, Poland