

Chapter 7

Complex Adaptive Systems Thinking Approach for Intelligence Base in Support of Intellectual Capital Management

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ABSTRACT

This chapter introduces Complex Adaptive Systems Thinking (CAST) into the domain of Intellectual Capital (IC). CAST is based on the theories of Complex Adaptive System (CAS) and Systems Thinking (ST). It argues that the CAST, combined with Intelligence Base offers a potentially more holistic approach to managing the Intellectual Capital of an organization. Furthermore, the authors extend this IC management with additional dimensions proper to a social entity such as an organization. New organizational design methods are needed and the capability approach is such a method that supports IC in virtual and real organizations. The characteristics of Intellectual Capital are discussed in the iterative process of inquiry and the Cynefin Framework, guaranteeing a holistic view on the organization and its environment.

INTRODUCTION

The aim of this chapter is to introduce Complex Adaptive System (CAS) and Systems Thinking (ST) into knowledge-based organizations implementing the Intelligence Base (IntB) to manage

their intellectual capital (IC). The combination of CAS and ST is called Complex Adaptive Systems Thinking (CAST) (Lowe & Ng, 2006).

We will first give a brief overview of the system Intelligence Base (Rabaey & Mercken, 2012) and the notion of intelligence. “Intelligence is

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the product resulting from the collection, evaluation, analysis, integration, and interpretation of all available information that concerns one or more aspects of foreign nations or of areas of foreign operations, and that is immediately or potentially significant to military planning and operations.” (DSS, 2012). Intelligence has two purposes: to increase and assess (thus to correct) the existing knowledge and support decision making by reducing the uncertainty. In the latter purpose, uncertainty management (broader than risk management) plays an important role: the known-unknown (awareness of it) and the unknown-unknown (unawareness). The system of sensors can push observations into the system so that the unknown-unknown shifts to known-unknown and later knowledge.

After the discussion on IntB and its role in a knowledge-based organization, we will introduce Complex Adaptive Systems Thinking (CAST) in this domain. This will extend the principle of learning organization and IntB (a component of Structural Capital). We will place CAST into the organizational theory. The theories of Sterman (2010) and Action Research will be combined into a CAST representation of IntB and learning organizations, in which the mental models of the environment and the proper organization will be very important in the creation and dissemination of knowledge throughout the organization.

The next point is to introduce the (military) capability approach, which will be explained in more detail in the part on the link between resources and capabilities, the theory of the firm and intellectual capital.

In this context of capability approach, the emergent synergistic properties of systems will be discussed: the whole is greater than the sum of the parts. Here it is crucial to explain the so-called less definable part of the relational capital in the framework of CAST, more precisely the emergent properties. It will be shown that although the re-

lationship with customers and other stakeholders is important, the internal relationships between the components of an organization (capability) are equally important.

As conclusion we will state that in the context of CAST the intelligence base is the vehicle by excellence to manage the Intellectual Capital of an organization (and its parts).

STRATEGIC CONTEXT OF AN ORGANIZATION

Mutual Influence

An organization is not a closed system due to the fact that it interacts with its environment. It will first observe the internal (organization) and external (environment) situation before making decisions to act. These actions will be observed by other actors (agents) in the environment and they will react upon it (ignore, collaborate, compete, agree, disagree, etc.). Of course, the organization itself will behave in a similar way upon the actions or reactions of the other actors (Figure 1).

Rabaey (2012) bases his strategy development on the Art of War. The first principle is the balance between goals and means. If an organization engages more resources than necessary, then it is not efficient. If the resources are insufficient to attain the objectives, then it will not be effective.

However, as will be discussed in the part on capabilities, an organization is greater than the sum of its means (resources). Therefore, the authors state that strategy development is based on the balance between capabilities and goals. Indeed other factors such as will, culture mentality are defining the strength (Bernard, 1976), thus capabilities. A capability is a logical set of modules (processes) which produce one or more outputs with a certain level of service.

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