Chapter 7.1
Strategic Management, Evolutionary Economics, and Complex Adaptive Systems

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ABSTRACT

This chapter sketches a strategic map of a selection of the relevant issues at the intersection of economics, psychology, sociology, and evolutionary theories applied to strategic management. It takes an evolutionary complexity perspective, based on a (manageable) selection of the relevant literature. The discussion focuses on evolutionary processes of change and their implications for strategic planning and related issues of organisation. The chapter concludes by discussing practical and research issues.

DOI: 10.4018/978-1-59904-962-5.ch008

INTRODUCTION

This chapter argues that the process of *strategic management* is analogous to evolution and learning processes (Alchian, 1950; Dopfer, 2001; Veblen, 1898). We argue that economic evolution based on competition, cooperation (Nash 1953; Von Neumann 1945), innovation, and tradition in organizations (Nelson & Winter, 1982; Schumpeter, 1993) is structurally comparable to evolutionary processes in biology (Goertzel, 1992; Kane, 1996; Smith & Szathmary, 1995; Standish, 2000). Therefore, an evolutionary framework can be used to integrate planning and management processes in strategy making.

The evolutionary approach shows many similarities to complexity perspectives on physical and social phenomena, where complexity perspectives can provide (technical) tools for data analysis, and evolutionary perspectives can provide an integrated conceptualization of the process.

Each of the relevant disciplines offers a specific way of dealing with complex phenomena, with distinctive advantages and disadvantages. Physics supplies the measures for potentially relevant characteristics of social systems. Computer science aims at algorithmic accounts of how complex systems can be artificially constructed. Biology provides more than 200 years of research experience dealing with the history and the consequences of complex interaction, competitive processes, and creation of novelty. Methodologically, the successful integration of these areas requires a transfer of complex adaptive systems methods and evolutionary concepts, as well as development of further methods in the complexity/simulation area. The chapter therefore discusses how these areas intersect conceptually.

In consequence, we suggest integrating evolutionary and complexity approaches for the management of social systems, particularly with respect to long-term strategic issues. Doing so requires using such a perspective in *research* on strategic management issues as well. The aim of this chapter is to sketch a strategic map of some of the relevant issues at the intersection of economics, psychology, sociology, and evolutionary theories applied to strategic management, when seen from an evolutionary complexity perspective. In the section section we discuss the background fields of evolutionary theory, organizational learning, social systems, elements of psychology, and strategy. In the third section we discuss the evolutionary and the complexity view on strategy, and in the fourth section we derive implications for research and practice. The last section presents future issues and concludes.

BACKGROUND

Evolutionary Theory

Evolutionary thinking shifts attention from a generalized standard optimality criterion to a differentiated account of selection criteria and selection conditions in specific circumstances as it explicitly asks for the adaptive value of specific characteristics (Lorenz, 1977; Mayr, 1982; Riedl, 1978). However, evolutionary theory bears some characteristics of a scientific paradigm and is thus more than just a theoretical system with its associated instruments. This can explain some of the tension between evolutionary approaches and those derived from the so-called "hard sciences." Complexity and reduction approaches are not competitors, but complementary approaches that both have distinctive advantages. Complexity perspectives are especially valuable if used in a "constructive" form, that is, validating the elements that have been found by reduction of systems and phenomena to the bare necessary elements. The question of research thus becomes: how do systems have to be composed and which "development paths" are to be taken to generate the observed real patterns? This offers a way of validating scientific results in social sciences analogous to the experiment of the natural sciences. Applying these results to social systems research allows to identify several research directions: recording and comparing characteristics of complex systems, explaining the existence of complex systems, explaining the history of complex systems, and trying to predict future developments. These questions are of practical importance in the strategic management of organizations.

The distinctive focus of the systemic evolutionary school are selection processes internal to an organism, the constraining and directing force of existing structures (Riedl, 1978), and the functional interaction of (organic) systems and their parts for the evolution of adaptations. It is argued that morphological and hierarchical