Chapter 17
Integral Post-Analysis of Design-Based Research of an Organizational Learning Process for Strategic Renewal of Environmental Management

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ABSTRACT

This chapter is based on a design-based research study of organizational learning and on a subsequent integral analysis of how and why organizational learning did, and did not, occur in the study. Integral theory is applied to deepen the understanding of how human organizations learn and adapt as complex adaptive systems made up of nested, operationally closed groups and individuals. The level of development and learning potential of an organization, as holon, can be understood as an emergent property resulting from the coordination of function and action of the unities that make up the system, even given that the levels of development and learning potentials of the groups and individuals in an organization are not consistent across the organization. The advantages of combining complexity and integral theory are explored, as both are understood to provide different, complementary interpretations of whole human systems.

INTRODUCTION

Application of Complexity Theory provides researchers with a rigorous and varied scientific perspective to investigate human organizations. It is, essentially, a "theory of everything" that integrates knowledge from a wide variety of sciences including ecology, evolutionary biology, and physics. Complexity Theory has a remarkable quality of clarifying, of making sense at a whole system level without requiring a deep reductionist focus on the details. The "sense" becomes transparent as we grow to understand each

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unique complex system, as complex systems generate their own coherence. Through their capacity to self-organize, complex systems actual *make* "sense", and we can see that sense more clearly through application of Complexity Theory. The theory, however, can be intimidating to the uninitiated because of its jargon, and reductionist because it is rooted hard scientific research. To apply Complexity Theory effectively in research on human systems, we need to be sensitive to its limitations in dealing with soft topics such as culture, personal perspectives, and consciousness.

Integral Theory too is a "theory of everything", but where Complexity Theory is firmly rooted in a positivistic and objective perspective of hard sciences; Integral Theory also includes subtle and subjective perspectives of "interiors". Integral Theory provides a holistic analytical tool that invites us to consider all perspectives, from all academic disciplines, when looking at a system. It also invites us to consider explicitly how a system grows and develops.

In this chapter, a study of organizational learning is presented as an example of how modeling of a human organization as a complex system can be used to understand its ability to adapt to changing conditions. At the time of the study, Complexity Theory was applied alone as the theoretical framework; and the study is reinterpreted here with an Integral Theory lens to consider how the two theories together could provide a more inclusive and comprehensive view.

THEORETICAL FRAMEWORK

Before proceeding to a description of the design and methods of the study, an introduction to the Complexity theoretical framework is provided, along with an brief explanation of the gaps in the theory that could be addressed by applying Integral Theory as a secondary lens.

In the study presented, Complexity Theory was selected with the expectation that it could provide framework for modeling and interpretation of an organization as a learning system: a complex collective human organization undergoing adaptation, development or learning.

Morin (1992) points out that in studying complexity, the focus is not on creating a general theory that covers everything from atoms to stars and cells to societies. It is rather to consider such phenomena in a richer way, "in the light of the complexity of system and organization" (p. 42). Complex systems of all types share the quality of "self-organization"; it is through their functioning as a complex system that they adapt and change over time in a form of co-evolution with dynamic changes in the environments in which they exist. As Morin explains, order is achieved *through an act of ordering*. Complexity research looks not at order, but at the process or act of ordering, at *organization*. And "organization is not an institution, but a continually generative and regenerative activity" (Morin, 1992, p. 43). Through their dynamic internal functions and the interactions of their many diverse parts, complex systems all exhibit the characteristic of self-organization. Rather than dissecting and analyzing the ordered structure of the system, complexity gives a researcher the opportunity to see how an organization functions on a macro level, and then focus in on aspects of the system that are of special interest.

Every complex system is unique, and it is in its unique composition and the interactions of its parts that coherence is generated. This quality of uniqueness makes it both challenging to study such systems, and at the same time provides a structure to research that includes a special key: though each system is entirely unique, they all exhibit similar properties. These properties are key to unlocking mysteries