Chapter XI

Complex Adaptive Systems
Theory and Military Transformation

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Abstract

The United States and many of its coalition partners have initiated a broad program of reform aimed at transforming their defensive capabilities to take advantage of recent advances in technologies and to meet emerging security challenges. Progress to date, however, has been mixed in terms of the ability of the U.S. Department of Defense (DoD) to redefine itself as an information age organization and in terms of the DoD’s capacity to deliver transformational capabilities to war fighters. This chapter examines questions regarding our ability to guide, direct, and control large scale organizational change. I suggest that transformational efforts can be viewed through the lens of the agent structure debate, which posits that social change is the outcome of a complex dialectic between human agents and social structures. I argue that our understanding of this dialectic may be significantly enhanced if we examine the theoretical and empirical insights gained from the study of complex adaptive systems (CASs).
Introduction

The United States and many of its coalition partners have initiated a broad program of reform aimed at transforming their defensive capabilities to take advantage of recent advances in information and communications technologies and to meet emerging security challenges. Transformation entails dramatic and sometimes disruptive changes in the way the U.S. DoD prepares for and conducts military operations. A critical component of this transformation is the theory of network-centric warfare (NCW). It posits that information sharing across traditionally separated organizational boundaries will lead to dramatic improvements in military effectiveness. In order to develop NCW capabilities, the DoD is sponsoring multiple programs, efforts, and initiatives aimed at harnessing new and emerging technologies that meet present and anticipated future war fighter needs.

Progress to date, however, has been mixed in terms of the ability of the DoD redefine itself as an information age organization and in terms of the DoD’s capacity to deliver transformational capabilities to war fighters. The reasons for the limited success of transformation efforts are numerous, including the strain of two wars. However, this chapter focuses on difficulties associated with transforming large and complex bureaucracies such as the DoD. It addresses questions regarding our ability to guide, direct, and control large scale organizational change. I suggest that transformational efforts can be viewed through the lens of the agent-structure debate that examines questions of large scale social change. Social constructivists argue that social change, such as the transformation of the DoD, is the outcome of a complex dialectic between human agents and social structures. I argue that our understanding of this dialectic may be enhanced if we examine the theoretical and empirical insights gained from the study of CASs. I conclude by making recommendations for a program of research aimed at furthering our understanding of large scale social change efforts exemplified by military transformation.

U.S. Military Transformation

Although the U.S. military is continually evolving and developing new capabilities, in recent years military leaders have vigorously pursued a policy of transformation aimed at dramatically changing the way that the U.S. prepares for and conducts warfare. The current transformation effort formally began in January 2001 when President George W. Bush selected Donald Rumsfeld as the Secretary of Defense (SecDef). SecDef Rumsfeld was given considerable freedom to pursue his agenda of transforming the military into an information age institution. The impetus to move forward on transformation was dramatically accelerated following the September
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