Chapter 11
Situation Understanding for Operational Art in Cyber Operations

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ABSTRACT

This paper presents a theoretically motivated framework and methodology that has been designed for finding out the emergent phenomena and information needs for planning and decision-making. The approach is based on complexity thinking, system modeling, communication and cognition philosophy, social system theories and content analysis research technique. It provides results with the analysis of quite small sets of information. The paper demonstrates the approach with a case study. The study was performed in an international cyber experiment of the Multinational Capability Development Campaign (MCDC) 2013-2014. The case study shows that the proposed approach is plausible for increasing understanding about complex situations. This is needed in operational art for creating such compositions and resources that enable success in military operations.

INTRODUCTION

The digitalization of society and its vital functions is transferring organizations and individuals to an endlessly expanding, unknown global terrain, where values, norms and objectives often appear as vague and weird. The prerequisites that digitalization sets for the security and military organizations and professionals in future are not clearly understood nor defined. In digital society, both the governmental and

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non-governmental organizations are typically needed for executing the vital functions of the society. This means that they have to collaborate in all security situations for defending the vital functions of the society from threats. Especially, the leadership, decision-making, management and intelligence activities have to be shared across organizations for reaching the security targets both in the physical space and in cyberspace.

This paper presents a theoretically motivated framework and methodology for finding out the emergent phenomena and information needs for enabling success in inter-organizational defence activities and decision-making. The approach is based on complexity thinking, system modeling, communication and cognition philosophy, social system theories and content analysis research technique. The paper applies the approach to the planning of comprehensive operations in cyberspace.

First, the paper makes some notes about concepts and models related to joint operations planning. The paper pays attention to operational art as selecting steps on the strategic path for reaching targets. The paper gives examples how the opportunities provided by the cyberspace for the creating of novel compositions and dynamic resources can be utilized to augment and improve current approaches on operational planning.

Operational art and operations are social interaction between people. The paper studies operational art and operations in social systems. The paper refers to a social system model and human information model and presents a system modelling approach for identifying the major characteristics and information profiles of a situation. The advanced approaches on intelligence and information analysis for planning and decision-making typically rely on the processing of huge amounts of big data. The proposed approach provides results with the analysis of quite small sets of information.

The paper demonstrates the proposed approach with a case study about the information aspect on operational planning of joint operations on land, sea, air, space and cyber. The case study was implemented in an international cyber experiment of the Cyber Implications for Combined Operational Access (CICOA) program. The CICOA program was part of the Multinational Capability Development Campaign 2013-2014. The aim of the program was to integrate cyber considerations into the Comprehensive Operations Planning Directive (COPD) and other national or multinational planning processes for joint and combined operations. The empirical data of the case study consist of workshop findings and information requests placed in the experiment.

CONCEPTS AND MODELS

Operational Art

Activities are often classified to strategic, operational art and tactic level activities and operating. In civil organizations, the operational art level activities are often hidden between the strategic and tactic levels. However, operational art or operations art is a widely recognized concept in the military context. A common definition for strategic is that it is ‘of or relating to a general plan that is created to achieve a goal in war, politics, etc., usually over a long period of time’ (Merriam-Webster, 2014). Strategic activities typically include the setting of the overall objectives for an organization and the determining of the path to these objectives or the developing of already chosen paths.

Piatt (1999) studies the concept of operational art as a discipline between the strategic and tactical activities. He argues that operational art is ‘the methodology used to determine how best to apply mili-