

From Sun Tzu's Art of War to Modern Warfare: Innovative Applications of Genetic Algorithms In Military Strategic Modeling

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Abstract

This paper is intended to discuss how complexity theory may help in optimizing military strategy and planning in times of growing uncertainty and complexity. The research, therefore, aims at establishing a complexity theory-based framework which will be applied in enhancing flexibility and adaptability within military operations and hence improving the chances of military victory. The study will adopt a combination of logic modeling, integrated with the genetic algorithm screening process for the purposes of establishing the framework of military strategy based on complexity theory, identification through literature review and data analysis of key factors that affect military victory, and application of the genetic algorithm screening process to identify and optimize strategic options so as to ensure their effectiveness in the time of complex and dynamic environments. Results reveal that a staunch military and adequate material preparation are the prerequisites of attaining military victory quickly and efficiently and that the statistical analysis shows a significant positive correlation among strategic planning, tactical execution, and logistical support. Genetic algorithm screening process verifies this theory by filtering out the best military strategic scenarios based on their competitive strength and upholds all assumptions of the logic modeling theory. This research applies the new framework of optimizing military strategies and planning under complexity theory with screening of a genetic algorithm so that a strong military, adequate material readiness, and flexible strategic planning can stand up to uncertainty and complexity. It clearly and concretely presented a recommendation to military strategists and politicians and therefore provided new support, directions, and approaches for future military research.

Keywords: complexity theory; genetic algorithm, Sun Tzu's Art of War, War Chapter, logic modeling