Adopting Lanchester Model to the Ardennes Campaign with Deadlock Situation in the Shift Time between Defense and Attack

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Abstract

General Karl Von Clausewitz believes that attack and defense in warfare are a state of interaction and response. The shift between attack and defense is involved with a short span of time difficult to define in concrete format. This paper extends Chen and Chu's model of the Ardennes campaign of World War II using the Lanchester equations. We use a new variable, deadlocked situation, to represent the shifting time between attack and defense. This article divides the Ardennes Campaign into three periods: (a) the initial period, German attacked while the Allies defended; (b) the middle period, both sides seized the initiative; (c) the final period, Allies attacked while Germans defended. In this paper, we apply Lanchester's Square Law to estimate the casualties by determining the shifting time between attack and defense. We obtain improved goodness of fit for the historical data.

Keywords: Military, Lanchester models, Ardennes campaign, combat models.