

DECISIVE OPERATIONS:
A MODERN LARGE-SCALE COMBAT OPERATIONS WARGAME

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE
Wargame Design

by

DANIEL WARNER, MAJOR, ARMY
BA, John Carroll University, University Heights, OH, 2010

Fort Leavenworth, Kansas
2022

Approved for public release; distribution is unlimited. Fair use determination or copyright permission has been obtained for the inclusion of pictures, maps, graphics, and any other works incorporated into this manuscript. A work of the United States Government is not subject to copyright, however further publication or sale of copyrighted images is not permissible.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 10-06-2022		2. REPORT TYPE Master's Thesis		3. DATES COVERED (From - To) AUG 2021 – JUN 2022	
4. TITLE AND SUBTITLE Decisive Operations: A Modern Large-Scale Combat Operations Wargame				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Major Daniel Warner				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Fort Leavenworth, KS 66027-2301				8. PERFORMING ORG REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Decisive Operations is a wargame for military professionals and wargame hobbyist alike. Designed to be played by two players and under two hours but still forcing players to make difficult meaningful decisions at the U.S. Army Division level. To plan future operations while managing current operations. This paper provides the basis and rationale for the modeling decisions made by the researcher in the development of this wargame. Players will take on the roles of the U.S. and PLA Army Commanders, immersing players in the commanders' decision-making process.					
15. SUBJECT TERMS Wargame, Correlation of Forces Model, MDMP, Large Scale Combat Operations, Division Planning					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT (U)	b. ABSTRACT (U)	c. THIS PAGE (U)			19b. PHONE NUMBER (include area code)
			(U)	67	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: Daniel John Warner

Thesis Title: Decisive Operations: A Modern Large-Scale Combat Operations Wargame

Approved by:

_____, Thesis Committee Chair
Michael B. Dunn, MBA

_____, Member
LTC Kenneth E. Moran, M.A.

_____, Member
LTC William S. Nance, Ph.D.

Accepted this 10th day of June 2022 by:

_____, Assistant Dean of Academics for
Dale F. Spurlin, Ph.D. Degree Programs and Research

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

DECISIVE OPERATIONS: A MODERN LARGE-SCALE COMBAT OPERATIONS WARGAME, by Daniel Warner, 67 pages.

Decisive Operations is a wargame for military professionals and wargame hobbyists alike. Designed to be played by two players and under two hours but still forces players to make difficult meaningful decisions at the U.S. Army Division level. To plan future operations while managing current operations. This paper provides the basis and rationale for the modeling decisions made by the researcher in the development of this wargame. Players will take on the roles of the U.S. and PLA Army Commanders, immersing players in the commanders' decision-making process.

ACKNOWLEDGMENTS

First and foremost, I would like to thank my wife, Whitney Warner, and my children, Arabella, Angelo, and Antonio, whose powers combine to form what is known as the A-Team. Without their love and support, I could not have completed this task. I am forever grateful for the endless hours I had to play test and ‘study’ other games.

I would like to thank my committee of Mr. Michael Dunn, LTC Kenneth Moran, and LTC William Nance for their guidance and mentorship throughout this project. To Dr. James Sterrett, thank you for entertaining the endless drive-by conversation while I was on break from class. To MAJ Avron Bloom, who selflessly volunteered his time to develop the hex map and assist the game’s presentation, Decisive Operations isn’t half the game it is now without you.

I want to acknowledge the support of my friends, classmates, and family members who were kind enough to edit my thesis and rules and playtest variations of the game, providing valuable feedback: Jessica Warner, Whitney Warner, Avron Bloom, Jason Sexton, Andrew Fisher, Pierce Hengst, and Turhan Buckley. Their unique points of view and comments led to substantial improvements for the game. Additionally, I am thankful for the expert help provided by Ann Chapman in writing and formatting this thesis, LTC Nicholas Shallcross, for providing additional research materials and insights into the Correlation of Forces Models. Finally, to my parents, Mark and Maryann Warner. For always supporting my love of wargaming since I was 12, to motivating me to create my wargame. To anyone else I have missed, my sincerest apologies.

TABLE OF CONTENTS

	Page
MASTER OF MILITARY ART AND SCIENCE THESIS APPROVAL PAGE	iii
ABSTRACT.....	iv
ACKNOWLEDGMENTS	v
TABLE OF CONTENTS.....	vi
ACRONYMS.....	viii
ILLUSTRATIONS	ix
CHAPTER 1 INTRODUCTION	1
Background.....	1
Problem Statement.....	2
Purpose of the Study	2
Research Questions.....	3
Assumptions.....	4
Definition of Terms	4
Scope.....	6
Limitations and Delimitations	7
Significance of the Study	8
Summary.....	9
CHAPTER 2 LITERATURE REVIEW	11
Introduction.....	11
Historical Sources	11
Wargaming Literature and Rules.....	12
Summary.....	14
CHAPTER 3 RESEARCH METHODOLOGY	15
Introduction.....	15
Method	15
Historical Data Analysis	16
Wargaming Design	16
Wargaming as a Method	18
Ethical Considerations	19
Summary.....	20

CHAPTER 4 ANALYSIS	21
Introduction.....	21
Victory Conditions.....	21
Units.....	22
Friction and Orders	23
Terrain.....	28
Sequence of Play.....	28
Engagements.....	29
Combat Results Table.....	31
CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS	33
Introduction.....	33
Recommendations for Future Research.....	33
Conclusions.....	34
APPENDIX A LIST OF COMPONENTS	36
APPENDIX B RULES	37
APPENDIX C GAME COMPONENTS	45
BIBLIOGRAPHY.....	56

ACRONYMS

COA	Course of Action
CRT	Combat Results Table
D6	Six-Sided Die
LSCO	Large-Scale Combat Operations
MDMP	Military Decision Making Process
PLA	Peoples Liberation Army

ILLUSTRATIONS

	Page
Figure 1. Standard Deviation Compared to the Results of 2d6	32

CHAPTER 1

INTRODUCTION

Background

As the Army rapidly transitions from a focus on counterinsurgency and stability operations to Large-Scale Combat Operations (LSCO) against a peer threat, there is a significant shift in training, planning, and executing operations at the division level. While there are many technical training tools for division planners and commanders, there is a significant gap in analog wargames playable in a leader professional development timeline line or during the Course of Action analysis in the Military Decision-Making Process. In a similar theme to the naval planners in the interwar years of the World Wars that lacked extensive resources to help understand and visualize the evolving sea domain, this wargame aims to provide a limited resource analog approach to understand and visualize the evolving land domain along with relevant multi-domain effects.

This paper defends the design of a wargame intended to create a doctrinally accurate and playable model for LSCO. The wargame is a two-player game, with players taking on the roles of either the 74th Peoples Liberation Army Ground Forces or the 2nd Infantry Division. Players take on the functions of Army planners and commanders at the divisional level, learning the operations process in LSCO and immersing themselves in the commanders' decision-making process. In this way, the wargame enables players to make decisions consistent with the information and capabilities available to commanders in modern to near future LSCO.

Problem Statement

This project will address the lack of an educational wargame that can be completed in under two hours that portrays the decision points in LSCO at the upper tactical level of war. Military-themed wargames enable players to understand a commander's mindset against a thinking enemy, gain unique insights into replicating decision-making in a complex context and appreciate the operational challenges experienced by Army commanders. The Army currently lacks a suitable war game to model large-scale combat operations at the division level. Therefore, what wargame design could enable Army leaders better to visualize the flow of operations in large-scale combat operations?

Purpose of the Study

By playing this wargame, players will learn about the tactical level of war at the division level, the operations process against a thinking enemy commander, and the complexity of LSCO. Additionally, this game is significant because it provides an alternative lens to think about and practice the principles of warfare¹ and operational design elements present in this wargame. Players are forced to maneuver forces while securing their lines of communication; synchronize fires and effects with maneuver; mass forces at a decisive point through rapid maneuver; balance operational challenges against the objective and end state; and mission completion.

¹ Chairman of the Joint Chiefs of Staff (CJCS), Joint Publication (JP) 5-0, *Joint Planning* (Washington, DC: Joint Chiefs of Staff, December 1, 2020), IV-1

Players learn about and practice “force, space and time relationships in the specific battle or campaign being simulated, [and] soon acquire an intuitive feel for more generic interactive dynamics associated with warfare.”² Players “must grapple with real strategic and tactical dilemmas as they struggle to beat their colleagues, and because the games show that the historical outcome of a conflict was not bound to occur.”³ The unofficial tagline of this game is “planning future operations while managing current operations.”

Research Questions

How can the Army model large-scale combat operations in a competitive wargame, accounting for unit missions and assets and enabling ease of use, to create more efficient visualization at the division level.

Secondary Question #1 What assets and planning priorities are necessary for game inclusion? (Effects, ISR, M2, Logistics, etc....)

Secondary Question #2 How does a wargame model the assets and planning priorities determined to be necessary for inclusion?

Secondary Question #3: How does the wargame model events or factors outside the players’ direct control? Terrain, weather, and the location of battles are just as important as the strategic implications of a conflict among world powers. These factors,

² Philip Sabin, *Simulating War* (London: Bloomsbury Publishing, 2012), 31.

³ Ibid., 37.

no doubt, would weigh on the decisions made on the ground and must be accounted for in the game.

Assumptions

The researcher made two critical assumptions during research and in constructing the wargame. The first assumption is that a valid model of LSCO is possible and can describe the effects of multi-domain operations actualized on ground forces effectively. This assumption allows the researcher to focus all efforts on modeling the game and not the validity of wargaming as a method.

Secondly, the researcher assumes that all players have no experience in wargames or board games. This approach is designed to make the rules straightforward. Acronyms will be spelled out, and any terms in which the definition is ambiguous will be fully explained. The game is written with the intent to be read as rules as written and not rules as intended.

Definition of Terms

Combat Results Table: The combat results table (CRT) is used to resolve combat during the wargame's combat phases. Players receive a force ratio depending on units engaged and synchronized effects and consult the CRT to determine the results. The CRT is the same for both forces due to the relative parity in capabilities.⁴

Fog of War: Clausewitz states that "War is the realm of uncertainty; three-quarters of the factors on which action in war is based are wrapped in a fog of greater or

⁴ *Battle for Moscow*, Frank Chadwick (Victory Point Games, 1986).

lesser uncertainty.”⁵ Fog is the unknowns, both known and unknown, that prevent commanders from the certainty of execution on the battlefield. In the wargame, the fog of war is simulated by keeping units unknown from the opposing player and revealing them only when detected. Additionally, each force has dummy units removed from play when discovered.

Command’s Visualization: “The mental process of developing situational understanding, determining the desired end state, and envisioning an operational approach by which the force will achieve that end state.”⁶

Situational Understanding: “The product of applying analysis and judgment to relevant information to determine the relationships among the operational and mission variables to facilitate decision-making.”⁷

Planning: “The art and science of understanding a situation, envisioning a desired future, and laying out effective ways of bringing that future about.”⁸

Army Design Methodology: applies critical and creative thinking to understand, visualize, and describe unfamiliar problems and approaches to solving them.⁹

⁵ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 101.

⁶ Headquarters, Department of the Army (HQDA), Army Doctrine Reference Publication (ADRP) 1-02, *Terms and Military Symbols* (Washington, DC: Army Publishing Directorate, 2016), 1-20.

⁷ Ibid., 1-87.

⁸ Ibid., 1-75.

⁹ Ibid., 1-6.

Scope

This game will focus on the operational level of war; players decide where to place their units and coordinate fires and maneuvers. The units are moved from one area to another and can force enemy units in the same area to fight against them in a tactical battle. The player must struggle with synchronizing fire and maneuver while maintaining a coherent force. The orders constrain the preparation during the planning phase, combined with the unknown limited number of resources each turn to carry out those plans. This wargame focuses exclusively on the operational level of war by incorporating the factors of combat, movement, logistics, attack, defense, and maneuver. The wargame deliberately excludes both the operational and strategic levels of warfare.

The commander's role in the operations process is the game's sole focus. By understanding and visualizing the battlefield, the commander can better describe and direct forces to accomplish their operational objectives; this process is doctrinally viable to a wargame.¹⁰ The staff is abstracted in the wargame, with decisions executed instantaneously. However, players will still understand the operations process by planning, preparing, executing, and assessing operations, building and maintaining situational understanding, and applying critical and creative thinking during every phase of the wargame.¹¹ Finally, players will experience aspects of Clausewitz's theory of

¹⁰ Headquarters, Department of the Army (HQDA), Army Doctrine Publication (ADP) 5-0, *The Operations Process* (Washington, DC: Army Publishing Directorate, 2012), 1-3.

¹¹ *Ibid.*, 2.

military genius¹² and John Boyd's OODA-Loop¹³ because understanding the situation and accurately anticipating the changing events and enemy's intentions is paramount to winning the wargame.

Limitations and Delimitations

The main limitation in this thesis is time since this thesis must be completed in roughly nine months. The development of professional wargames can go on for years with a dedicated playtesting team and the lead developers working on them full-time. This thesis is one of many requirements for the researcher while at the Command and General Staff College.

The second limitation is the game itself. While the effort was made to create multiple ways to win the wargame, the game remains confined to a finite number of binary outcomes. The players are also limited in the options presented to them within the confines of the game. The most notable is the geopolitical landscape that will undoubtedly influence the conflict in a real-life crisis.

The final limitation of the study is the stress of making decisions in a conflict that cannot be fully replicated outside of the experience of combat. The player cannot experience the requisite fear, danger, or fatigue that would have been experienced during

¹² Clausewitz, *On War*, 101-103.

¹³ Robert Coram, *Boyd: The Fighter Pilot Who Changed the Art of War* (New York: Back Bay Books/Little, Brown, 2004), 21.

the campaign or in battle.¹⁴ This limitation is famously addressed by the British statistician George Box when he said, “Remember that all models are wrong; the practical question is how wrong do they have to be not to be useful.”¹⁵ While some friction can be simulated through various mechanics, the researcher cannot replicate all aspects of war when fought on paper.

A delimitation of the study is the use of only unclassified information to construct the combat results table based on the specific unit capabilities. This delimitation makes the game more readily available and portable.

Significance of the Study

Players of the wargame will have fought a battle against a thinking enemy trying to achieve separate objectives.¹⁶ The players will gain experience maneuvering multiple brigades and synchronizing and sequencing operations. Players will develop an operational approach and consider how to reach their end-state.¹⁷ The Player will be constrained by the victory conditions placed upon him by their headquarters that may cause them to allocate forces in a way that they would typically not. These constraints

¹⁴ Peter Perla, *The Art of Wargaming*, ed. John Curry (Annapolis, MD: The United States Naval Institute, 2011), 7.

¹⁵ George E.P. Box and Norman R. Draper, *Empirical Model-Building and Response Surfaces* (New York, NY: John Wiley & Sons, 1987), 74.

¹⁶ Sabin, *Simulating War*, 37.

¹⁷ Headquarters, Department of the Army (HQDA), Army Doctrine Publication (ADP) 3-0, *Operations* (Washington, DC: Army Publishing Directorate, July 2019), para. 2-10 – 2-18.

and limitations simulate what Clausewitz wrote regarding the difference between Absolute and Real War.¹⁸ Players will have a more intimate understanding of the commander's role in the operations process by personally going through the steps. This is relevant for planners and commanders because doctrinally, the commander's staff performs essential functions that amplify the effectiveness of operations; commanders drive the operations process through understanding, visualizing, describing, directing, leading, and assessing operations.¹⁹ By playing the role of the commander, staff officers will have an alternate lens to understand how to achieve the commander's desired end state. This is especially important in LSCO because of the lack of institutional reps and sets against a peer advisory above the brigade level. By playing the wargame, planners can add to their library of knowledge, providing them a sandbox to practice theory and doctrine without the risks and associated costs of a training rotation or a virtual exercise.

Summary

This introductory chapter explained the parameters for this project and how the author intends to conduct his research. It covered the research questions and some of the limitations and focus areas of the study. Additionally, it provides definitions of terms specific to this research project and the overall significance of this study. The next chapter will discuss the literature reviewed and the wargames played by the researcher. In totality, this paper will provide the rationale for building a wargame, examine the critical

¹⁸ Clausewitz, *On War*, 579.

¹⁹ HQDA, ADP 5-0, 2.

aspects of wargame design, and discuss how the author fused modern military methodologies and doctrine while creating an accurate and playable wargame.

CHAPTER 2

LITERATURE REVIEW

Introduction

The goal of this wargame is to have players placed in the roles of the United States division commander and the army commander for the People's Liberation Army Ground Force. Within those roles, the players must make various decisions, often with limited understanding of the operational environment. Some of these decisions would usually be done by staff and presented to the commander for action, but due to the constraints of this game being a two-player wargame, players will take on roles of staff planners. The researcher used this framework as a guide to direct his research in creating the wargame. The researcher focused on historical primary and secondary sources for information related to modern LSCO. For wargaming theory, reading sources written by experts in the field provided professional insight. Finally, playing and reading about relevant wargames provided the researcher with a deeper understanding of the various mechanics that can be used, which established a floor on which this game was built.

Historical Sources

The researcher gained a firm understanding of the operational planning considerations of LSCO from *Lucky War* by Richard M. Swain. The great lessons of operations process for Desert Storm were how logistics dominated the operational

offensive.²⁰ After this understanding, he began to look into more specific aspects that would weigh on the commanders as they made their decisions with the foundation that logistics would be the operational constraint to any offensive operations in the game.

In the unclassified version of the Center for Army Lessons Learned *FY20 Mission Command Training in Large-Scale Combat Operations Mission Command Training Program (MCTP)*, *Key Observations* focused on the division working 72 hours out to synchronizing fires and maneuvers as the most significant friction point observed.

²¹Additionally, understanding the fog of war present for both commanders was a vital aspect that focused on intelligence to inform how much of the opponent's board should be known to a player.

Wargaming Literature and Rules

The researcher primarily used two sources to understand wargames: *The Art of Wargaming* by Peter Perla and *Simulating War* by Philip Sabin. These sources provided an understanding of wargame theory and the components that make a wargame successful: theoretical knowledge of wargaming and what components must be present to make a successful wargame. Additionally, these sources provided vignettes and insights on integrating wargaming with education.

²⁰ Richard M. Swain, *"Lucky War": Third Army in Desert Storm* (Fort Leavenworth, KS: U.S. Army Command and General Staff College Press, 1997), 332.

²¹ Center for Army Lessons Learned (CALL), *FY20 Mission Command Training in Large-Scale Combat Operations: Mission Command Training Program (MCTP) Key Observations* (Fort Leavenworth, KS: CALL, 2020), 22.

In addition to these readings, the researcher played games set at the operational level and or had aspects of rules that the researcher wanted to replicate. *Napoleon 1807* and *Verdun 1916 Steel Inferno* were highly informative to the foundation of this game in both game flow and the application of hidden information. They offered vast examples of handling an operational wargame's physical components and provided vital insight on portraying an active map and an example of a shared victory point chart. *Strike of the Eagle* and *Blucher* offered insight into mechanics that could represent the fog of war at the operational level. *Battle for Moscow* provided a framework for a Critical Results Table.

The game turn was modeled loosely on the operations process. The researcher used doctrine and research methodology to build the foundation of this paper, studying ways to compose this paper and perform the historical and wargaming research. Current U.S. Joint and Army doctrine provided the definitions of key terms and the understanding of concepts. The theories of the operational level of warfare and the commanders' decision-making process are fundamental to the theoretical frameworks. Current military observations published in the Center for Army Lessons Learned emphasized the staff's ability to combine and synchronize the application of their combat power.

These observations presented in CALL publications served as a foundation for the theory due to the future release of Army publications in the 3-0 series; however, due to the "new" nature of LSCO, historical military views were just as relevant due to the lack of published doctrine. Additional historical definitions of warfare, especially those

from Clausewitz's *On War*, assisted the researcher in precisely defining the concepts the wargame aims to teach and understanding the limitations of a simulation of war.²²

Summary

The researcher uses the framework of a two-player game that challenges players to make military decisions with a limited understanding of the operational environment as a guide to direct his research in the creation of the wargame. The researcher focused on historical sources and wargaming theory on written sources by either experts or trainers in those specific fields. While playing and reading about, relevant wargames provided the researcher with a deeper understanding of the variety of mechanics.

²² Clausewitz, *On War*, 579.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

This chapter will explain the methods used to answer the primary and secondary research questions. The intent is to illustrate the path by which the researcher collected and synthesized the information to answer the questions. The data and the answers are found in subsequent chapters. The researcher used a qualitative method study to complete this paper. The three methods are historical, document analysis, and wargame design. The researcher used both primary and secondary sources while using established procedures for criticism to evaluate the fluidity of modern battle.²³ Document analysis of written orders, journal entries, and professional articles allowed the researcher to incorporate meaningful decisions into the wargame. Finally, the researcher followed the process for building a wargame proposed in *Simulating War* to develop his wargame and conducted twenty-three iterations of playtesting to refine the proposed simulation model and validate the results.²⁴

Method

This study will be focused on a qualitative methods approach. This method is the most appropriate because the feedback is focused on the conduct of the game from the

²³ Center for Army Lessons Learned (CALL), *How to Master Wargaming: Commander and Staff Guide to Improving Course of Action Analysis* (Fort Leavenworth, KS: CALL, 2020), 21.

²⁴ Sabin, *Simulating War*, 17.

perspective of human decision makers rather than on a quantitatively accurate simulation of tactical outcomes.

Historical Data Analysis

For the historical method, the researcher utilized primary and secondary sources from recent operational level battles to understand the essential factors of modern operational warfare. The knowledge learned from the historical method gave insight into secondary questions one, two, and three.

Secondary Question #1 What assets need to be considered for game inclusion? (Effects, ISR, M2, Logistics?)

Secondary Question #2 How should gameplay flow from the start of the turn to the end of the turn to replicate realistic phases in combat?

Secondary Question #3: How does the wargame model events or factors outside the players' direct control? Terrain, weather, and the location of battles are just as important as the strategic implications of a LSCO among world powers. These factors, no doubt, would weigh on the decisions made on the ground and must be accounted for in the game.

Wargaming Design

Wargaming design served as the primary method of research. Wargaming design served as the method to synthesize and action the knowledge gained into an effective model. The researcher closely followed the wargaming design methodology laid out by Philip Sabin in his book *Simulating War*. Sabin argues that wargames are more focused

on the underlying dynamics than the narrative details because playing the game will generate a different narrative every time.²⁵

Geographic Environments: This wargame takes place over a map that represents key terrain in the Kingdom of Thailand on the road to Bangkok in a theoretical near-future combat scenario. To adequately create this map, the researcher had to understand where the fighting would take place and at the division level what factors of the terrain are the commander concerned about. For the model to be accurate, battles had to be likely to happen in the map spaces. Recent historical vignettes aided this in knowing why battles occurred in specific locations and what drives those battles to occur. The game map enables significant actions and meaningful operational-level decision-making without overloading the player with movement considerations.

Orders of Battle: Knowledge regarding OoBs informed how the player would manage forces at the operational level and what those forces could accomplish. Understanding the OoBs as they exist on paper and how they can be task-organized to achieve the mission at hand. For the decisions in the model to be accurate, players on both sides must have realistic limitations and capabilities within the force structure.

Generic Capabilities: This study focused primarily on army units' performance on the battlefield. With this information, various statistics were applied to the assets the player would command and determine their effectiveness on the battlefield. This research

²⁵ Sabin, *Simulating War*, 47.

informed the probability odds that formed the basis of cohesion and combat capability mechanics.

Decision Environment: The restriction of the players' decisions was informed by research conducted to investigate secondary questions one, two, and three. Once these decisions have been identified, the decision environment forms the fundamental portions of the turn separated by the types of decisions or information the players would receive.

Wargaming as a Method

This section will be the defense of wargaming as a method for learning. The key aspect that makes wargames 'serious' and not abstract diversions is the attempt to simulate certain aspects of actual armed conflict.²⁶ Wargaming is a vital part of the planning process of the Military Decision-Making Process (MDMP). The act of wargaming allows the participants to share and build intellectual knowledge about the problem or issue the game is addressing. Not only does the wargame provide tangential insights into future outcomes, but the playing of the wargame provides a learning opportunity at the organizational level.

Ralph Koster claims three critical levels to understanding: intellectual understanding, intuitive understanding, and grokking. Grokking means understanding beyond intuition, commonly compared to muscle memory. An extensive library of knowledge is required for the brain to recognize the patterns enough to grok something.²⁷

²⁶ Sabin, *Simulating War*, 47.

²⁷ Raph Koster, *A Theory of Fun for Game Design* (Sebastopol, CA: O'Reilly Media, 2014), 32.

Wargames provide this opportunity to build this library through practice without any risks. This is one of the greatest strengths of wargaming as a method because it allows for a unique chance to get the mental reps and sets that are limited due to the resource drain that field training requires.

Ethical Considerations

The primary ethical considerations for this research are shielding the playtesters from being a human studies search, protecting the playtesters from internalizing the wargame and triggering sticky thoughts of previous deployments, and personal bias. Playtesting a competitive game is only as good as the playtesters. Since this is an analog wargame, the playtesting should and will be done by humans. Machine learning/AI would not be helpful because the game needs to be playable and fun at the end of the day, not just accurate. Having human playtesters brings additional risk. The goal is to have feedback and questions directed to the game, not how it makes them feel or affects them. The individuals selected for playtesting are observers, not the research subject. All questions will be focused on the game and not the individuals playing the game.

Another ethical risk is harming individuals that could result from using wargames to investigate topics that could trigger stress or violence. Most of the playtesters will presumably be military members, and it cannot be discounted what can happen or what thoughts can be triggered when conducting a game about war. Especially since my topic is LSCO, losses will be high, and an immediate correlation to different units' performances in Iraq and Afghanistan will be inevitable. These risks can be reduced by careful recruitment and training of game staff and individual vigilance.

The final ethical danger is personal bias. Unclassified documents provide force ratios for likely outcomes in a combat situation, but there is still room for personal preference. Promoting contrarian thinking in the playtesting and being open-minded on feedback is pivotal for the validity of this wargame and grounding the core aspects in doctrine, not opinion.²⁸

Summary

This chapter sought to examine the methodology used by the researcher as they investigated the topic of an LSCO wargame. It explained the different methods: historical document analysis, wargame design, and wargaming as a method. This chapter included which questions the differing methodologies sought to inform and how wargaming synthesized the variety of information gained. Finally, this chapter explained why wargaming was explicitly selected and is valid as the primary method for this project and the ethical considerations of that method.

²⁸ Stephen Downes-Martin, ed., *Unethical Professional Wargaming: "Make Your Wargame Say What You Want It To Say,"* Working Group Final Report, Connections US 2021 Wargaming Conference (Fort Leavenworth, KS: U.S. Army Command and General Staff College and the CGSC Foundation, September 13, 2021), 4, <https://paxsims.files.wordpress.com/2021/09/unethical-professional-wargaming-final-report-20210913-v2.pdf>.

CHAPTER 4

ANALYSIS

Introduction

This chapter is organized into six sections. Each section focuses specifically on a factor that is modeled into the wargame. These sections are Victory Conditions, Friction, Orders, Terrain, Sequence of Play, Units, and Engagements. For each section, the researcher will define the aspect in question, explain why it is an essential factor to be modeled into the wargame, how the element is modeled into the game, and the historical or analytical characteristics that informed the model.

Victory Conditions

While the wargame is designed to teach players about military decision-making in LSCO, tactics, etc., merely learning creates too much of an academic or instructional aspect to the game. There must be a way to win, to walk away from the wargaming knowing that you were more effective than your opponent. This gives the players something tangible to orient their play on and objectives to achieve, emulating realistic constraints of military operations-oriented purposes.²⁹ This wargame models military objectives and relative victory in combat power taken from the opposition and mission cards unique to the player's side or the player's mission.

The mission cards contain a primary and a secondary mission. The primary mission is usually a broad military objective, for example, securing a piece of land or

²⁹ Sabin, *Simulating War*, 123.

breaching the enemy's defense. The secondary objective is to either protect a critical vulnerability or eliminate an enemy's critical requirement.³⁰ Primary objectives will be worth more victory points than secondary objectives, and secondary objectives will be worth more victory points than reducing an enemy's combat power by one. This design is intended to focus each player on their higher headquarters mission, to emulate constraints placed on a modern Division commander.

Units

This wargame uses units to distinguish between the different types of military formations and the orders that they can execute. These units are maneuver, fires, aviation, and sustainment.

Maneuver are the Armor, Infantry, Mechanized, Motorized, Airborne, Air Assault, and any other permutation of the maneuver warfighting function. A Maneuver unit may never be stacked with another maneuver unit; however, it can be stacked with a Fires or Sustainment unit. These units can be given an attack or defend order.

Fires are the Artillery units. They may be stacked to a maximum of two and maybe stacked with a maneuver unit. These units can be given a move or fire order; furthermore, an air defense unit can be given the air defense order.

³⁰ Joe Strange, *Centers of Gravity Critical Vulnerabilities: Building on the Clausewitzian Foundation So That We Can All Speak the Same Language*, Perspectives on Warfighting Number Four, 2nd ed. (Quantico, VA: Marine Corps University, 1996), 4, https://jpsc.ndu.edu/Portals/72/Documents/JC2IOS/Additional_Reading/3B_COG_and_Critical_Vulnerabilities.pdf.

Sustainment are the logistics and sustainment units. They may be stacked to a maximum of two and maybe stacked with a maneuver unit. These units can be given a move, defend, or support order.

Aviation are the Combat Aviation Brigades or other task-organized rotary-wing formations. These units have the same stacking limitations for maneuver units. These units can be given the attack, defend, and air defense orders. Aviation units may move up to their allotted distance to attack, defend another friendly unit, or conduct air defense, more widely known as combat air patrol. Then at the end of the turn, the aviation unit may move back towards friendly units up to their allotted distance.

Additionally, the Chinese units have Mandarin characters for the numbers eight and one. This is significant for real-world Chinese forces because August 1, 1927, was the birth of the Peoples Liberation Army, August being eight along with the first of the month.

Friction and Orders

The Friction Phase of the wargame is the abstraction of the events outside the player's control. Both players roll 3D6 and add the result to determine the number of Order points the opposing player will get. This 3D6 roll provides an element of additional randomness, even for a player who has played this game several times. This wargame prioritizes planning the "deep fight" and coordinating and synchronizing assets. Thus, the order structure of now, next turn, and turn after next. Orders given to units will cost more to complete this turn and less if planned for a later turn. This model is the moving of men and equipment to do a deliberate plan vs. a hasty plan. The orders that can be given to a

unit are as follows: attack, defend, air defense, move, support, fires, ISR, deep fires, and engineers. Zeroth-order theory was applied when modeling orders and actions that units will take in the wargame. This was done to simplify assumptions to give a rough estimate of the result³¹

Attack: This order implies a move order, in addition to attacking if the unit that is given this order is not adjacent to an enemy unit when this order is given. The unit will move up to its allotted distance as indicated on the game piece; then, it will attack an enemy unit if it is adjacent. The attack may be done immediately or at the end of the player's turn. This allows the active player to mass assets to assist in the offensive.

Defend: This order models the deliberate preparation at the brigade level for defense. A unit given this order will place an orange game piece under their unit stack, and it will remain there until it is used or that unit moves. A unit may only be given one orange game piece from the defend order at a given time. When defending, a unit uses the orange game piece to adjust the CRT one column to the left. Thus a 2:1 attack becomes a 1:1 attack. When this modifier is applied, remove the orange game piece from the unit stack; it has been used and no longer has a value in the game. On subsequent turns, the defending unit may be giving a defend order to generate another cube.

Air Defense: This order models the surface-to-air capabilities of modern combat brigades. Additionally, this order represents a combat air patrol for aviation units to

³¹ Geoffrey B. West, *Scale: The Universal Laws of Growth, Innovation, Sustainability, and the Pace of Life in Organisms, Cities, Economies, and Companies* (New York, NY: Penguin Press, 2017), 109.

defend local friendly units from an air attack. This order is passive and can be revealed in response to the opposing playing conducting deep fires or attack orders with an aviation unit. When defending in a surface to air capacity (an air defense air unit), the unit will roll the number of d6 indicated on their combat sheet. For every result of a 3+, a one-step loss will be applied to the attacking unit. Against deep fires instead of a step loss Air Defense reduces the number of dice rolled as indicated by the order. For example, if one roll of 3+ is rolled by air defense, a Deep Fires (4) order will roll three dice instead of four. Aviation units cannot conduct air defense against a deep fires order, only against an aviation unit, as previously described in the unit section.

Move: This order models non-combat arms, typically sustainment and fires unit conducting a move to get into a position of better relative advantage to support combat operations. This order differs from the attack order because a unit given a move order may not attack an adjacent enemy.

Support: This order models a division sustainment unit replenishing troops and equipment to their forward battalion sustainment units that sustain the brigade fight. When this order is given, a unit within four spaces of a sustainment unit may recover one step loss immediately. Four hexes are roughly 40km which is the recommended doctrinal limits of lines of communication for a division sustainment unit.³²

³² Headquarters, Department of the Army (HQDA), Field Manual (FM) 6-0, Change 2, *Commander and Staff Organization and Operations* (Washington, DC: Army Publishing Directorate, 2016).

Indirect Fires: These order model a division fires unit conducting cannon or rocket artillery fires to shape or support combat operations. When supporting combat operations and indirect fires, the order will shift the CRT to one ratio for cannon artillery and one ratio for rocket artillery order. The main difference between cannon and a rocket is the range and counter-battery capability.³³ A counterfire mission will happen before the combat roll if both sides conduct indirect fires orders into the same combat. Both fires units will look at their respective capabilities sheet and roll several dice direct concerning their current combat strength. A roll of a 3+ will result in a step loss for the opposition fires unit in the case of multiple units divided equally. The capabilities sheet indicates that a fires unit will always modify the CRT by one column shift regardless of its relative combat power. However, its current combat power impacts the fire's counter-fire capabilities. If a fires unit has received an indirect fires order to a reviled enemy unit that is not adjacent to a friendly unit, you will roll for shaping fires. Roll a number of dice equal to the power indicated on the capabilities sheet; for every roll of 3+, that exposed enemy unit will receive one step loss.

ISR: These order models the division and higher intelligence, surveillance, and reconnaissance capabilities. To conduct an ISR mission, the player must indicate one hex they will be observing when planning the order. Then when the order is activated, the active player may choose one enemy unit to reveal that is on the indicated hex or any

³³ Headquarters, Department of the Army (HQDA), Field Manual (FM) 3-09.12, *Field Artillery Counterfire and Weapons Locating Radar Operations* (Washington, DC: Army Publishing Directorate, 2021), 1-6.

adjacent hex. To reveal a unit roll 1d6. A result of a 2+ reveals the unit until the start of the next player's turn, and indirect or deep fires may target it.

Deep Fires: This order models fixed-wing or corps-level fire assets that can be used to shape the battlefield³⁴. When planning for this order, indicate the hex you wish to plan the deep fire mission for. When executing this order, choose the hex you planned for or any adjacent hex to conduct your fires mission. Deep fires can only be ordered on revealed units or working with an attack or defense. When used on the active players turn treat deep fires like an indirect fires order. On the passive player's turn, they may reveal the deep fires order after the combat ratio is determined but before the dice are rolled. Once deep fires are activated, the opposing playing can reveal any air defense orders and carry them out immediately before resolving the effects of deep fires on the engagement; if the deep fires score capabilities score is reduced to zero, it will not affect the combat. If the deep fires order was directed against an exposed unit, roll the number of dice reduced by the air defense order. For each 3+ rolled, the unit in that hex will take one step loss. If there are multiple units in that hex, divide them equally as the defender determines.

Engineers: This order models engineer assets that are echelons above brigade or otherwise reserved for the division commander's release. When planning this order, choose one unit you wish to dig in. Select that unit or any unit adjacent to it and apply one orange cube to the unit stack when executing this order. This may be in addition to an

³⁴ HQDA, FM 3-09.12, 1-6.

orange cube given for the defend order, but only one orange cube may be given to a unit at a time. The orange cube works the same as previously stated in the defend order.

Terrain

This wargame uses hexes overlayed on a terrain map of the specified area. The hex map was chosen to streamline use of the map, and each hex represents roughly 10km in the distance. At the same time, terrain features and roads are visible on the map that has been incorporated into the terrain coding for the game so the players can focus on maneuvering units and not arguing over terrain. The types of terrain are unrestricted (no effect), restrictive (costs one additional movement point to enter), heavily restrictive (costs two extra movement points to enter), and impassible (units cannot enter). The terrain coding and hexes model an MCOO (Modified Combined Obstacle Overlay) that division planners and commanders would have on their maps at the division level.

Sequence of Play

One of the critical requirements for this wargame is to enable player decisions at the operational level. In this section, the sequence of play will be discussed as it relates to time, decision making, and how those are modeled into the game. Each sub-section will address a different phase of the game in the order the players encounter them.

The sequence of play is designed around the Army's model of the operations process: Plan, Prepare, Execute, Assess³⁵. The phases are generally named after the step

³⁵ HQDA, ADP 5-0, 1.

they are associated with. The researcher's goal here was to replicate the operations process for the players and increase their iterations within the Army's paradigm.

Engagements

Engagements are the abstraction of the effects of combat in a close fight. Attacking is voluntary and must be ordered. This is to account for the planning effort it takes to sustain an engagement and an attempt to keep the player involved in the total of operations and not just go on autopilot. An "Engagement" is an attack on one enemy unit by any or all the attacking players' units adjacent to that Engagement space; two dice are cast to determine the outcome. A 2d6 combat system most accurately follows the laws of standard deviation. This is a valuable model to keep combat results in the realm of possible while still allowing for Clausewitz's chance. A single unit may only attack once per play turns, and a single enemy may only be in one Engagement per Combat Phase.

The engagement sequence is purposefully formulaic to be easily repeatable by the plays and for its ease to add complexity and enablers to the combat results. First, the players must total the combat strengths of all the attacking maneuvers and aviation units in the engagement. The combat strengths are a derivative of the COFM³⁶ and, while dated, are still a useful model. Next, the players divide the sum of attacking combat strength by the sum of defending combat strength and annotating but dropping the remainder. This is done to provide a clean and clear ratio of relative combat power in the

³⁶ U.S. Army Command and General Staff College (CGSC), "Force_Ratio_Calculator_4ID_CPSOP," (Microsoft Excel Worksheet, Department of Tactics, CGSC, Fort Leavenworth, KS, 2017).

combat results table. Next, the players apply the terrain effects and any additional modifiers that affect the combat ratio for the engagement. This prioritizes positioning and maneuver to attack or defend in a position of relative advantage and rewards the player for planning multiple assets and enablers to shape the close fight with deep fires.³⁷

Now that the combat ratio has been determined, the players will take any remainder annotated when dividing attacking combat power with defending combat power and divide that number by 2, rounding up. This number represents the die roll modifier, and a result of .6 remainder would provide a +3 to the dice roll. This allows for unit combat power and composition variation without overburdening the combat system. If this were not utilized, then a unit with 19 combat power vs. a unit with ten combat power would be no different than a unit with ten combat power vs. a unit with ten combat power. While both rolls will happen on the 1:1 ratio table, the unit with 19 power will add +5 to their roll, guaranteeing the doctrinally projected outcome of the combat engagement or better will happen. This will force the players to look at their units not as checkers pieces that can fill the same roles but as chess pieces that have to bring a unique and important capability to the totality of the division fight.

Finally, once the engagement is concluded, both sides suffer the results prescribed by the combat results table. The defending player can retain her position for the cost of one combat power point or retreat up to two hexes away from the enemy but keep their combat strength. This allows the defender to have an option to defend for time or defend

³⁷ HQDA, ADP 5-0, 12.

to retain a key position and will force the players to think about unit placement and responses to contact.

Combat Results Table

Using the 2017 COFM data and Mike Dunn's analysis for Land Power, it has been determined that the planning factor for a successful military operation is 50% greater combat power loss for opposition forces. This can be extrapolated from a hasty blue attack sustaining 20% losses and a hasty red defense sustaining 40% combat losses, as indicated by the COFM. While there needs to be chance, the game still needs to exist in the realm of possibility; otherwise, there is no incentive or framework for players to plan. After all, this game is designed for division planners to understand LSCO from the last tactical level.

Additionally, this game decided on using a 2d6 dice system. The results of 2d6 are the closest representation of standard deviation. This is important because it allows the game to present somewhat predictable outcomes as planning considerations in-game and allows the chance to be present in the result. What will not happen is an attacker with a 3:1 ratio loses all of their force, and the defender suffers no casualties. By keeping the results to three and making the doctrinal outcome the statistical mean of the 2d6 roll, the game provides uncertainty and chance without breaking or challenging the suspension of disbelief. The game is designed to get players thinking about operations in time and space and shaping the deep fight to enable the close fight, not to argue over the dice roll and its outcomes.

Result	Probability
2	2.78%
3	5.56%
4	8.33%
5	11.11%
6	13.89%
7	16.67%
8	13.89%
9	11.11%
10	8.33%
11	5.56%
12	2.78%

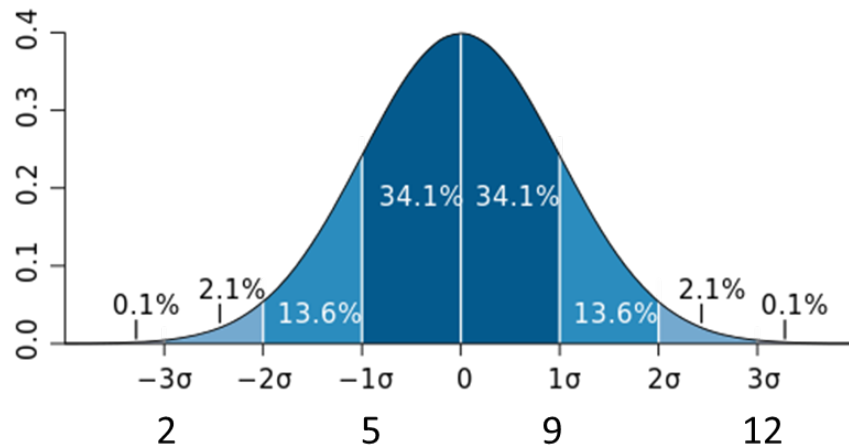


Figure 1. Standard Deviation Compared to the Results of 2d6

Source: Created by author.

With that consideration in mind, it was decided that there will be three results for a dice roll/engagement: The operation goes as planned, or at least doctrinally planned, 66.7% of as a 2d6 roll of five to nine, the operation goes worse than planned 16.6%, represented by a 2d6 roll of two to four, and the operation goes better than planned 16.6% represented by a 2d6 roll of ten to twelve.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

This paper provides the rationale for creating a wargame model to address the question: What wargame design could enable Army leaders better to visualize the flow of operations in large-scale combat operations? These critical decision events were modeled into the game by studying the history of game design and modern combat at the tactical, operational, and strategic levels. This chapter describes the research outcomes and playtesting recommendations for future research and conclusions.

Recommendations for Future Research

Constant improvement is the hallmark of a profession. While this game can and should be constantly improved, it does, in its current form, achieve the research objective of developing a playable competitive wargame in under two hours. It is also fun and hopefully leaves players with a great appreciation of the planning considerations of a division in LSCO. Further investigation and development would focus on the following topics based on research and feedback.

First, more flexibility with organizing subordinate forces. An optional rule lists most maneuver units and a correlating combat power number assigned to them. This will provide an enhanced experience of the wargame as players will be able to task organize their units before the game even starts.

Secondly, further zeroth order of magnitude can be applied to Higher Assets effects on the battlefield.

Thirdly, whether interaction. Weather is a constant thorn in for a planner because it is a major constraint on Intelligence collection operations and potential the use of aviation assets.

Finally, the researcher was unable to conduct blind playtesting. This technique is commonly defined as playtesting, in which the researcher provides only the rules and no further instruction. This method would further refine the rules to ensure a complete player understanding and fluid gameplay.

Conclusions

The researcher identified three insights that make wargame relevant to the current operating environment and military professionals through the research and gameplay.

The first is the importance of practicing operations process. The wargame provided players a vehicle to test the theories or thoughts they had learned at the Command and General Staff College. In a low threat learning environment, this provided the opportunity to build that skill, creativity, and judgment that doctrine says is necessary for commands and staff to “develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means.”³⁸

The second is armies’ finite and fragile nature to rapidly reconstitute combat power in LSCO. After the Intelligence Warfighting Function narrows the location of the enemy, which informs and drives operations, the following question players ask is, can I sustain this action? The ability to conduct a deep air assault exists; however, it is nearly

³⁸ HQDA, ADP 5-0, 14.

impossible to maintain. This constant and deliberate planning in the player's turn keeps sustainment at the forefront of the decision maker's mind. There are many things the commander can do, but that list narrows when asked if it can be sustained.

The final point is the importance of shaping the deep fight. Commanders should focus on setting conditions and enabling tactical units to succeed in the tactical battle. Success in the wargame mirrored success in 18th-century warfare; those commanders who could expose their enemy's LOCs without creating a vulnerability could achieve operational and strategic success.

In this chapter, the lessons learned from the research and development of this game were explained. Additionally, further areas to expand or refine the game were explored to provide a jumping-off point for further study. This thesis successfully answers the research question: what wargame design could enable Army leaders better to visualize the flow of operations in large-scale combat operations? With the creation of Decisive Operations: A Large-Scale Combat Operations wargame.

APPENDIX A
LIST OF COMPONENTS

- 1) Decisive Operations Game Map
- 2) 4D6
- 3) 10x 24mm Blue Blocks
- 4) 10x 24mm Red Blocks
- 5) 6x 24mm Orange Blocks
- 6) 2x Unit Tracker
- 7) 10x Order cards
- 8) Decisive Operations Rule Book
- 9) Bangkok Blitz Scenario Sheet

APPENDIX B

RULES

Decisive Operations

*A game of Divisional Large Scale Combat Operations
By Daniel Warner*

“Don’t blame me; I didn’t write the scenario.”

- Napoleon Bonaparte

Welcome to Decisive Operations, a divisional-level game of modern combat. As the Commander of a U.S. Army Division or PLA Army, you will muster a force to engage in decisive large-scale combat operations. The game is scaled to a kitchen table and designed for both wargamers and non-wargamers to put on their green tab and Command in a large-scale modern and post-modern operating environment. Planning for effects and maneuvering your units is quick and intuitive. The game is an immersive struggle of planning for future operations while predicting and disrupting your opponent’s plans.

PART 1 – Game Definitions

Dice - The game uses a d6 to resolve combat, referred to as a d6.

Models - Models are presented as gaming chits provided as a download attachment.

Active Player - The Player is currently issuing an Order during the turn.

Measuring - This game describes all measurements as a point to points. Count the number of hex spaces in between any adjacent area to the point in question to the destination space.

Roll Off - Whenever there is a dispute about a rule not clearly defined in the rule book, each player will roll a d6, and the player with the highest role is correct.

The Board - Missions take place on an area map provided as a download or created with the consent of both players.

Order Cards - A dry-erase card or pencil capability to plan future fire and effect missions and give orders to ground forces.

Closed Information – Game information that is not known to the opposing player. Two examples are the location of units and the mission the opposition has.

Planning Board – Game space just outside that map where orders are placed in the order phase.

Lines of Communication – A unit is in lines of communication if it can draw a path to the rear area (their side of the map) without going through a zone that has an enemy unit in it. Additionally, units can be in lines of communication with each other if they can draw a path to each other without going through a zone that has an enemy unit in it.

Stacking – Stacking is used for having two units in one space. Generally, the stacking limit in Decisive Operations is two (2), and maneuver units may never stack.

Unit Types – Each game token on the map represents a unit of action relevant at the operational level. There are three different types of units: **Maneuver**, **Fires**, and **Sustainment**.

Maneuver: Are the Armor, Infantry, Mechanized, Motorized, Airborne, Air Assault, and any other permutation of the maneuver warfighting function. A Maneuver unit may never be stacked with another maneuver unit; however, it can be stacked with a **Fires** or **Sustainment** unit.

Fires: Are the Artillery units. They may be stacked to a maximum of two and maybe stacked with a maneuver unit.

Sustainment: These are the logistics and sustainment units. They may be stacked to a maximum of two and maybe stacked with a single maneuver unit.

Aviation: These are the Combat Aviation Brigades or other rotary-wing formations.

Victory Points: Victory points in this game represent a relative advantage and an enumeration of measures of performance and measures of effectiveness. The player with the most victory points wins, as described in 5.1.

PART 2.0 Getting Ready to Play

2.1 Determine Area of Operations

Decisive Operations is meant to be played in any theater of operation. While there will be a ready stock of “official maps” for players to choose from, if both players agree to it before the game, they can play on a home-brew map and scenario.

2.2 Creating your Task Force

Players will either use predetermined forces provided in the mission briefing or will be able to make specific adjustments to their forces. This information is contained in each unit’s force organization cards.

2.3 Determine Scenario Headquarters Objective

Each player will roll on their mission card for their secondary mission.

2.4 Deploy Forces

Starting with the commander that has the initiative to deploy their forces. Before the first turn of the game is the one exception to the rule of no stacking maneuver units.

PART 3.0 - Playing the Game

Decisive Operations is played in a series of rounds, also known as a game turn specifically in the game; the day tacker represents it. Each round comprises one player turn for each player, and each player’s turn is divided into the following phases.

- 1) Friction
- 2) Orders
- 3) Recovery

3.1 Initiative

At the start of each round, the Commanders Roll-Off with a D6. The player with the highest roll will become the Active Player and executes their player turn first. On subsequent turns, the player with the initiative will receive a +1 to their d6 result when rolling for initiative.

3.2 Friction

The Commanders roll 3D6 and conceal the roll result for their opponent (covering them with an opaque cup). The total scores of those dice are your side's operations point limit. During the orders phase, the active player executes orders, with each activation costing Friction points and increasing the total for that turn. The passive player keeps an eye on the Friction limit as she does this. When the active player completes an activation and adjusts the current friction to equal to or greater than the limit, the passive player lifts the cup to reveal the dice and informs the active player that his execution phase is done. That player can no longer spend operations points, but she can complete any orders on this turn order box. Orders may be planned for in the current turn, next turn, or the turn after next (24/48/72 hours, respectively).

3.3 Orders Phase

The player with initiative goes first and gives orders to her units. Each maneuver unit may only be given one order per turn. These orders can be **NOW**, **NEXT TURN**, and **TURN AFTER NEXT**. Orders issued in the **NOW** window (current game turn) are executed during the phase; these orders cost 3 Friction Point (unless it was already paid for in a previous turn). Orders planned for **NEXT TURN** cost 2 points, and orders prepared for the **TURN AFTER NEXT** cost 1 point. The active player must start issuing orders on the **TURN AFTER NEXT** slot until they are complete. Once the active player has given an order in the **NEXT TURN** slot, they may not return and issue any orders in the previous slot. For example, Whitney gives two orders to be executed in the **TURN AFTER NEXT**, then one order for the **NEXT TURN**. As she contemplates her next order, she knows that if she gives an order to be executed **NOW**, she cannot return and deliver orders for the **NEXT TURN**. She has already issued orders to be performed for the **NEXT TURN** and may not give orders in the **TURN AFTER NEXT**.

- Attack
- Defend
- MI
- Fires
- Strike
- Engineers
- CEMA
- LR Fires
- Air Defense
- Counterattack
- Sustainment

Attack: The unit given this order may move up to its maximum distance and may conduct an attack on an adjacent enemy unit. If the unit gives this order is in an adjacent hex to the unit, it is attacked, this is a **Deliberate Attack**, and the attacking unit will get a one-column shift advantage. **Deliberate Attack** is further defined in section 3.3.1.

Defend: If the unit given this order is attacked, the defending player may choose to reveal that their unit was given a defend order, and the attacker will take a one-column shift penalty.

MI: Reveal the unit located at the designated location, roll 2d6, and on a six or more, the opponent must disclose the unit's current composition and strength (lay the game piece face up). If **MI** is employed in conjunction with **Fires**, the attacker will roll one d6 per artillery strength point; for each 4+, the affected unit revealed and fired upon will take one combat power loss.

Fires: **Fires** may be used in conjunction with an **Attack**, **Defend**, and **MI** order or in reaction to the active player using a **Fires** order; this is known as **Counterfire**. In all instances, **Fires** will give a one-column shift advantage to the player using it. If used when the player is the inactive player, carry out the procedure listed in 3.3.1 **Counterfire**.

Strike: These orders are Aviation orders and are essentially the same as fires orders; however, if the opposition forces have an **Air Defense** order, they may attempt to intercept the attack before it happens. Roll 4d6 – any successful **Air Defense** reactions.

Engineers: This order may be given to any space that contains a friendly unit. Place one orange block in this space to represent defensive positions. Only one block may ever be in one area at any time. Defensive positions grant one column shift down to the CRT.

CEMA: This order may be given to an **Aviation** or **Air Defense** unit. This order does not expire until completed or rescinded. Roll 2D6 and add the ADA's combat power; if the score is ten or more, the aviation attack is intercepted.

LR Fires: This order represents Corps or Theater fires, either HIMARS or Ship launched capability. Any enemy unit revealed (face up) on the board may be targeted. This order functions the same as **Fires** but does not trigger a counter-fire instance.

Air Defense: This order may be reviled when the active player declares a strike order, Roll 4d6 and for each 4+, reduce the dice rolled in the Strike by 1.

Counterattack: This order may be revealed in response to an **Attack** order. The unit given this order will add its combat power to the engagement and will suffer the effects of the engagement as any unit would.

Sustainment: This order may only be executed by a Logistics unit. When this order is completed, one friendly unit within three hexes of this unit regains one CPP immediately.

3.3.1 - Special Orders

These orders are second-order effects or special situations resulting from an order.

- Deliberate Attack
- Counterfire

Deliberate Attack: If the unit given an **Attack** order and is in an adjacent hex to the unit it is an attack, this is a deliberate attack, and the attacking player will get a one-column shift advantage.

Counterfire: If a fire order is used when the player is the inactive player, apply the column shift advantage and roll one d6 per combat power point as indicated on the unit's sheet. For every 4+ inflict one CPP loss to the opposition. In response, the active player may roll half of their CPP dice, inflicting one CPP loss to the inactive player per +4 d6 roll. This counter-fire instance is done simultaneously, and the results are not applied until the end of the engagement.

3.4 – Combat

In each Combat Phase, all friendly units may attack adjacent enemy units. Attacking is voluntary.

An “**Engagement**” is an attack on one enemy unit by any or all the attacking player's units adjacent to that **Engagement** space, and the die is cast to determine its outcome.

A single unit may only attack once per play turns, and a single enemy may only be in one **Engagement** per Combat Phase.

Engagement Sequence:

- 1. Total the Combat Strengths of all the attacking units in the engagement.*
- 2. Divide this total by the Combat Strength of the defending unit, dropping but annotating any remainder (or “fractions”) to get one of the odds levels provided on the Combat*

Results Table.

- 3. Determine if the combat effects of terrain or additional modifiers have lowered or increased the odds column.*
- 4. Take the remainder that was annotated and divide it by two; this will provide a dice roll modifier in favor of the attacker unless the attack was below the 1:1 ratio.*
- 5. Roll the 2d6 and consult the Combat Results Table, adding the remainder modifier as applicable; cross-index the number row rolled with the odds column to determine the results.*
- 6. Apply the combat results immediately.*
- 7. Advance after combat: The defending Player may elect to retreat up to hexes away from the attacker as long as it can pass through friendly control zones. The defender may also choose to retain its defensive positions for the cost of one additional combat power point*

3.5.1 – Long Odds

After step 2 above, if the odds are above 6:1, reduce them to 6:1.

After step 3, if the odds are below 1:1, the attack is rolled in the 1:1 column with a -2 modifier to the roll.

3.5.2 – Terrain Effects on Combat:

The Terrain Effects Chart shows that if the defending unit restrictive terrain applies a one-column shift penalty to the attacker, i.e., a 3:1 becomes a 2:1. If the defending unit is in heavily restrictive terrain, apply a two-column shift penalty to the attacker, i.e., a 3:1 becomes a 1:1.

3.5.3 – Combat Results Table Explanation:

Each number on the CRT corresponds to CPP loss for the respective side, as indicated by the color. For example, a 3 in the blue box and a 2 in the red box would mean that the U.S. player takes 3 CPP losses and the PLA player takes 2 CPP losses.

4 – Recovery Phase

4.1 Units Check Internal Lines of Communication

Units must have lines of communication back to their respective rear areas. A unit has lines of communication if it can draw a path to the logistics unit without going through a zone that has an enemy unit in it. If they cannot or are more than six hexes from their logistics unit, they will suffer a one CPP loss.

4.2 Logistic Unit Checks External Lines of Communication

Logistics units must have lines of communication back to their respective higher echelon rear areas. A unit has lines of communication if it can draw a path to its board edge without going through a zone that has an enemy unit in it or an enemy unit's zone of control.

5 - Ending the Game

5.1 Scoring Victory Points

Both players tally up victory points at the end of the game (VP). Every step loss result that hasn't been recovered by the end of the game results in 1 VP for the opposing forces. Additionally, score the appropriate number of victory points indicated by the mission card. The results of the battle are as follows:

Major Victory: One side has five or more victory points than the opposition.

Minor Victory: One side has less than five victory points more than the opposition.

Draw: Both sides have an equal amount of victory points

"I drink Champagne when I win, to celebrate...and I drink Champagne when I lose, to console myself."

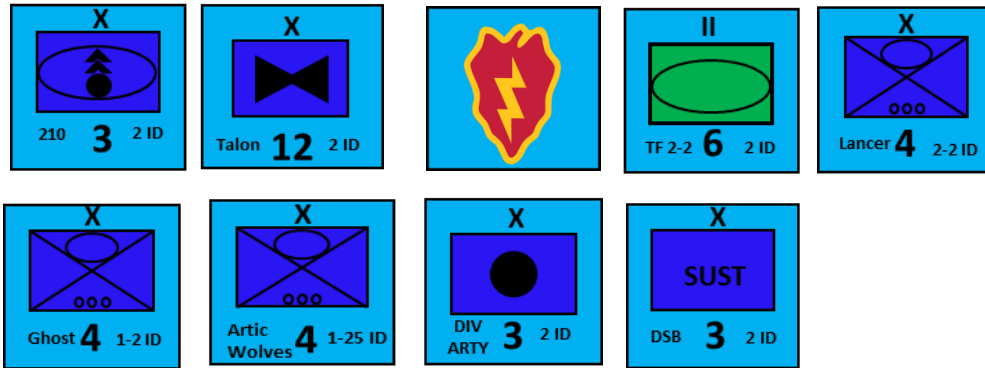
-Napoleon Bonaparte

APPENDIX C

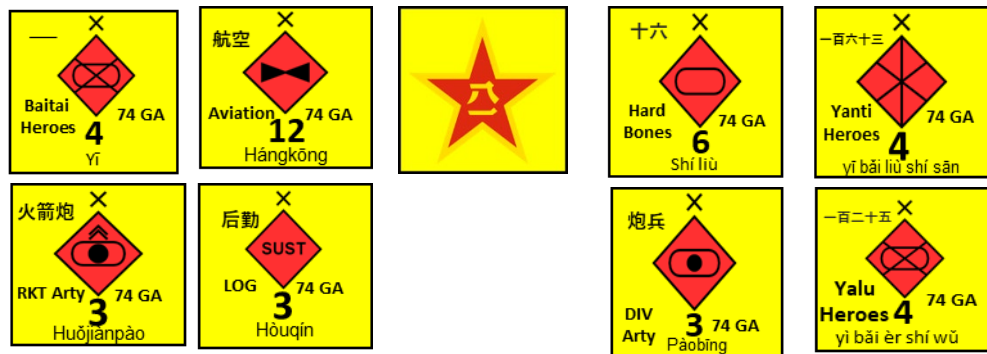
GAME COMPONENTS

Unit Markers

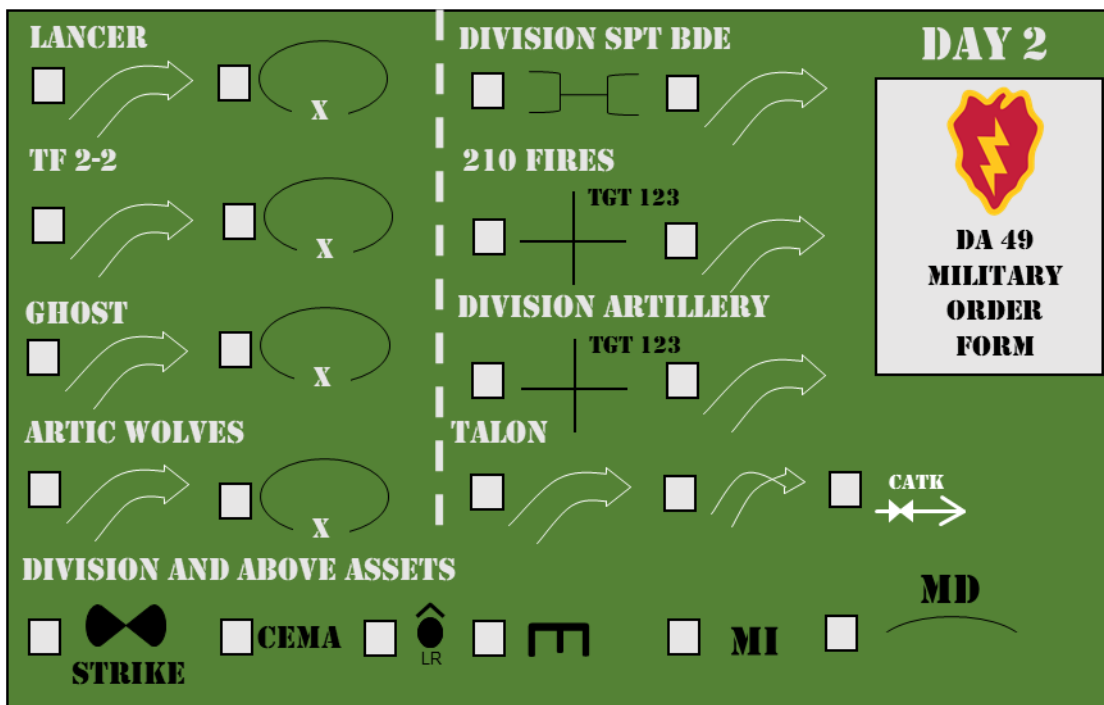
25th Infantry Division Unit Markers

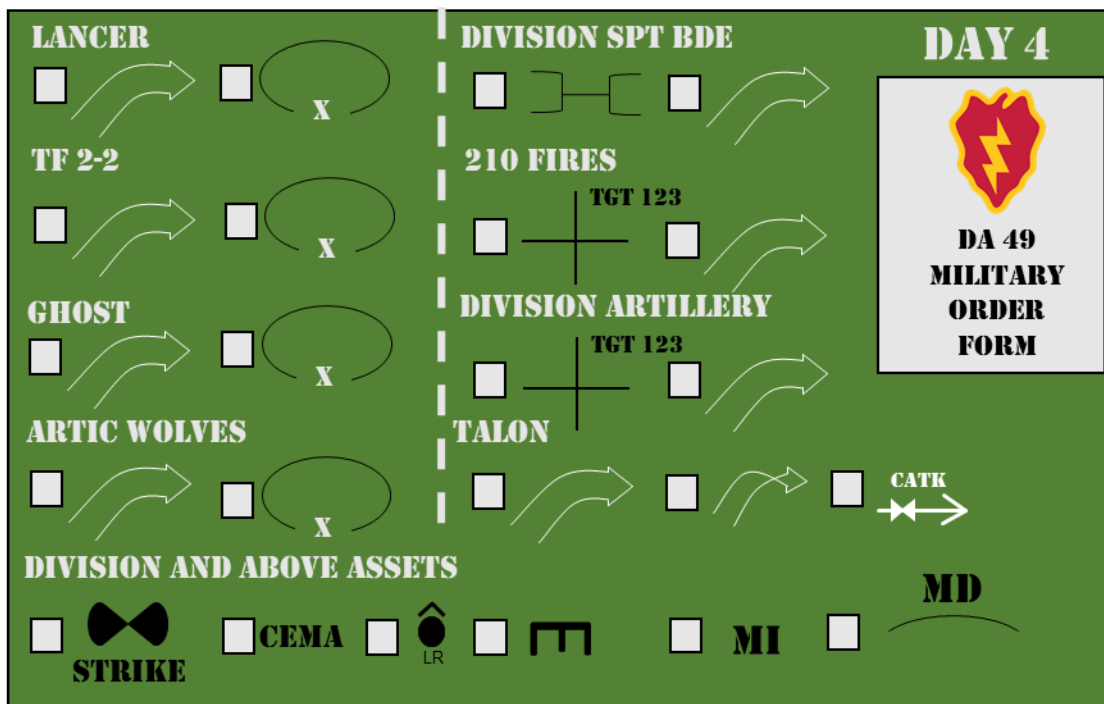
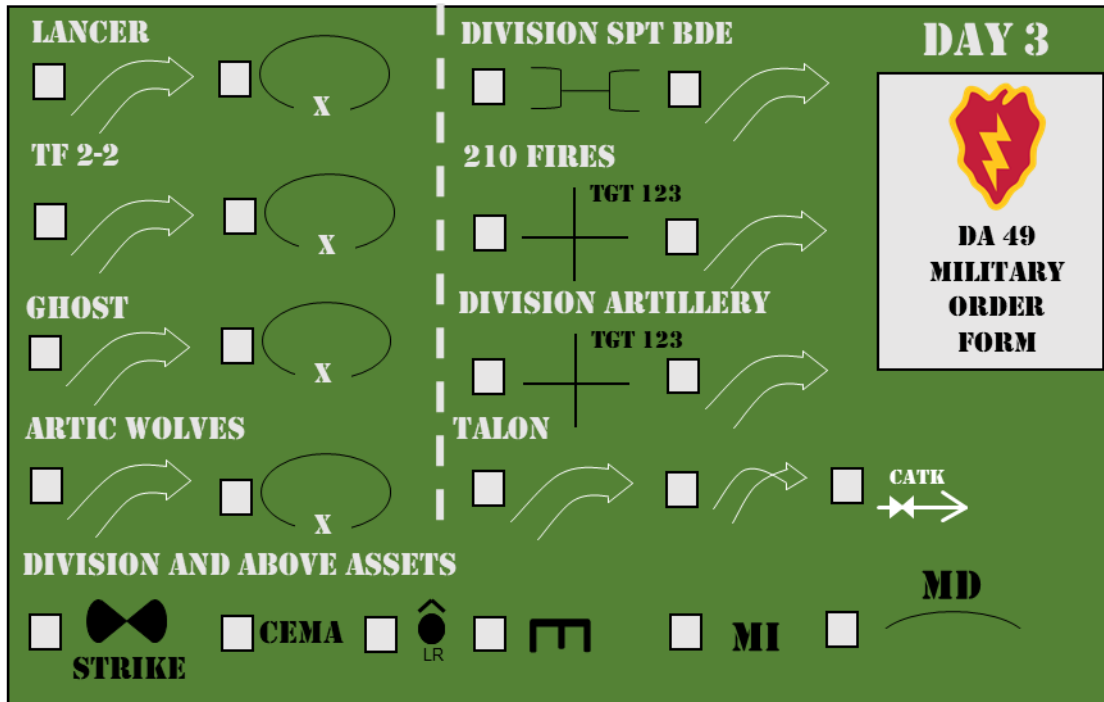


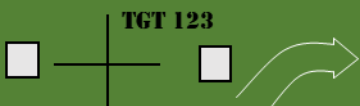
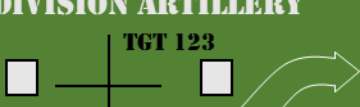
74th Group Army

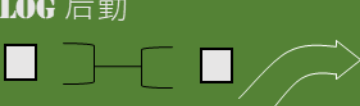
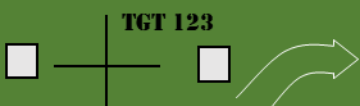
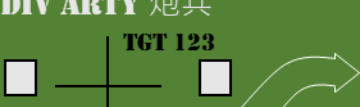


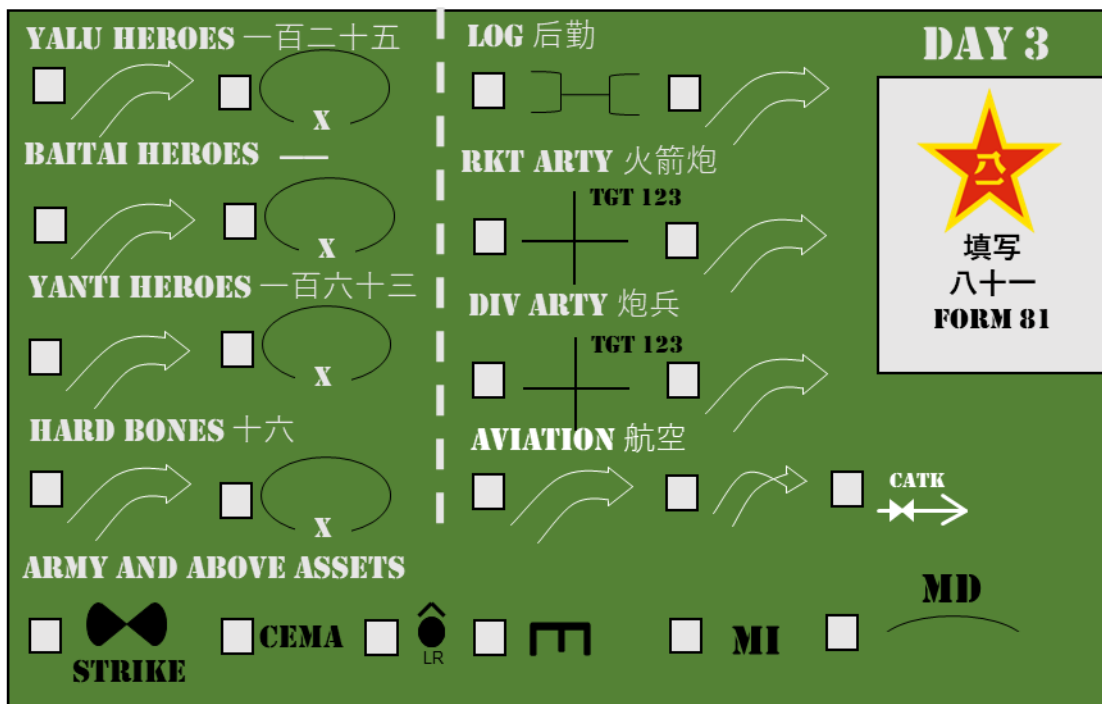
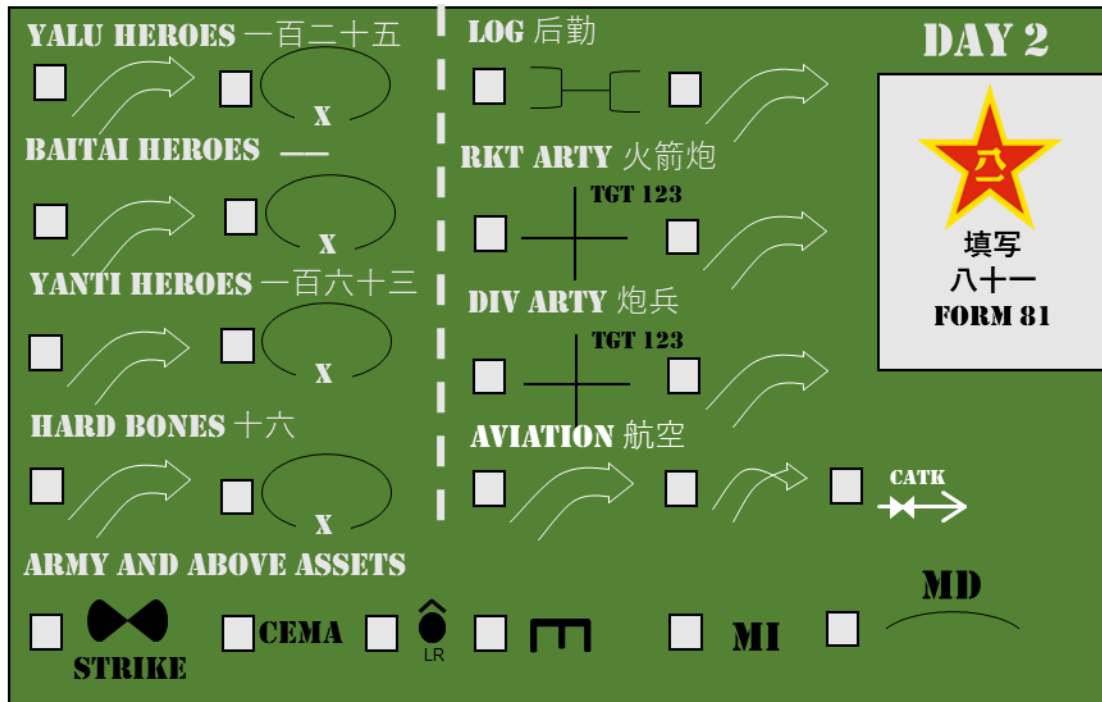
Order Cards

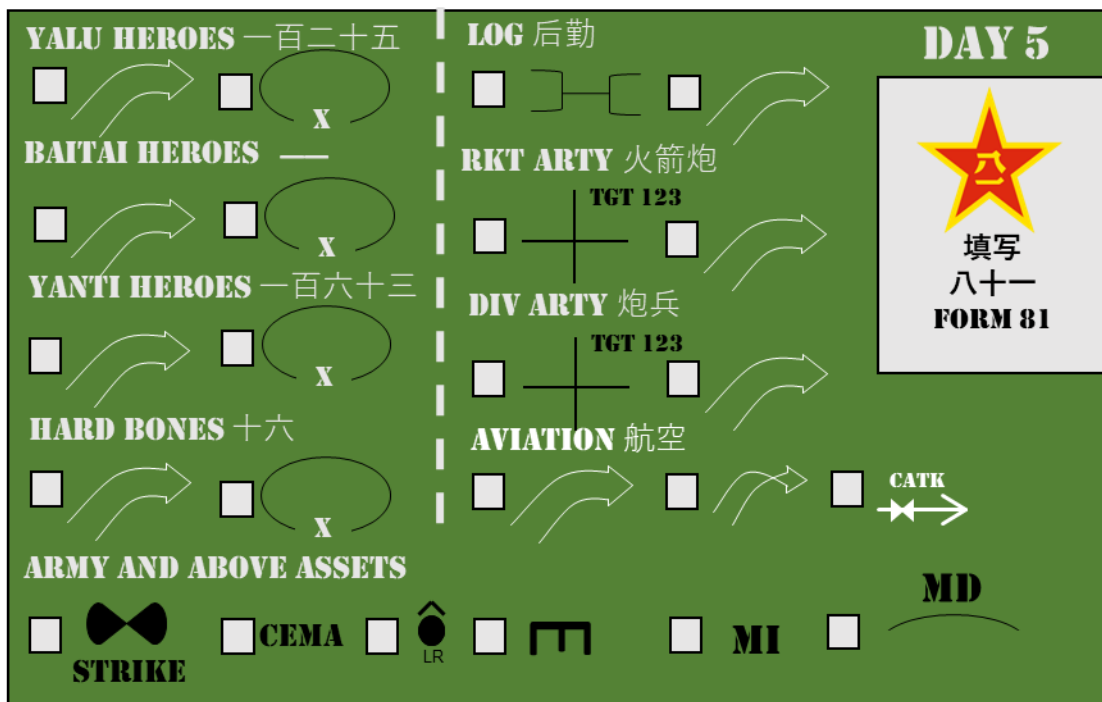
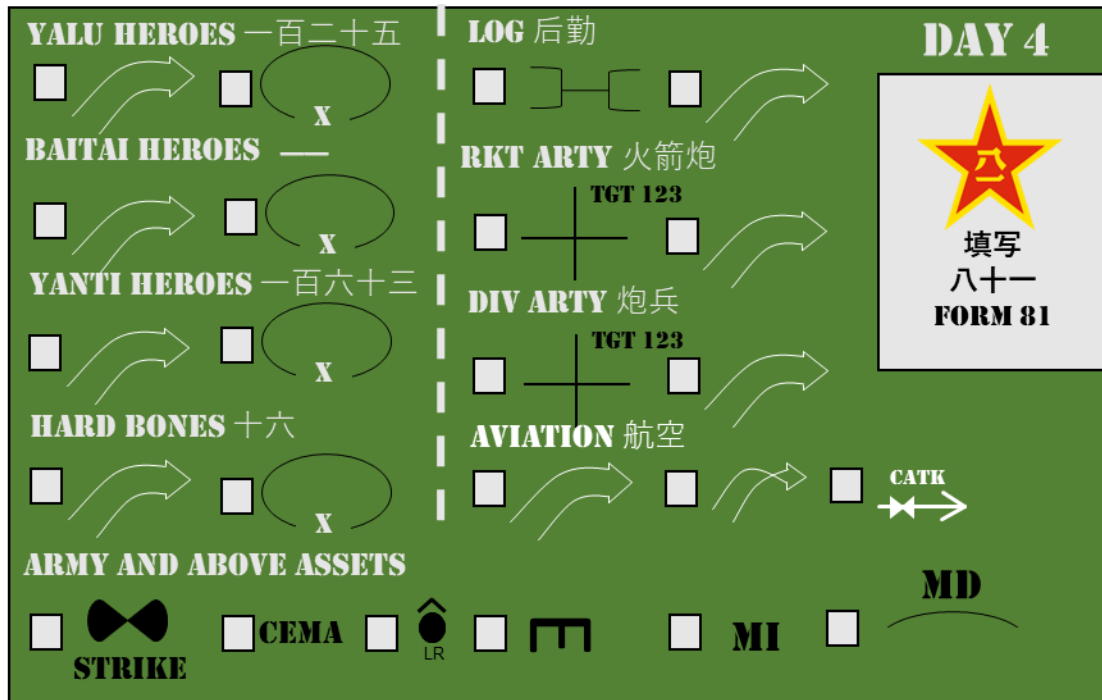




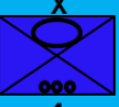
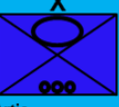
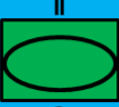
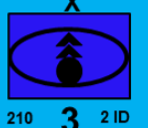
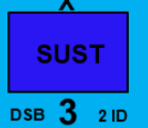
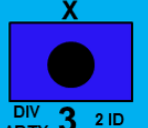
DAY 5	
LANCER 	DIVISION SPT BDE 
TF 2-2 	210 FIRES TGT 123 
GHOST 	DIVISION ARTILLERY TGT 123 
ARTIC WOLVES 	TALON 
DIVISION AND ABOVE ASSETS  STRIKE  CEMA  LR  MI  MD	

DAY 1	
YALU HEROES 一百二十五 	LOG 后勤 
BAITAI HEROES — 	RKT ARTY 火箭炮 TGT 123 
YANTI HEROES 一百六十三 	DIV ARTY 炮兵 TGT 123 
HARD BONES 十六 	AVIATION 航空 
ARMY AND ABOVE ASSETS  STRIKE  CEMA  LR  MI  MD	





CTF LIGHTNING WARRIOR

 Lancer4 2-2 ID	  12 Power   10 Power   8 Power	PRIMARY MISSION 5 POINTS FOR EVERY MANEUVER UNIT MORE THAN THE ENEMY IN HEXES 62,62,74,75,80 SECONDARY MISSION CHOOSE 2 OR ROLL 1D6 TO RANDOMLY DETERMINE D6 1-2: 2 POINTS FOR EVERY STEP LOSS OF ENEMY FIRES UNITS & 2 POINTS FOR QUEEN'S GUARD AND TF 2-2 ABOVE RED D6 3-4: 2 POINTS FOR EVERY STEP LOSS OF ENEMY SUSTAINMENT AND AVIATION UNITS & 2 POINTS FOR 210 AND DIV ARTY ABOVE RED D6 5-6 : 2 POINTS FOR EVERY HARD BONES BDE STEP LOSS & 2 POINTS FOR TALON BDE AND DSB ABOVE RED		
 Ghost4 1-2 ID	  12 Power   10 Power   8 Power		STRIKE 4 Sorties CEMA No Counterfire ADA 4 intercept dice	
 Artic Wolves4 1-25 ID	  12 Power   10 Power   8 Power			
 Talon12 2 ID	  12 Power   10 Power   8 Power			
 TF 2-26 2 ID	  19 Power   17 Power   15 Power			
			 210 3 2 ID	  4 Power   3 Power   2 Power
			 DSB 3 2 ID	  1 Power   1 Power   1 Power
			 DIV ARTY 3 2 ID	  3 Power   2 Power   2 Power

MEASURE OF EFFECTIVENESS (VICTORY POINTS)

_____ PRIMARY OBJECTIVE POINTS
 _____ SECONDARY OBJECTIVE POINTS
 _____ ATTRITION POINTS (ENEMY STEP LOSSES)
 _____ TOTAL POINTS

74TH GROUP ARMY

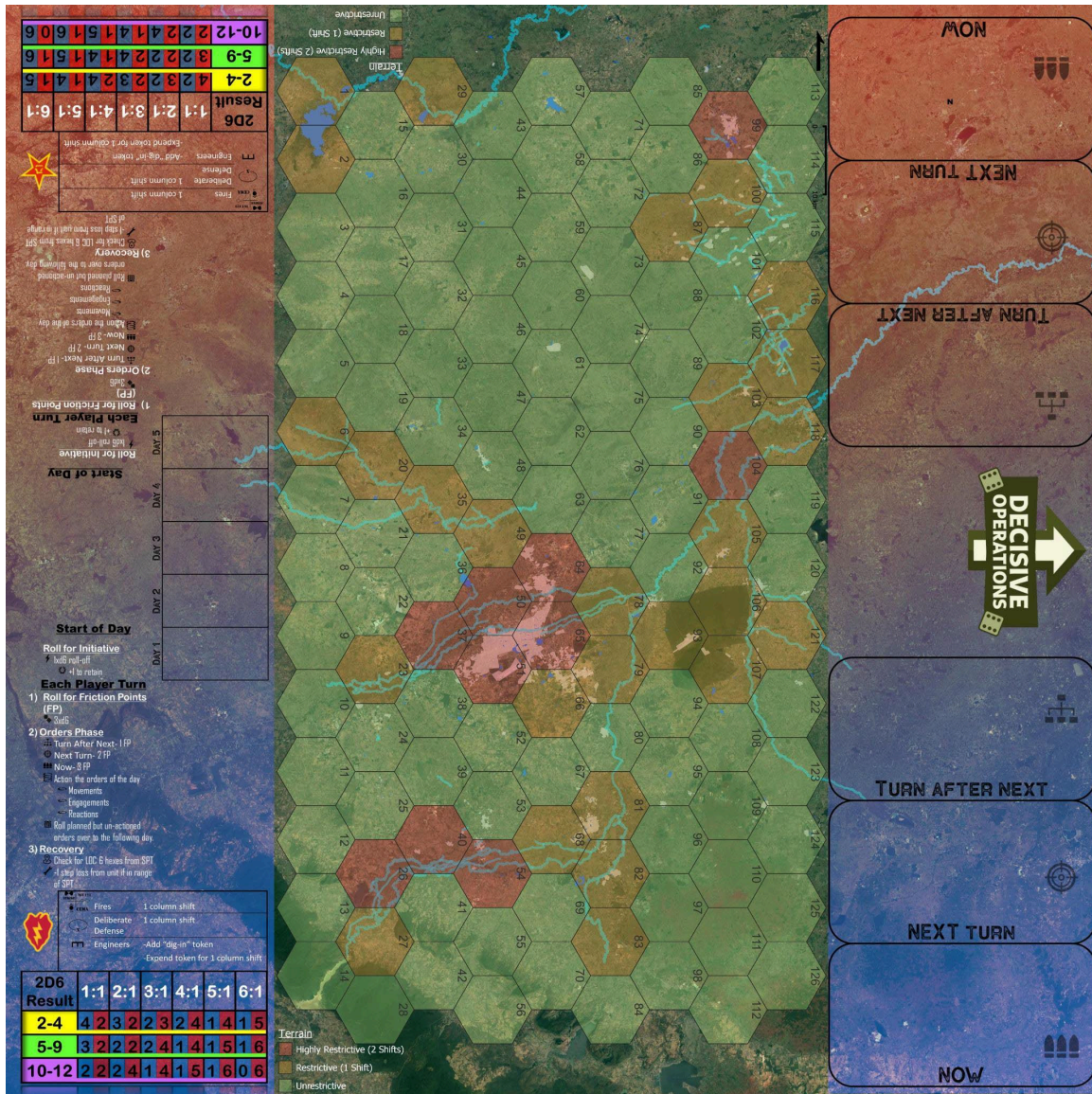
X  Yalu Heroes 4 yì bǎi èr shí wǔ 16 Power 14 Power 12 Power		PRIMARY MISSION 5 POINTS FOR EVERY MANEUVER UNIT IN HEXES 62,62,74,75,80	X  STRIKE 4 Sorties CEMA No Counterfire ADA 4 intercept dice
X  Yanti Heroes 4 yī bǎi sān shí èr 10 Power 9 Power 8 Power		SECONDARY MISSION CHOOSE 2 OR ROLL 1D6 TO RANDOMLY DETERMINE	
X  Hard Bones 6 shí liù 19 Power 17 Power 15 Power		D6 1-2: 2 POINTS FOR EVERY STEP LOSS OF ENEMY FIRES UNITS & 2 POINTS FOR HARD BONES BDE ABOVE RED	X  Baitai Heroes 4 Yī 16 Power 14 Power 12 Power
X  Aviation 12 Hángkōng 13 Power 10 Power 8 Power		D6 3-4: 2 POINTS FOR EVERY STEP LOSS OF ENEMY SUSTAINMENT AND AVIATION UNITS & 2 POINTS FOR ADA AND RKT ARTY ABOVE RED	X  LOG 3 Hòuqín 1 Power 1 Power 1 Power
X  RKT Arty 3 Huǒjiānpào 4 Power 3 Power 2 Power		D6 5-6 : 2 POINTS FOR EVERY ROYAL THAI ARMY STEP LOSS & 2 POINTS FOR BAITAI HEROES AND YALU HEROES ABOVE RED	X  DIV Arty 3 Pàobīng 3 Power 2 Power 2 Power

MEASURE OF EFFECTIVENESS (VICTORY POINTS)

_____ PRIMARY OBJECTIVE POINTS
 _____ SECONDARY OBJECTIVE POINTS
 _____ ATTRITION POINTS (ENEMY STEP LOSSES)
 _____ TOTAL POINTS

Game Map

Print image as a 20 inch by 20 inch dimensions



Bangkok Scenario Sheet

Decisive Operations: Bangkok Blitz



It is the year 2025. Over the past decade the People's Republic of China has expanded its territory and influence in Asia to deny US interdiction within the 9 Dashline by calling in debts other countries owe in exchange for military staging under the guise of security cooperation. Elements of the Chinese 74th Army are currently forward deployed to Laos and Cambodia. In response to these operations the United States has deployed the 25th and 2nd Infantry Divisions to conduct a combined training exercise with the Royal Thai 2nd Infantry Division, Queen Sirikit's Guard whose infantry regiments have just completed their fielding of the M1126 Stryker ICV and its relevant variants. The Royal Thai government has hinted at the possibility of recognizing Taiwan as an independent nation if the PRC does not relent in its projection of military force.

On 7 May 2025, the Russian Federation begins the largest Arctic readiness drill in recent memory. Fear over Russian seizure of Norwegian or Finnish Territory in the Arctic, demands western attention. As the international order looks towards Europe, the Chinese Communist Party decides to make a move against those that would allow a western government access to mainland Asia. A red sun is rising...

74th Group Army



The 74th Group Army of the Chinese People's Liberation Army, formally the 42nd Group Army affiliated to the Army in the Southern Theater, is stationed in the West Lake of Huizhou, Huizhou City, Guangdong Province. PLA Group Armies are corps-sized units but are more comparable to an American division.

The 74th Group Army has a proud lineage, notably on 16 October 1950 the 124th Division, of the 42nd Army and its advanced elements proceeded to the point south of the Changjin Reservoir where they met the ROK 26th Regiment by 25 October. The remainder of the division moved up to the point of contact and joined in the battle near Sudong against the U.S. 1st Marine Division troops that replaced the ROK 26th Regiment in a Battle known as the Chosin Reservoir.

President Xi Jinping has visited the units within the 74th multiple times in his political career. Most notably on 18 January 2020 while answering a letter from a Soldier during Chinese New Year festivities he made the remarks when answering a letter from the company known as the "hard-boned sixth company". Xi urged the entire company to pass on their "red genes" and hone their capabilities to win wars. He also extended Chinese New Year's greetings to them and their families.

You will assume the role of the 74th Group Army Commander Major General Hong Jiang Qiang and his staff. You have orders to secure the highway junction in the city of Nakhon Ratchasima to control lines of communication out from Bangkok to pressure the Royal Thai government to expel United States forces from their territory.



25th Infantry Division (CTF Lightning Warrior)

25th Infantry Division Headquarters has been tasked to deploy to Thailand with elements of 2ID while the 25th 2nd and 3rd “jungle warfare” brigades are conducting security cooperation missions in Indonesia and the Philippines. The primary mission is to conduct a combined training exercises with the newly fielded Stryker to the Royal Thai 2nd Infantry Division, Queen Sirikit's Guard. However, with increased tensions in the region, the presence of the Task Force is intended to posture against the recent PLA positioning in Laos and Cambodia.

The 2nd Infantry Division was formed on 21 September 1917 and has a litany of heroic service in France during World War One, the European Theater of Operations in World War 2, most notably taking Omaha Beach on D-Day; the Korean War, where the division headquarters stayed and remains to this day. Elements of 2ID have taken part in both Wars in Afghanistan and Iraq.

The 25th Infantry Division “Tropic Lightning” was activated on 1 October 1941 and traditionally, conducts military operations primarily in the Asia-Pacific region. The 25th was pivotal in the reclamation of the Philippines in World War Two; had a major role in the Korean and Vietnam Wars; and deployed in support of the Iraq and Afghanistan Wars. Of note two maneuver brigades in the 25th are in Alaska while two are in Hawaii.

The Royal Thai 2nd Infantry Division, Queen Sirikit's Guard was founded by King Chulalongkorn (Rama V) in 1910. The Division saw action in the Franco-Thai War of 1940-1941, remained part of the eastern army during the Burma Campaign. During the Cold War the division defended the Thai border against Vietnamese incursions and the suppression of domestic communist agitations and saw action in at least four border raids by Vietnamese or Kampuchea troops, in 1975, 1978-1979, 1983, and 1984-1985. In 1988 the division was designated a King's Guard unit by cabinet order, however, as a mark of distinction the division and all its subsidiary units were put under the patronage of Queen Sirikit and has since been known as the Queen's Guard.



BIBLIOGRAPHY

Books

- Appleget, Jeff, Robert Burks, and Fred Cameron. *The Craft of Wargaming: A Detailed Planning Guide for Defense Planners and Analysts*. Annapolis, MD: Naval Institute Press, 2020.
- Box, George E.P., and Norman R. Draper. *Empirical Model-Building and Response Surfaces*. New York, NY: John Wiley & Sons, 1987.
- Coram, Robert. *Boyd: The Fighter Pilot Who Changed the Art of War*. New York: Back Bay Books/Little, Brown, 2004.
- Downes-Martin, Stephen, ed. *Unethical Professional Wargaming: "Make Your Wargame Say What You Want It To Say"*. Working Group Final Report, Connections US 2021 Wargaming Conference. Fort Leavenworth, KS: U.S. Army Command and General Staff College and the CGSC Foundation, September 13, 2021.
<https://paxsims.files.wordpress.com/2021/09/unethical-professional-wargaming-final-report-20210913-v2.pdf>.
- Garra, Neil A. *Wargaming A Systematic Approach*. Sierra Vista, AZ: S2 Company, 2000.
- Koster, Raph. *A Theory of Fun for Game Design*. Sebastopol, CA: O'Reilly Media, 2014.
- Perla, Peter. *The Art of Wargaming*. Edited by John Curry. Annapolis, MD: The United States Naval Institute, 2011.
- Sabin, Philip. *Simulating War*. London: Bloomsbury Publishing, 2012.
- Swain, Richard M. *"Lucky War": Third Army in Desert Storm*. Fort Leavenworth, KS: U.S. Army Command and General Staff College Press, 1997.
- von Clausewitz, Carl. *On War*. Edited and translated by Michael Howard and Peter Paret. Princeton: Princeton University Press, 1976.
- West, Geoffrey B. *Scale: The Universal Laws of Growth, Innovation, Sustainability, and the Pace of Life in Organisms, Cities, Economies, and Companies*. New York, NY: Penguin Press, 2017.

Government Documents

- Center for Army Lessons Learned (CALL). *FY20 Mission Command Training in Large-Scale Combat Operations: Mission Command Training Program (MCTP) Key Observations*. Fort Leavenworth, KS: CALL, 2020.

- . *How to Master Wargaming: Commander and Staff Guide to Improving Course of Action Analysis*. Fort Leavenworth, KS: CALL, 2020.
- Chairman of the Joint Chiefs of Staff. Joint Publication 5-0, *Joint Planning*. Washington, DC: Joint Chiefs of Staff, December 1, 2020.
- Headquarters, Department of the Army. Army Doctrine Publication 3-0, *Operations*. Washington, DC: Army Publishing Directorate, July 2019.
- . Army Doctrine Publication 5-0, *The Operations Process*. Washington, DC: Army Publishing Directorate, 2012.
- . Army Doctrine Reference Publication 1-02, *Terms and Military Symbols*. Washington, DC: Army Publishing Directorate, 2016.
- . Field Manual 3-09.12, *Field Artillery Counterfire and Weapons Locating Radar Operations*. Washington, DC: Army Publishing Directorate, 2021.
- . Field Manual 6-0, Change 2, *Commander and Staff Organization and Operations*. Washington, DC: Army Publishing Directorate, 2016.
- Strange, Joe. *Centers of Gravity Critical Vulnerabilities: Building on the Clausewitzian Foundation So That We Can All Speak the Same Language*. Perspectives on Warfighting Number Four, 2nd ed. Quantico, VA: Marine Corps University, 1996.
https://jpsc.ndu.edu/Portals/72/Documents/JC2IOS/Additional_Reading/3B_COG_and_Critical_Vulnerabilities.pdf.
- U.S. Army Command and General Staff College (CGSC). “Force_Ratio_Calculator_4ID_CPSOP.” Microsoft Excel Worksheet, Department of Tactics, CGSC, Fort Leavenworth, KS, 2017.

Wargames/Board Games

- A Fist Full of TOWs 3*. Ty Beard and Paul Minson. Self-Published, 2011.
- Battle for Moscow*. Frank Chadwick. Victory Point Games, 1986.
- Blucher*. Sam Mustafa. Honour, 2014.
- Epic Armageddon*. Games Workshop, 2001.
- Force of Will*. Eye Spy Productions PTE. LTD, 2013.
- Magic the Gathering*. Richard Garfield. Wizards of the Coast LLC, 1993.

Napoléon 1806. Denis Sauvage. Golden Bell Entertainment, LLC, 2017.

Napoléon 1807. Denis Sauvage. Golden Bell Entertainment, LLC, 2020.

Rommel. Sam Mustafa. Honour, 2017.

Strike of the Eagle. Brian Bennett, Uwe Eickert, and Robert Zak. Academy Games, Inc., 2011.

Yu-Gi-Oh! Trading Card Game. Konami Digital Entertainment Co., Ltd, 1999.

Warmaster: Revolution. Rick Priestly. Games Workshop, 2000.