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FUTURE WAR PAPER


Ender's Wargame: A Virtual Path to Victory

**SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF OPERATIONAL STUDIES**

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In May 2026, Allison Jones, a high school senior, walks into her scheduled appointment at a Marine Corps recruiting office. Staff Sergeant Basile greets Jones and directs her to a conference room where three other applicants are waiting to begin wargaming trials (module I). Basile reminds them that they will be playing a game in a virtual environment on the same team. The purpose of this wargame is to determine which of the applicants has inherent leadership and decision-making skills prior to shipping them off to recruit training. The four applicants work through scenarios, all under the observation of local recruiters and evaluators at Marine Corps Recruiting Command in Quantico, VA. In the later portion of the game, an accelerating enemy tempo increases the complexity of the scenario. Basile offers feedback to each applicant in front of the others for collective learning. The future Marines now have initial training records that include decision-making evaluations prior to entering recruit training.

Later, Jones and her cohorts enter recruit training and continue to conduct wargames for the next three months. As of 2025, with the implementation of the Virtual Recruit Training Environment (VRTE), recruits focus less on rote memorization and more on physical and cognitive training through wargames. With Drill Instructors serving as facilitators, these wargames provide lessons for the group. The wargames become progressively more complex, particularly after the addition of module II which increased the number of enemy players (module II). The new Marines learn to adapt to more difficult situations and make decisions with little information provided by instructors. At the conclusion of recruit training, the new Marines graduate and are ready to begin MOS (military occupational specialty) training.

When Jones advances to the School of Infantry (SOI) she experiences a natural progression of wargame integration to help improve her decision-making. She continues with more classroom instruction including testing of her knowledge in the MOS wargaming lab (module III). On

one occasion, Jones briefs her instructor on a proposed plan to defeat an enemy defensive position. At the conclusion of her wargame, the scene is played back and critiqued by the instructors and the class. During the final phase of her SOI training, Jones physically executes the same scenario (which she has done numerous times virtually) with other students playing aggressors in one of the mock-towns at infantry school. Jones continues this scenario-based (virtual and live play) training against thinking enemies and increasing difficulty throughout her training. By the time of Jones' graduation, she has spent hundreds of hours competitively solving problems. Jones has never actually engaged an enemy combatant; however, she has tested her training and applied her learning in multiple scenarios. Consequently, Jones is comfortable with wargaming and is ready for her assignment to the operating forces.

As Jones progresses in the Marine Corps, she continues to participate in wargames and exercises that test her tactical decision-making. Within the next year, Jones will be in combat, making decisions against an actual foe. Her ability to make decisions has grown from memorizing simple procedural steps (module I), to working through complex problems (module IV) against multiple enemy players. Like the instructors of Ender's Game, Basile seeks to identify talented problem-solvers through games.¹ In future conflicts, the ability to out-think the enemy will be as important as out-gunning the enemy—wargaming will be the method used to achieve that end.

INTRODUCTION

As in the days of Sun Tzu, wargaming remains vital to warfighting.² Wargaming is a valuable tool for military leaders looking to test ideas without deploying troops to the field. In the 1980s, the Marine Corps began using wargaming to compensate for the loss of field training due to expense and/or limited training facilities.³ Improved Marine training and enhanced decision-making at low cost validated the financial efficacy of wargaming. Since that time, wargaming has been primarily restricted to concept development. The fierce and ubiquitous competition for US budget dollars coupled with increases in deployments requires creative solutions for training Marines for the future fight—wargaming may be the answer. It is time for the Marine Corps to expand from limited experimental (concept) wargaming to developing an institutional mind-set that employs wargames to improve problem-solving skills for all Marines. Maintaining the current training model while the future operating environment continues to grow more complex may result in Marines being unprepared for the future—leading to Marine Corps irrelevance.

In *The Art of Wargaming*, Peter Perla defines wargaming as a model or simulation of warfare without the deployment of troops, where actions are driven by the players representing two opposing sides.⁴ According to *Tactics* (MCDP 1-3):

Wargames can be a valuable tool for understanding the many factors that influence a leader's decisions. Morale, enemy and friendly situations, the higher commander's intentions, firepower, mobility, and terrain are only a few of the decision factors included in the play of wargames. In all these simulations, from the sand table to a commercial board game to a computerized simulation, routine should be avoided. The less familiar the environment, the more creativity the student must display.⁵

The distinct feature of wargaming is that it is a form of simulation that includes an adversary or enemy role-player. The human players act as both friendly (blue) and enemy (red) forces who are both trying to win. Wargaming's inherent competitive nature allows players the ability to test their hypothesis with successive iterations.

Marine Corps leaders forecast a future where Marines will face a more complex operating environment than in any previous warfare.⁶ To meet these challenges Marines must develop the requisite mental dexterity. One way of doing so is by integrating wargaming with training events to offer a safe and effective environment for Marines to improve their decision-making skills. Wargaming also permits game-facilitators to modify the training environment that results in a better learning process focused on specific tasks required for military specialties. The Marine Corps must improve problem-solving training now or risk becoming ineffective in a complex environment in the future.⁷

In the past, the Marine Corps has demonstrated a willingness to make bold adjustments and take institutional risks to adapt to changing threats. This proposal offers important changes for near-term wargaming inclusion to better train Marines for future threats. Today, Marines participate in wargaming at three venues: training, professional military education (PME) and (theater) campaign planning.⁸ Of the three institutional venues, training (schools) is the optimum venue for universal wargaming integration to reach all Marines regardless of rank.

PROBLEM FRAMING

Current Marine Corps training provides limited opportunities for Marine units to train against an adversary role player. Marine Corps orders include training standards that do not consistently require enemy interaction.⁹ Over time, the lack of adversarial interaction can lead to a false level of confidence to an individual Marine or unit. The proposed integration of wargaming in the training curriculum can overcome the three central problems with the existing model; (1) Marine Corps' training is limited by the lack of an enemy to challenge a trainee's decision-making, (2) formal decision-making instruction does not occur until the Sergeant and Captain ranks, and (3) the Marine Corps does not take full advantage of modern methods to train Marines.

PROBLEM #1: CURRENT STANDARDS DO NOT INVOLVE AN ENEMY

The first problem begins with the relatively uncontested training environment Marines are offered throughout training. The current path for new Marines includes training new skills (specialty) requiring standardized instruction where a premium is placed on memorizing repetitive steps.¹⁰ Individual Marines are evaluated in their ability to complete tasks outlined by Training and Readiness (T&R) standards.¹¹ At the unit level, Marine commanders supervise the repetition of individual tasks and standards based on the type of unit. In both individual and unit standards, tasks are performed in a controlled environment without an enemy. Additionally, the T&R standards are mostly designed for benign environments. *Warfighting* (MCDP1) defines the essence of war as two irreconcilable wills; therefore, training without an opposing will is not training for war.¹² According to the (MCDP1) definition of war, current training standards are not fully preparing the force for an enemy with an irreconcilable will.

Marines who graduate initial training schools are considered basically trained in their fields. Once Marines arrive at their units, the expectation is that further training will be sustained via the checklist of tasks associated with the MOS.¹³ Current career progression for Marines is primarily based on the ability to master the T&R tasks. Lack of an enemy perspective is a problem that extends beyond individual training and affects unit training.

Unit level T&R standards consist of a similar list of tasks that a unit is required to complete periodically. By design, current T&R standards are built without an enemy to contest performance and are approved by unit commanders with varying backgrounds of experience—the results are inconsistent quality standards. For example, the infantry unit task for mobile defense is to “conduct a mobile defense” using the standard “defeat the enemy.”¹⁴ According to *Marine*

Corps Operations (MCDP1-0), defeating an enemy requires an understanding of the enemy's plan and the ability to modify the enemy's will.¹⁵ If there is no enemy player, the effectiveness of this task allows a wide interpretation and inconsistent training outcome. Wargaming can improve this shortfall in training by helping Marines translate their training into practical application. The added randomness by enemy actions teaches flexibility in planning execution. As the enemy progressively improves, the student players will improve.

PROBLEM #2: TRAINING IS PROGRAMMED TOO LATE

The second problem with current training is that it delays the critical decision-making development required to make a difference in a dynamic battlefield. According to the *Marine Corps Operating Concept* (MOC), the future dispersed environment presents a need for better decision-making training for subordinate Marines.¹⁶ Today, the first time an enlisted Marine is required to get career level PME is at the rank of Sergeant (for enlisted) or Captain (for officers). Based on today's operational tempo, a Sergeant will likely deploy without the benefit of critical decision-making skills or training against an adversary. The shortfall of decision-making at PME cascades to the officer ranks as well. According to a recent study, the average student (Major or Lieutenant Commander) arriving at Marine Corps Command & Staff is likely to be deficient in creative and critical-thinking.¹⁷ The lack of cognitive training resulted in General Robert B. Neller (37th Commandant of the Marine Corps) ordering more experimentation focused on leaders and decision-making "to increase reps' in mentally and physically stressing environments."¹⁸ Critical-thinking and decision-making is needed prior to attending a staff college.

In the future, decisions in combat will be made by smaller and more distributed formations. Junior Marines (enlisted and officer) will require earlier exposure to decision-making training

rather than waiting for PME at the rank of Major.¹⁹ The problem is not a material shortfall, but rather, cultural bias where decisions are only made by a mid-grade leader (Staff Non-Commission Officer or Captain). In a future that requires smaller units (platoon vice battalion) distributed in large areas, small unit leaders will be driving operational decisions. The Marine Corps needs to change its focus and evaluate decision-making potential earlier, not waiting for a rank. In *Wargaming for Leaders*, the authors describe the benefits of wargaming as experiential learning without the risk's attendant in the real world.²⁰ Continuous decision-making training via wargaming is a worthwhile investment for Marines. Wargaming (service-wide) would provide a complimentary cost-effective vehicle to deliver more training to individuals and Marines.

PROBLEM #3: INCONSISTENT ENTERPRISE DELIVERY

The third problem with current training methods is the inconsistency of decision-making application. Tactical decision games (TDG), sand table exercises and case studies are training methods used sporadically and do not normally include a thinking adversary. Each of the methods mentioned do not effectively test a Marine's decision-making.²¹ Wargaming allows players to reflect success and failure for improvement. The methods noted do not require arbitration nor an enemy actor. In *The Enlightened Soldier*, Charles Edward White highlights the value of experienced decision-making for professional soldiers throughout history.²² Wargaming can provide a historical catalogue for Marines to reference when presented a problem without guidance from higher or past experiences to recall.

The three problems outlined—lack of adversarial T&R standards, delayed critical thinking instructions and inconsistent training methods are solvable problems that will require a change in how we train. The current training model does not focus decision-making at all levels and is

contradictory to the goals outlined in the *MOC*.²³ This proposal highlights the content, timing, and tools necessary to incorporate decision-making to improve current shortfalls in decision-making training.

Marine Corps wargaming integration is more than teaching using opposing role-players. It requires an enterprise modification in problem-solving instruction from an industrial-age training model to a modern (includes digital and non-digital solutions) system that encourages decision-making at every level. The current model does not account for different learning styles and delivers training uniformly regardless of the individual students' comprehension. According to Major General William F. Mullen III, Commanding General of Training and Education Command, "[Marines] memorize facts, regurgitate the facts on a test, then promptly forget those facts and move on to the next set of facts. We have to have an information age process that gets Marines learning as a group."²⁴ Any future change will have to shift from reciting checklists to an enterprise continuum of wargaming that challenges intellectual reasoning. Wargaming would be introduced as early as possible to compliment initial training and increase as the Marines increase in rank, responsibility, and proven success in earlier modules. These are the cognitive tools that will be needed in the next operating environment. Future training should include adversary interaction, early introduction of critical-thinking skills and implementation of hybrid methods to improve problem solving.

RECOMMENDATION #1: INCLUDE ADVERSARY INTERACTION OFTEN

Increased wargaming would offer an innocuous setting to practice warfare more often without endangering lives or material. Former Defense Secretary James Mattis forecasts a future that

requires generational changes based on dynamic threats ranging from minor regional disturbances to theater war.²⁵ Training needs to advance from simple lectures and multiple-choice questions to interactive decision-based scenarios that allow groups to garner perspective from other students—a video game-like environment.

Future standards should incorporate opposed and unopposed tasks to reinforce the adaptive responses by an enemy in contact. Future T&R standards would include rival elements with increasing complexity and difficulty through a progression of training modules. The career training continuum (modular approach) exposes Marines to challenging scenarios that include recording failures and allow Marines to learn from that experience. Losing can be a very motivating component for learning—with the right environment. Marine Corps doctrine suggests that wargaming will improve the decision-maker through repetition, which will result in Marines gaining more (synthetic) experience.²⁶ As Marines gain experience, the wargames get more difficult, building on a repository of previous interactions. Gary Klein highlights the value of recognition prime decision making, defined by noticing a pattern which provides familiarity.²⁷ Klein goes on to support that repetition of experiences builds a reservoir of recognized patterns, which leads to better intuitive decision-making. The objective of a Marine Corps wargaming curriculum is to formulate decisions using system 1 (intuitive thinking) and system 2 (deliberate thinking) thought, based on a body of experiences (real or virtual).

Currently the Marine Corps does not mandate unit wargaming; therefore, unit training needs to adjust to accommodate wargaming for future threats.²⁸ The progressive nature of the proposed wargaming curriculum can culminate with a modified integrated training exercise (ITX) conducted at the Marine Corps Air Ground Task Force Training Center in Twentynine Palms,

CA. The exercise is normally an annual or semiannual training event where units deploy for approximately 30 days for an evaluation of the unit mission essential tasks (METs). Currently, exercise units deploy and execute concurrent unit and MAGTF level training. During the conduct of an ITX, the units may train alongside an adjacent unit. For ITX to remain relevant as the premier MAGTF training event, the exercise will have to improve training through the integration of red players for each iteration of training.

For example, ITX 2030 (a future version of the present exercise) will require units to conduct several company and battalion sized wargames locally prior to deploying to conduct ITX 2030. The locally conducted wargames prepare the unit staff and commander to explore and test procedures against a notional opposing force. The game rules are governed by evaluators from the existing Tactical Training Exercise Control Group (TTECG) to prevent the enemy force from adversely affecting necessary unit-based training. The TTECG controllers would also evaluate the effectiveness of wargaming scenarios. The red (cell) unit would be another similar unit that has deployed for ITX 2030. The red unit's ITX 2030 consists of 30 days of enemy study or intelligence preparation of the battlefield—valuable situational unit learning. Eventually, the continuous learning environment improves the entire service as Marine Corps units rotate between friendly and enemy players through the conduct of ITX 2030.

In *Wargaming for Business*, the authors posit that leaders can gain insight by using imperfect information to test their ideas in an environment that simulates the complexity of their field, resulting in a new approach.²⁹ Continual wargaming for a battalion or regiment will produce similar self-awareness. Expanding typical ITX training allows participating units to remain local using virtual training environments and computer simulation. In the ITX 2030 example,

specialized units, like signal (cryptologic) intelligence (Radio Battalions), would support remotely to enhance the wargame experience. Asynchronous participation of specialized units saves money while incorporating high-demand MAGTF capabilities. Consider an AH-1 Cobra pilot in a simulator in Florida (virtually) supporting close air support to a patrol in Twentynine Palms, while an Unmanned Aerial System operator in Colorado provides battle damage assessments after a mission. The Marine Corps would train as a MAGTF rather than just fight as a MAGTF. Wargaming integration possibilities are endless if the force is inherently expectant of this form of training. The wargaming philosophy at ITX 2030 would be a continuation of the entry-level (module I) wargaming provided to entry-level Marines.

RECOMMENDATION #2: EARLY INTRODUCTION OF CRITICAL-THINKING

SKILLS

According to Paul Strong, wargaming provides an experiential learning environment where tactical decisions could be made without casualties and where officers are taught to ‘read the battle.’³⁰ The expansion of PME wargaming to the most junior Marines will lead to “reading the battle” much sooner. Junior Marines, in future operating environments, will find themselves making decisions at smaller units more often. Adding historic wargaming to training venues targeted at squad and platoon leadership levels, (i.e., The Basic School [TBS] and SOI) offer various models of engagement with a thinking enemy. Like the opening vignette, the modules would continue to grow in difficulty with the hardest modules available to the operating forces in support of a larger campaign. Early wargaming training builds the “sets and reps” to complement the education offered to today’s senior enlisted leaders and field-grade officers.³¹ The inculcation of wargaming as a practical tool to test ideas and procedures will achieve a natural ex-

pectation over time. Using wargame theory, Marines will apply the concept of evaluating alternative solutions based on hours of (synthetic) experience. The successes and failures formulate into synthesis of experiences that Marines will call upon when faced with a new problem. Early introduction of decision-making (below the rank of Sergeant and Captain) could develop early competitive thinking. A wargaming training curriculum would introduce the right level of wargaming to the lowest echelons—where the future fight is expected.³²

RECOMMENDATION # 3: IMPLEMENTATION OF HYBRID METHODS

General Neller envisions future training that includes simulations with opposing forces like the “Battle Rooms” in *Ender’s Game*. In 2016, while at the AFCEA (Armed Forces Communications and Electronics Association) West Conference, General Neller described a need for a Star Trek holodeck or battle lab to allow units to play force-on-force.³³ Future unit training will have to retool and prioritize cognitive training at the same level of current weapons training. The digital natives of today’s Marine Corps interact differently and are comfortable with synthetic environments with gaming systems and scenario-based games. With continued exposure, the comfort level of Marines will rise as they interact with wargaming as a normal method of problem-solving. Virtual training complemented with live instruction will ensure that physical skills are just as strong as cognitive skills. Integration of wargaming is available today with affordable tools, updating current methods and utilizing commercial-off-the-shelf (COTS) systems to improve decision-making for Marines.

As noted in *Warfighting* (MCDP1), war is more than just physical interaction, it requires a significant mental or intellectual component.³⁴ Wargaming activities compliment actual live training, but should not replace it or be the singular training method.³⁵ Wargaming does not im-

ply a large network of computers with dozens of contractors and controllers stepping in to explain game-isms. Wargaming can be accomplished with old and new technology. For example, board games can provide enemy interaction to sharpen decisions based on estimates, calculations, and tactics. The cost of purchasing and integrating (board games) wargames into training is minimal compared to deploying an infantry company to a field exercise to rehearse a mobile defense. The implementation of wargaming can be as simple as including dice rolls, playing cards, or board games with a scenario. During the inter-war years, the Naval War College wargame directors added chance to the Orange Plan scenario by including updated intelligence to simulate the fog of war.³⁶ Providing an environment where random outcomes results from simulated battlefield decisions is more important than debating which particular “game” is used. In addition to low-cost board games, there is a contemporary renaissance occurring outside of military circles with the advent of smart phones and tablet technology. These existing handheld platforms can accelerate the decision-making laboratories throughout the Marine Corps today.

In October 2017, 2d Battalion, 6th Marines (2/6) experimented with wargaming by combining traditional live training scenarios with a computer-based, first person shooter game. The result of this pairing created a new wargaming tool, the Tactical Decision Kit (TDK).³⁷ During live training, 2/6 trained with existing tools like the Instrumented-Tactical Engagement Simulation System II (I-TESS II), with Marines wearing monitors to track their position on a range. With the addition of TDKs, the battalion leadership would replay the action afterwards to the companies for review. Arbitration of hits and misses were determined with views from a first-person point-of-view or from an all-encompassing birds-eye view. The added benefit of this transparency of decision-making is that it allows the unit to learn about the decision-making

ahead of an actual event. The TDK is one example of integrating existing technology with conventional training. The Marine Corps Systems Command adopted the TDKs and fielded them to all infantry battalions. This is an example of the Marine Corps acquisition process accelerating a wargame solution for immediate use. Another method of modernizing Marine Corps training is by collaborating with video game developers.

Although current scenario-based commercial games are just “games,” there is potential value in the Marine Corps partnering with a gaming developer to customize a wargaming system. The *Call of Duty* series of games, by Activision, provides online gamers across the globe with hours of decision-making practice. Video game developers increase difficulty as the player advances through scenarios. The *Call of Duty* scenarios simulate the dynamic future environment described in the *MOC*: “Mission demands in complex terrain will place a greater requirement to conduct sustained, foot-mobile operation in and among populations.”³⁸

The current Marine Corps model is repairable and the list of proposed solutions is within reach. Also, the recommendations offered supports humans remaining in the decision-making chain—not machine-learning or artificial intelligence. Marine Corps training will be enhanced (not replaced) with increases in wargaming. Integrating wargaming into training standards, modifying PME and the introduction of modern technology will improve the decision makers of the future fight.

SUMMARY

Training standards and PME are currently slow at preparing Marines for combat deployments around the world, change is required. The *MOC* forecasts a future battlefield consisting of complexity and uncertainty.³⁹ Future enemies will seek asymmetry against US military formations,

thus, seeking an information advantage rather than an equipment advantage. Like the Marine Corps of the interwar years, it is time for the institution to make an evolutionary change in training. Teaching from training standards that wait for a Marine to be a Sergeant or Captain to learn critical-thinking will not help address future challenges. Additionally, straying from available technologies will impede the Marine Corps from improving decision-making required in the forecasted future.

Investing in intellectual improvements like wargaming will result in better decision-makers who are confident when presented into an unknown environment. Better thinking will result in victory on the future battlefield. The Marine Corps needs to expand from wargaming experimentation to enterprise integration. Teaching Marines critical-thinking at an earlier stage in career development will result in better decisions in future battlefields. Major General Bob Scales (USA, retired) suggests future success will be based on superior intellect; “Victory will come to the side that has superior will, cunning, intelligence, tenacity, and skill at arms”.⁴⁰ Similar to the 1990s when the Marine Corps focused the force towards maneuver warfighting with the writing of *Warfighting*, (MCDP 1), a similar change in thinking will be required to focus the force on competitive decision-making—wargaming.⁴¹

EPILOGUE

In April 2028, an impending hurricane is about to strike outside of Camp Lejeune, NC. The MEF staff sends its A-team of critical-thinkers which includes two Captains, a Master Gunnery Sergeant and Staff Sergeant Jones. Jones’ attitude is simple, “I have played out this civil affairs scenario hundreds of time in module V at II MEF. Each time, I adapted to the environment, weather, enemy, time of day, and civilian involvement.”

Notes

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- ⁶ Headquarters US Marine Corps, *Marine Corps Operating Concept*, (Washington, DC: US Marine Corps, September 2016), 24.
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- ¹⁷ Headquarters US Marine Corps, *The Struggle to Think: Critical and Creative Thinking in the Marine Corps*. Strategic Initiatives Group, HQMC Staff Note, 2018, 2.
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