Chapter Four

Building Wargame Designers and On-the-Job Training

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INTRODUCTION

Wargaming comes from a well-established pedigree. Whether tied to the genesis of modern wargaming and Kriegsspiel or tied to ancient wargames like Chinese Wei-Hai, wargames have always had the military profession at their forefront.¹ Unfortunately, wargaming within the military profession suffers from a severe talent problem. Wargaming education within the Services is rare, compartmentalized, and insufficient. To overcome these challenges, organizations who wish to use wargaming methods effectively have sought to train wargamers in an on-the-job fashion, relying on a guild-like apprentice-master structure.² While wargames have become accepted as invaluable tools for military analysis and planning, wargame design still holds the stigma of grade-school geekery, and only those professionals with a hobby gaming background tend to break into the ranks of professional wargamers. Without significant investments, including new training and education courses, repeated engagements, and senior leader buy-in, the on-the-job nature of wargame design training is not likely to change.

Training new wargamers and wargame designers is not a trivial task. This chapter looks to establish and underscore

best practices in developing novice wargamers and building a cadre of skilled wargame designers by using a literature review of adult education research, best practices from wargame designer training programs, and the author’s first-hand experience with on-the-job wargame designer training. An optimized pipeline for wargaming education is important to meet the growing demand for wargames and ensure that uniformed noncommissioned and commissioned officers, whose tenure in wargaming positions is often short, receive the appropriate development and ensure useful game design.

WHERE HAVE ALL THE WARGAMERS GONE?
Interest in wargaming within the Department of Defense (DOD) has never been higher. With the 2015 establishment of the $10-million-a-year Wargaming Incentive Fund, headquarters of every type have looked to conduct wargames. Unfortunately, the resident expertise in wargaming is extremely limited in most units. Except for a small cadre of wargame designers that are clustered in war colleges, federally funded research and development centers (FFRDCs), or analytical centers, and within those organizations, experienced wargame designers are few and far between.

A lack of experienced wargame designers leads to two obvious problems. First, these individuals only have so much throughput. The wargaming handbook developed at the Center for Army Analysis estimates that a typical strategic wargame takes on the order of 13 weeks to design and execute. Overloading experienced designers with additional products

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3 For more on the genesis of this initiative, see Robert O. Work Memorandum, “Wargaming and Innovation,” 9 February 2015.
leads to suboptimal wargames and potentially false learning.\textsuperscript{6} Second, with experienced wargamers unavailable, wargames may turn into a BOPSAT (a bunch of people sitting around talking).\textsuperscript{7} Or worse, they will have enough of the tactile features of a wargame to fool participants, but they will be bad designs. Succinctly put, “wargames are only as valuable as the designers who create them.”\textsuperscript{8} In short order, bad games will dampen interest in wargaming as a field.\textsuperscript{9}

There is currently no pipeline to train wargamers. Instead, wargaming talent within the Department of Defense relies on self-motivated hobbyists who find their way into wargaming positions as civilians (general schedule or contracted wargamers) or by vagaries of the military human resource processes. Once in their positions, these hobbyists “turn pro” through on-the-job training, merging their personal interests with a deeper understanding of military activities and benefiting from the mentorship of more senior wargamers.\textsuperscript{10} Unfortunately, this makes the talent pipeline “informal, difficult to access, and produces games of uneven quality,” according to Dr. Elizabeth Bartels, a wargamer at Rand.\textsuperscript{11} As a result, the most respected wargamers in the field today are products of this informal, on-the-job system.\textsuperscript{12}

These experienced wargamers are nearly all civilians. While many have served in uniform at one time, there are few, if any,

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\textsuperscript{6} False learning refers to the phenomenon wherein incorrect assumptions, biased adjudication rules, or other wargame factors lead to insights that are incorrect. See William F. Owen, “What’s Wrong with Professional Wargaming?,” PAXSims, 26 April 2020.

\textsuperscript{7} Perla, “Now Hear This.”

\textsuperscript{8} Sebastian Bae, “Just Let Them Compete: Raising the Next Generation of Wargamer,” War on the Rocks, 9 October 2018.


\textsuperscript{11} Elizabeth Bartels, “Building a Pipeline of Wargaming Talent; A Two-Track Solution,” War on the Rocks, 14 November 2018, 1.

truly experienced wargame designers currently serving in the military. According to a Military Operations Research Society (MORS), Wargaming Community of Practice survey, most designers did not consider themselves master-level wargamers until they had at least 10 years of professional experience leading wargaming efforts. Since Service wargaming efforts generally take place at staff schools, war colleges, and dedicated centers, wargaming experience for an officer does not begin professionally until around their 10th year of service. In the unlikely event that an officer is placed in a wargaming billet from first exposure to wargaming at a staff school like the U.S. Army’s Command and General Staff College to an officer’s eligibility for retirement, this officer would only develop mastery around the time they would exit military service.

The broad consensus of the wargaming community is that this organic pipeline is not sufficient to support the educational and analytical needs of the Joint Force. This chapter will look at the two dominant types of formalized wargaming education, historical and practicum approaches, and the broad literature on adult education to see how the organic pipeline can be improved to shorten the time requirement between novice and skilled wargame designers. Lastly, this chapter will close with recommendations for best practices for any staff headquarters with a wargaming mandate.

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13 Elizabeth Bartels, “Insights from a Survey of the Wargaming Community” (brief, MORS Community of Practice, Santa Monica, CA, 7 September 2017).
14 Sebastian J. Bae and Paul M. Kearney, “Use Wargaming to Sharpen the Tactical Edge,” Rand (blog), 8 March 2021.
ADULT EDUCATION AND WARGAMING

Wargaming education is adult education. Teaching complex skills like wargame design to adult learners requires an understanding of its unique conditions. This section will look at models of adult learning and discuss barriers to adult learning that are important to consider for wargaming education.

Adult learning is a broad academic field. The principles in this field are varied and often contradictory. On the whole, the literature suggests that adult learners have a few common traits. Adults learn best when the information or skill they are trying to learn is salient, has an immediacy to their professional lives, and is experiential. One important theory of “functional adult learning” first proposed by Graham Gibbs recommends that adult learning ought to be experience-centered and that experience must be meaningful to the learner. Additionally, adults are often more self-directed than their youthful counterparts. This means that adult learners are often more successful at learning skills that they have chosen to learn and are motivated to see through.

The most widely accepted model for experiential learning is the David A. Kolb learning model (figure 6). While sometimes criticized for being a simplistic, four-step model to describe complex learning, its simplicity makes it an adaptable template for describing experiential learning. It is especially useful for adult learning because the model depicts an iterative cycle rather than the Paulo Freire “banking model of learning.”

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17 Brookfield, Understanding and Facilitating Adult Learning, 25–32.
The banking model of learning imagines that a learned teacher unidirectionally transmits information to a student. Adult learning is less about received wisdom than it is about acquired understanding. This is particularly true of learning complex or art-based skills.

The Kolb learning model stresses active participation in learning by the student. In addition to experiencing something new, students must critically examine their new capabilities, conceptualize the important insights, and actively experiment.
with those insights. This experimentation may result in a new experience, restarting the cycle. This learning model will be familiar to most wargamers because it is this same sort of learning that educational wargames try to elicit.\textsuperscript{21}

There are significant obstacles to adult learning, however. They include indecisiveness or hesitation and barriers to breakthrough or professional impact. Indecisiveness or hesitation serves as a mental block to adult learning. Adult learners are often more successful at skill acquisition and complex skill learning than children because they have greater autonomy over what they want to learn.\textsuperscript{22} While it may take an incredibly engaging teacher to get an engineering major excited about the required English literature course, adult learners are typically self-motivated or incentivized. Adult learners are either studying topics they are interested in personally or, in a work setting, only learning what is necessary for their chosen profession, and are therefore incentivized by career concerns.\textsuperscript{23} But indecisiveness still affects learners in this setting. Novice wargamers might not think themselves capable of wargame design because of the noticeably unrepresentative make-up of the wargaming community.\textsuperscript{24} Adult learners in other settings may see themselves as not fitting into the mold of what that profession seems to be. Therefore, there is hesitancy even to start the investment in learning.

Adult learning also has a high barrier to breakthrough. Since adult learning for complex skills is primarily experiential, learning at the beginning is difficult and overwhelming. The hallmark of a positive start to experiential learning is the right

\textsuperscript{21} Peter P. Perla and E. D. McGrady, “Why Wargaming Works,” Naval War College Review 64, no. 3 (Summer 2011).


\textsuperscript{23} Lai, “The Influence of Adult Learners’ Self-Directed Learning Readiness and Network Literacy on Online Learning Effectiveness,” 98.

initial experience and appropriate support through the first cycles of reflection, conceptualization, and experimentation. Often getting the first opportunity to try a complex skill can be hard. If an adult learner is able to get the first experience, they will likely still need a guiding hand through the reflection, conceptualization, and experimentation portions of the first cycle(s). They also might not feel that failure in experimentation is an option in situations where professional reputation or even livelihood is on the line. Without a foundation of experiential learning in the complex skill that an adult learner hopes to master, they will not be equipped with the tools to develop beyond the most basic level.

**WARGAMING EDUCATION**

The field of wargaming has very few formal training programs to train and educate wargame designers. There are two similar but distinct approaches for getting new wargame designers into the design process for wargaming.

The first approach is a historical wargaming approach. This method is employed by several organizations like the U.S. Naval Academy in Annapolis, Maryland; the Marine Corps Command and Staff College in Quantico, Virginia; and at Georgetown University in Washington, DC, among others. These relatively new programs use well-documented battles or operations, allowing new wargamers to research the commanders’ critical decisions and available capabilities. Under the steady hand of an experienced wargamer, these apprentices build wargames designed to have their players experience the battle from the perspective of one of the historical figures. Apprentice wargamers get the benefit of being able to examine the actual course of a battle, posit counterfactual histories, and experiment with varied game mechanics with a known historical outcome to judge against. At the end of this semester-long course, students will have completed a full, working wargame based on a historical

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25 Sebastian Joon Bae, interview with the author, 19 June 2021.
operation and been exposed to many of the design consider-
ations a wargamer must deliberate when building a game.26

The second approach is the practicum model. This mod-
el is employed at the Naval Postgraduate School in Monte-
rey, California, and the U.S. Air Force Academy in Colorado
Springs, among others.27 In this approach, new wargamers are
matched with sponsors who have specific analytical questions
that could benefit from wargaming. The instructor, in this case
experienced wargame designers such as Dr. Jeff Appleget or
Dr. James D. Fielder, works with the student-officers to design
wargames for real-world customers.28 Similar to the historical
wargaming approach, students end the course with exposure
to many design considerations and will have completed the
design of a full analytical wargame.

Both approaches combine classroom instruction and
practical experience. The curriculum for each course introduc-
es apprentice-students to theory and practical considerations
for designing wargames, and both methods typically involve
exposure to existing wargames to develop familiarity with
game mechanics, different turn sequences, and the tradeoffs
between realism and simplicity.

Formal educational programs that teach the underlying
requirements for wargaming, or any such design-based skill,
will invariably fall short in practical usefulness as the field hosts
more specialties and variations than any single course could
cover.29 This shortcoming is why on-the-job training exists to
some extent in every field.

26 Caitlyn Leong, Charles Lewis, and Nikolai Rice, “Designing a Wargame: Reconquering
Rome” (presentation, Georgetown University Wargaming Society, Washington, DC, 2
June 2020).
27 Jeff Appleget et al., Wargaming at the Naval Postgraduate School, CRUSER Report
(Monterey, CA: Naval Postgraduate School, 2016); and Course of Instruction, 2021–2022
28 Appleget et al., Wargaming at the Naval Postgraduate School, 19–20.
BUILDING WARGAME DESIGNERS AND ON-THE-JOB TRAINING

OPTIMIZING THE ORGANIC PIPELINE
Despite the emergence of formal wargaming programs at certain professional military education and civilian schools, the path from a novice wargamer to a skilled one relies on the organic guild-like pipeline. What follows are some best practices in wargaming education that are supported by the academic literature on adult education, interviews from experienced wargamers, and the experiences of the author.

Concrete Experiences in Design and Iteration
As with many skills, learning by doing remains the gold standard for complex skill acquisition. The sooner that a wargamer can begin to design games, the sooner they are on the path toward mastery. Much as with other guild-like training, one senior wargamer says, “There is no replacement for actually standing at the anvil.” This is why formalized training courses generally include designing a wargame. This is intuitively obvious for other complex skills-based tasks. Using the previous example, no one would hire a blacksmith who has read all the latest books on metallurgy but has never hammered steel. This comports well with the Kolb model of experiential learning. Since complex skills are not directly transferable from teacher-to-student via lecture halls, it makes sense that wargame design training would be experiential in nature.

Getting even a single repetition completed is a large hurdle for adult learners and novice wargamers. It shatters the belief that wargamers are “born, not trained” and overcome mental blocks. After the design process of a single wargame, novice wargamers will have built confidence and will have the tools required to continue self-development. Self-development, es-

30 Judge, “The Wargaming Guild.”
31 Sebastian Joon Bae, “In seriousness, I found being a copilot with someone senior teaching me as I go was how I learned. Reading or watching materials is good, but there is no replacement for actually standing at the anvil and designing games,” Twitter, 21 July 2021, 1346.
32 Kolb, Experiential Learning.
33 Bartels, “Building a Pipeline of Wargaming Talent.”
pecially with adult learners, is a key factor in determining future success.34 That single event equips a novice wargamer with the ability to build on that foundation to continue their own training.

A best practice for developing novice wargamers is finding ways to allow them to design new games quickly. One tool for this activity is Andrew Peterson and Matthew Smith’s Rapid Prototyping Game.35 It is a card-based game that allows wargame designers to think through the game design process without needing a broad repertoire of game mechanics and designs. This is because the game provides an encyclopedic deck of common mechanics and design considerations. Pairing novices with experienced wargamers and allowing the novices to build and pitch game designs in a structured way, using the Rapid Prototyping Game or a tailored deck of mechanics and designs most useful to their field, provides novices with a way to get more experience designing wargames in a free-to-fail way—or wargame wargaming design!

**Hobby Game Utilization**

To expose novice wargamers to the myriad of possible game mechanics, one best practice is to use hobby games as teaching vehicles. It is no accident that the most celebrated wargamers were first hobby gamers.36 Commercial off-the-shelf games have several advantages that are important for novice wargamers. Successful commercial games tend to be engaging. Their commercial success generally hinges on how they draw a player in and how much fun they are to play.

Hobby games also do not typically take days to complete. A recent wargame conducted by the Center for Army Analysis was conducted during three days of gameplay with an

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34 Kolb, Experiential Learning.
36 Curry, *Peter Perla’s the Art of Wargaming*, 275.
additional half-day to train players. Many hobby games can be set up, the basics understood, and played in a few hours. More importantly, completing the game is not necessary for the game to become an educational tool. One best practice along these lines is an intensive on-the-job training course that utilizes a “wargame lab.” In the Strategic Wargaming Division at the Center for Army Analysis, novice wargamers are exposed to different hobby games for three hours each week during the first eight weeks of their employment. Some games, such as Risk, are used to examine the basic elements of a wargame and their adaptability. Different versions of Risk, including Risk: Star Wars and Risk: Game of Thrones, teach novice wargamers how a solid system can be adapted to different objectives. Other hobby games, such as Terraforming Mars, are used to explore cooperative-competitive relationships and how those relationships can be understood through wargaming. In addition, all wargamers meet for wargaming labs monthly. The key to these wargame labs is not simply playing new games—though increased exposure is valuable in its own right—but also to critique and explore the design tradeoffs with a larger group of wargamers at every level of experience. This ties the wargaming lab back to the Kolb cycle of learning.

Hobby games also have thematic hooks. Part of the challenge of training new wargamers is overcoming the mental barriers of adult learners. Using a hobby game based on a theme

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38 This approach is used for the internal new strategic wargamer’s on-the-job training developed at the Center for Army Analysis by Dr. Josh Jones and Ms. Claire Fisher, supported by Dr. Karsten Engelmann. Their efforts provided a way to bridge the author’s previous research on wargaming and experiential learning with practical examples for teaching wargame design. The author is deeply indebted to them for their support and mentorship.
41 Terraforming Mars (Vellinge, Sweden: FryxGames, 2016).
42 Kolb, Experiential Learning.
that excites and engages the target audience helps overcome anxiety about learning a new adult skill. Adjunct Professor Sebastian Bae uses *Risk: Game of Thrones* to hook his students in at Georgetown University. Once students are immersed in a learning environment, the experience is more salient and impactful. On-the-job training can benefit from thematic hooks. The variety and breadth of available commercial wargames ensure that there is likely a wargame to match the interests of new wargamers.

Hobby games represent fertile ground for design starting points. Seeing how commercial designers replicate battlefield effects can be incredibly useful for novice wargame designers. In a formal program at the U.S. Air Force Academy, Professor James Fielder reports that deconstructing the game mechanics and “innards” of hobby games allows novice designers to learn design fundamentals more completely than lectures or reading alone can accomplish.43 Novice designers in his program used elements from several different hobby games to achieve their sponsors’ objectives for the wargame. This gave the designers a tested starting point, rather than requiring them to begin the difficult design process from an unknown point.

**Leverage the Wargaming Network**

As a guild-type organic pipeline, there is no escaping the need for skilled master wargamers to guide and support novice wargamers through their development; however, this does not need to be limited to the novice’s organization. The community of hobby wargamers is actively engaged. While the community has challenges with diversity, efforts are underway to remove this barrier to entry.44

Wargaming communities and conferences such as MORS’ Wargaming Community of Practice and Connections have re-

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sources available for new wargamers and provide a vehicle for connecting with experienced wargamers, most of whom are excited to share their love of wargaming with novices. With the increased popularity of virtual conferences, the cost of traveling to conferences has been greatly reduced. Moreover, a growing number of university-based wargaming groups such as the King’s College London Wargaming Network and the Georgetown University Wargaming Society bring wargaming content to novice wargamers online for free.

**A STRONGER PIPELINE**

Increasing demand for wargames and a limited pool of experienced designers means that developing new wargamers is more important than ever. But the process of adult education to take a novice wargamer and equip them with the tools for rapid self-development and complex skill mastery is difficult.

The challenges of adult education and experiential learning for complex skills stifle efforts to develop new wargame designers. Hesitance to start and barriers to breakthrough limit the numbers of willing candidates. Lacking formal pipelines for wargame design means that organizations that conduct wargaming must develop their own wargame designers.

Organizations that hope to shorten the time from novice to skilled wargame designers should follow best practices supported by adult learning models and practical experience. They include teaching by doing to build concrete experience and overcome barriers to breakthrough, incorporating hobby games both to drive interest and explore game mechanics/45

45 In recent years, the Connections series of wargaming conferences have been hosted virtually, including Connections-U.S., Connections-North, Connections-UK, and Connections-Oz due to COVID-19 travel restrictions. A new annual event for the Connections series, Connections-Online, has been added to the roster to remain as a virtual conference.

46 “Georgetown University Wargaming Society (GUWS),” GUWargaming.org, accessed 31 March 2022; and “Wargaming Network,” King’s College London, accessed 31 March 2022.
design. To do this, they should leverage the wider field of wargaming groups to reduce barriers to entry and foster a more inclusive environment in wargaming.

Novice wargamers, when supported in this way, have the opportunity to realize their potential and grow the population of skilled wargame designers needed to support educational wargaming efforts.