Army

Wargaming Handbook

Serving the nation

Acknowledgements

The content in this handbook has been compiled from three primary sources: the United Kingdom Ministry of Defence's Wargaming Handbook (2017); Peter Perla's The Art of Wargaming (2011); and the Royal Australian Air Force Air and Space Centre's This is not a game – Wargaming for the Royal Australian Air Force (1991). This handbook includes a copy of Take That Hill, a game originally designed by Dr Philip Sabin and adapted by the members of the UK Fight Club.

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Foreward

When General von Muffling, the Chief of the Prussian General Staff, received a demonstration of Kriegsspiel in 1824, he proclaimed:

'This is not a game at all! This is training for war!
I must recommend it to the whole Army.'

The use of wargaming in military training and education is not new. Over the course of the last 200 years, wargaming has enhanced the cognitive capacity of soldiers and officers throughout the world. Since the Prussians adopted Kriegsspiel, in the 1800s, through to the current strategic environment, wargaming has supported capability development, planning and military training. Into the future, as it has in the past, wargaming will enhance our ability to think and act independently by providing opportunities to experience decision-making in safe-to-fail adversarial environments.

This handbook aims to provide context and guidance on the utility of wargaming across all domains, environments and levels of war. Its release as part of the initiatives contained in the Commander Forces Command Directive 01/2022 Army Wargaming: 2021-2025 will expand Army's perception of wargaming beyond just a step in the Military Appreciation Process. Wargaming has a role to play in developing Army's operational capabilities in complex strategic environments. Army's leaders at all levels must embrace wargaming and embed its use in units and training establishments.

Wargaming in all forms, digital or analogue, professional or hobby, contributes to the ability of our people to creatively tackle a broader range of more complex problems; it will enable Army to be Ready Now, Future Ready.

Matthew Pearse, AM
Major General
Commander Forces Command

Introducing Wargaming

'Wargaming will contribute to our ability to think, fight and win in war; it enhances our cognitive capacity and ensures our Army has the intellectual edge.'

Brigadier Glenn Ryan, Director General Training and Doctrine

Wargaming is a valuable tool for military leaders at all levels. Well-executed wargames have delivered significant competitive advantage in numerous conflicts, although we must remember wargaming itself does not, and cannot, guarantee success[1]. The history of military wargaming shows that since its development by the Prussians in the early 1800s, its use has been cyclical. It is generally accepted that wargaming peaked in the inter-war years of the 20th Century, and then languished during the Cold War period. Over the past five years, the United Kingdom and the United States have sought to reinvigorate wargaming, acknowledging its utility in developing critical thinking and exercising decision-making in a 'safe-to-fail' environment.

When you mention wargaming, most soldiers and officers will immediately think of the fourth step of the Military Appreciation Process. This misconception highlights that within Army, wargaming is considered a fringe activity with only loose links to foundation warfighting[2]. This publication will address this perception and initiate the cultural change required to ensure Army can leverage wargaming as a tool to complement and enhance existing approaches to training and education. That said, the Wargaming Handbook should not be viewed as a rigid step-by-step process for wargaming. Instead, it is a source of information and ideas to equip Army personnel, at

1 The Development, Concepts and Doctrine Centre, Wargaming Handbook, UK Ministry of Defence, 2017, p. 2 – 3.

2 Australian Army, Key Observations and Recommendations from the HQ FORCOMD Wargaming Conference 2017 (AT2638391), Australian Army, 2018, p. 2.

all levels, across all corps, with additional tools to enhance their cognitive capacity in an era of Accelerated Warfare.

This handbook consists of three sections. The first will provide a brief history of wargaming. The second will examine what wargaming is, its benefits and limitations, the types, levels, and applications. The third section will outline the fundamentals of wargaming, how it can be applied and the guidelines for conducting an effective wargame. Finally, this handbook contains a number of annexes which outline the roles and responsibilities, describe the wargame process from concept design through to execution and analysis, provide guidance on how to structure a wargame PME activity and a copy of Take That Hill, an adaption by UK Fight Club of a wargame designed by Dr Philip Sabin.

A brief history of wargaming

'The war with Japan had been re-enacted in game rooms of the War College by so many people, and in so many different ways, that nothing happened during the war that was a surprise – absolutely nothing except the kamikaze tactics towards the end of the war; we had not visualised these.'[3]

- Admiral Chester Nimitz, addressing the Naval War College, 1960

There is evidence to suggest that humans have been playing games about war for thousands of years. Prior to the 19th Century, these games had little direct military application; 'they often lacked any representation of terrain or a combat resolution model, beyond the simple exchange of pieces'.[4] Examples of these wargames include the Chinese board game Go[5] and early versions of modern chess.

Figure 1: Go – a deceptively complex game

3 Air Power Studies Centre, This is not a game – Wargaming for the Royal Australian Air Force, Department of Defence, 1991, p. 4.
4 Ibid., p. 1.
5 Go is a game of manoeuvre and encirclement featuring coloured stones.

From the 18th Century, the popularity of wargames grew, fuelled by design innovations. War Chess, an adaption of chess, became popular with junior officers throughout Europe. It was played on a larger board with its squares representing different terrain features and fortifications. War Chess featured units that replicated 18th Century military capabilities, including infantry, cavalry and artillery. The game factored in the different degrees of mobility of these units and used an umpire to subjectively determine the results of engagements. While these games lacked direct military application, they still had the capacity to influence conflict. British admirals Nelson and Rodney used a naval wargame more akin to an abstract simulation of ship movement as an inspiration for the tactics that would be used successfully against the French fleet.[6]

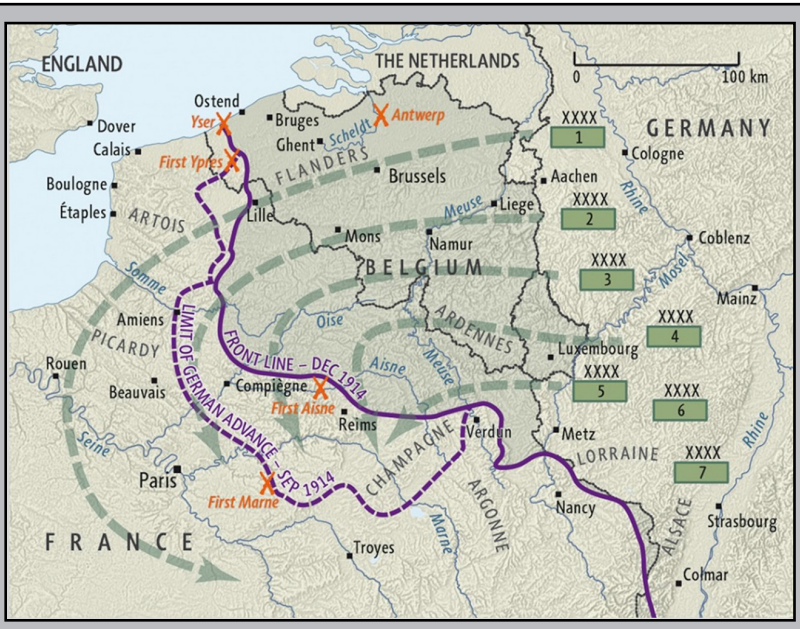
The birth of modern military wargaming can be attributed to Georg von Reisswitz, a Prussian, who wanted to create a more realistic wargame that allowed free form movement over realistic terrain. His initial design, known as Kriegsspiel, was presented to a number of Prussian Princes in 1811, and a refined version was presented to King Wilhelm III in 1812. While the game board was an elaborate piece of craftsmanship, the game itself was incomplete. The rules for gunfire and hand-to-hand combat would not be developed until 1824 by von Reisswitz's son Georg von Reisswitz (Jr). By this time, large-scale topographical maps replaced the game board, and rules were developed to allow game units to suffer partial losses with the variable damage determined by dice. Finally, the game featured an umpire who was responsible for moving the blocks on the map in accordance with the written orders provided by the players. This umpire could enable 'fog of war' by keeping record of hidden units and only deploying them on the player's board when they became 'visible'.

6 Perla, P., The Art of Wargaming, United States Naval Institute, 2011, p. 19 – 21.

Figure 2: A modern adaption of Kriegsspiel

Kriegsspiel was presented to the Chief of the Prussian General Staff, General von Muffling, in early 1824. He immediately recognised its value, and the game was distributed to every regiment in the Prussian Army. Prussian Field Marshall Helmut von Moltke was an avid practitioner of Kriegsspiel, and Prussia's quick and decisive campaigns against the Danish, Austrians and French in the 1860s and 1870s were widely attributed to Kriegsspiel's role in training officers and testing and refining campaign plans.[7] The Prussian victories generated global interest in professional and hobby wargaming. In 1875, the Russians adopted Kriegsspiel, followed in 1883 by the British Army and in 1887 by the United States Navy. As a result of its rapid proliferation, wargaming was used extensively in the lead up to the First World War.

7 Perla, op.cit., p. 41-42.



The Schlieffen Plan and the importance of Belgium

In 1905, the British used wargaming to explore the outcomes of a war between France and Germany. This wargame correctly anticipated the Schlieffen Plan and the British commitment to Belgium in 1914. Critically, it highlighted that the British forces would not be able to mobilise and deploy to Belgium in time to prevent Germany from defeating France. Addressing these challenges in the lead up to war in 1914 ensured the British Expeditionary Force was in the right place at the right time.

Wargaming at the United States Naval War College

From the 1930s, the United States Navy integrated its War College's wargames with its fleet exercises to examine a conflict in the Pacific. By the time the US entered World War II the US Navy had already completed 300 iterations of the war with Japan. This enabled the development of its tactics for amphibious operations and the deployment of aircraft carriers. Importantly, the frequent exposure of senior naval officers to wargaming mentally equipped them to respond rapidly to changing and often adverse events, as it had for the Prussians in the 1860s and 1870s.

The inter-war years were a period of unprecedented technological disruption. Inventions such as radar and sonar, as well as rapid improvements in wireless communications, mechanisation, aviation, submarines and aircraft carriers presented challenges for all militaries.[8] Wargames were used to explore a range of possible

8 Work, B. and General Selva, P., Revitalising wargaming is necessary to be prepared for future wars, War on the Rocks, 2015, available at: https://warontherocks.com/2015/12/revitalizing-wargaming-is-necessary-to-be-prepared-for-future-wars/

warfighting futures, generate innovative ideas and consider how to integrate new technologies into doctrine, operations and force structure.[9]

The development of nuclear weapons and their subsequent proliferation shifted the use of wargaming from a purely military focus, particularly at the operational and tactical level, to a broader military/political game placing more emphasis on the human element. At the same time, analysis using complex modelling algorithms and computers came to the fore, overtaking the more subjective wargaming as the preferred method of exploring problems such as the Vietnam War. If the inter-war years were the high-water mark for wargaming, the Vietnam War would be considered its low point. Wargaming, along with other techniques, was brought into disrepute by its association with the failure in Vietnam. The nature of guerilla warfare, the terrain and the 'alien' nature of the enemy meant that the war in Vietnam was notoriously difficult to model.[10] Unlike previous conflicts, it was difficult to 'think red'; the guerilla forces did not share the same cultural roots, military institutions and traditions, doctrine, equipment or logistic requirements.[11]

By the mid-1980s, wargaming experienced a resurgence within military establishments due to economic pressures forcing the abandonment of other techniques, as well as improvements in the art of wargaming and the explosion of civilian interest in wargaming fuelled by the mass production of commercial wargames.[12]

Wargaming in the Australian Army

The origins of wargaming within the Australian military can be traced back to the late 1800s, following the British Army's adoption of wargaming in 1883. By 1893, General John Monash, a lieutenant

9 Ibid.
10 Air Power Studies Centre, op.cit., p. 6.
11 Ibid., p. 6.
12 Ibid., p. 9.

at the time, identified that wargames should be used as one of the principal professional development activities undertaken in the Naval and Military Club and the United Services Institute of Victoria.

Records of the Australian Defence Force's wargaming activities prior to 1969 are limited; from this time, the Scientific Services Office was actively engaged in wargames assessment.[13]

The first attempts, within Army, to develop wargames suited to Australia's strategic environment date back to the early 1970s. Then Lieutenant Colonel John Grey, impressed by the potential of wargaming, recommended in a paper that Army should commence using wargames. The recommendation was endorsed and wargame design and development began. In 1977, a Headquarters Field Force Command Wargaming Conference reviewed the progress made to date, confirmed the value of wargaming to Army, and recommended greater use of wargaming in Army. The release of Training Information Bulletin 52, Training Simulation Techniques – War Games in 1980 and the Army Office Staff Instruction (AOSI) 33/81 War-gaming in the Australian Army in November 1981 supported these findings.

In 1984, the Army War Game Centre (AWGC) was established using manual (also known as analogue), computer-assisted and automated (digital) wargames to support individual and collective training. Since then, with advances in computers, there has been a shift away from manual wargames, although the establishment of DG TRADOC's Professional Gaming List has highlighted their continued value. Since its formation, the AWGC has gone through a number of name changes. Today it is the Land Simulation Centre. Its mission, which is executed through the Battle Simulation Sites (BSS) across Australia, is to provide simulation and wargaming support to Army.

13 Australian Army, Training Information Bulletin 52: Training Simulation Techniques – War Games, 19 December 1980, p 52-2.

Figure 3: Australian and US officers conduct a wargame

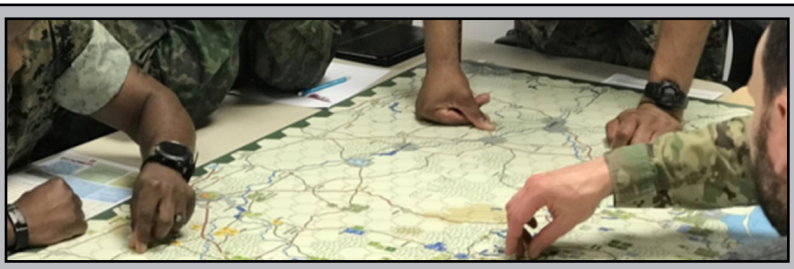
The future of wargaming

The world has entered a complex and uncertain period. Australia finds itself in an era of renewed great power competition, where nations seek to use all elements of national power to achieve their strategic aims below the threshold of conflict. This is further complicated by rapid technological change and the convergence of new technologies, all of which pose a challenge to our Army's traditional structures and processes.[14] As a direct result of these challenges, military wargaming has experienced a reinvigoration led by senior leadership. Reinvesting in wargaming acknowledges that it is a powerful tool capable of enhancing the cognitive capacity of our personnel and preparing them for joint force operations in a complex and rapidly evolving strategic environment. Wargaming is as relevant today as it was for the Prussians in the 1800s.

14 Lieutenant General Burr, R. Army in Motion, Accelerated Warfare Statement, Department of Defence, 22 October 2020.

What is wargaming?

'Wargaming is a decision-making technique that provides structured but intellectually liberating safe-to-fail environments to help explore what works (winning/succeeding) and what does not (losing/failing), typically at low cost. A wargame is a process of adversarial challenge and creativity, delivered in a structured format and usually umpired and adjudicated. Wargames are dynamic events driven by player decision-making.'



Military personnel conduct a training wargame

In 2015, United States Deputy Secretary of Defense Bob Weeks and the Vice Chairman of the Joint Chiefs of Staff General Paul Selva noted:

'Today, we are living in a time of rapid technological change and constrained defense spending, not unlike that of the inter-war years. Successfully navigating through this complex and dynamic competitive environment will once again require us to push the boundaries of technology while ensuring that innovation remains rooted in operationally realistic doctrine and capabilities. One way to do both is to re-prime and re-stoke the department's wargaming engine.'[15]

15 Revitalising wargaming is necessary to be prepared for future wars, War on the Rocks, 2015, available at: https://warontherocks.com/2015/12/revitalizing-wargaming-is-necessary-to-be-prepared-for-future-wars/

Many of the current definitions of wargaming focus on use-cases instead of the technique; the aim of this section is to demonstrate that wargaming has applications beyond simply Course of Action – Analysis. This section will open with a proposed description of wargaming as well as providing an outline of its benefits and limitations, the types of wargames and the elements common to all types of wargames.

Wargaming defined

Despite its long history of shaping the outcomes of military conflicts, there is no commonly accepted definition of wargaming. What this section highlights is that wargaming is not simply Course of Action – Analysis. The latter is, in fact, a type of wargaming which has limitations. Reviewing our allies' and partners' definitions of wargaming highlights that each definition emphasises different aspects of the nature of wargaming. Rather than trying to construct the quintessential definition of wargaming, this handbook proposes the following description to guide the Australian Army's understanding of wargaming:

'Adversarial by nature, wargaming is a decision-making technique that provides structured but intellectually liberating safe-to-fail environments allowing a representation of military activities involving multiple actors governed by rules, data and procedures, which shapes and is shaped by the participants. While the scenarios are repeatable, the outcomes are nuanced by decisions made by participants.'

Wargaming's benefits

Training and education. Wargames force the participants to begin translating what they have studied about strategy, tactics or administration into something they can use.[16] 'Experience is a great

16 Ibid, p. 170.

teacher and well-designed games can deliver experiences that are tailored to drive home learning.' [17] Wargaming can complement traditional instructional methods; however, it is dependent on the selection of the right wargaming tools.

Exploration and innovation. Wargames provide opportunities to explore new ideas without undue risk, enabling innovation and supporting the development of tactics, procedures and doctrine. Wargaming forces participants to look at reality from a different angle, and can lead to fundamental changes in how they perceive

The nature of wargaming

In 2017, the Headquarters Forces Command Wargaming Conference reconfirmed the findings of the Headquarters Field Force Command conference: it acknowledged the value of wargaming to Army and recommended its greater use, albeit in 2017, through its reinvigoration. Normally at this point of the handbook, it would be appropriate to review the definition of wargaming; however, despite its long and arguably distinguished history, there is no commonly accepted definition of wargaming as highlighted by Major General (Retired) Michael Krause's quote from the 2017 Wargaming Conference:

'When you speak to some in this audience and you mention wargaming they will go straight to Course of Action Analysis in the Military Appreciation Process; (Course of Action Analysis) is actually an extremely poor example of doing a wargame.'

Source: Headquarters Forces Command Wargaming Conference Opening Address, available at: https://cove.army.gov.au/article/hq-forcomd-wargaming-conference-opening-address

17 Dr. Sterrett, J. Rock, Paper, Shotgun. Interview: James Sterrett, Professional Wargamer, available at: https://www.rockpapershotgun.com/2012/11/16/interview-james-sterrett-professional-wargamer/

the nature of a situation, thereby altering the actions they take.[18]

Enhancing cognitive performance. Wargaming provides a cost-effective method to exercise decision-making and staff processes for headquarters staff at all levels. These activities can exercise a headquarters element without the need to put units and equipment in the field. Utilising freethinking adversaries, competitors, allies and stakeholders can create friction and uncertainty, which creates opportunities for realistic combat decision-making.

Wargaming's limitations

Wargaming is not predictive. Wargaming is not real. Despite the similarities to warfare, its abstractions are many and, too often, are not obvious to those without real-life experience. [19] Wargames will highlight possible outcomes, but due to the difficulty of accurately modelling every element within a scenario, at all levels of conflict, they cannot definitively predict outcomes. In particular, novel or innovative tactics or technologies that are not enabled within the structure or rules of the wargame will not be able to be properly explored or discovered. Running multiple iterations of wargames, potentially using different wargaming structures or rules, will provide a greater understanding of the potential range of outcomes.

Wargaming results are not repeatable. While the nature of wargaming means that the scenario can be run multiple times, the result of each wargame will be nuanced by the decisions made by the participants. The chance that two independent games will produce the same sequence of decisions and outcomes are so low as to be negligible. [20]

18 Perla, op.cit., p. 171.
19 Perla, op.cit., p. 157.
20 Ibid, p. 157.

Wargames are only as good as the participants. Participants in wargames are not a passive audience.[21] A lack of diversity, knowledge, experience or over-confidence within a wargame team has the potential to influence the quality of the wargame's outputs. The selection of participants is critical, particularly in analytical wargames; subject matter experts are often essential in seminar and matrix games exploring longer-term strategic problems with flexible adjudication methods.

Wargame types

Course of Action wargame. The Course of Action wargame, as part of the Military Appreciation Process, is completed by headquarters staff at all levels. It enables the visualisation of the plan as it is tested against a range of variables; courses of action are compared to other available options being developed. The outputs generated by this type of wargame include enhancements to tested plans and enabling decisions by the commander.

While the Course of Action wargame is considered a type of wargaming, it does have a unique limitation: unlike the other types of wargaming which enable competition, the only 'winner' in the Course of Action wargame is the Blue player. While the Blue plan is tested against Red actions, if Red conducts an action that Blue cannot counter, or might only counter by modifying the plan, then Blue changes its plan. This can including 'rewinding' its plan and going back in time to make sure that the Blue plan is improved and is not countered by Red. Both sides in Course of Action Analysis are working to make the Blue plan better and to make Blue win. Whereas one of the key attributes and benefits of wargaming is the competitive nature, the Course of Action wargame is a formal process to improve a plan.

Kriegsspiel. The Prussian innovation that led to modern military

21 Ibid. p. 171.

wargaming remains a valid type of wargaming that can be used to support training or analytical wargames. Kriegsspiel is conducted over three tables, one for Blue, one for Red and one for the umpires. It is normally a closed wargame where the umpire controls the information available to the players based on the situational awareness of their subordinate units and assets.

Seminar game. A seminar game is open-ended argument-based discussion between a small group of experts, to elicit opinions and judgements. These games normally deal with strategic problems. An adjudicator, leveraging their professional judgement and experience, determines the results of the interactions generated by these discussions.

Matrix game. Chris Engle invented this type of wargaming in the early 1990s. It is a free form, umpired alternative to more rigid, rules-based games. [22] In a matrix game, players typically take turns making an argument about what they wish to do, why they believe they would be successful, and what effects they expect this to have. Other players may be invited to identify counter-arguments. These arguments can be influenced through negotiations conducted between players. The outcome is then adjudicated by the umpire, with or without the use of dice. As a matrix game progresses, players will be forced to live with the consequences of their earlier decisions.

Hobby and historical wargames. Since the 1950s, thousands of commercial wargames have been produced covering almost every military battle and conflict in human history. These games can range from tactical to strategic level[23] , solitaire through to multi-sided games using game boards, table top miniatures or computers.

22 Brynen, R., Matrix Games at the US War College, PAXSIMS website, 09 Feb 2016, available at: https://paxsims.wordpress.com/2016/02/09/matrix-games-at-the-us-army-war-college/

23 It is possible for hobby and historical wargames to combine a higher level of decision-making with a lower level of combat resolution; these are described by Peter Perla in the Art of Wargaming as being hybrid games (p. 161).

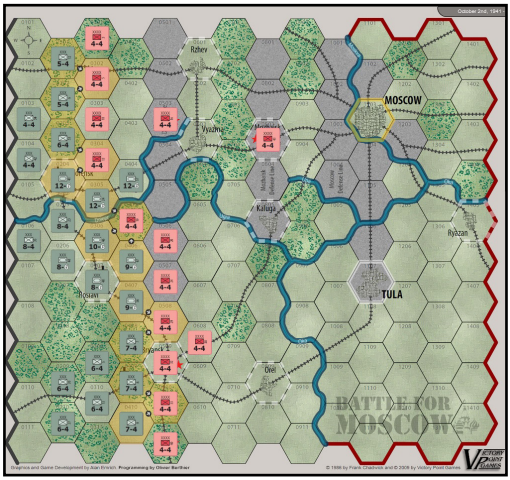


Figure 4: Battle for Moscow, a hobby game used at the United States Army Command and General Staff College

Chosen carefully, hobby and historical games can be used to support military training and education. Examples exist of these games being incorporated into the curriculum at command and staff colleges and war colleges.

Wargame elements

Aim and objectives. The aim and objectives will drive the structure of the wargame and ensure it creates the learning experiences and information outcomes required. The training objectives for wargames may include the receipt and issue of orders, application of the appreciation process, conduct of coordinated operations and administrative planning, staff decision-making, practice in the implementation and adjustment of plans, developing and maintaining proficiency in tactics and developing, validating and practising SOPs.

Scenario. The scenario, inclusive of the geographic setting, provides the environment in which the players undertake their decision-making. The scenario will shape the assumptions made by the players and potentially influence their decision-making throughout the wargame.

Data. The information required by the players to understand the scenario, and which is used by the models to determine outcomes.

Models/simulation. Not to be confused with rules, models and simulations translate the decisions made by the players and the game's data into game events. Wargaming should not be confused with constructive simulation models or synthetic environments, which may or may not support a wargame[24]. Models/simulations can be computerised, computer-assisted or manual.[25]

Players. The participants whose decisions determine the outcomes of the wargame.

Analysis. The after action review conducted by an instructor of a training wargame is an example of analysis. It is the data gathered in the game to help us understand what occurred, and the associated lessons.

Rules, procedures and adjudication. The rules of a wargame detail how and when to apply the wargame's models. Rules and procedures allow the players to understand the sequence of events enabling cycles of action and reaction. Professional wargames, such as Kriegsspiel, can also leverage umpires to provide arbitration (clarification of the rules and processes) and adjudication (determining the outcomes of player actions/interactions).

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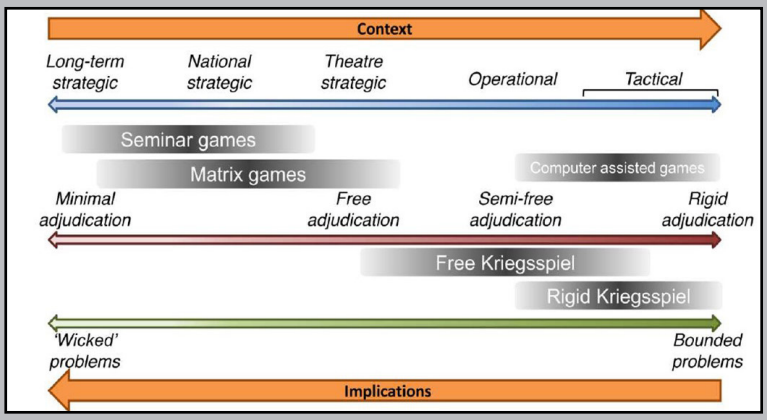
24 The Development, Concepts and Doctrine Centre, op.cit., p. 6.

25 In the Australian Defence Force context a simulation is defined as the 'implementation of a model over time' (Australian Defence Glossary). A model is defined as 'a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process'.

Rules, Procedures and Adjudication



Wargame spectrum and application
(Source: Expanding the Wargaming Toolbox, https://www.osti.gov/servlets/purl/1526136)

The following is an abstract of the Wargaming Handbook, which provides a summary of the methods of adjudication:

Rigid adjudication. The results of interactions are determined according to predetermined rules, data and procedures.

Semi-rigid adjudication. Interactions are adjudicated by a rigid method, but the outcomes can be modified or overruled by the adjudicator.

Free Adjudication. The adjudicators in accordance with their professional judgement and experience determine the results of interactions.

Minimal/consensual. Adjudication is by the collective opinion of players and the adjudicators.

Wargame applications

Training and education. Through the creation of an intellectually liberating safe-to-fail environment, wargames can support the cognitive development of personnel by providing opportunities to experience decision-making against an adversary that is actively trying to defeat them. It provides opportunities to experiment and innovate, enabling personnel to develop an understanding of what works and what does not. If chosen properly, wargames can also provide insights into historical tactical and technological factors that have directly influenced modern military thinking. Furthermore, wargames supporting training and education can be repeated, allowing participants to apply lessons from previous attempts and complete reps and sets in realistic combat decision-making.[26]

Planning. Planning wargames are typically analytical wargames designed to develop and test plans. Planning wargames are able to span tactical, operational, strategic and policy situations; they examine plans in detail to identify risks and unconsidered factors.

Decision-making. Once again, these are analytical wargames designed to inform real-world decisions. These wargames support decision-making through the exploration of potential future events by understanding how situations might develop, how force structures and concepts might adapt to new challenges, and how science and technology might deliver a competitive edge.

The flow chart (Figure 5) produced by Francis McHugh in 1966 highlights the primary difference between wargames for training and education that provide decision-making experience, and analytical wargames that provide decision-making information.[27]

26 General Berger, D.H., Commandant's Planning Guidance, United States Marine Corps, 2020, p. 19.
27 McHugh, F.J., Fundamentals of War Gaming, US Naval War College, 3rd Edition, 1966, page 9.

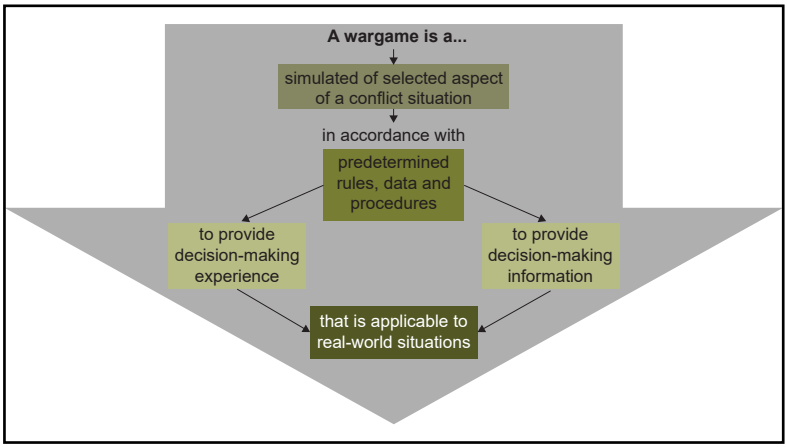


Figure 5: The general purpose of wargames.[28]

28 Ibid., p. 9.

Wargame fundamentals

'It is important to make one thing clear at the very start: designing and delivering a wargame is an art, not a science. Experienced military officers, practised operations research analysts, and accomplished computer programmers are not necessarily capable of designing useful wargames. Although some or all of the knowledge and skills of such people are important tools for a wargame designer to possess, the nature of game design requires a unique blending of talents.'[29]

Dr Peter Perla, US Navy researcher and wargame designer

The Wargaming Handbook provides valuable insights into the fundamentals of wargaming, in particular, the guidelines for good wargaming and the roles and responsibilities for planning and executing a wargame. These have been summarised and included in this handbook to inform and guide the planning of wargames. These should not be viewed as a checklist, but should be considered in detail when planning a wargame. The value of each of these factors will need to be carefully considered to ensure they contribute to the aim and objectives of the wargame, rather than adding complexity for little or no gain. Conversely, over-simplifying a wargame may adversely affect the validity of its findings by enabling organisational bias. As noted in the quote above, designing and delivering a wargame is an art not a science. However, just like successful operations, successful wargames are a combination of art and science.[30]

29 Perla, op.cit., p. 173.
30 The Development, Concepts and Doctrine Centre, op.cit., p . 21.

Guidelines for good wargaming

Under the pressure of time, the basis of imperfect or incomplete information to influence the course of events, and by incorporating the effects of randomness and 'luck', wargaming comes closer than any other form of intellectual exercise to illuminating the dynamics of warfare.[31]

The following characteristics should be considered during the design and development of all wargames:

Adversarial. As noted in the description of wargaming developed for this handbook, the adversarial nature of wargaming is essential and should always be present. Active, thinking and adaptive opponents covering all elements that influence and act within a complex operating environment are critical to creating an environment that provides realistic decision-making challenges to participants. When designing a wargame, detailed consideration should be given to the various adversarial elements, including their capabilities and plans.

Chance. Participants should accept the fact that they will not control everything within a wargame, and collectively Army should understand that this lack of control means there is the potential to fail. Chance, regardless of how it is represented within a wargame, highlights the risks associated with all military operations. As noted by Clausewitz *'War is the province of chance … it increases the uncertainty of every circumstance and deranges the course of events.'* [32]

Uncertainty. In operations, while we seek to understand all aspects of our operating environment we rarely, if ever, know with certainty everything that operates in or can influence our plans. Reflecting this

31 Perla, op.cit., 171.

32 von Clausewitz, C., On War, vol. 1, Kegan, Paul, Trench, Trubner and Company, 1832, p. 49.

in a wargame, through mechanics such as hidden movement or incomplete information, enhances the participant's ability to cope with uncertainty. It enables the participants to develop and react more appropriately when unforeseen events or outcomes occur in real life. Creating uncertainty within a wargame can also generate useful insights informing the wargame's findings.

Player decisions. Wargaming is about the decisions made by the participants when they are immersed in a scenario. These decisions should determine the course of the wargame, although the players need to make realistic decisions rather than 'gaming the system'.[33] Designers and game directors/controllers should avoid being too prescriptive in terms of narrative and events. Instead they should foster the creation of a dynamic, open-ended narrative.

Control. The decisions made by the participants should drive the narrative, but the staff running the wargame must ensure that the wargame achieves the aim and objectives without detracting from the immersion of the participants in the scenario. As previously noted, there are different methods of adjudication available to determine the outcomes of actions taken by the participants, but the umpires should not become the dominant participant.

Safe-to-fail. The creation of a safe-to-fail environment is important. It allows mission command to be exercised, innovation can be explored and participants can learn by applying risk management techniques. Participants have the opportunity to learn from their mistakes without the pressure of being assessed.

Engagement. Part of the cultural challenge that Army faces with wargaming is the perception that it is fun. While this is important to hobby and historical games which need to appeal to a market, it is not the primary purpose of defence wargames, although it still

33 Gaming the system is where players use the rules and procedures meant to protect a system to, instead, manipulate the system for a desired outcome.

provides benefits. Creating an enjoyable, professionally rewarding environment through wargames ensures that participants are engaged and actively learning. This form of engagement leads to better internalisation of training lessons and greater analytical insight.

Easily accessible. Providing low-cost, easily executed wargames maximises Army's learning and innovation opportunities, particularly as these tools can be exploited when unexpected gaps develop in unit training programs. The frequent use of wargames enables participants to continually explore complex problems and conduct self-reflection particularly as personnel will invariably seek to engage in these activities in their own time.

Simulation support. Simulation, whether manual, computer-assisted or computerised, is the implementation of a model over time. This is essential to all wargames. While Army has, in recent times, focused on computerised simulations to enable wargames, all types of simulation should be considered and employed. Many higher defence colleges around the world, including recently the Australian Command and Staff College, employ commercially available manual wargames or matrix games to support learning outcomes.

After action reviews and reflections. At the conclusion of major training events, an after action review is conducted. This should also be factored in to all wargaming events, although the scope and complexity of these reviews should be scaled appropriately to the event. The wargame design should consider how data will be collected and managed throughout the execution phase. For large-scale wargames, consideration should be given to capturing lessons throughout the conduct of the wargame, specifically those lessons which are relevant to the wargame's planning and execution. When exercises are supported by constructive or virtual simulations, replays of these systems will often be employed to highlight key teaching points. The after action review provides opportunities for the

exercise participants to conduct individual and collective reflection and learning.

For educational wargames, analysis will likely take the form of self-reflection, guided reflection or other forms of semi-formal analysis. This can be facilitated through a series of questions designed to assist the participants in exploring their plans and decisions as well as aspects of the game design. Providing this guidance upfront allows the capture of information at the time it occurs and the development of meaningful reflections in relation to participants' decisions. Importantly though, when using games to support education, it should not be left for the learners to figure out why they were playing the game and how it achieves the learning outcomes. Annex C provides some example questions to assist the design of a post-wargame reflection.

Selecting the right wargame

Gaming within education helps to build a pluralist habit of mind and enhances military planning, decision-making and thinking about competition, conflict, and war.[34] In order for wargames to complement other forms of education, it is essential that the right wargame be selected; this will first and foremost be determined by the learning outcome sought. It is also important to understand who the training audience is and their experience with gaming. In a time-constrained environment, it is unlikely that participants will have the opportunity to complete a game. However, it is better that participants play a few turns to experience the game than spend all the allocated time trying to learn a game system that is beyond their experience level.

When selecting a wargame it is likely that there will be a number of options available. The challenge will be finding a game with

34 Bosio, N.J., Gaming to Win: Enhancing Military Decision-Making, Australian Army Journal, Vol 18, No. 1, 2022, p. 39.

the right attributes, whether open (god's eye view of the operating environment) or closed (fog of war), analogue or digital, and of course professional or hobby to name a few variables. Finally, as the participants conduct a reflection activity to support their learning, the facilitator should reflect on the conduct of the activity to determine the suitability of the selected game and inform future iterations.

Conclusion

Wargaming is as relevant today as it was for the Prussians in the 19th century. It has been proven to develop the critical thinking capacity of participants while simultaneously providing decision-making opportunities against adaptive adversaries in safe-to-fail environments. In the absence of a commonly accepted definition for wargaming, it is common for Course of Action – Analysis to be referred to as wargaming. Changing this understanding is essential to ensuring that Army embraces wargaming, of all types, which will support the development of the cognitive capacity of our personnel. Wargaming will contribute to preparing our people for Accelerated Warfare.

Annex A: Wargame roles and responsibilities

The following are the common roles associated with the design, development and execution of wargames:

Game sponsor. The wargame sponsor is the senior officer or official under whose authority the wargame is being conducted.[35] The game sponsor is critical to the successful conduct of a wargame. In addition to defining the aim and objectives, the sponsor ensures active participation throughout the process creating a positive environment which is free from cognitive bias and embraces wargaming as a valuable tool.

Game director. The game director is responsible to the sponsor for achieving the aim and objectives. They identify team members with appropriate qualifications and experience to support the design, development and execution of the wargame. The game director manages available resources to ensure a robust wargame is developed, analysed, validated and that findings are promulgated to inform future training activities and the refinement of the wargame itself.

Wargame team. Peter Perla noted the nature of game design requires a blending of skills. While the composition of the team will depend on the scale and complexity of the game being developed, the team designing a wargame should comprise the following:

Sponsor representative. The representative is responsible for providing direction and guidance on behalf of the sponsor to ensure the wargame design meets the aim and objectives.

35 The Development, Concepts and Doctrine Centre, op.cit., p. 29.

Designer. An experienced wargame designer should lead the design and development effort.

Analyst. Analysts ensure the data used in the wargame's models are realistic. Additionally, their involvement in the design process will enable development of the data collection plan in a way that does not interrupt the conduct of the wargame, and informs subsequent analysis and findings.

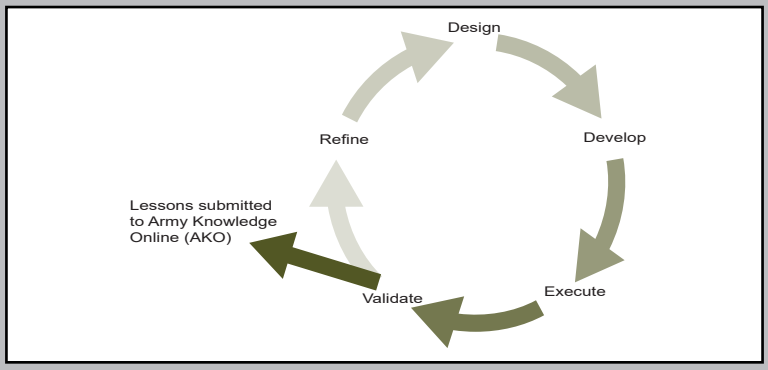
Simulation experts. These experts will ensure that the simulation tools used are appropriate and capable of meeting the wargame's aim and objectives.

Game controller. During the execution of the wargame, the game controller follows the direction and guidance of the game director to ensure that the wargame achieves the stated aim and objectives. In this role, the game controller oversees the adjudication of outcomes, potentially provided by the umpire or umpire cell, and facilitation of support to the players and wargame staff.

Players. The participants of the wargame are knowns as the players. They are normally divided into teams or sides, normally colour coded, and represent the different actors within the wargame, including the higher headquarters and subordinate units of the training audience.

Annex B: The wargame lifecycle

This annex is designed to support those with an interest in the design and delivery of wargames. Developing this expertise within Army and Defence will provide a significant advantage as demonstrated by the United States Navy in the inter-war years. The retention and application of the results and observations from wargames, including suggested improvements, will enhance our capabilities and readiness.



The wargame lifecycle

Source: UK Ministry of Defence's Wargaming Handbook, p. 51

In the inter-war years the US Navy adopted a lifecycle approach to wargaming, and centrally managed the wargame proceedings, findings, suggested refinements and best practices. In doing so it was able to take the products from one iteration of a wargame and apply them to the design and development phases of subsequent wargames, thereby continuously improving the quality of the wargames. The wargame lifecycle above is sourced from the Wargaming Handbook and should be considered a guide, rather than a step-by-step process, for the design and delivery of a wargame.

Design

Designing a wargame is often described as being an art rather than a science. While the particular design will take its own form, these games are based on some fundamental principles.[36] There are numerous books which discuss wargame design in detail, including James Dunnigan's The Complete Wargame Handbook and Peter Perla's The Art of Wargaming. This section will provide an overview of the fundamental principles of wargame design. Peter Perla identifies five key elements to wargame design, which are summarised below:

Specify objectives. In designing a professional wargame, the focus will generally be on either education or research. In terms of education, the objectives normally fall under the following groups: generating an active learning experience; reinforcing lessons from traditional learning approaches; or evaluation of the student's ability to assimilate the lessons. For research, the objectives generally range from developing and testing strategies and plans, identifying issues, and building consensus among participants. There is no recipe for translating a game objective into its mechanics. This responsibility falls to the wargame team.

Identify players, roles and decisions. When designing a wargame the designer has to know their audience. This is somewhat easier for hobby wargame designers who are able to target their audience; designers of professional games do not have the same luxury. In understanding the audience, the designer can ensure that the game is challenging, involving and educational without being impossible and frustrating. It is important that there is a distinction between players, control staff and umpires. This can be achieved by having a clear understanding of the roles that the players fulfil in the wargame, specifically those that are important to achieving the game's objectives. In defining these aspects, the designer will gain

36 Perla p.173.

insight into the appropriate scope and scale of the game: it should replicate the geographic and command responsibilities of these roles and prevent players getting ‘lost in the weeds’ of detail and decisions at lower command levels. The final consideration for game designers is that the game design must be able to assist players who are unfamiliar with the roles they are assigned. The game can assist players competently carrying out these roles by enabling them to understand the decisions they must make, the factors to consider in making those decisions and what form the decision should take.

Define information requirements. There are two primary types of information required for games: the scenario and databases. In the same way that military exercises are based around a scenario, a game designer will immerse the players in an environment that will enable them to make decisions. The scenario must allow the players the flexibility to make decisions in line with the objectives while remaining relevant to the scope and scale associated with the roles of the players. The development of a good scenario relies on four principles:

> **Understanding the problem.** The designer must ensure that the kinds of player activities and decision-making opportunities required to meet the game objectives can arise in the scenario that is created.
>
> **Building from the bottom up.** By identifying the specific decision points required to meet the objectives, the designer can then step backwards in time to determine the possible sequences of events to lead to those decision points. This allows for the identification of critical events, which can then be incorporated into the scenario. A complete scenario provides all participants with the information they need to fulfil their roles, whether players or analysts.

Documenting choices. Documentation allows the designer to record their decisions and the reasons for them, as well as any assumptions and sources of information. This documentation provides the foundation for the final principle.

Communicating results. Finally, the game designer needs to communicate the scenario to a diverse audience including the game sponsor, control staff, players and analysts. The designer needs to consider the unique requirements of each of these users and tailor the presentation of information to suit.

Database. Peter Perla describes the scenario as being the qualitative information about a game, while the database provides the quantitative information about the capabilities of forces and the relative likelihood of the occurrence and outcome of interactions between forces. The database provides the inputs to allow the game's models to determine the outcomes of interactions. This data needs to be relevant to the scope and scale of the game; too much irrelevant data will slow the game down. However, the designer must also balance what the players need to know to make decisions and what the controllers need to facilitate the game.

Devise the tools. The game's models and procedures represent two interrelated systems, which together form the mechanics of the game. They allow the player's decisions to be implemented and determine the outcomes of these decisions. Models and the results that they produce will commonly include weapons, sensors, the physical environment and logistics, to name a few. Regardless of the type of models, good ones have the following key characteristics:

- They accurately reflect factors most prominent for player decision levels.

- They are flexible to deal with unusual situations.
- They are adaptable to changes in the database.
- They are stochastic to the extent that reality is stochastic.
- They are documented to allow others to understand assumptions and algorithms.

These models can either be pre-calculated, as was common in wargames conducted in the 19th and early 20th centuries, or can be calculated during play, leveraging the processing power of computers.

In professional wargames the procedures, or game's rules, are normally monitored by a team of umpires/adjudicators and the game controller. Procedures and umpires fulfil three primary functions:

- They monitor player actions by translating actions into game terms, enforce the rules of the game and prevent physically unrealistic actions or sequences of events.
- The procedures need to balance the requirement to be realistic with the freedom of allowing the players to explore what works and what doesn't in the safe-to-fail environment.
- They assess interactions through the implementation of themodels, data and rules while umpires apply judgements as required. This involves implementing one of the methods of adjudication discussed earlier in this handbook.
- They inform players of the outcomes of their decisions; umpires can restrict some of this information in order to preserve the fog of war present in actual military operations. Maintaining this closed game does place a significant burden on the game

controllers/adjudicators.

The final aspect of the game procedures that needs to be considered is the management of time; a critical element in any good wargame design. Time management in a game can be sequenced in a series of alternating player turns, continuous or incremental (fixed or flexible). The selection of a time management method will be dependent on the scope and scale of the game and the objectives of the game itself.

Document the design. In the purist sense, this involves pulling together all of the aspects of wargame design into the rules of the game. This is a challenge for professional games, which are often designed by a team rather than an individual, further complicated by the fact that few are developed from scratch. Most professional games are the result of adapting scenarios and models from a variety of sources to the long-standing procedures of the organisations conducting the game. Documenting the design, through a balanced approach of readability and detail, ensures players can improve their play and learning experience.

In a similar manner to the exercise design process, the concept development conference (CDC) or initial planning conference (IPC) should be held as early as possible to inform the wargame design. These conferences will outline the game sponsor's aim and objectives, as well as identify and assign responsibility for the actions required to achieve a successful wargame. Consideration should be given prior to conducting the CDC to speaking to organisations that have undertaken similar wargames. Additionally, making contact with Army Lessons, Army Knowledge Branch and conducting a search of Army Knowledge Online will allow the consideration of lessons identified by previous wargames.

Develop

The development phase is where the game design concept is refined, play-tested and ultimately transformed into a playable game that meets the sponsor's objectives. In addition, the development phase will also ensure that the technical and administrative arrangements for the wargame are in place and, where necessary, have been tested and rehearsed. The goals of the wargame team during this phase are:

- Verifying that all the elements of the game are present, accurate and integrate to allow the game to operate smoothly.

- Confirming that the game will meet the sponsor's objectives.

- Ensuring the game is play-tested to confirm that the modelswill behave as designed for expected and unexpected player inputs and situations.

- Developing the data collection plan and the associated analysis plan.Confirming the attendance of players, support personnel and relevant subject matter experts.

- Confirming the venue and design the physical layout of the wargame.Conducting integration testing and rehearsals to confirm that systems such as computerised simulation platforms will communicate with battle management systems, and that the available network can handle the transmission of data.

- Conducting a test exercise to examine all aspects of the wargame, with a representative of the sponsor and director present.

At the conclusion of the development phase, the game sponsor, game director and all members of the wargame team are confident that the wargame is ready to execute.

Figure 6: An example battlefield for wargaming PME

Execute

During execution, players are immersed in the scenario and experience decision-making in a safe-to-fail yet adversarial environment. The game controller and adjudication staff determine the outcomes of interactions between the various elements participating in the wargame, but do so in a way that does not dominate the wargame. This in turn generates data which is captured and either analysed during or after the wargame to inform the after action review. Finally, the concurrent capture of lessons will inform the final two steps of the wargame lifecycle, namely: validate and refine.

Validate

Validation assesses whether the wargame has achieved the sponsor's aim and objectives. The process of reviewing and validating the lessons culminates in the production of a post exercise report. This report should consider:

- Suggested refinements to the design or execution of the wargame.

- Wargame findings, the lessons identified, and observations and insights from the wargame that will potentially shape the design and execution of future wargames.

Ideally, the post exercise report, once endorsed, will be forwarded to Army Lessons, Army Knowledge Branch, enabling it to be uploaded and centrally stored as part of the Army Knowledge Online repository.

Refine

Wargames that support training and education tend to be iterative and, as a result, incorporating the lessons from previous wargames is routine. Ensuring that Army leverages Army Knowledge Online as a central repository for wargaming lessons will support the integration of lesson from one-off wargames. This step is essential to developing Army's wargaming corporate knowledge, particularly as future wargame designers can readily access the documentation from previous events.

Annex C: Running a wargaming PME Session

The following information is deigned to guide the conduct of a wargaming-focused professional military education (PME) session utilising the wargames found on DG TRADOC's professional gaming list. This is a recommended structure for the introductory games on the list. PME organisers should modify this to meet specific training or learning outcomes.

Figure 7: The 2019 Army Tactics Competition

Introduction (30-45 mins). This should provide the historical overview of the battle/campaign, a brief walkthrough of the game and identify the focus areas for the post-game reflection. The historical context should outline the challenges faced by the commanders of the day, as this will help the participants understand what the game designer was trying to capture in the game. Ideally, the participants should be provided with the questions for the reflection so that they can compile their responses as they play the game.

Conduct of the game (90 mins). While the aim is not necessarily to complete the game, sufficient time needs to be allocated to ensure all participants can complete at least two or three turns. This will enable the participants to understand the mechanics of the game, implement their plan and observe their opponents' reactions. Additionally, this will provide enough time for the participants to experience the challenges that have been incorporated into the design of the game.

Figure 8: US Marines conducting a wargaming PME session using a COTS wargame (Memoir 44)

Reflection (45-60 mins). Undertaken as a moderated discussion, the participants should explore the history of the battle/campaign and the associated challenges and dilemmas. This enables reflection on how the game designer captured these aspects in the game, as well as enabling discussions on possible enhancements to the game itself. Participants should reflect on their plan and their decision-making process as the game unfolded. They should be able to identify alternate approaches that they could employ in subsequent iterations.

The following is an example of the questions that could be used to facilitate a reflection activity:

- What was your plan for playing this game?
- How successful was the implementation of your plan?
- What were the weaknesses in your plan?
- What challenges/dilemmas did you face?
- What would you do differently next time?
- What challenges did the historical commanders face?
- How did the game designer capture these challenges?
- What could be modified or enhanced to improve the game?
- What did you learn from playing this game?

Annex D: Take That Hill!

Introduction. This is a short wargame primer to introduce non-wargamers to basic wargame concepts in the context of a simple dismounted platoon attack.

You command an infantry platoon made up of three sections and a Pl HQ. Your mission is to destroy an enemy section hastily dug in on the hill 500m away as quickly as possible. The ground in front of your position is open and offers no cover from view or fire. To do this you will need to fire and manoeuvre your platoon into an assault position adjacent to the hill whilst keeping the enemy suppressed.

Game components. The following is included in this version of Take That Hill:

Game board representing the operating area, approximately 500m x 300m, overlayed with a hexagonal grid system of alphanumeric coordinates A-C on the vertical and 1-6 on the horizontal.

Blue counters (4) representing the friendly platoon elements.

Red counter (1) representing the enemy section.

Counter (1) to mark the progress of time.

Counter (1) to mark the number of hits on Blue

In addition to these component you will need one six-sided die.

Methods of play. The wargame can be played solo or head-to-head. In solo mode, the player controls the Blue or friendly side, with the Red or enemy side being automated by a simple set of tactical choices. In head-to-head mode, the second player controls the Red side and makes all decisions therein.

Force element (counters) and states. Counters are used to represent combat elements in the wargame. For simplicity, each counter represents a group of combatants between 4-10 in number. This aggregation is simpler than representing every soldier involved. The counters used in this wargame are two-sided (a plain coloured side and coloured side with a grey stripe through it). The plain side denotes a combat element as fresh and the grey stripe as spent. Fresh denotes an element with the capacity to undertake an action such as move or fire. Spent denotes an element that, for whatever reason, is unable to act because it has lost this capacity. Elements become spent after taking an action or when successfully engaged by direct or indirect fire, or by other weapons. There is no limit to the

number of counters that can be stacked in a hex.

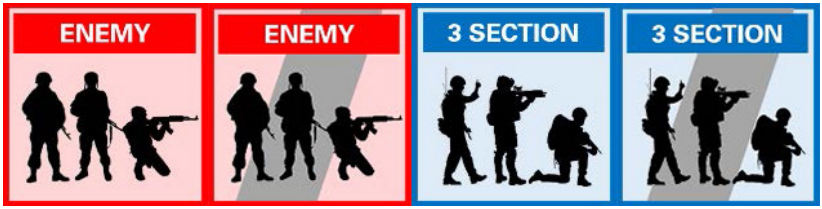


Figure 1: The red and blue counters (fresh and spent)

The map. The wargame uses a very simple and abstracted terrain map of 16 hexes in three rows of five, six, and five hexagons respectively. The left-hand column of hexes comprise wooded terrain and the extreme centre right hex is a hill. All the other hexes are open grassland. In this wargame, for simplicity's sake, the terrain does not affect the actions of the players.

Game turns. The wargame is bounded in time by a set number of turns, segments of 'game time' in which activity on the map takes place. This is recorded on a separate track below the map numbered 0 to 16 using the turn counter (the watch). Each game turn represents between 1-3 minutes of real time combat.
A separate counter (3 bullets) records hits on friendly (Blue) forces using the same track. The combined total of turn and hits is used to determine the player (Blue player's) success.

Figure 2: The turn tracker and turn and blue hit counters

Turn phases. Turns are often subdivided into phases to guide player decisions and actions. Although often a turn looks very phased in time, the general principle is that all actions in the same turn are occurring simultaneously. A turn has four phases that occur in sequence: three concern the actions of the friendly forces or Blue player, and one concerns the reactions of the enemy or Red player. It is important that the phases occur in the sequence shown; if firefight occurs before movement then a player will know if the fire has been effective before moving – this removes a key aspect of uncertainty from the wargame and so should be avoided.

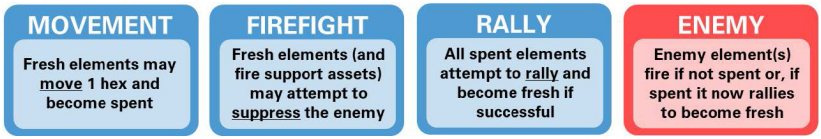


Figure 3: The turn phases

Movement. This phase allows Blue elements to move from one hex to another. Each fresh element may move to any adjacent hex and become spent (flipped to its grey stripe side). Alternatively, a fresh element may remain in its current hex and stay fresh. Spent elements cannot move in this phase.

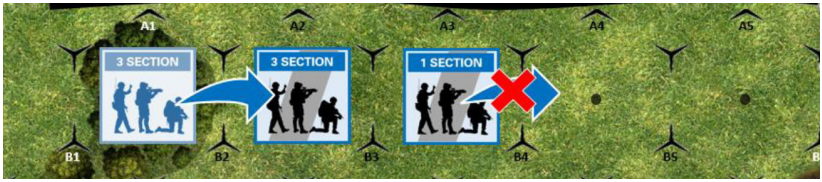


Figure 4: 3 Section moves from A1 to A2 and becomes spent. 1 Section started the movement phase spent and so cannot move.

Firefight. This phase allows Blue elements to fire on the enemy to attempt to suppress it. Each fresh section (not the Pl HQ) may fire to

suppress the enemy if desired, and is then flipped to its spent side. A section that starts the phase spent may not fire. To fire, roll a die, if the number exceeds the range in hexes from the firers to the hill, the enemy section is hit and is flipped to its spent side. If the roll is equal to or less than the range, the fire is ineffective.

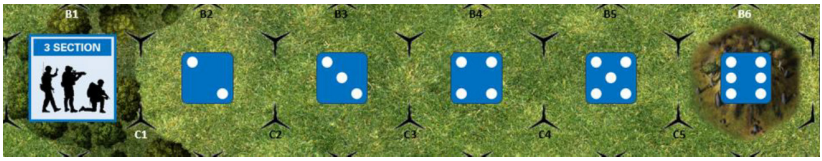


Figure 5: Section's required 'roll to hit' shown over a range of 5 hexes.

Fire is blocked if there is a friendly element in the same row between the firing element and the target

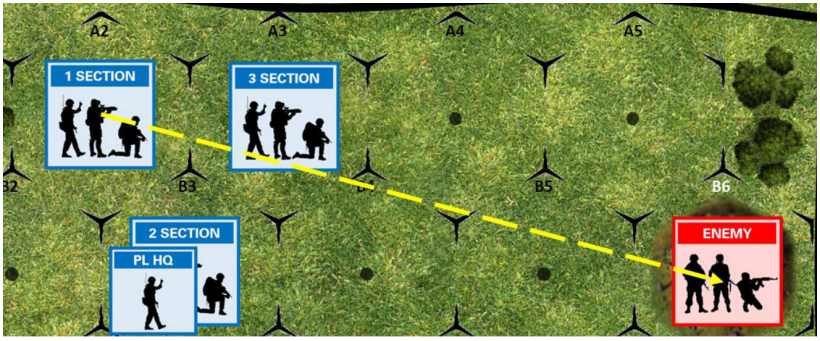


Figure 6: 1 Section cannot fire on the enemy from A2 because 3 Section is blocking its line of fire in A3.

Rally. This phase allows spent Blue elements to become fresh, ready for the next turn. The Pl HQ automatically rallies from spent to fresh, as do any sections that are in the same hex. Any other spent sections must roll a die to 'rally'. A section must roll 3-6 to rally itself.

If adjacent to the Pl HQ the section rallies on 2-6. An unsuccessful roll results in the section remaining spent. If a friendly section is adjacent to an enemy hex and the enemy section is not spent, the friendly token can only rally if the PL HQ is co-located in the same hex.

Figure 7: 2 Section automatically rallies as it is co-located with the Pl HQ. 1 and 3 Section must roll the required number shown on the die in order to rally.

Enemy action. If the enemy section starts this phase spent, (having been successfully engaged by suppressive fire from the platoon) it now becomes fresh and the phase ends. If it starts the phase fresh, then it fires on the closest section (prioritising fresh over spent) and any additional sections in that hex. The enemy will also target the next closest section if it is in an adjacent hex, thereby giving it a beaten zone of fire no more than two hexes in total. Roll a die for each targeted section. The enemy hits if the roll is equal to or greater than the range in hexes. A hit flips the target section to its spent side if it was fresh, and the hits counter is moved one space along the tracker. Spent sections are not flipped but are recorded as hits. If the roll is less than the range to the target, the fire is ineffective. The Pl HQ is not specifically targeted and does not count as an additional hit if the section it is with is successfully engaged. The enemy section always finishes the turn fresh.

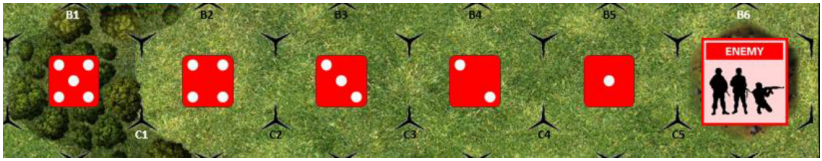


Figure 8: The enemy section's 'roll to hit' number for a range of 5 hexes. Note the enemy only has to roll equal to, and not over, as blue must, in order to hit.

End of turn. Once all four phases have been completed, move the turn counter along one space on the game track and then repeat the phases again, in order.

Set up. Place the enemy counter on the B6 hex on the side. Place the Blue platoon counters in any of the extreme left hexes (eg. A1, B1, C1) on their fresh side. Place the turn counter (watch) on the '1' space and the hits counter on the '0' space of the game track.

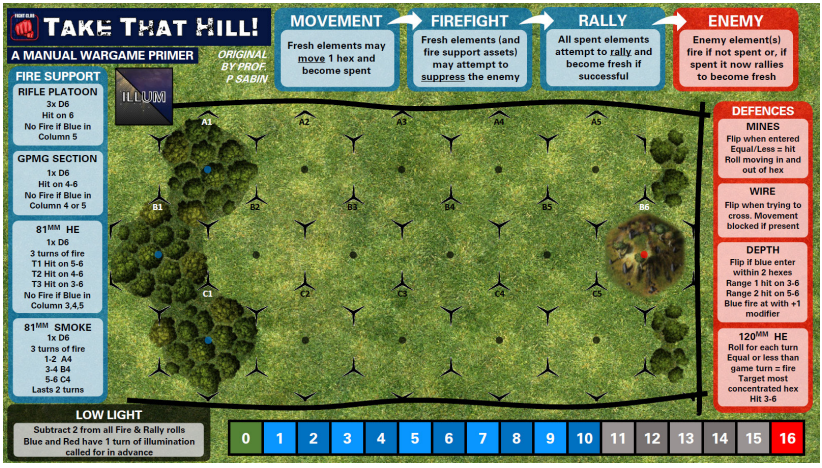


Figure 9: Example set up for the base game. Blue sections do not need to be placed as shown and could all start in the same hex.

Victory conditions. Each time a turn elapses move the 'turn' counter one space on the numbered track. Each time a section is hit move the 'hits' counter along the track on space. If the combined total (hits plus turns) reaches 16 the Blue player loses the game. If a Blue section moves into the hill hex and the total is 10 or less Blue wins. If it is between 11 and 15 the game is declared a draw.

Accumulated Total	Winner
10 or less	BLUE
11-15	DRAW
16 or greater	RED

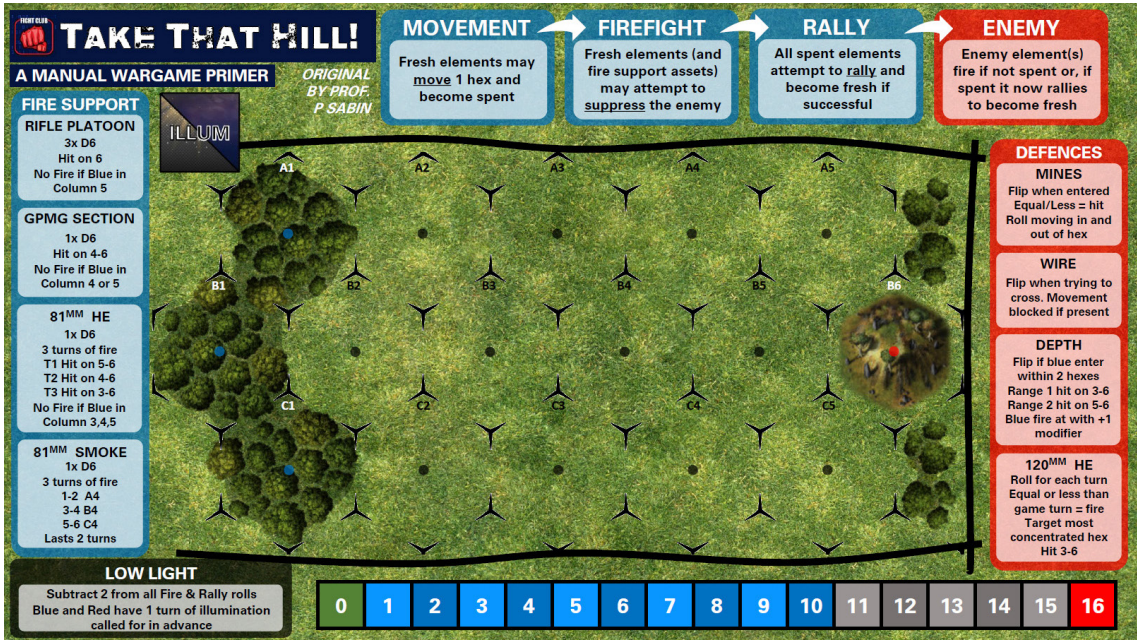
Figure 10: Determining a winner

Advanced rules. Take That Hill has a number of optional, advanced rules that can be used once players are familiar with the base rules and general mechanics. These rules add Blue fire support, low light, Red defences and advanced morale. These rules and the associated counters are available in the hardcopies of Take That Hill distributed by The Cove, and via Decisive Edge on ADELE.

Living rules. These rules are subject to iterative improvement based on the feedback from you, the players. To ensure you have the latest version visit the website https://www.ukfightclub.co.uk/take-that-hill. Email us with suggestions at ukfightclub@outlook.com.

Game designer. Take That Hill is an original wargame designed by Professor Philip Sabin. His aim was to simulate the tension between concentration and dispersion in infantry tactics. Prof Sabin is Professor of Strategic Studies in the Department of War Studies at King's College London, where he has taught since 1985.

This version of Take That Hill was adapted by the members of UK Fight Club, a professional gaming experimentation club learning to fight across all domains of conflict and competition.


TAKE THAT HILL!
A MANUAL WARGAME PRIMER
ORIGINAL BY PROF. P SABIN
MOVEMENT
Fresh elements may move 1 hex and become spent
FIREFIGHT
Fresh elements (and fire support assets) may attempt to suppress the enemy
RALLY
All spent elements attempt to rally and become fresh if successful
ENEMY
Enemy element(s) fire if not spent or, if spent it now rallies to become fresh
FIRE SUPPORT
RIFLE PLATOON
3x D6
Hit on 6
No Fire if Blue in Column 5
GPMG SECTION
1x D6
Hit on 4-6
No Fire if Blue in Column 4 or 5
81MM HE
1x D6
3 turns of fire
T1 Hit on 5-6
T2 Hit on 4-6
T3 Hit on 3-6
No Fire if Blue in Column 3,4,5
81MM SMOKE
1x D6
3 turns of fire
1-2 A4
3-4 B4
5-6 C4
Lasts 2 turns
ILLUM
A1
A2
A3
A4
A5
B1
B2
B3
B4
B5
B6
C1
C2
C3
C4
C5
DEFENCES
MINES
Flip when entered
Equal/Less = hit
Roll moving in and out of hex
WIRE
Flip when trying to cross. Movement blocked if present
DEPTH
Flip if blue enter within 2 hexes
Range 1 hit on 3-6
Range 2 hit on 5-6
Blue fire at with +1 modifier
120MM HE
Roll for each turn
Equal or less than game turn = fire
Target most concentrated hex
Hit 3-6
LOW LIGHT
Subtract 2 from all Fire & Rally rolls
Blue and Red have 1 turn of illumination called for in advance
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

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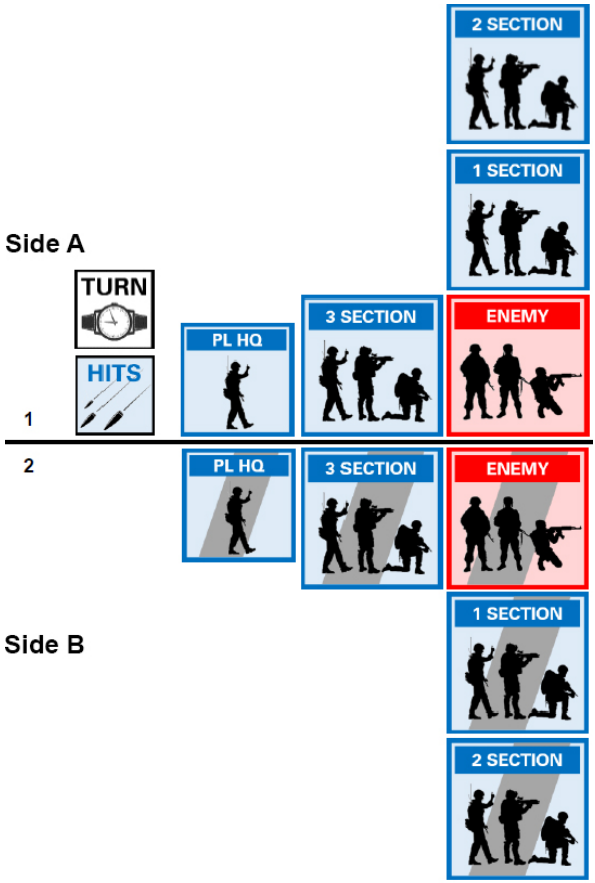
PRINT AND PLAY

1. Print onto paper or printable/peelable label.
2. Cut down centre line
3. Stick side A onto thick card
4. Stick side B onto reverse side, ensure the number 1 and 2 match up on the front/reverse sides.
5. Fablon if not already printed on plastic label.
6. Cut out individual counters



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FIRE HOSE


THE AUSTRALIAN ARMY
Army