



Ministry
of Defence

Influence Wargaming Handbook



Influence Wargaming Handbook

Influence Wargaming Handbook, dated July 2023,
is promulgated as directed by the Chiefs of Staff

A handwritten signature in black ink, appearing to read 'Rowell', written in a cursive style.

Head Concepts

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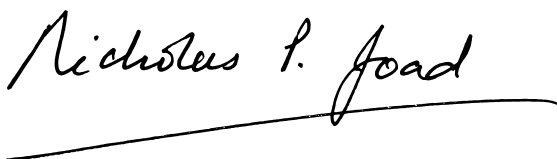
Foreword

Human behaviour is a central concern of much Defence and security activity, and operational success frequently depends upon influencing the attitudes, perceptions and behaviours of different audiences. Adequately representing and exploring the impact of behavioural interventions on conflict and security outcomes is challenging however, because precise causal mechanisms are elusive, and informational and non-kinetic activities embody significant uncertainty in their impact and effectiveness. The *Influence Wargaming Handbook* seeks to explain how wargaming can be used to better represent and explore influence effects across a range of policy, force development, planning, education and training problems.

The character of warfare is changing rapidly, driven by the pervasiveness of information and pace of technological change. Our competitors and adversaries are pursuing a strategy designed to undermine political cohesion, erode social and economic resilience, and challenge the global order and international stability. Their goal is to achieve these objectives – ideally below the threshold of armed conflict – by employing a diverse and ungoverned set of information-centric approaches to affect the attitudes, beliefs and behaviours of audiences globally. Accordingly, representing and exploring audience behaviours is now central to UK Defence doctrine and the wider Defence and security activities across the continuum of competition.

Wargaming is a trusted analytical technique that provides structured, intellectually liberating and safe-to-fail environments where decision-makers can differentiate ‘what works’ from ‘what doesn’t’. It is also a potent technique to be employed to understand influence and information activities. At the same time, wargaming influence is different from conventional wargaming (typified by force-on-force and kinetic activity) and demands a new mindset and a change in approach from sponsors, practitioners and participants alike.

The *Influence Wargaming Handbook* provides a handrail for would-be sponsors, practitioners and participants striving to include and better represent influence within wargames. It is a key resource, designed to prompt debate and further research, and I commend it to you.

A handwritten signature in black ink that reads "Nicholas P. Joad". The signature is written in a cursive style and is underlined with a single horizontal line.

Dr Nick Joad
Director Defence Science and Technology

“

Challenging traditional thinking through wargaming is critical to reform of our Services. I expect those commissioning wargames to play an active role in those games so that reform and challenge are seen to be part of everyday thinking rather than occurring in academic or scientific backrooms. Wargame outputs have been central to our decision-making under my leadership and everyone has a role to play in this cultural shift.

”

Rt Hon. Ben Wallace MP, Secretary of State for Defence

Preface

Purpose

1. The *Influence Wargaming Handbook* seeks to explain how wargaming can be used to explore influence. It also looks at how influence effects might be better represented within wargames.¹

Context

2. Affecting the behaviours of target audiences is central to all Defence and security activities across the continuum of competition.² At present, the understanding and representation of influence and behavioural effects within defence and security methods, techniques and data are of variable quality. Of the many validated methods and techniques that support education and training, planning, executive decision-making and experimentation³ across the operational domains,⁴ very few currently have the ability to explore and represent influence. Both the development of new, and augmentation of existing, methods and techniques to represent influence-related effects below the threshold of war is regarded as a high priority.

3. Wargaming is recognised as ‘a powerful tool ... that can deliver better understanding and critical thinking, foresight, genuinely informed decision-making and innovation.’⁵ While that is certainly true of ‘conventional’ wargaming, typified by force-on-force and kinetic activity, the representation of influence effects within wargames is of more variable quality. Wargaming is particularly suited to examining influence – but it must be conducted well

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1 The examples contained in this handbook that mention illegal or illicit activities used for persuasion are to illustrate to the reader that such activities can be undertaken by certain foreign nationals and members of the public during operations and thus represented in wargames as role play by individuals, groups or organisations. The UK government seeks to comply with relevant domestic and international law in all its activities. Any such illegal persuasive activities are not condoned by the UK Ministry of Defence (MOD) and do not reflect UK government policy, promotion or practice by government staff.

2 The continuum of competition, introduced in Joint Doctrine Publication (JDP) 0-01, *UK Defence Doctrine*, 6th Edition, spans from cooperation, through rivalry and confrontation, to armed conflict. Other nations and organisations use the terms competition, crisis and conflict.

3 See MOD, *Defence Experimentation for Force Development Handbook*.

4 JDP 0-01, *UK Defence Doctrine*, 6th Edition, page 16. The five operational domains are maritime, land, air, space, and cyber and electromagnetic.

5 MOD, *Wargaming Handbook*, page iii.

or it carries risk if it is not. ‘Influence wargaming’ is an evolving discipline that needs to be developed. It is essential that influence is better represented within wargames to inform our understanding of the information environment and, in particular, audiences.

Scope

4. The *Influence Wargaming Handbook* is not a guide to practising influence. Similar to its sister publication, the *Wargaming Handbook*, it will provide general guidance and highlight points that require consideration. In addition, it will present unresolved challenges that prospective wargame designers must acknowledge and address.

5. This handbook is not a detailed guide to practising wargaming. It will assume that the reader is familiar with wargaming and the associated red teaming good practice and will focus on factors that relate specifically to wargaming influence. As a minimum, the *Wargaming Handbook* and *Red Teaming Handbook* should be read alongside the *Influence Wargaming Handbook*.

Audiences

6. The *Influence Wargaming Handbook* is intended for all Defence and security personnel, including partners across government, related non-government departments and those in the private sector. The handbook is split to accommodate different audiences. Chapters 1 and 2 are aimed at the owners of influence-related problems (for example, potential wargame sponsors), so they can better understand how wargaming can be used to support their activities. Chapters 3 and 4 are aimed at practitioners who design and deliver influence wargames.

Structure

7. The *Influence Wargaming Handbook* comprises four chapters and a supporting annex. An outline of the content is described below.

For sponsors

- a. **Chapter 1 – Why wargame influence?** This chapter describes influence and wargaming. It explains why influence is important, and why wargaming is particularly suited to exploring and representing influence.

b. **Chapter 2 – Sponsoring influence wargames.** This chapter outlines the various factors that influence wargame sponsors must consider. It then highlights key risks associated with wargaming influence and suggests how to manage and mitigate these risks.

For practitioners

c. **Chapter 3 – Challenges to wargaming influence.** This chapter outlines the challenges facing influence wargaming practitioners. These are explained by illustrating the differences between conventional and influence wargames.

d. **Chapter 4 – Addressing the challenges to wargaming influence.** This chapter suggests how the challenges raised in Chapter 3 might be addressed.

e. **Annex A – Case studies.** Annex A presents recent case studies that illustrate how wargaming methods and techniques have been applied to influence-related defence and security problems.

Linkages

8. The *Influence Wargaming Handbook* is a sister publication to the *Wargaming Handbook* and is underpinned by a number of policy, strategy and doctrinal publications. In addition, there are a number of other publications that provide further context and guidance on aspects introduced. These include:

- Joint Doctrine Publication (JDP) 0-01, *UK Defence Doctrine*, 6th Edition;
- Allied Joint Publication-10.1, *Allied Joint Doctrine for Information Operations* (with UK national elements);
- JDP 04, *Understanding and Decision-making*;
- *Integrated Operating Concept*;
- *The Orchestration of Military Strategic Effects*;
- *Defence Experimentation for Force Development Handbook*;
- *Red Teaming Handbook*, 3rd Edition; and
- United States Army, *The Red Team Handbook*, US TRADOC G-2, Version 9.

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“

Against all odds and doom and gloom scenarios, Ukraine didn't fall. Ukraine is alive and kicking. And it gives me good reason to share with you our first, joint victory. We defeated Russia in the battle for the minds of the world.

”

Volodymyr Zelenskyy speaking to the United States Congress, 21 December 2022



Chapter 1

Why wargame influence?

1.1. This chapter describes influence and wargaming;⁶ note that the descriptions/definitions and scope of both influence and wargaming are not universally agreed nor well understood. The chapter then explains why wargaming is particularly suited to examining influence. Finally, it discusses why the wargaming of influence is different from conventional wargaming (typified by force-on-force and kinetic activity) and demands a new mindset and approach from sponsors, practitioners and participants.

What is influence?

1.2. The importance of audiences is recognised in UK Defence doctrine with the addition of integrated action to the two existing tenets of mission command and the manoeuvrist approach. Integrated action can be described as the audience-centric orchestration of military activities, across all operational domains, synchronised with non-military activities **to influence the attitude and behaviour of selected audiences necessary to achieve successful outcomes**. Understanding the audiences is the major consideration of

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⁶ Further detail can be found in: Joint Doctrine Publication (JDP) 0-01, *UK Defence Doctrine*, 6th Edition; Allied Joint Publication (AJP)-10.1, *Allied Joint Doctrine for Information Operations* (with UK national elements); and the *Wargaming Handbook*.

integrated action and so Joint Doctrine Publication (JDP) 0-01, *UK Defence Doctrine* (UKDD) introduces an audience-centric approach recognising ‘that people are at the heart of competition.’⁷

1.3. Influence is defined as: *the capacity to have an effect on the character or behaviour of someone or something, or the effect itself.*⁸ Influence is achieved by creating effects across all dimensions within the information environment. The information environment, visually represented in Figure 1.1, is defined as: *an environment comprised of the information itself, the individuals, organizations and systems that receive, process and convey the information, and the cognitive, virtual and physical space in which this occurs.*⁹

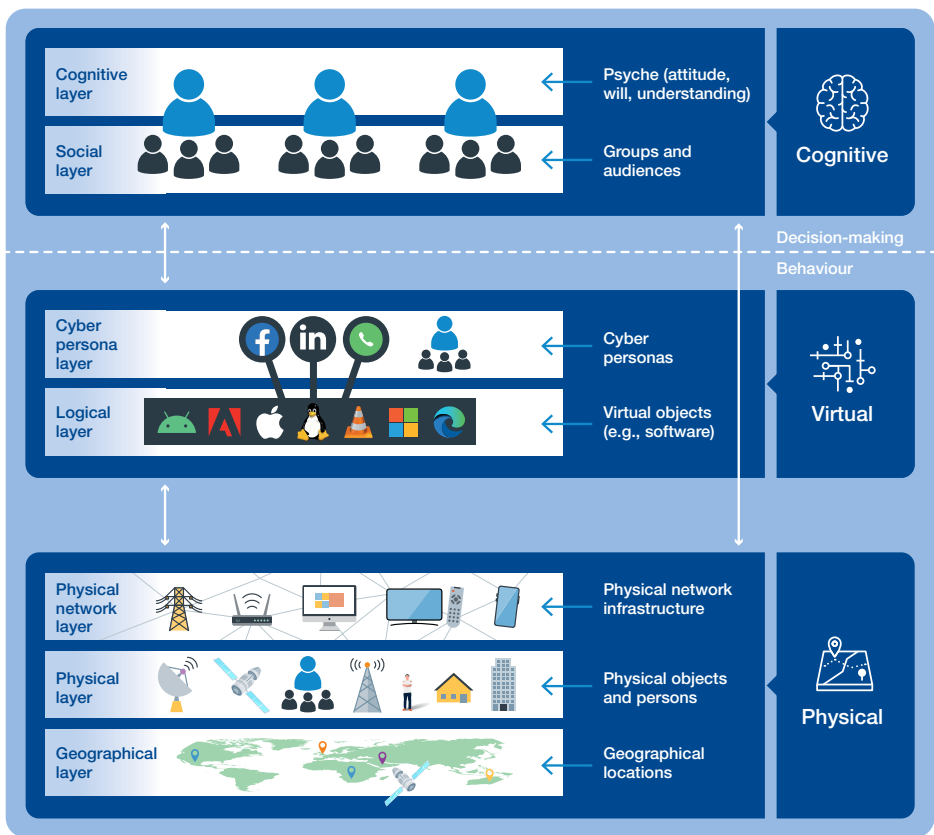


Figure 1.1 – The information environment¹⁰

1.4. The information environment is segmented into three dimensions: cognitive, physical and virtual. These dimensions are further segmented

7 JDP 0-01, *UK Defence Doctrine*, 6th Edition, pages 14–16.

8 *Concise Oxford English Dictionary*, 12th Edition.

9 NATOTerm.

10 AJP-10.1, *Allied Joint Doctrine for Information Operations*, Figure 4.1.

into seven layers: cognitive; social; cyber persona; logical; physical network; physical; and geographical. The effects created in the information environment may be **physical** (for example, the presence, posture or profile of forces as well as conventional activity), **virtual** (such as using cyberspace) or **cognitive** (where delivery mechanisms include messaging, information and misinformation), or a combination of the three.

1.5. Influence has many parallels with information activities, which seek to affect the will, understanding and capability of audiences to change their behaviours.¹¹ UKDD classifies this as an ‘audience-centric’ approach, while the North Atlantic Treaty Organization (NATO) refers to it as ‘behaviour-centric’.¹² Information operations¹³ is recognised as an integral part of all military activity and must be included from the beginning of the operational planning process.

Why influence is important – and challenging

1.6. The need to influence the perceptions and behaviours of identified audiences as part of defence and security activities and operations is not new. What has changed is that we now live in an Information Age, which is, ‘an increasingly digitized and interconnected world that provides easy access to technology that offers the ability to deliver real time audience-tailored communication to report, command, inform, influence, persuade, confuse, coerce or deceive.’¹⁴

The relationship between conventional and influence wargaming



The invasion of Ukraine in 2022 demonstrates the continuing utility of conventional wargaming and highlights the lack of effective influence wargames. Both have utility and are complementary. A number of conventional wargames were held immediately before and just after the war started that indicated that the presumed quick defeat of Ukraine was unlikely.

11 Information activities are defined as: [activities performed by any capability or means, focused on creating cognitive effects](#). NATOTerm.

12 NATO’s ‘behaviour-centric approach’ still places audiences at the centre of this, and defines them as: [any individual, group or entity whose interpretation of events and subsequent behaviour may affect the attainment of the end state](#). NATOTerm.

13 Information operations is defined as: [a staff function to analyze, plan, assess and integrate information activities to create desired effects on the will, understanding and capability of adversaries, potential adversaries and audiences in support of mission objectives](#). NATOTerm.

14 AJP-10.1, *Allied Joint Doctrine for Information Operations*, paragraph 1.3.



continued ...

Posted online on 2 March 2022,¹⁵ the conclusions from ‘The wargame before the war: Russia attacks Ukraine’, were that Russian forces did not achieve the quick victory that Putin expected so that, ‘one can expect the Russians to revert to type and start employing their overwhelming superiority in artillery and airpower much more indiscriminately.’ The wargame was revisited a month later and found that ‘by the end of the summer, Russia no longer possessed the forces to pursue major simultaneous objectives nor the combat power to conquer a major city.’¹⁶ The Rapid Campaign Analysis Toolset was used by Cranfield University on 3 March 2022 to conduct detailed modelling of the emerging situation around Kyiv in the early days of the Russian invasion. The model suggested that an immediate Russian attack on the city would be unsuccessful and result in heavy casualties of up to 5,000 personnel. This would likely lead to a relatively static situation with Russia resorting to massed fires and protracted siege tactics. These would strain logistics and cause significant collateral damage and civilian casualties.

Influence wargames were notable for their absence. They might have been used to examine the effectiveness of measures taken to deter Putin. From the Russian perspective, an examination of the Ukrainian people’s will to resist and the anticipated cohesion of the West could have elicited some fundamental insights. The lack of influence wargaming prior to and after the Russian invasion highlights the necessity to address this capability gap. This handbook explains how these apparently intangible factors can be examined using wargames.

1.7. Influence effects span and blur the strategic, operational and tactical levels of operations. They result from information activities that need to be synchronised across the maritime, land, air, space, and cyber and electromagnetic operational domains, and coordinated between organisations capable of creating the desired influence effects. Despite the acknowledged importance of influence in meeting Defence challenges,¹⁷ and the centrality of achieving information advantage,¹⁸ the ability to represent behavioural effects

.....
15 War on the Rocks, ‘The wargame before the war: Russia attacks Ukraine’, 2 March 2022.

16 Modern War Institute at West Point, ‘Wargaming a long war: Ukraine fights on’, 4 April 2022.

17 For example, implementing the Integrated Operating Framework (protect, engage, constrain and warfight) outlined in the *Integrated Operating Concept*.

18 Joint Concept Note 2/18, *Information Advantage*.

to inform planning and decision-making at all levels remains limited. This is because the nature and application of influence presents challenges. Some key examples are below.

- Effects are shaped by audiences' perceptions, culture and beliefs, which can be hard to predict.
- External actors may have a limited understanding of local attitudes and dynamics.
- The baseline of audiences' perceptions can change rapidly each time an action occurs.
- The impact of activities will be modified by a large number of variables and cumulative changes to the environment.
- Influence-related effects may have widely differing timelines, both in time-to-effect and the persistence of the effect.
- Despite new doctrine, the understanding of the meaning and scope of influence has not been universally agreed.

What is wargaming?

1.8. Wargaming can be described as a scenario-based model in which the outcome and sequence of events affect, and are affected by, the decisions made by the players. However, the *Wargaming Handbook* points out that, as with influence, 'there is no single, commonly accepted, definition of wargaming.' It goes on to explain the essential nature of 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 relatively low cost. A wargame is a process of adversarial challenge and creativity, delivered in a structured format and usually umpired or adjudicated. Wargames are dynamic events driven by player decision-making. As well as hostile actors, they should include all 'oppositional' factors that resist a plan.'¹⁹

.....
¹⁹ *Wargaming Handbook*, paragraph 1.5.

Why use wargaming to examine influence?

1.9. There are many validated methods and techniques that support planning and decision-making across the operational domains. Conversely, there are few techniques currently available that enable the exploration of influence. Representing and evaluating influence effects in decision-making is often subjective, prone to cognitive bias and with outcomes based on assumptions. Given that operational success is often dependent on changing audiences' behaviours, the ability to represent influence effectively is a significant capability shortfall. Wargaming can be used to better represent and explore influence effects across a range of policy, force development, planning, education and training problems.²⁰

1.10. One key characteristic of a wargame is that it is adversarial, with outcomes and the resulting narrative predicated on player decisions made in response to a dynamic and emerging situation. Wargaming is well suited to exploring influence for the following reasons.

- a. Wargaming is a fundamentally human endeavour that offers the potential to examine problems from the perspective of multiple, diverse actors. This helps deliver insights into plausible effects that could result from particular courses of action.
- b. The adversarial and immersive nature of a wargame ensures an examination of the subject through an audience-centric lens. This enables dynamic interplay between different elements, which raises alternative and competing perspectives.
- c. Wargames are an experiential act of communication in all directions; up, down and sideways. This helps build networks and foster integrated action based on a common and shared understanding, including within stovepiped organisations and between Defence, partners across government, and allies and partners.
- d. Wargame participants face the consequences of their decisions in dynamic gameplay, often in linked campaigns of experiments. This helps to reveal unintended consequences and multiple orders of effect, not just the typical first and, maybe, second order effects.

²⁰ For more details on the applications of wargaming see the *Wargaming Handbook*, pages 8–11.

- e. The uncertainty and frictions inherent with real-world operations and influence are intrinsic elements of a wargame. This allows players to become more comfortable dealing with ambiguity and helps develop an adaptive mindset.
- f. Wargaming allows influence and behavioural effects to be explored in a safe-to-fail environment. This allows participants to become comfortable with unfamiliar concepts, enables experimentation using new ways of conducting and testing influence activity and provides better-considered options for decision-makers.
- g. Robust, structured and transparent wargaming methods and techniques build confidence in outcomes and generate relevant and explorable observations and insights. This allows the risks of false lessons and miscalculation to be managed.

Why wargaming influence is different

1.11. Activities that create influence and behavioural effects are broader than purely kinetic military operations. Hence, wargaming influence demands a wider perspective and new mindset from sponsors, practitioners and participants, as explained below.

- a. **Influence wargaming uses different methods and techniques that build on those used in conventional wargaming.**²¹ Conventional wargaming approaches typically focus on kinetic force-on-force engagements and manoeuvre. Icons represent force elements,²² usually on a physical map or computer screen. Adjudication techniques tend to use probabilities to hit, force ratios and so on. These techniques cannot simply be copied across and applied to influence wargaming; novel and unconventional approaches are required, as illustrated by the case studies at Annex A. The wargaming principle that there is no 'one-size-fits-all' solution is particularly true of influence wargames.
- b. **Influence wargaming is a developing capability.** While conventional wargaming has been practiced since the early 19th Century, influence

.....
 21 Note that conventional and influence wargames might use any of the types of wargame (for example, a seminar game or *Kriegsspiel*) introduced in the *Wargaming Handbook* and other approaches.

22 A formation, unit, sub-unit, ship, aircraft or group of such.

wargaming is less mature and underused.²³ There are no definitively proven influence wargaming approaches, let alone simple solutions that are easy to implement. All of the illustrative case studies at Annex A have been conducted recently, and many document the first pioneering use of the approach described.

c. **Influence wargames are potentially unbounded in scope.** Even the most cursory ‘zooming out’ from what appears to be a bounded situation reveals that all aspects of the instruments of national power²⁴ or the systems on and in which the instruments act²⁵ are likely to be affected by any military activity because of the interconnected and complex global environment. The question for influence wargamers is where and how to bound the problem under consideration to make examining it practicable.

d. **Influence wargames deal in unknown unknowns.** Information in conventional wargames generally takes the form of either a known known or a known unknown. For example, the locations of forces are either confirmed, estimated or unknown but, in the latter case, understanding the broad composition of an enemy force triggers activity to find missing elements. Influence wargames regularly reveal unknown unknowns, eliciting factors and audiences that we did not know about or did not consider important. Furthermore, they often reveal that what we think we know actually is not so, and that our beliefs and understanding are wrong.

e. **Influence wargaming still carries risk.** The risk box that follows this paragraph explains that false lessons arising from an influence wargame might lead to strategic miscalculation. Other risks are expressed throughout this handbook; the effects of all are potentially significant. However, **not** conducting influence wargames because the risks are perceived as too great is not a mitigation – or even an option. Rather, we must do it more, to better understand influence wargaming and how to manage the risks and opportunities.

.....
23 There are historical examples of influence wargames, but these are scant. For example, Germany and Japan incorporated political–military games into their 1930s planning activities, and RAND considered the possibility of nuclear war in the 1960s using influence games.

24 The instruments of national power are: diplomatic, information, military and economic (DIME).

25 Political, military, economic, social, information and infrastructure (PMESII).



Risk: generating false or misleading insights and lessons

Cause. The difficulty of assessing the impact and effectiveness of influence in real life leads to effects being misrepresented, overstated or understated, being unrealistic or having the opposite impact to that envisaged.

Effect. This can lead to: generating false, misleading or irrelevant observations, insights and lessons; missing or ignoring key factors; and strategic miscalculation.

Mitigations include: red teaming to ensure creative exploration; repeated short gaming so that lessons identified can be reintegrated into the games, thus refining insights and lessons; rotating red and blue players and adjudicators between games so that influence from all perspectives can be explored; and recruiting participants from populations knowledgeable about the target audiences in the game.

1

1.12. None of this implies that conventional wargaming is in any way obsolete, or not fit for purpose. The Russian Federation's invasion of Ukraine in 2022 provides a stark reminder of the utility of conventional forces and, hence, of conventional wargaming. Conventional force-on-force kinetic wargaming must continue to feature in military decision-making processes. Influence wargames build on conventional wargames; they do not replace them. Influence wargames can be conducted as stand-alone events that focus entirely on influence and behavioural effects or in support of conventional wargames. Indeed, all wargames, no matter how kinetic, should feature influence mechanisms or have a good and explicit reason why they do not.

Conclusion

1.13. Influence is central to all military activities, as explained in UK and NATO doctrine. Great effort must be made to understand and conduct influence and behavioural effects. Similar efforts must be made to understand influence wargaming and do it better. Despite the challenges of influence wargaming, the conclusion must be that more effort should be made to develop and practise it.

“

The only thing harder than getting
a new idea into the military mind
is to get an old one out.

”

B. H. Liddell Hart



Chapter 2

Sponsoring influence wargames

2.1. Chapter 1 introduced the idea that influence wargaming is different to conventional wargaming and, consequently, demands a different mindset. This must be instilled and championed by the sponsor of an influence wargame. This chapter outlines the key factors that sponsors must consider. It concludes with a checklist that sponsors can use to ensure they provide the correct leadership, direction and resourcing to the wargame team, and that risks are properly managed.

Influence wargames require new approaches, a new mindset – and leadership

2.2. Sponsors of influence wargames should not expect the games to necessarily resemble or function in the same way as conventional wargames. The representation of the information environment will be different. It, and the associated audiences, will need to be modelled using novel techniques, although these will often build on existing approaches. Furthermore, the sponsor and designers will need to adopt new mindsets when commissioning, designing and delivering influence wargames. This will require leadership, an appetite for risk and an understanding of how to manage these. A visual comparison of conventional and influence wargames is at Figure 2.1.

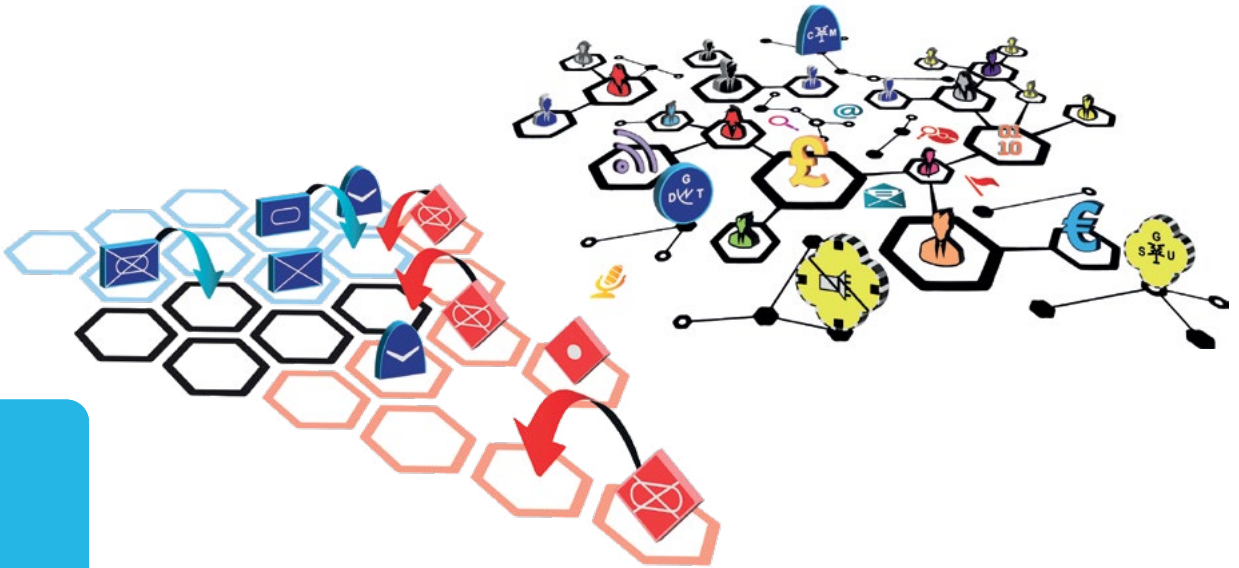


Figure 2.1 – Conventional versus influence wargaming

2

2.3. Key challenges that arise because of the differences between conventional and influence wargames are discussed in detail in Chapter 3, with suggested approaches to help address them set out in Chapter 4. While it is the task of the wargame design team to develop the detailed methods and techniques that address them, wargame sponsors should be aware of the challenges. The challenges are listed below.

- a. **Challenge 1 – Influence wargames are likely to be vastly multi-sided.** A two-sided ‘red versus blue’ approach will be replaced by many different sides.
- b. **Challenge 2 – Influence wargame teams are likely to be diverse and different.** Teams will be multifunctional and not necessarily have the same composition.
- c. **Challenge 3 – Influence wargames focus on rivalry and confrontation, not just armed conflict.** While the setting of an influence wargame can be during conflict (as in Ukraine), the context of many influence games will be below the threshold of war.
- d. **Challenge 4 – There are unlikely to be clear winners in an influence wargame.** Although players will still work towards objectives, and informational successes can be achieved, specific win conditions are unlikely to be fulfilled within the time frame of the wargame.

- e. **Challenge 5 – Influence wargame scenarios require greater detail across the information environment.** Adopting an audience-centric approach and providing players with sufficient information activities vectors will require significant scenario detail and predicates towards using real-world data.
- f. **Challenge 6 – Influence wargames are more prone to cognitive bias.** Influence wargames are particularly sensitive to biases due to their focus on the cognitive dimension and the subjective beliefs of players, analysts and supporting experts with individual exposure to influence operations.
- g. **Challenge 7 – Influence wargames require a greater understanding of audiences’ perspectives.** Understanding the beliefs and potential reactions to influence actions of the audiences in a wargame will be challenging. Increased effort will be required to capture data on players’ opinions and perspectives, particularly when the use of proxy participants is likely.
- h. **Challenge 8 – Influence wargames will contain multiple subjective perspectives on the game narrative.** Instead of clear storylines that are simple to understand, influence wargames will have multifaceted narratives that can be interpreted in many ways.
- i. **Challenge 9 – Influence is ill-defined and poorly understood.** The lack of a common, internationally agreed influence lexicon, plus the broad scope of the subject, will make it difficult to bound an influence wargame and represent the required effects.
- j. **Challenge 10 – Influence wargames must contain both behavioural and physical science approaches.** The diffuse behavioural effects represented within influence wargames will rely heavily on qualitative and social science approaches, in conjunction with established physical effects models.
- k. **Challenge 11 – Influence actions and their effects are not proportionate.** Influence effects are not bounded by physics and geography, and even individual actors can have an enormous and far-reaching impact.

- l. **Challenge 12 – Influence actions do not have equal and opposite reactions.** While conventional warfare generally follows the laws of physics, in the information environment, the impact of an action can generate extremely complex outcomes.
- m. **Challenge 13 – Influence effects can propagate unpredictably.** Unlike conventional actions, which generally result in a first order effect only, influence actions will commonly have second, third and fourth order effects, which will also spread across political, economic and informational boundaries.
- n. **Challenge 14 – Influence effecters and their effects have a complex relationship.** Instead of a limited number of appropriate effecters, in influence wargaming there will be an enormous range of possibilities by which any given effect can be created.
- o. **Challenge 15 – Information in influence wargames is open to many different interpretations.** Instead of a relatively discernible ‘ground truth’, individual data points are likely to be interpreted differently by participants in an influence wargame depending on the game context and the players’ specific perspectives.
- p. **Challenge 16 – Influence actions and effects operate over vastly different timescales.** The time frames of player actions will span from seconds through to years, both in terms of times-to-effect and persistency of effect.

2.4. The challenges listed above mean that sponsors must remain closely engaged when commissioning and leading an influence wargame. There is generally a good common understanding of the factors to be gamed in conventional wargames and how they might be represented. However, the initiation, design and delivery of an influence wargame will be a shared journey of discovery between the sponsor, the wargame team and the game’s participants. The final form of the wargame will not be known until just before, or even during, execution, so the sponsor must help shape the direction the game takes and ensure it is fit for the envisaged purpose. Case study 1 at Annex A illustrates the criticality of good sponsor engagement.

2.5. The leadership required by the sponsor usually manifests in creating a properly resourced and empowered wargaming team with access to the sponsor. Ideally the sponsor and other seniors should also participate in

the wargaming, which sets an example and is fundamental to establishing the common understanding that will arise from the shared journey. Some military personnel find the examination of influence an uncomfortable activity, putting them outside their comfort zone. As well as potentially allowing time for participants to grasp new concepts and approaches, the sponsor must encourage participants to face the unfamiliar and not default to approaches and techniques that they know. One aspect of this is to ensure the red team is empowered and receives the full backing of the sponsor. Finally, the sponsor must embrace the diverse participants required for an influence wargame and ensure access to a wide pool of specialists.

The primary considerations for the sponsor

Influence wargaming demands a new mindset and a change in approach from sponsors, practitioners and participants alike.



2

2.6. In addition to the factors normally considered when commissioning a wargame,²⁶ the sponsor must pay attention to the factors detailed below. As with conventional wargaming, many of these must be determined in the initiation phase of an influence wargaming project, so early and continuing advice is required from the wargaming team.

2.7. **Aim, objectives and bounded scope.** While this is true of any wargame, the purpose of an influence wargame must be completely unambiguous and agreed before design begins. Given the potentially unlimited scope of an influence wargame, it is crucial that an achievable aim is derived, with specific objectives that bound the scope of the game.

2.8. **Level of experimentation.** Given the novel nature of influence operations and the lack of agreement on its definition, influence wargames will be inherently experimental. Levels of experimentation range from discovery, through development, to validation.²⁷ These levels are fully discussed in the *Defence Experimentation for Force Development Handbook*. Understanding where an influence wargame lies within the levels of experimentation fundamentally affects many aspects of the wargame and the resources required to satisfy the requirement. Examples include: participation, depth of analysis, the scope of the scenario detail, sophistication of adjudication

²⁶ Further detail can be found in Chapter 4 of the *Wargaming Handbook*.

²⁷ These are illustrated in Figure 4.5 in Chapter 4.

techniques and the necessary degree of red teaming. It is unlikely that an influence wargame will deliver the same degree of certainty or clarity as a conventional wargame. However, the insights generated from an influence wargame are unlikely to be delivered by a conventional wargame.

2.9. Timescales. Three temporal factors must be considered: the in-game time-to-effect of influence-related activities; the persistency of those effects; and the real-world passage of time during the game and between games. These three factors are likely to be linked, but it is the first two that set influence wargames apart from conventional ones. For example, force-on-force wargames tend to have relatively regular turn lengths, but the juxtaposition of short and long in-game times-to-effect and persistency in an influence wargame might require irregular turn lengths and iterative games that cover different periods of time.

2.10. Factors to be represented within the wargame. Influence wargaming requires the representation of different factors to those required in conventional wargaming. Examples include: behaviours, attitudes, cultures and non-negotiable beliefs; governance; motivations in decision-making; disinformation and misinformation; the degree of media penetration; and national constraints, policies and permissions. Representing all such factors is unworkable, so the game must concentrate only on those that are essential to achieving the aim and objectives. Even with a tight focus, it will be necessary to simplify or make many factors abstract to aid understanding. Case study 5 at Annex A is a good example of complex factors being abstracted so they are playable.

2.11. Representation of force elements. Most conventional wargames centre on the manoeuvre of force elements. In influence wargames, both sides of the threshold of war will need to be considered. Force elements will continue to feature, as appropriate, with influence effects being integrated into the wargame. Hence, force elements might need to be faded into the background in influence wargames. Soft factors such as audience perceptions predominate, not military forces. Force elements, and their presence, posture and profile, might still feature, but their impact on gameplay is likely to have an influence, rather than a kinetic, effect.

2.12. Understanding audiences' perspectives. Influence operations seek to have a cognitive effect that affects one or more audiences' behaviours, which can include adversaries and enemies. Understanding and measuring this cognitive effect in real life, and in wargames, is challenging and requires

effort and bespoke processes. Participants (players and adjudicators) should be recruited from populations who are knowledgeable about the target audiences, but sponsors must remain aware that unconscious bias may still introduce risk.

2.13. **Balancing simplicity against playability.** While true of conventional wargames, influence games necessarily feature even more simplified models of reality to assist understanding and avoid participants being overwhelmed by the complexity of the context. Game mechanisms must be developed that strike a balance between being appropriately simple and abstracted while remaining credible and not compromising confidence in the insights and data arising.

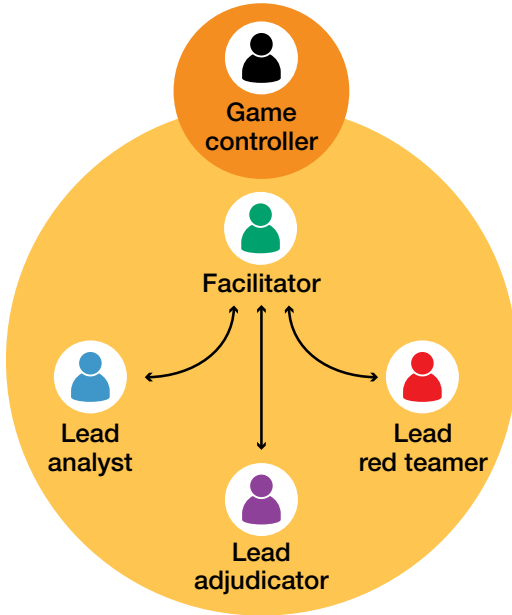
2.14. **Control.** The *Wargaming Handbook* explains that ‘control is the minute-by-minute activity that ensures the wargame proceeds as required to address the problem and meets its objectives.’²⁸ It specifies that the control team comprises a game controller, facilitator (often the wargame designer) and lead analyst.²⁹ In an influence wargame, a **lead adjudicator** and **lead red teamer**³⁰ are essential. Controlling an influence wargame effectively is crucial because the broad context makes it much easier to deviate from the aim and objectives and expand beyond the planned-for scope. Control must include an assurance function, both of the wargame’s outputs and of the game itself.³¹ Given this, controlling an influence wargame can require more deliberation and, hence, can take longer than a conventional wargame. The key responsibilities of the control team in an influence wargame are shown in Figure 2.2. With the exception of the game controller, which is a singular role, each function might include several people working to a lead. However, the team is scalable and roles might be double hatted with the overall control function discharged by a small team. Case study 7 at Annex A shows that the control function can be discharged by just one person.

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28 *Wargaming Handbook*, page 23.

29 *Wargaming Handbook*, pages 32–33.

30 Red team is defined as: [a team that is formed with the objective of subjecting an organisation’s plans, programmes, ideas and assumptions to rigorous analysis and challenge](#). Joint Doctrine Publication 0-01.1, *UK Terminology Supplement to NATO Term*.

31 For more detail on assurance, see the *Defence Experimentation for Force Development Handbook*, Version 2, page 21.



- Game controller:**
 - Steer wargame to achieve objectives
 - Final arbitration of routine decisions
 - Assure wargame outcomes

- Facilitator:**
 - Run the wargame mechanics, leaving the players and controller free to think
 - Control the tempo of the wargame
 - Support adjudicators
 - Support data capture and analysis
 - Enable the introduction of audience perspectives from participant cells
 - Enable red team interjections
 - Ensure diverse thinking

- Lead analyst:**
 - Ensure adherence to, and completion of, the data collection and management plan
 - Ensure adequate data collection by scribes
 - Assess player engagement

- Lead red teamer:**
 - Identify and mitigate biases
 - Challenge assumptions and beliefs
 - Identify different opinions and alternatives
 - Widen the scope of information searches

- Lead adjudicator:**
 - Ensure the validity of adjudication processes and supporting methods, models and tools
 - Initial assurance of adjudication outcomes

Figure 2.2 – Wargame control team responsibilities

2.15. **Adjudication.** A key aspect of control, ‘adjudication is the process of determining the outcomes of player interactions.’³² Central to all wargames, good adjudication is critical to the success of influence wargames. If adjudication is flawed, disproportionate risks arise. These can cause a game to fail or, worse, lead to false lessons and strategic miscalculation. Adjudication techniques are either subjective (based on subject matter expert opinions) or structured (based on defined rules). Both approaches carry risk, as illustrated in the risk box below. Subjective adjudication relies on people with knowledge that spans the full range of influence effects. The outcomes from subjective adjudication tend to be opaque and produce inconsistent results over time and across different instances. Additionally, the wargaming and modelling community have not yet developed sufficiently nuanced and trusted sets of

³² *Wargaming Handbook*, paragraph 1.9e.

rules to support structured adjudication. Thus, any wargame will be open to criticism. Influence wargames should feature multiple adjudication approaches to mitigate many of the associated risks. Data from the adjudication cell must be collected with the same rigour as from player cells³³ and adjudicators, and players might rotate positions for repeated gaming.³⁴



Risk: wargame outputs are not used due to a lack of confidence in the rigour of the adjudication process

Cause. Current adjudication methods are still maturing to represent behavioural effects in a credible and realistic manner.

Effect. The required levels of confidence in the outcomes may not be achieved, the required data and insights not being generated or the players losing confidence in the utility of the wargame itself.

Mitigations include: using multiple appropriate adjudication approaches; credible adjudicators; determination and assignment of qualitative confidence statements; recognising important outcomes as branches that trigger additional adjudication resource; capturing adjudication rationale; transparency; and red teaming the adjudication process and outcomes.

2

2.16. **Recognising cognitive biases.** Influence wargames are particularly sensitive to cognitive biases due to outcomes being based largely on subjective perceptions, rather than the more objective rules of physics that support conventional wargames. Bias affects individual and group understanding and decision-making. It also leads to misunderstanding and incorrect conclusions that can result in poor decisions and negative outcomes. The various red teaming publications listed in the linkages section of the preface examine sources of bias and suggest a range of techniques for addressing these which are especially relevant to influence wargaming. An influence wargame's introductory brief for players and adjudicators should include an overview of relevant cognitive biases and how to recognise and mitigate them.

33 See Stephen Downes-Martin, 'Adjudication: The Diabolus in Machina of Wargaming', *Naval War College Review* 2013, Volume 66, Issue 3, pages 67–80.

34 See Stephen Downes-Martin, 'Swarm Gaming: Regaining the Strategic Innovation Initiative', United States Army War College, 9 October 2020.

2.17. **Managing risks.** As explained in Chapter 1, the potential negative effects arising from poor risk management when wargaming influence are significant. The risks expressed throughout this handbook are illustrative, not comprehensive. Sponsors must manage the risks associated with influence wargames.

2.18. **Analysis.** Robust analysis is essential in any wargame, whether for a training or analytical purpose. Analysis planning must start during the event's initiation phase and shapes all aspects of the wargame. The 'master question' is often the starting point for an analytical wargame project. As with psychological and other studies within the social science discipline, the subjectivity of the collected data creates difficulties when determining cause-and-effect relationships. Hence, conclusions and findings are likely to be indicative and require further examination. Due to the significant increase in subjective and qualitative data in influence wargames, enhanced data capture methods and social science methodologies will be needed to elicit insights.

2.19. **Metrics and visualisation.** In influence wargames, metrics are less tangible (but still important) and, therefore, must be challenged and assured. Metrics include in-game indices and/or the perceptions of the actual players. For example, adjudicated outcomes might move a marker on a track that represents an audience's level of support for an actor. Alternatively, players might be asked to score their perceptions of, or feelings towards, an actor before, during and after gameplay.

2.20. **Scrutinised assumptions.** Given the uncertainties inherent in wargaming influence, it is crucial that baseline assumptions are identified, scrutinised (for example, with the red team leading a key assumptions check) and kept under constant review throughout wargame design, development and execution. Assumptions are likely to need refining and new assumptions will arise that need examination. Assumptions should encompass and make explicit what is not known.

2.21. **Supporting or supported influence wargames.** In the context of this handbook, a supported wargame is one where influence and behavioural effects are the primary focus. A supporting wargame is one where influence, or an influence wargame, is just one element of an event with a broader scope. The sponsor must be clear whether their influence wargame is supporting or supported because different approaches and levels of effort are required for each state. The influence wargaming campaign developed for Headquarters Allied Rapid Reaction Corps (ARRC) at Figure 4.5 in Chapter 4 illustrates this.

2.22. **Integration with wider activities.** An influence wargame should be firmly embedded in an integrated analysis and experimentation campaign plan (also expressed as a 'cycle of research') or a training progression. The wider activities can include wargames but should encompass other forms of analysis, exercises and operational lessons learned. Everyone involved will learn along the way and maintaining the tempo of the campaign will help people formulate and develop new ideas. Because influence is a relatively unfamiliar concept that involves applying novel approaches, these campaigns are likely to require a rapid tempo moving from hypothesis generation to conclusion.

2.23. **Supporting methods and techniques.** The development of methods and techniques that represent influence and behaviour is a rapidly evolving area. For example, artificial intelligence and human behaviour representation are of great interest to Defence. New methods and techniques will be developed that can support influence wargaming.

2.24. **Appropriate resourcing.** Influence wargames demand a broader and more specialist set of resources than conventional wargames. This is relevant to the wargame design team, players, supporting subject matter experts and analysts – in fact all participants. It is the sponsor's responsibility to ensure appropriate resourcing, including their own engagement, and the correct participation at the wargame itself.

Sponsor's checklist

2.25. The sponsor of an influence wargame can use the bullets below as a checklist throughout the life cycle of an influence wargame project. It is couched as a series of questions that should be discussed with the wargame design team.

- Is wargaming, potentially in conjunction with other techniques, a suitable technique for examining the problem?
- Is the wargame's aim clear and achievable?
- Is the wargame bounded, with the factors to be represented identified and extraneous ones removed?

- Does the wargame synergise with other wargaming and non-wargaming activities, including in the sharing of insights and lessons before and afterwards?
- Is a wargaming campaign approach appropriate, potentially involving repeated, comparative or even persistent wargames?
- Has a suitably qualified and experienced team of wargame designers, facilitators, adjudicators, red teamers, analysts and player cell leads been recruited, ideally before initiation?
- Are the wargame design and analysis team properly resourced, including having access to, and engagement with, the sponsor?
- Has an empowered red team been established, for the wargame itself but also to scrutinise all wargame design and development processes throughout?
- Have the correct wargame participants (players and adjudicators) with an appropriate level of understanding of influence been identified and recruited?
- Do the participants have an appropriate level of understanding of cognitive biases, both of their own and of the target audiences that are the subject of the game?
- Do the participants have an appropriate level of understanding of wargaming?
- Has a process to control the wargame effectively during execution been established?
- Is adjudication appropriate and subject to red teaming?
- Has a process been established to determine qualitative levels of confidence in the wargame and its outputs?
- Have valid and appropriate methods and techniques been identified or, more likely, developed to support the wargame?

- Has a process been established to confirm a common understanding of the game's emerging narrative and key events?
- Has a comprehensive after-action review been resourced and planned for?
- Are the timelines for the wargame project workable?
- Is there a plan to manage risks?
- Are there any classification issues? If so, have workarounds been identified?





It is important to make one thing clear at the very start: designing and delivering a wargame is an art, not a science.

Peter Perla, *The Art of Wargaming*

Art is the elimination of the unnecessary.

Pablo Picasso

Chapter 3

Challenges to wargaming influence

3.1. This chapter outlines the challenges facing influence wargaming practitioners. These are explained by illustrating the differences between conventional and influence wargames. They are not presented in a priority order, as their significance will vary depending on the context of the game. Rather, the challenges are grouped into three sections: scenario, narrative and objectives; perspectives and biases; and modelling. Chapter 4 suggests how these challenges might be addressed.

Section 1 – Scenario, narrative and objectives

Challenge 1 – Influence wargames are likely to be vastly multi-sided

3.2. Conventional wargames typically feature a two-sided ‘red versus blue’ structure. Sides might consist of various allies and host nations, but the fundamental philosophy remains that of two clearly opposing teams. Local populations and various non-state actors are sometimes represented, but these tend to remain peripheral to the main activity.

3.3. Influence wargames will feature more subtle, complex and multi-sided relationships that morph and adapt within the ever-changing and interconnected world being represented. Multiple actors are likely to feature in an influence wargame, often operating through proxies working in ungoverned spaces. Different sides may be closely aligned on certain goals and issues but diametrically opposed on others. The adage ‘the enemy of my enemy is my friend’ does not hold true, and the lines between ‘friend’ and ‘enemy’ can become blurred to the point of becoming meaningless.



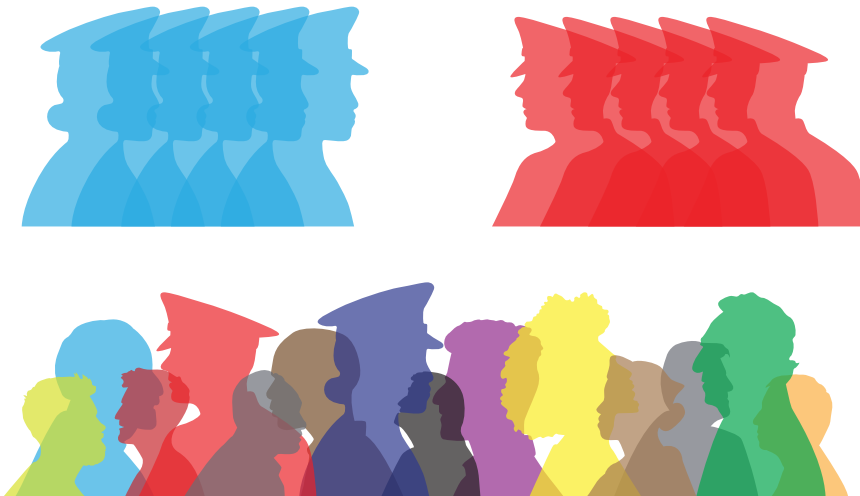
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3.4. The key point for designers is that the classic, two-sided, approach will not suffice in influence wargames. Games will typically feature multiple dedicated sides and the relationships between them will be nuanced. Designers must balance having sufficient sides to reflect real-world complexity while bounding the game and the number of participants to make it playable. Additionally, the conventional ‘colour coding’ of cells and teams is unlikely to suffice and should be replaced by naming cells according to the relevant actual actor or audience.

Challenge 2 – Influence wargame teams are likely to be diverse and different

3.5. In conventional wargames, teams are generally homogeneous (and typically military). Despite consisting of personnel from different arms and Services, individuals and the forces they represent fundamentally integrate into a holistic team and operate using common practices. The players in these roles will be familiar with operating with each other within whatever context the wargame is representing.

3.6. In influence wargames, each side will likely consist of multidisciplinary players who may not have worked with each other (military players alongside, for example, finance ministers, social media influencers and diplomats). In addition, these players are unlikely to share a common lexicon and will likely have distinctly different operating procedures and even world views. In a multinational influence wargame, participants will likely be familiar only with their own national laws and ethics, ways of planning and thinking within different systems, and may have different in-game objectives.



3.7. The wargame delivery team will need to manage participants carefully, defining new approaches and planning paradigms while balancing the sense of equality across the different players to ensure effective integration and player engagement. All viewpoints are of equal importance. Data capture methods must ensure a common understanding of the game's narrative and events, despite varying perspectives. Designers will need to incorporate untested command and control concepts and bespoke permissions and authorities' processes. Wargame control and player teams, once formed, will need to be well rehearsed.

Challenge 3 – Influence wargames focus on rivalry and confrontation, not just armed conflict

3.8. The context for conventional wargames is overwhelmingly oriented towards warfighting. From education and training wargames through to force development and force optimisation, players are typically placed in, and stay in, the situation that presents the greatest challenge – direct armed conflict. Historically, this is the primary use of the wargaming technique.

3.9. Whilst situating influence wargames within an armed conflict is perfectly permissible, most will be set during protracted periods of constant rivalry, interspersed with confrontation. However, as the 2022 war in Ukraine shows, wargames must be able to examine both sides of the threshold of war simultaneously. During an influence wargame, it is likely that the degree of competition will fluctuate. With multiple sides involved, it is also likely that the state of competition will differ between different actors at the same time. A humanitarian assistance and disaster relief operation includes significant influence and behavioural effects and could occur across the continuum of competition.

3.10. With wargames set in the contexts of rivalry and confrontation, it will be necessary to create an array of competing objectives for the teams rather than a conflict resolution goal. Successes will contribute to the winner's objectives whilst not necessarily having an impact on the other sides. Scenarios must be designed to be flexible, moving back and forth between cooperation, rivalry, confrontation and armed conflict.

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Challenge 4 – There are unlikely to be clear winners in an influence wargame

3.11. Conventional wargames tend to feature easily discernible objectives given to each side. Games are generally zero-sum (where the gain of the winner means a loss for the loser) and it is usually easy to declare a winner and loser, or that the outcome is a draw. Whatever the outcome, the result is usually clear and apparent and is determined after a bounded period of adversarial activity. Objectives tend to be geographical, for example, a unit or formation will be ordered to seize a location, or an air mission will seek to destroy a communications hub. Frequent small victories and defeats occur during a conventional wargame that, win or lose, enhance player engagement.



3.12. A logical extension of the constant and protracted nature of competition is that an influence wargame is unlikely to have a ‘winner’. Goals and objectives will be set for each side and clearly articulated to the players, but achieving these should not be conflated with winning; a position of advantage might be gained (whether in real terms or in the perceptions of others), but this could be temporary. Such changes in the ‘win state’ might occur within the time frame of the game but are just as likely to take place at some unidentified point in the future. It is important to note, however, that it may (or should) be possible for a side to lose. There will be thresholds or objectives that certain sides or players cannot afford to cross or fail to hold. For example, breaking rules of engagement constraints might lead to political disaster, or depleting a national reserve too far could result in economic crisis. Influence actions tend to deliver marginal and incremental effects, with fewer outright successes during the wargame.

3.13. With no clear winner and loser, influence wargames should run over protracted periods or even be persistent. The length of time between wargames will vary depending on the context, so a campaign mindset is likely to be required, whereby branch points and key events can be examined and re-examined. The assessment of whether a side or team has done well will be subjective, so additional effort will be required to capture these perspectives. The reduced instances of discernible successes and failures could lead to lower player engagement. This can also lead to players engaging in unrealistic activity that facilitators will need to mitigate.

Challenge 5 – Influence wargame scenarios require greater detail across the information environment

3.14. In conventional wargames, scenarios are generally written with an emphasis on military activities in the physical dimension. Whilst many include aspects of the instruments of national power³⁵ or political, military, economic, social, information and infrastructure (PMESII),³⁶ these are often only to provide context for the primary military activities. The consequences of the players' (military) actions tend not to be reflected in any supporting political, informational or economic gameplay, and those aspects do not necessarily feed back into and affect the military operations within the game.

3.15. In influence wargames, gameplay will include activity in the wider political, informational, social and economic areas, for example. To support that, scenarios must give at least equal, and probably greater, weighting to these non-military aspects if they are to present the required details of the information environment and provide the players with the necessary levers. This is a product of the inherent complexity of the information environment, the number of sides in the wargame, the diversity of players in each team and the need to encourage the sides to compete for numerous objectives rather than a single win/loss condition.

3.16. Greater scenario depth is required in an influence wargame, with non-military aspects appropriately detailed. These areas of the information environment will often be more important than the military activities in the game and players might need to operate in areas unfamiliar to them. Representing the information environment will probably require novel methods

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35 The instruments of national power are: diplomatic, information, military and economic (DIME). These are often expanded to DIMEFILET by adding finance, infrastructure, legal, environmental and technology.

36 These are the systems on and in which the instruments of national power act. They are often expanded to PMESII-PT by adding physical environment and time.

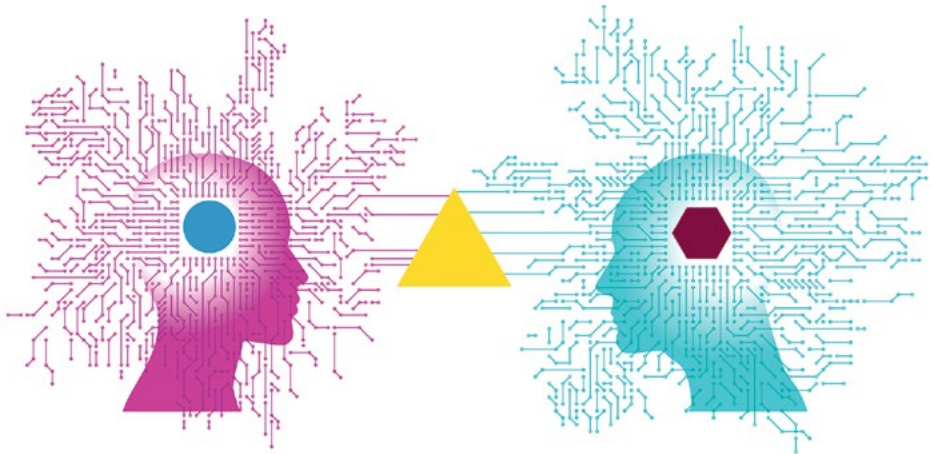
and techniques. The availability of subject matter expertise provides the interface between the scenario and players in both directions, adjusting the dynamic scenario according to the decisions players make, and reflecting the consequences of those decisions back to the players by way of injects, for example. It is likely that the depth of scenario material required will only be available by using real-world data, although this can be fictionalised or disguised. Scenarios might be developed by subject matter experts (SMEs) from across the PMESII framework and the players themselves. Scenarios can also be built over extended time frames, as illustrated by the years-long ‘Brynania’ wargame described in Case study 7 at Annex A. Without large, high-quality teams or long time frames, inventing sufficiently detailed scenarios is problematic and reinforces the likelihood of using real-world data, unless security restrictions prohibit it or it is politically, organisationally or educationally unacceptable.



Section 2 – Perspectives and biases

Challenge 6 – Influence wargames are more prone to cognitive bias

3.17. All wargames are likely to be negatively impacted by cognitive bias. Mirror imaging (assuming adversaries act according to our values and beliefs), groupthink (making decisions as a group, resulting typically in unchallenged, poor-quality decision-making) and confirmation bias (wargaming to reinforce preconceived notions) are just three examples from many. However, the more objective rules of physics that support conventional wargames provide a partial mitigation of cognitive biases.



3.18. Influence wargames are particularly sensitive to bias due to their focus on the cognitive dimension and the subjective beliefs of players, analysts and supporting experts. All SMEs will have their own biases, which include, but are not limited to: how influence is defined; how it can be applied; what the effects are; and how effective it is given specific situations. These biases will likely be predicated on a relatively small number of real-world case studies, and do not represent a holistic body of ‘influence knowledge’ because that does not yet exist. Answers to questions such as how susceptible someone is to illicit or illegal approaches will be shaped by the SME’s biases and beliefs, for example.

3.19. Red teaming is the primary mitigation for cognitive bias. It must feature throughout wargame design and execution, and encompass every aspect of the process. This handbook does not attempt to explain red teaming in detail, but highlights how important it is when wargaming influence. Further detail on red teaming can be found in the resources listed in the preface. Beyond that, careful selection of participants is also important.

Challenge 7 – Influence wargames require a greater understanding of audiences’ perspectives

3.20. Understanding audiences’ perspectives is notoriously difficult. This tends not to be an issue in conventional wargaming, where effects relate primarily to the physical dimension, for example, destroying an enemy or capturing a geographical location. Objectives tend to be relatively clear, with success or failure discernible, and proven methods exist to measure effects, for example, battle damage assessment and combat effectiveness.



3.21. In influence wargames, understanding the audiences’ perspectives is of paramount importance. However, acquiring reliable data on audiences and their perspectives is difficult. Even where baselines exist, attitudes and behaviours can change rapidly, making it difficult to assess the impact of actions taken in the wargame. The challenge can be exacerbated by the necessity to use proxy players to represent audiences in the wargame. Such proxies must use subjective and external assessments of an individual’s or audience’s mindset. Insights arising from the wargame will remain speculative until actual behavioural changes can be observed in the real world.

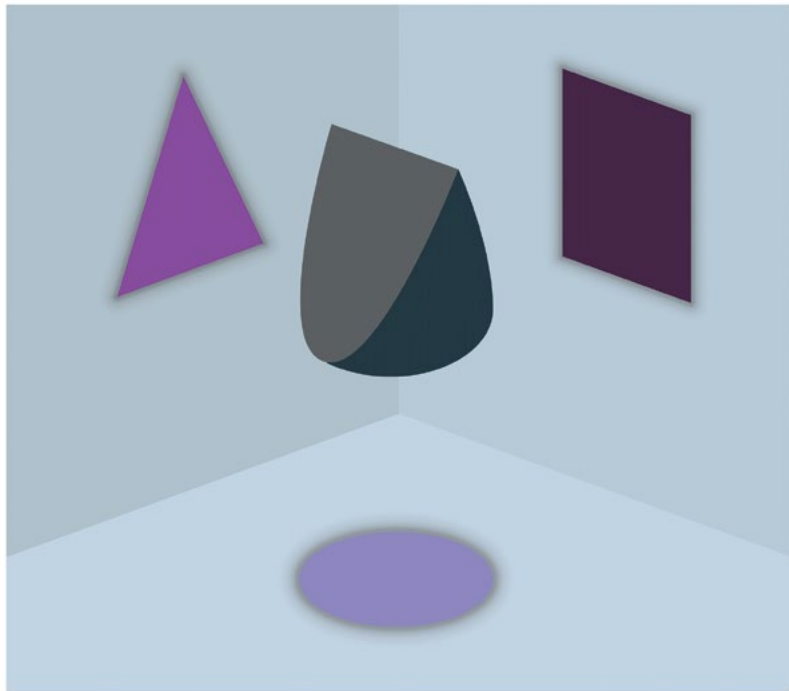
3.22. Wargame designers must pay greater attention to understanding audiences’ perspectives. Increased resources, including time and expertise, will be required to analyse audiences before and during the wargame, particularly when the use of proxy players is likely. Various audience analysis techniques exist, which are introduced in Chapter 4. However, additional techniques and metrics must be developed to enable audience analysis during a wargame and ensure that outcomes are fit for purpose.

Challenge 8 – Influence wargames will contain multiple subjective perspectives on the game narrative

3.23. The emerging storyline in a conventional wargame is usually clear, apparent and relatively easy to capture and analyse. Given the necessary data capture effort in understanding players' decision-making rationale, it is also possible to discern the **why** of the emerging narrative, not just the **what**. Perspectives on the narrative are generally limited to the two sides playing the game.

3.24. In an influence wargame, participants are trying to understand and interpret complex, intangible and often opaque events, and this must be elicited from players representing multiple sides and perspectives, each with their own biases and beliefs. Furthermore, gameplay data is captured, examined and promulgated by analysts and SMEs who are also likely to have their own subjective views. This makes it difficult to establish a 'ground truth'. Simply agreeing on the emerging narrative, let alone being able to analyse it, requires considerable effort and analytical resource, particularly because players tend to retrospectively change their decision-making rationale once events have concluded.

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3.25. Additional effort is required to capture different perspectives and determine the ground truth for each of the multiple sides. The game process, data capture methods and analytical approach (including a well-resourced after-action review) must enable this or risk false insights arising and potential player disengagement. Particular attention must be paid to the evolving narrative, perhaps requiring someone to be a dedicated ‘storyteller’ who summarises the evolving situation, possibly from several different perspectives.

Challenge 9 – Influence is ill-defined and poorly understood

3.26. The scope of conventional wargame activity is relatively well bounded and understood. UK and North Atlantic Treaty Organization (NATO) joint doctrine and terminology is frequently common to all events, for example, coalescing around frameworks such as the tactical, operational and strategic levels of operations. Mission verbs and operational effects are defined and agreed: if a foreign subordinate is asked to defeat an enemy, they will know what has to be done.

3.27. The current understanding of influence is inadequate. It is diversely defined by different nations and organisations. The broad scope of influence makes it difficult to bound an influence wargame and properly represent the required effects. This challenge is exacerbated by the variable quality of existing methods, techniques and data used to understand influence.



3.28. Sponsors and practitioners must ensure there is a common understanding of both influence and wargaming – or at least an acceptance of the terminology used, even if not everyone agrees with it. This can partially be achieved by issuing pre-reading but should also be addressed in introductory briefs so that a common lexicon can be agreed. That is a minimum, however, because common and accepted terminology is required to ensure the development of the necessary metrics and effective data capture.

Section 3 – Modelling

Challenge 10 – Influence wargames must contain both behavioural and physical science approaches

3.29. Quantifying outcomes in conventional wargames is possible, although sometimes challenging. Operational research and historical analysis spanning 200 years of modern wargaming enable relatively high levels of confidence to be assigned to combat outcomes. In a tactical wargame, the percentage chances of destroying a certain vehicle using a specific missile are accurate enough to determine outcomes from which sound insights can be derived. At higher levels, techniques such as force ratios are commonly used to determine the expected range of outcomes from combat, along with estimated casualties, logistics usage, movement rates and so forth. Such techniques are well understood and, when properly applied, deliver a proven and effective means by which to quantify conventional wargame outputs.



3.30. In contrast, the diffuse effects represented within influence wargames rely heavily on qualitative and social science approaches. Such methodologies still benefit from an appropriate degree of rigour but, given the nature of cognitive effects and a reliance on adjudication based on human judgement, they are essentially subjective. Qualitative methods can include primary research techniques such as interviews, polls, surveys or ethnographic techniques. However, primary research has proven challenging to conduct in a defence context. Secondary research techniques such as literature reviews and the use of case studies can assist by providing insight into human behaviour (noting that, without direct involvement from people from a particular country or region, this insight is always an assessment). Due to the variability of human behaviour, social and behavioural models will vary and are likely to deliver different, or even opposing, outcomes. Therefore, even when behaviours can be quantified, it can be difficult to accurately assess what people might do in certain situations at a given time.

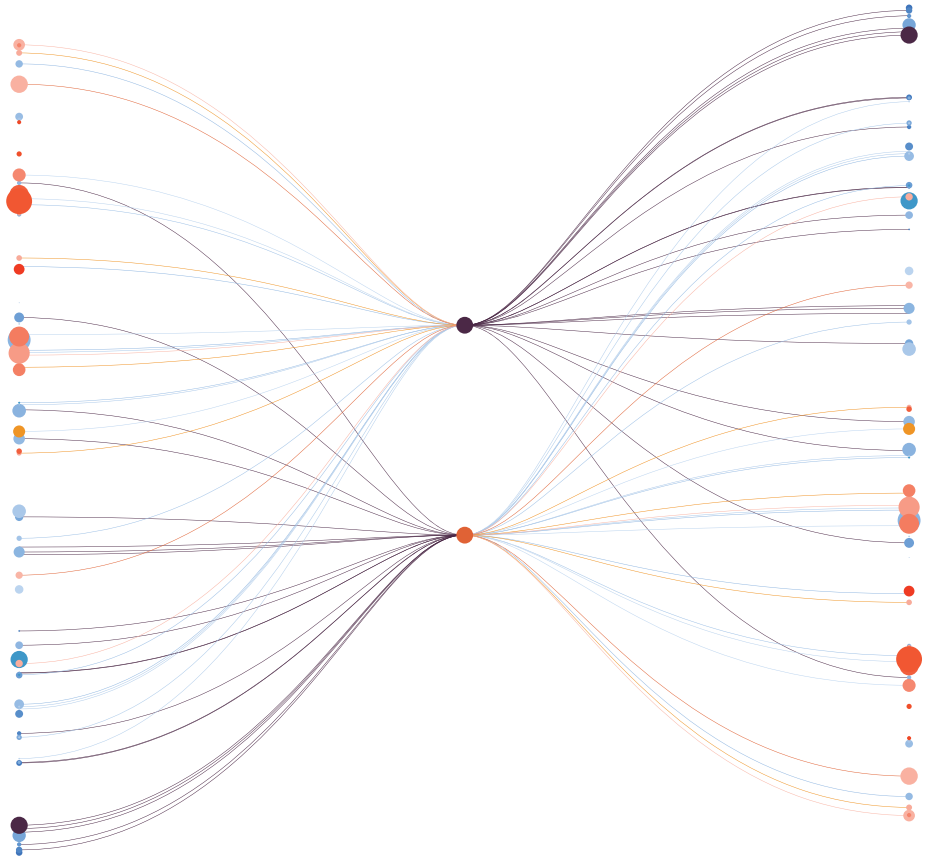
3.31. Wargame designers, participants and sponsors must accept greater levels of uncertainty in wargame outcomes for the foreseeable future. While this might not always be the case (in time, modellers and analysts will better understand the complex processes and create objective methods to mimic them) designers are reliant on, and so must have access to, relevant expertise. That said, designers themselves should be comfortable with social science methodologies.

Challenge 11 – Influence actions and their effects are not proportionate

3.32. Conventional force elements are generally constrained in the scope of the actions they can take and the effect they can create. A unit can only move so far and there are logical and well-understood limits on what they can achieve. For example, an attacking division is likely to defeat an enemy brigade in defence, but not another division. Such conventional activities can be described within the framework of tactical, operational and strategic, with most activity and effects bounded by, and limited to, one of these levels of operations (noting that there will always be exceptions).

3.33. In influence wargames, a single actor can affect entire audiences or economies. Just one individual or entity might diminish the effectiveness of an enemy brigade to the point where it cannot fulfil its intention (the definition of defeat) by using cyber or disinformation, for example. An individual could seize the finances of tens of thousands of people, assassinate a figurehead

or destroy a national symbol and thereby start a war. Conversely, a crowd of thousands of protesters might be halted by a single social media post that goes viral.



3

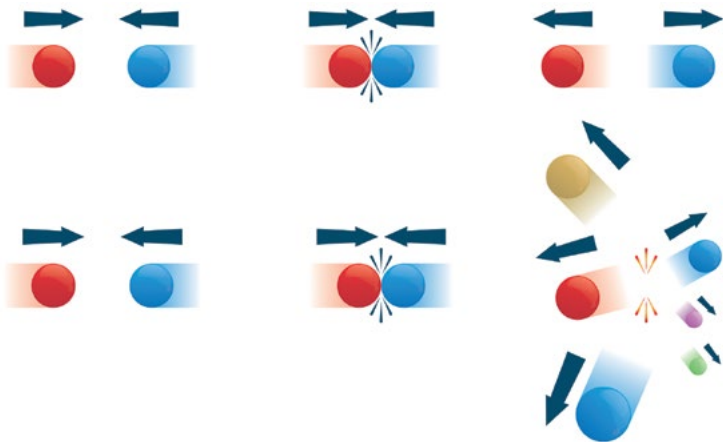
3.34. A wider range of actors is likely to feature in influence wargames, and their activities will easily cross (and blur) the conventional tactical, operational and strategic levels, potentially reducing the utility of using these levels of operations as a categorisation. Chapter 4 discusses the categorisations of micro, meso and macro,³⁷ which might provide a more useful taxonomy than tactical through strategic. New ways of modelling cause-and-effect relationships are required that will further enhance and underpin improvements in the adjudication of influence wargames.

.....
37 Micro is described as the actions of individuals, therefore an individual demographic, culture or motivation. Meso is described as the parts or a part of society, these could be groups of organisations situated in different areas, which may be interlinked. Macro is considered to be society as a whole, therefore representing different PMESII factors.

Challenge 12 – Influence actions do not have equal and opposite reactions

3.35. The layman’s description of Newton’s Third Law states that ‘every action has an equal and opposite reaction’. This is one of the foundational principles of the physical sciences, and a great deal of conventional warfare follows the laws of physics (both literally and philosophically): most outcomes are relatively well understood and will fall on a normal distribution. For example, a missile fired at a tank will probably inflict a mobility kill (it cannot move). One outcome is that it might inflict a firepower kill (it cannot fire) or even destroy it. Another might be that it achieves just a glancing blow or misses entirely.

3.36. Influence effects do not follow these classical laws of physics. Every action does not necessarily have an equal and opposite reaction. The uncertainty of outcomes is far greater, to the extent that effects can be the opposite of those intended. Messages often do not survive contact with their intended audience. Hence, modelling influence effects can be unintuitive (not easily grasped), and adjudicated outcomes can be counter-intuitive (contrary to those expected). An influence action could create the intended effect (say, a politician is coerced to support a cause), but there is also an appreciable chance that it might achieve no success (they refuse), have greater success than anticipated or even result in a disastrous failure, whereby the effect is the opposite of that intended (they reveal the operation and attribute those concerned, for example).



3.37. Such unintuitive and counter-intuitive effects increase the risk that players will lose trust in the adjudication processes and the outcomes of the wargame. Adjudication must become an area of particular focus for those designing and delivering an influence wargame. Additional rigour is required in assuring not just the outcomes from the wargame, but also of the game itself.

Challenge 13 – Influence effects can propagate unpredictably

3.38. Conventional actions generally result in first order effects and maybe second order effects. Technically, any given effect will propagate much further, but the magnitude of the impact will tend to diminish rapidly and it quickly becomes impractical to track them. For example, an anti-tank missile is fired. The first order effect is that an enemy tank is destroyed and the second order effect might be that the morale of the unit is affected. Such conventional effects can be considered predictable: you only need to know what happened in the previous event (or link in the effects chain) to understand what should happen next.

3.39. Influence effects commonly cause cascading third, fourth and fifth order effects. They are also likely to propagate across a wide number of nodes across all dimensions of the information environment. A failed and attributed attempt to coerce someone might cause the supporters of that person to protest, which might escalate into a riot, which might result in businesses being pillaged. These businesses might be owned by a particular ethnic group, which then sparks racially motivated tensions.

3

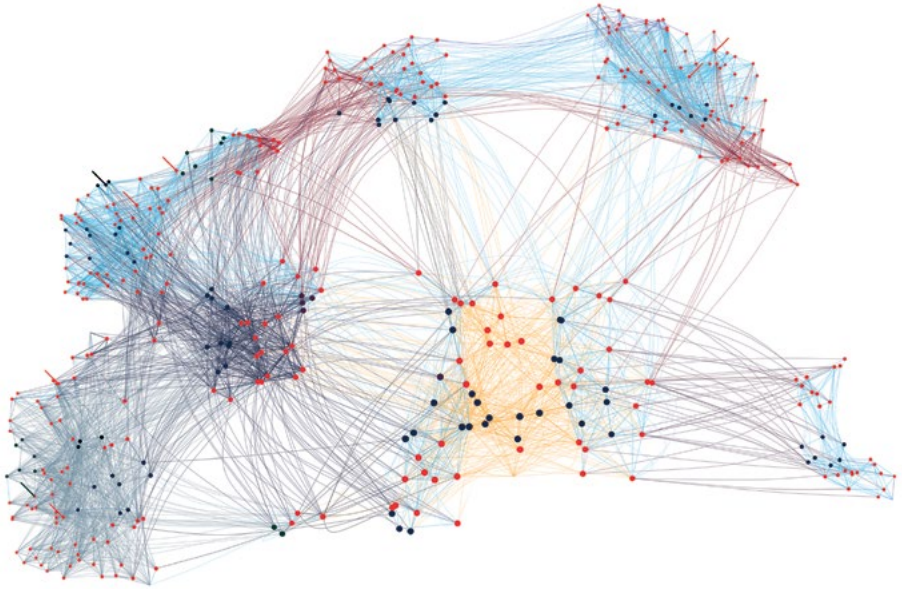


3.40. This has two implications for wargame practitioners. First, there is a requirement for an array of carefully selected experts to be recruited to identify when an effect in one dimension and layer of the information environment might morph into a subsequent effect in another. Second, there will be an increased overhead to track the development of third, fourth and fifth order effects as the game progresses. This could potentially lead to an enormous list of in-game effects as the players' actions generate cascading effects at an increasing rate. These can become overwhelming in terms of participants' understanding of the evolving narrative, data capture and adjudication.

Challenge 14 – Influence effecters and their effects have a complex relationship

3.41. In conventional wargames, the mappings of effecters-to-effects are generally one-to-one or, at worst, few-to-one. That is, for any given desired kinetic outcome (effect), there is generally a capability which has been designed to specifically create it (an effector). In many situations, there are likely to be a small number of alternative, but less efficient, options. For example, if the desired effect is to destroy a tank, the primary effecters could include another tank or an anti-tank missile. Artillery could serve as a sub-optimal alternative. This creates a two-to-one or perhaps three-to-one mapping of effecters to that particular effect.

3.42. In influence wargaming, there will often be an enormous range of possibilities by which any given effect can be created. For example, a wargame player representing an adversary may choose a range of coercive means (which could be legal or illegal) to create a desired effect on a target. These might include personal threats, changing public opinion (which might itself be manipulated by disinformation) or social media accounts being hacked and deep-faked. Consequently, the result of a target being influenced can generate a huge array of effects. This will result in extremely complex mappings of in-game effects to and from the entities represented in the game.

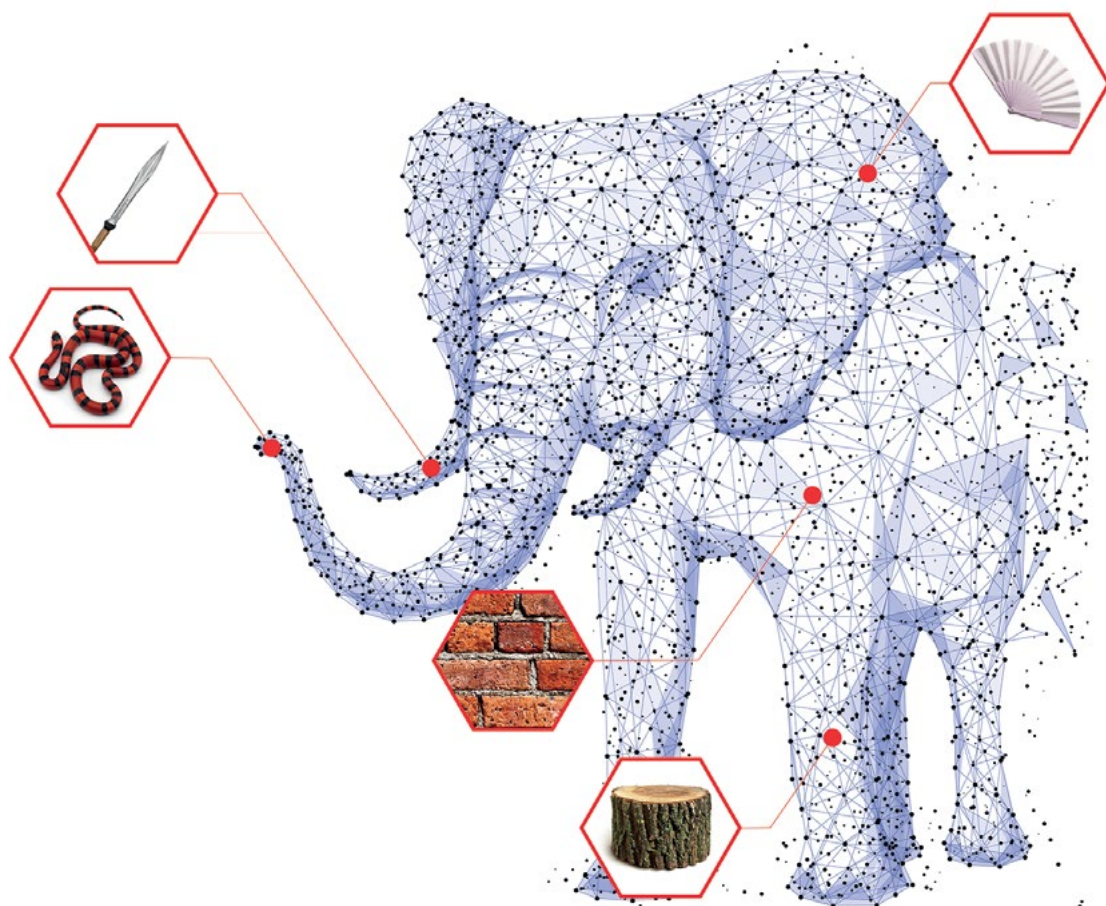


3.43. Wargame designers must provide players with enough vectors to be creative (for example, political, economic and informational). They must understand and provide the means to represent these many-to-one and one-to-many functional relationships. This has implications for the required scenario depth, modelling, data capture and the range of expertise necessary to support the wargame. Player engagement and confidence in the wargame's outcomes can also suffer if insufficient or inappropriate vectors are available.

Challenge 15 – Information in influence wargames is open to many different interpretations

3.44. Information in conventional wargames generally has an objective 'ground truth' value and this is either known to a player or unknown, often presented as a common operating picture. Force element locations (both friendly and enemy) are either confirmed, estimated or completely unknown. Other types of information can be shown in, for example, map layers and reports, but they still conform to this simple model.

3.45. In an influence wargame, the same data can be represented or interpreted differently depending on the context and players' biases. These different interpretations go far beyond the 'fog of war' in conventional operations. Additionally, there is an emotional element to influence that significantly affects perceptions and interpretations. For example, someone might be enraged by something that has no effect on others.



3.46. Every side and every player will have their own view on what is the 'truth'. Therefore, game designers must devise ways to represent those in the game. They not only need to decide whether to play open,³⁸ closed³⁹ or semi-open games, but must manage the data which forms the game's information environment so that each player might have their own view on what that data is and what it means. This area is also relevant to the concept of deception (although other challenges also connect to this). Players' attempts at deception will be heavily affected by the interpretations and judgements made by the other players, and these may all be different.

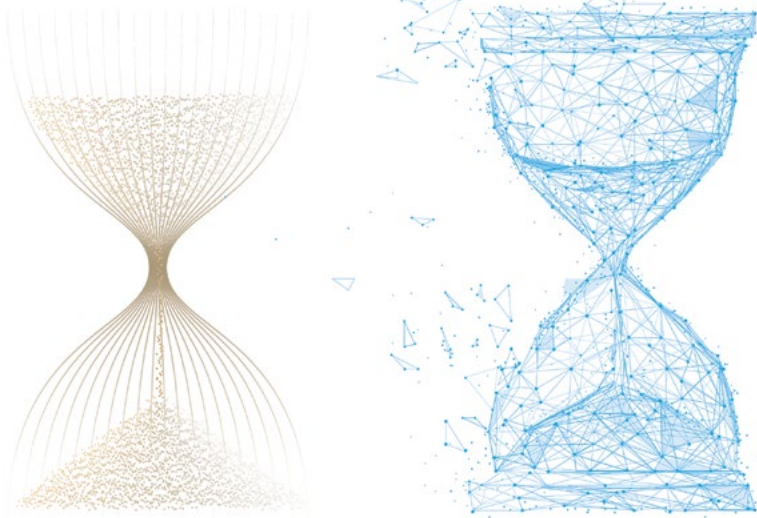
.....
 38 All players have access to all information and intelligence of the actions of all friendly and enemy forces.

39 Players receive the amounts and kinds of information and intelligence that they would normally receive in a similar real-world situation.

Challenge 16 – Influence actions and effects operate over vastly different timescales

3.47. Conventional wargames are usually regulated by using turns of fixed periods of time.⁴⁰ While turn lengths can vary between tactical wargames (typically a few minutes to a few hours) and strategic wargames (typically days or weeks), their length is usually determined prior to the wargame and maintained throughout. This is possible because most activity will create an effect within a fairly predictable time frame, with any persistency of effect conforming to the turn length. Furthermore, the total period of in-game time to be wargamed will be decided before execution or determined by one side or the other being deemed to have lost, culminated or reached some other previously agreed end state.

3.48. The concept of the flow of time must be considered differently in influence wargames. This is because of: large variances in the in-game times-to-effect of influence-related activities; the persistency of those effects; the real-world passage of time, both during and between games; and different people represented in the wargame being able to leverage time differently to their advantage, for example, demonstrating strategic patience. A cyberattack could have an effect in the order of seconds, whereas economic leverage might be years in the making. The persistency of the cyberattack might last several hours, whereas the impact of economic human development could endure for years.



.....
40 Even real time computer simulations model activity in small time steps.

3.49. Thus, the concept of a fixed-length turn might not be appropriate in influence wargames. Turn lengths within the same wargame might need to alternate between minutes, years or anywhere in between, and it might be necessary to determine their duration on an ad hoc basis during the game and even retrospectively after a series of actions. More radical, the wargame process might be more akin to an event-based schema, where time can jump to where important activity occurs. Alternatively, systems could be adapted to track different timescales simultaneously and merge the events together.





If the only tool you have is a hammer, you tend to see every problem as a nail.

Abraham Maslow

Chapter 4

Addressing the challenges to wargaming influence

4.1. Chapter 4 suggests how the challenges raised in Chapter 3 might be addressed. Influence wargaming is an evolving discipline and many of the examples in this chapter and Annex A are novel. They are intended to prompt ideas and fresh thought for practitioners when developing influence wargames. Experience shows that bespoke solutions are almost always required for each influence wargame problem, so the ideas in Chapter 4 should not be applied mindlessly to an influence wargaming problem.

Section 1 – Representing the information environment

4.2. Methods and techniques used to represent the information environment must be appropriate to the wargame's aim, focusing attention onto the factors to be considered within the bounded game. Audiences are the key element of the information environment. An example of the range of audiences that could be considered when designing a wargame is presented in Figure 4.1 taken from Joint Doctrine Publication (JDP) 0-01, *UK Defence Doctrine*, 6th Edition.

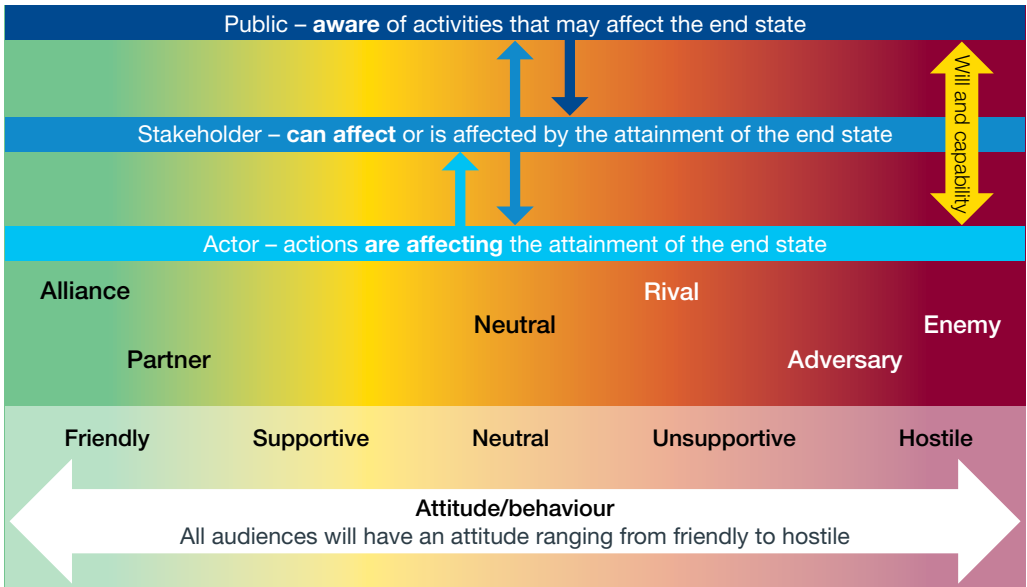


Figure 4.1 – An audience-centric approach⁴¹

4.3. There are various techniques that enable audience analysis. The Strategic Communication Actions and Effects Framework (SCAEF) sets out campaign objectives and outcomes, for example. It will be based on three conceptual layers of audience analysis: baseline audience analysis (BAA); mission audience analysis (MAA); and target audience analysis (TAA).⁴² Products that can be used in the audience analysis process include human environment assessment, which often follows the political, military, economic, social, information, infrastructure (PMESII) framework and network analysis, which identifies the connections between audiences and audience segments. These feature respectively in Case studies 1 and 2 at Annex A.

4.4. Techniques used to represent audiences and their relationships in a wargame can range from simple through to complex. Simple visualisations enable situational awareness, prompt discussion and provide one means of capturing data. For example, adding a linear ‘marker track’, as illustrated in Figure 4.2, to a map (physical or digital) forces consideration of the metrics on it – and that often suffices to prompt the necessary discussion. At the other end of the spectrum, computerised causal loop models enable detailed interrogation of specific variables. It is likely that wargame development and

⁴¹ JDP 0-01, *UK Defence Doctrine*, 6th Edition, page 17.

⁴² While the North Atlantic Treaty Organization recognises audience analysis and the subset of target audience analysis, UK Ministry of Defence has decided to recognise three subsets of audience analysis, as the three layers better support UK planning requirements.

actual gameplay will inform the actual audience analysis products and vice versa. Development is an iterative process, so any method or technique used to represent the information environment in the wargame must be flexible and include the ability to quickly integrate new audiences, factors or metrics.

4.5. Figures 4.2, 4.3 and 4.4 illustrate approaches along a spectrum of simple through to complex representations of the information environment. The least complicated approach is placing a ‘smiley’ or ‘angry’ face icon on a map, which conveys an emotional message that informs gameplay. Figure 4.2 is a basic marker track showing the levels of support of a domestic audience for their own government (the green arrow) and two other actors (blue and red arrows). The numbers represent the ‘stickiness’ of the track, whereby influence effects created on the audience have a decreasing chance of changing behaviours towards the extremities of the track. For example, it is much more difficult to move peoples’ perspectives once they have become partisan, while some audiences have strongly held and non-negotiable beliefs.⁴³ Marker tracks used in the Royal Marines’ Falklands wargame featured in the *Wargaming Handbook*⁴⁴ force the students to consider the geopolitical context. For example, declining UK domestic support due to shipping losses leads directly to the political direction to ‘regain the initiative’ and the potentially war-losing order to attack Goose Green. General Julian Thompson, who receives the wargame back brief, describes Goose Green as being ‘off the line of march’, and would not have attacked it without being so ordered. Such inputs lift captains and majors out of their tactical ‘comfort zone’ and introduce influence effects.

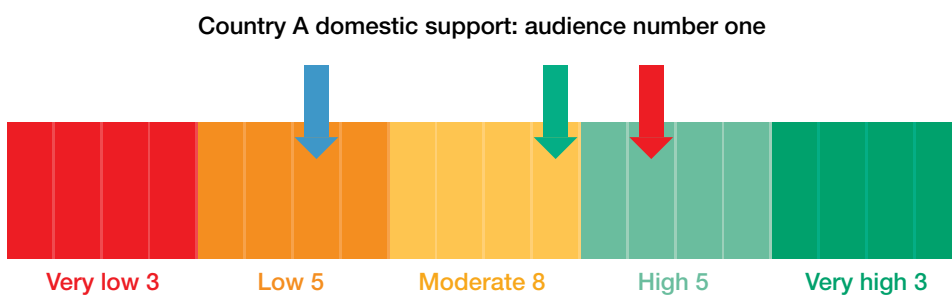


Figure 4.2 – A simple ‘sticky’ marker track

43 In Figure 4.2, a three or less must be rolled on a ten-sided die to affect the track extremes (red and dark green areas). This is a 30% chance of an influence action having the desired effect. In the centre (yellow) area of the track, an eight or less is needed to shift perceptions. This is an 80% chance of success.

44 *Wargaming Handbook*, pages 79–81.

4.6. Figure 4.3 is a visualisation of the outcomes over time of simple marker tracks used to shape events in a command post exercise training wargame.⁴⁵ The coloured linear graph tracks generalised levels of support for factions, while the radar diagram tracks changing perceptions of specific actors within a city, showing levels of consent and threat from an audience towards each actor. Quantifying the audiences' levels of support remained entirely subjective but was appropriate for generating scenario events for the training audience. A designated 'storyteller' played an important role in this process. They described the evolving narrative from several different perspectives, and these and the 'ground truth' were agreed before being presented back to the players. This approach is equally applicable to an analytical influence wargame.

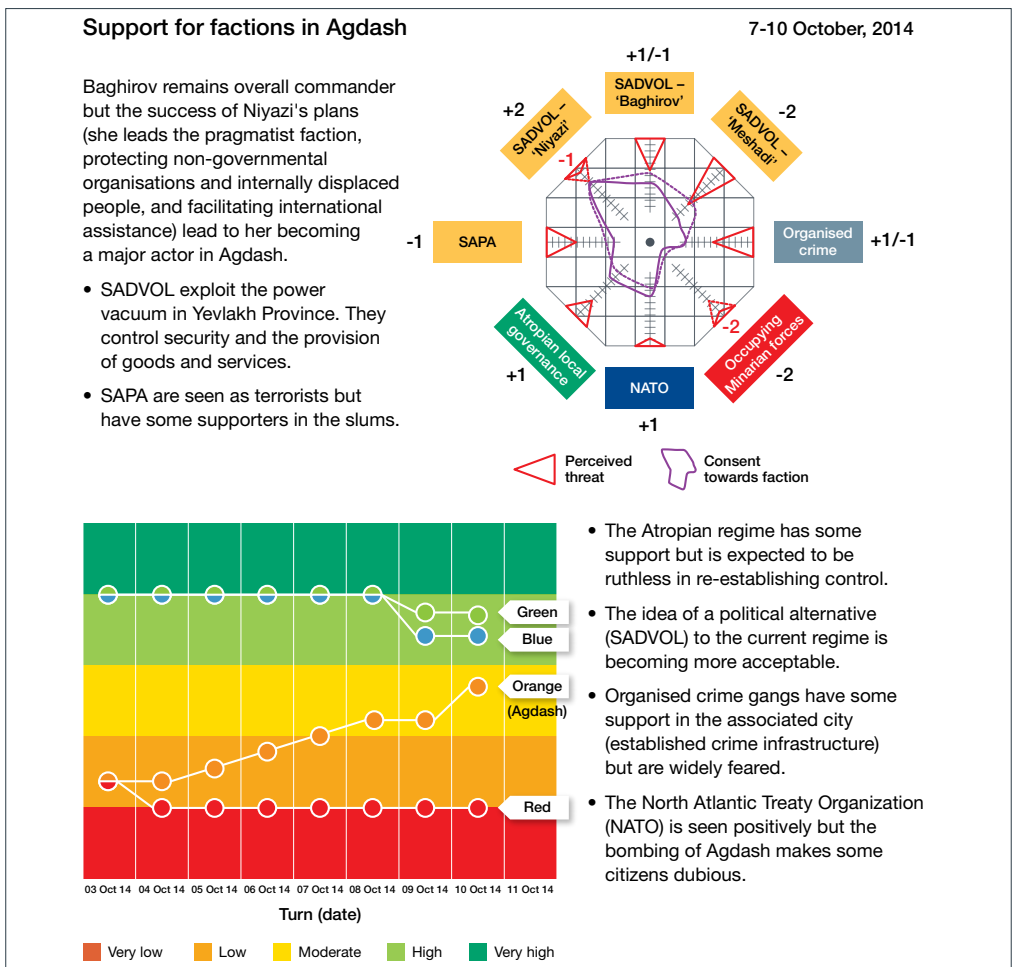


Figure 4.3 – Marker track and radar diagram representations

⁴⁵ This is the Headquarters 3rd Division Exercise Iron Resolve that features on pages 76–78 of the *Wargaming Handbook*. Note the reference to marker tracks on page 77 and 'non-kinetic effects representation' on page 78.

4.7. Figure 4.4 shows Marvel,⁴⁶ a computerised causal loop model used to support adjudication in a North Atlantic Treaty Organization (NATO) urban wargame. ‘The Marvel model, developed by TNO, a Dutch organisation for applied scientific research, is a systems dynamics model depicting the resilience of [a city], and the interactions between them and any events (for example, military action) in the city. The model analysts were able to show the second, third and fourth order effects of any actions by the teams during the game, or discuss potential effects during the planning session.’⁴⁷ The diagram can be interrogated in a number of ways to show links, speed of effect, strength of factors and so forth.

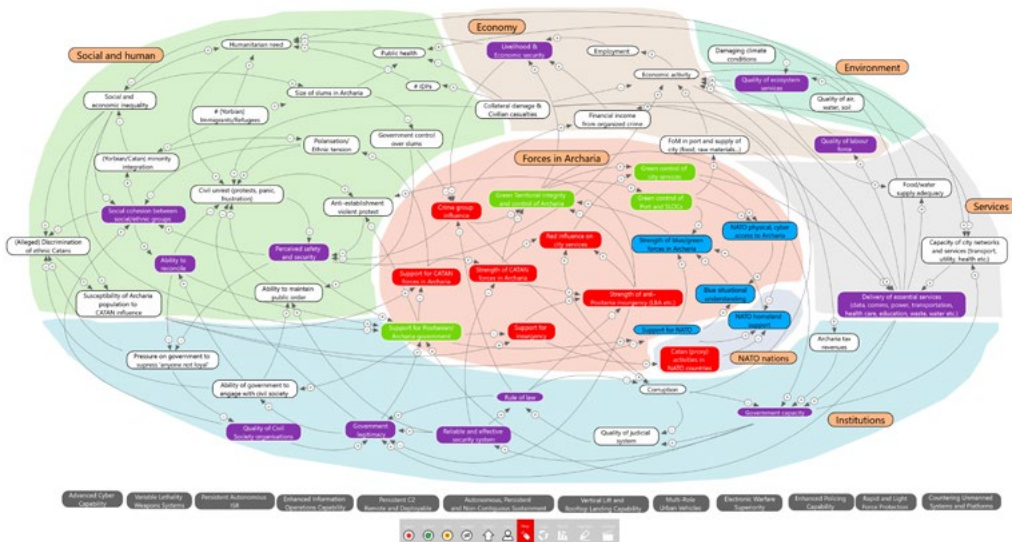


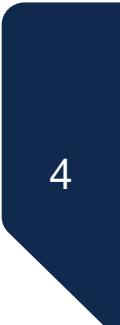
Figure 4.4 – The Marvel systems dynamics model⁴⁸

4.8. Irrespective of its complexity, the wargame team must consider how any such visualisation is affected by inputs arising from gameplay and how its outputs in turn affect forthcoming gameplay. For example, in the Falklands wargame the marker track was affected by shipping losses. If domestic support fell to a certain point on the track, the effect on gameplay was to trigger the political direction to regain the initiative. All tracks and visualisations must incorporate inputs and outputs.

46 Method to analyse relations between variables using enriched loops.

47 Bodnar, J. and Collins, S., ‘NATO Joint Military Operations in an Urban Environment. A Capstone Concept’, Allied Command Transformation, *The Three Swords Magazine*, 34/2019.

48 Veldhuis, G. A., van Scheepstal, P., Rouwette, E., and Logtens, T., ‘Collaborative problem structuring using Marvel’, *EURO Journal on Decision Processes*, 2015, Volume 3, Issues 3-4, pages 249–273.



4.9. **Representing force elements.** Conventional force elements will probably still need to be represented so that both sides of the threshold of war can be wargamed. However, it is likely that military units will be faded into the background or may even be removed entirely. While its presence, posture and profile might affect the game, a force element is more likely to have a behavioural rather than a kinetic effect in an influence wargame. Cyber and electromagnetic activities, technologies and force elements might feature, but it is the effect that these enable rather than the equipment itself that is likely to need representing. These points are all illustrated by Case study 6 at Annex A.

4.10. **Incorporating deception.** Deception is an important feature in influence wargames. NATO defines deception as: [deliberate measures to mislead targeted decision-makers into behaving in a manner advantageous to the commander's intent](#). The intended deception target will not be at the wargaming table, so all efforts to assess the effectiveness of deception must be attempted through proxy players. This requires specific design approaches and significant data capture effort. The appropriate approach is likely to be a closed game in which certain information is concealed from the players. This entails strict operations security concerning the scenario and objectives, and limiting out-of-game player interactions. Misinformation and disinformation are likely to feature, and varying degrees of information integrity and degradation (not just binary denial) can lead to player confusion and exacerbate the usual pressures inherent in a wargame. Hence, players must be carefully briefed, and the correct mindset instilled to pre-empt player disengagement and frustration. For each action taken by a player, it is important to ascertain that deception is intended, the type of deception, and the desired behavioural response of the target to being deceived. This must be done as each action is conceived and submitted. When information about actors' moves is provided (filtered and possibly distorted through the control cell) players should then interpret what is happening. This must be captured before they plan their next move. Finally, the players declare what they now intend to do, and whether this deviates from previously stated plans. In this way, the following can be determined after the game:

- if deception was intended and, if so, what type and how;
- if the deception target's perception of reality changed; and
- if the changed perception changed the target's behaviour in the way desired by the deceiver.



© MICHAL CIZEK / Getty Images

An example inflatable tank used for deception purposes in Ukraine, 2022

4.11. **Scenarios.** An influence wargame scenario must provide players with enough means and vectors of information activity to be creative. This demands scenarios deep enough to satisfy the requirement while balancing the risk of players becoming overwhelmed by the complexity of the information environment. The following may help to develop the scenario.

- a. Using the real world is likely to be the only practicable way to access sufficient data to enable the broad play of influence. A real-world scenario can be fictionalised or disguised, but creating a fictional scenario of adequate depth will require considerable effort during the development of the wargame and throughout execution. This is a lesson identified across the case studies at Annex A.
- b. The terminology used to describe conventional operations is unlikely to suffice. Social science concepts and language will feature. For example, given that a single influence action can have a strategic effect, consider using the categorisations of micro, meso and macro as well as, or instead of, tactical, operational and strategic.
- c. Use frameworks such as DIME,⁴⁹ PMESII⁵⁰ or STEMPLES⁵¹ as checklists for scenario development, but not as methodologies for designing the game. Unthinkingly applied, these frameworks can distort

49 Diplomatic, information, military and economic.

50 Political, military, economic, social, information and infrastructure.

51 Social, technological, environmental, military, political, legal, economic and security.

complex and nuanced informational and attitudinal dynamics. Designers should ask, ‘what matters in this situation?’, not just seek to introduce a game mechanic for every letter in an acronym. The frameworks often need adapting, for example, adding finance, infrastructure, legal, environmental and technology to DIME and physical environment and time to PMESII. Case study 2 at Annex A is an example of where the PMESII framework had to be further developed.

d. Scenario writers must devote considerable effort to an analysis of the audiences and actors that need to feature in the wargame. Developing the scenario using accepted audience analysis techniques helps achieve this and will also reveal actionable insights during the design and development phase. The level of detail needed, and the time required to develop it, is illustrated in Case study 2 at Annex A.

e. Use wargaming to develop the scenario. This needs few resources, is low-risk and elicits actionable insights at an early stage of wargame development. The activity can complement formal planning using techniques such as an information environment assessment.

Section 2 – Wargaming approaches

4.12. This section builds on the types of wargames introduced in the *Wargaming Handbook*,⁵² highlighting where each approach can support influence wargames. Combinations of these types of game, plus new approaches, are likely to be required when designing an influence wargame. The case studies at Annex A illustrate some novel approaches, but no comprehensive listing is possible because each game, and its mechanisms and processes, must be designed to a specific purpose; there is no ‘one-size-fits-all’ wargaming approach.

Matrix gaming

4.13. Matrix games provide a framework for presenting the reasons why a particular action (with a specified measurable effect) might succeed or fail. The approach centres around argument-based adjudication. Matrix games provide a flexible approach that can be used to consider almost anything. They are rapidly deployable and configurable as the system is open-ended. They are particularly useful when conducting the initial scoping of subsequent activities in a linked campaign approach, for example, to determine the factors to be included in

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⁵² *Wargaming Handbook*, pages 39–42.

a scenario. Their primary weakness is that the approach is subjective, being based almost entirely on oral arguments and participants' judgement. Hence, they are susceptible to cognitive bias and, without taking great care to ensure diverse, knowledgeable and informed participants, it is difficult to assign accurate confidence levels. Matrix games also tend to feature just one 'action' from each player cell each turn. This is unlikely to suffice when considering the broad scope of influence and behavioural effects that results from multiple interwoven actions. Matrix games are dependent on a skilled facilitator, who can have a disproportionate effect on all aspects of the game.

Seminar games

4.14. Seminar games can be quick to implement. A seminar game is more of a discursive group exercise than a matrix game, which enables richer, more complex and nuanced actions to be considered. This typically takes more time than a matrix game. Seminar games provide another suitable method for exploration and discovery through discussion and argument, however, they are again highly subjective. Any appropriate adjudication technique can be used.

Course of action wargames

4.15. Course of action (COA) wargames are used during the planning process by headquarters at all levels. COA wargames are a subset of wider wargaming that can incorporate several of the generic approaches outlined in this handbook. They are 'a systematic method of analysing a plan in a conscious attempt to visualise the ebb and flow of a mission [and] identify risks and shortcomings in potential or selected COAs.'⁵³ The core of the technique consists of: preliminary situational reviews to establish the context; a series of turns based on an action – reaction – consideration mechanic; and a cognition phase asking 'what if?' and 'so what?' questions. Influence is not well represented in COA wargames but can be addressed as follows.

- During preliminaries, ensure briefs include an overview of the information environment, including key actors and audiences.
- Ensure visualisation includes the information environment.
- During each turn, include an agenda item that demands consideration of actors' and audiences' perspectives on the activity undertaken by the primary protagonists.

⁵³ *British Army Planning and Execution Handbook*, Headquarters Land Warfare Centre, June 2018.

- Include diverse information environment subject matter experts as active players or, as a minimum, a role in the red teaming.
- Appoint a lead red teamer and encourage red teaming among all participants.
- Include an agenda item during the cognition phase to explore second and third order effects that might result from the in-turn activity.
- If time allows, play more consecutive turns to explore cascading effects.

Role playing games

4.16. Role play – where participants ‘play’ influencers and those they seek to influence – is a staple of negotiation and committee games played in educational settings, for entertainment and so-called ‘mega games’. However, since they involve the actual exercise of influence on another individual or group, rather than modelled influence (shifting an attitudinal metric through a game mechanism), they have considerable use. Putting players **into** a role (‘I will do this’, as opposed to ‘I think X would do this’) helps them internalise decisions and elicit insights into the views, beliefs and perspectives of the person they are playing. Case study 7 at Annex A is a good example of a role play game, where changing attitudes and behaviours were observable in the players themselves.

4.17. A key challenge to role play mechanisms is that role players must act in ways that are similar to their real-life actor. Actors who act in ways dissimilar to their real-world counterparts can distort game outcomes as much as problematic rules or algorithms. Conversely, excessive adherence to a stereotyped view of the actor can be equally damaging, precluding the possibility that their real-life counterpart may act in unexpected or innovative ways. This challenge is especially acute in influence games where each player is, in a sense, a personal model of how an actor might react to incentives, threats, cooperation and information. To assure that role play is both flexible and plausible, it is important to develop a strong sense of narrative engagement.⁵⁴ Briefings should subtly express the perspective, biases and interests of the actor. It is possible to introduce rigid or rules-based constraints

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⁵⁴ For more detail see ED McGrady and Peter Perla, ‘Why Wargaming Works’, *Naval War College Review*, Volume 64, Number 3, 2011.

too, but the influence element of the wargame will work best if roles have been internalised. The way in which the game is conducted and framed can be important too. Things like, for example, emblems, national flags and realistic documents can be more than decoration; they may act rather like set dressing in the theatre, propelling players into the game designer's intended world.

Closed wargames

4.18. Closed wargames are ones in which the provision of intelligence is limited to that which the control team assesses would be known by the players. They are particularly useful for examining the effectiveness of influence factors such as deterrence, deception and escalation/de-escalation, where the players' perceptions of what is happening in the game, based on imperfect information and uncertainty, are of paramount importance. However, they require significant effort by the control cell to run the game, the security of in-game information must be strictly enforced (for example, players should not talk over coffee) and, crucially, an effective data capture plan must be developed to gather subjective information from the players. Because deception, disinformation and misinformation can be played in closed wargames, care must be taken to retain player engagement by ensuring participants understand that such factors are deliberately included as part of the wargame construct. Case study 6 at Annex A illustrates this approach and the challenges of controlling such games.

Jury games

4.19. Jury games are named after the body of people who deliver a verdict in a legal case based on evidence submitted to them. Influence effects can be adjudicated using a substantial group of participants who themselves represent the intended target of the influence. For example, in a series of games conducted by Defence Research and Development Canada for the NATO Systems Analysis Studies Working Group 151⁵⁵ in 2021, all cells were directed to an audience of up to 50 participants who themselves were asked to role play local residents of a fictional country. These participants could interact among themselves using a closed social media system and generate their own messages. They were also periodically polled to determine their attitudes. Rather than more traditional systems of adjudication, participants themselves acted as a jury of sorts, with the effectiveness of messaging and other actions being determined by their collective and individual response.

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55 Sean W. Havel, 'Wargaming the Information Environment', *Canadian Army Today*, Volume 6, Issue 2, page 64.

Jury games enable crowd sourcing, but the process needs moderating and can take time, particularly if they involve debate.

Card-driven games

4.20. Using cards in influence wargames is more a mechanic than a game type. While card-only wargames exist, the mechanic tends to feature as part of a wider influence wargame design. Using a card-based system for providing players choices of options is a useful way of providing structure to players' actions, and bounding and constraining these. Cards often feature actions or activities that result in specific outcomes, such as increased influence. These can be quantitative parameters. The actual outcomes may be fixed or dependent on the play of cards from other participants. Cards are easy to assimilate and can be used to quickly impart information, for example, by including doctrinal terminology on them. Cards may also have a cost or penalty for playing, which may, for example, be financial or reputational. Once the base game mechanism has been established, new cards can be added, or existing ones edited, to reflect an evolving situation or changed context. Case study 5 at Annex A is an example of layering cards onto a base mechanic.

Section 3 – Games and game turns

4.21. **Turn lengths.** Three temporal factors were discussed in Chapter 3 that affect the length of wargame turns: the in-game time-to-effect of influence-related activities; the persistency of those effects; and the real-world passage of time during the game and between games. The wargame design team should consider the following when determining the number and duration of turns in a game.

- a. The juxtaposition of short and long in-game times-to-effect might require irregular turn lengths. These could range from seconds to years. One way to deal with this is to run iterative games that each feature different timescales and turn lengths, rather than a single wargame that struggles to consider widely different times to- and persistence of-effects.
- b. Approximately five or six turns are generally required to explore cascading effects and unintended consequences. Time should be allowed to enable a sufficient number of turns, although the precise number will be difficult to determine in advance of actual gameplay.

- c. Given a practised and well-rehearsed control cell, the duration of such irregular turns can be determined in-stride as part of each pre-turn process. This can even be done retrospectively, depending on how much activity has taken place in the turn.
- d. Influencing someone can depend on getting inside their informational decision-making process. Where this is so, game mechanisms should reward teams for the speed with which they formulate and deploy effective messages. Influence games that feel overly structured and turn-based may be misleading, suggesting you can take weeks to respond to an immediate informational issue. It might be necessary to interrupt turns with short time-to-effect injects if a team could realistically mount such activities.
- e. Consider an epilogue phase when, at the end of gameplay, the control cell relates further actions or consequences that had an impact beyond the time frame of the game itself. The epilogue phase is not just an interesting extrapolation of the narrative. It can be used to: provide feedback to the players and reward them; explore cascading effects; and introduce points of focus for the after-action review. Case study 1 at Annex A featured such as epilogue phase.

4.22. **Campaign games.** Many of the points above predicate towards linked, or campaign, games. Furthermore, influence wargames are most effective when integrated into broader activities, whether this is an analytical and experimental campaign plan or a training progression. To do this, it is important to understand the synergies, external dependencies and temporal factors (the period that the game needs to represent and the time within which outcomes need to be generated). Campaign games should be persistent, with one game eliciting branch points or cascading effects that need further, or separate, examination. Such iterations can develop into **persistent** wargames, with participants reconvening on a regular or ad hoc basis. Establishing such a routine requires effort and leadership. However, the resources required need not be great; such wargames are most effective when small, fast and frequent, as explained in the *Wargaming Handbook*. Figure 4.5 illustrates an influence wargaming campaign designed for the Headquarters Allied Rapid Reaction Corps (ARRC) Joint Fires and Influence Branch in preparation for a large-scale exercise.⁵⁶ Note the iterative approach, with outcomes and insights carried forward or able to be revisited, and that the approach combines analytical and training wargames.

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 56 This campaign was developed but not executed due to operational commitments caused by the 2022 Ukraine war.

Example game format(s)	Activity		Adjudication technique(s)	Outputs
Not applicable	Academics day, conceptual development		Not applicable	Confirmation of influence and wargaming terms
Simple abstracted influence game	Educational game to familiarise players with influence wargaming		Per the abstracted game system	Introduction to influence gaming
Argument-based	Open-ended analytical wargame scoping further activities and game		Matrix	Ideas, concepts and contexts to take forward in the campaign
Map and counter	Training game exploring how influence can be incorporated in the Headquarters Allied Rapid Reaction Corps 96+ planning processes		Multiple	Enhanced standing operating instructions, wargaming campaign outputs
Course of action wargame	Training game exploring how influence can be incorporated in Headquarters Allied Rapid Reaction Corps hasty planning processes		Subject matter expert judgement, spreadsheet	Course of action wargaming standing operating instructions, campaign outputs
Simulated mini-command post exercise training style	Mini-command post-exercise training event focused on the Joint Fires and Information Branch		Semi-rigid deliberative	Enhanced planning processes such as Defender injects
Command post exercise with, for example, 'next day' Excon wargame	Exercise Defender		Per the exercise construct, with influence supporting the main event	Confirmed information activities signal operating instructions for 96+ hours and hasty planning

Figure 4.5 – Headquarters ARRC influence wargaming campaign progression

4.23. **Integration with wider activities.** Wargaming should not be the only approach in an analytical campaign or training progression. The complexity of influence wargames, and the prevalence of subjective adjudication techniques, demands that assumptions, inputs and candidate outputs must be cross-referenced, checked and assured. This can occur within the wargame, but also elsewhere. To do otherwise adds to the risk of strategic miscalculation that rarely arises from conventional wargames. Influence wargames should be firmly embedded in an integrated analysis and experimentation campaign plan (also expressed as a 'cycle of research') or learning progression. The wider activities are likely not to be wargames; rather they will be other forms of analysis and exercises.

Section 4 – Methods and techniques to support influence wargames

4.24. The development of influence wargaming techniques is a rapidly evolving area subject to fast-moving research. Areas such as artificial intelligence, big data, machine learning and human behaviour representation are of great interest to influence wargaming, so new methods and techniques will regularly emerge. This section discusses how adjudication techniques can be applied to influence wargaming and presents three examples that have been developed for specific influence wargames. It then discusses the role of red teaming.

Adjudication

4.25. Adjudication need not be complex if it supports the wargame's objectives and meets the requirement of the data collection and management plan. For example, not all player actions need to be adjudicated and not all need detailed adjudication. However, disproportionate risks can arise from influence wargames. An example is in the risk box below.



Risk: lack of confidence in the validity of adjudication

Cause. Disagreement between anthropologists, criminologists and psychologists (social scientists) adds variability to adjudication outcomes.

Effect. This can lead to false, misleading or irrelevant insights arising, which undermines the wargame and its outputs, making them unusable.

Mitigations include: selecting appropriate adjudication techniques; rigorous adjudication; determining the confidence levels of adjudication processes and outcomes; red teaming adjudication; transparent outcomes; and capturing adjudication rationales.

4.26. Figure 4.6 illustrates the broad approaches to adjudication, first categorised by Francis McHugh in 1966.⁵⁷ These are explained in the *Wargaming Handbook*,⁵⁸ except for ‘deliberative adjudication’, which is particularly suited to influence wargames and explained below. Given that influence pertains to the ‘wicked (messy) problems’ area of the real-world applicability arrows, the adjudication approach will tend towards the left-hand side of the ‘broad adjudication approach’ arrow. The game design team must understand the strengths and weaknesses of each approach and select, modify and combine these as appropriate. An adjudication solution will often be a combination of several techniques.

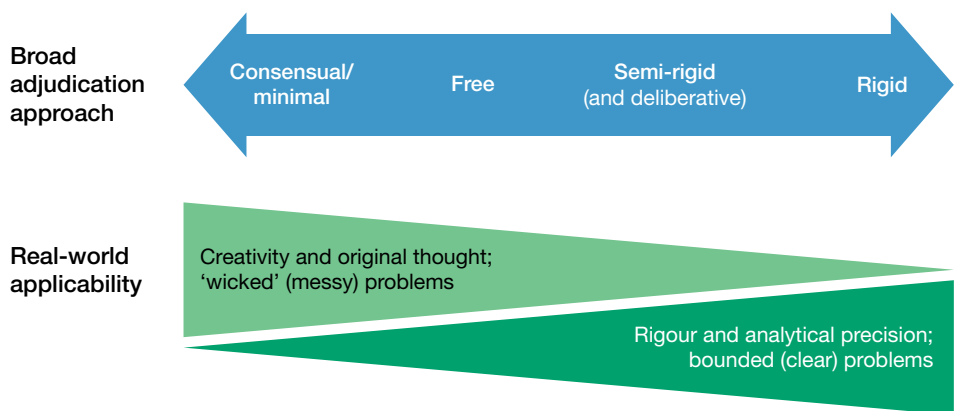


Figure 4.6 – Broad adjudication approaches

4.27. Free and consensual/minimal adjudication are relatively rapid but, being based on subjective judgements, risk the introduction of bias, a lack of confidence in the outcomes and potential player disengagement. These negatives can be mitigated by using ‘intelligent crowds’ in the proper manner (for example, correct participants, hidden voting and diversity). Bias is still a factor and participant voting takes time. Cards can be used to provide a range of outcome options, often quantified, from which players choose the card (outcome) they think appropriate. Argument-based adjudication can also be used, as discussed earlier in Section 2.

4.28. Semi-rigid ‘deliberative’ adjudication is a particularly useful technique when wargaming influence. In this approach, rigid adjudication is used to generate a prospective result, which is then presented to players as the start

⁵⁷ McHugh, F., *Fundamentals of War Gaming*, 1966, page 14.

⁵⁸ *Wargaming Handbook*, page 43.

point for a discussion that then determines the final outcome. This discursive approach forces a participant discussion that elicits insights, helps with data capture and assists in determining confidence levels.

4.29. Adjudication affects in-game measures and indices, and/or real players. At present, a ‘human in the loop’ is required to balance and cohere the effective use of subjective and/or structured adjudication techniques. The following suggestions are intended to help design effective adjudication.

- a. Use multiple adjudication techniques that generate combinations of outputs and metrics data. This is illustrated by Case study 6 at Annex A. Compare these to identify convergence or divergence, which helps build confidence or indicates variation and the span of potential outcomes, from which the most appropriate can be selected.
- b. Ensure adjudication is rigorous enough to meet the wargame aim and objectives. Imposing the necessary rigour requires resources, including time. Transparency enables the scrutiny required to ensure the adjudication process and outcomes are fit for purpose, with confidence levels understood. This is illustrated by Case study 1 at Annex A. Transparent adjudication should be considered a default approach unless another requirement outweighs the advantages.
- c. Subject the adjudication process to scrutiny during design, development and execution of the wargame. This is illustrated in Case study 2 at Annex A. Red team the process and outcomes. During execution, the game controller is ultimately responsible for arbitrating adjudication outcomes to ensure these support the game’s objectives.
- d. Recognise and counter cognitive biases specific to adjudication. Subject the adjudication process and outcomes to red teaming, including peer review. Avoid the tendency to unthinkingly select a familiar or favoured adjudication approach.
- e. Assess the confidence level of the adjudication process and outcomes.
- f. Allocate resources appropriate to the degree of adjudication rigour required, including time. There is a trade-off between the speed of adjudication and: levels of coherence; ability to ascertain confidence levels; and transparency. Case study 4 at Annex A is a good example of simple and quick, but fit for purpose, adjudication.

- g. Consider involving players in the adjudication process in a 'deliberative' approach. This assists data capture, can expose the rationale for player decisions and provides an opportunity to assess the confidence levels of outcomes. Case study 1 at Annex A illustrates the utility of involving the players in discursive adjudication.
- h. Use robust and comprehensive analysis to ensure adjudication outcomes are fully understood. This is predicated on effective data capture and further assurance of outcomes during the after-action review.
- i. As well as the actual adjudication outcomes, endeavour to understand the rationale for these. Adjudication should feature in the analysts' data collection and management plan. Identify the most important outcomes so they can be examined or re-examined in greater detail. Similarly, note possible branches in the wargame in case these need to be investigated.
- j. Use qualitative methodologies appropriate to the data capture requirement. These could include questionnaires and affinity diagrams (for example, clustering).
- k. Manage expectations. Precise outcomes cannot be expected from an influence wargame due to the uncertainties inherent in the information environment. Sponsors and participants must be apprised of the realistic limitations.

Example 1 – Using a simple and transparent modelling technique for a Strategic Command influence wargame

4.30. One example of a technique used to support influence wargaming is the Simple and Transparent Influence Model (STIM). It is an uncomplicated model that is easy to visualise and explain that was developed to support the adjudication of influence outcomes. The wargame for which the technique was developed demanded an accessible and transparent approach; other models might need to be far more complex. Each method and technique is likely to be designed to meet a specific purpose. STIM uses a graphical representation of selected factors in the information environment and how they interrelate. It will not necessarily provide a definitive model, however, STIM's open graphical nature allows players and participants to observe and comment on its internal workings and thereby establish confidence levels or make suggested modifications. An influence diagram from the STIM approach showing a representation of information environment factors for one particular example application is at Figure 4.7.

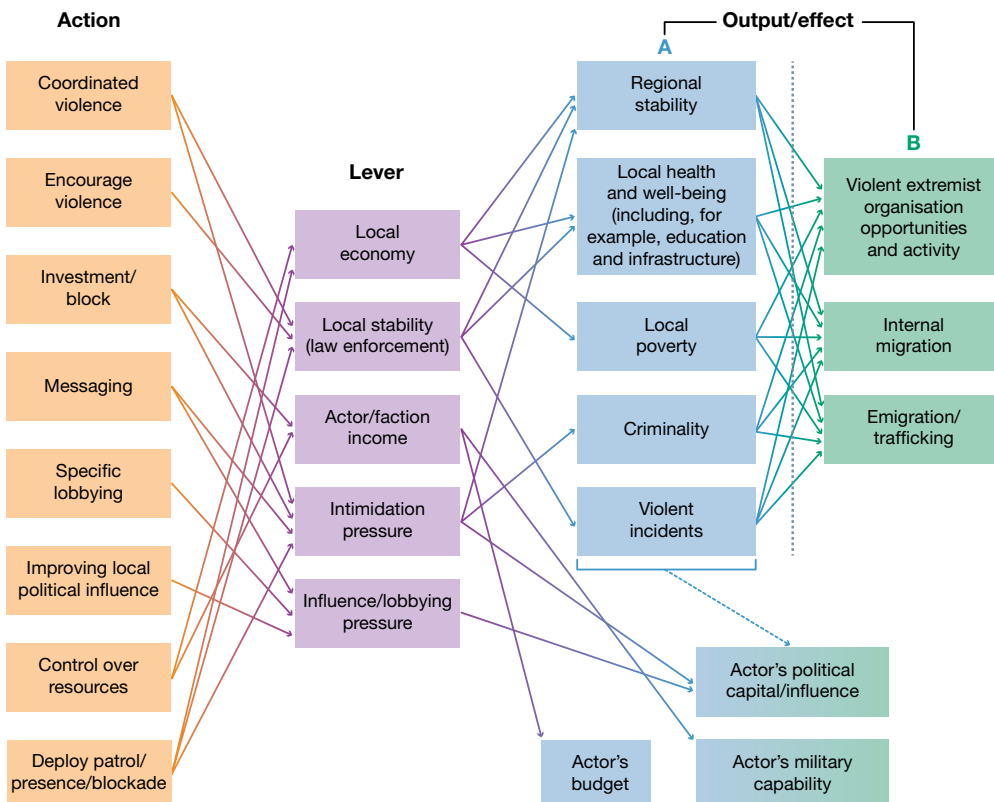


Figure 4.7 – A transparent influence diagram

4.31. Figure 4.7 was produced for Case study 1 at Annex A. This was a manual influence wargame that incorporated a system in which player factions (teams) undertook a variety of actions, such as negotiation, political, financial (including illicit activities), patrolling and kinetic operations. The game's adjudication system incorporated this diagram-based model. This was chosen because it delivered an outcome that provided a start-point for subject matter expert debate and final adjudication. The diagram drew on existing research and was used to generate human factor outputs in a consistent, reproducible and transparent manner. Other techniques might not need these requirements. The users and players of the wargame found this approach useful as it engaged them and was explainable (and modifiable) by the subject matter experts in an easy and open manner. The approach was also quick to implement in the game without information technology support (in this instance). The diagram illustrates how an input (on the left) propagates to affect parameters later in the diagram.

Example 2 – Better understanding an adversary or audience

4.32. Understanding is the perception and interpretation of a situation to provide the context, insight and foresight required for effective decision-making. It involves 'developing knowledge to a level that enables us to know why something has happened or is happening (insight) and be able to identify and anticipate what may happen (foresight).'⁵⁹ Understanding must focus on the audiences relevant to the integrated force as a whole and must be persistent. Common understanding is the ability to comprehend perceptions of groups other than our own and to establish an accepted and relevant baseline for communication, interpretation and action. Assessing deterrence effect and escalation thresholds are examples of common topics within influence wargames. Unless the actual target audience or adversary is at the wargame (which is highly unlikely), any assessment of the cognitive effect on them can only be made using a subjective judgement, so must be treated with caution. That does not preclude us from trying to better understand an adversary's or audience's viewpoint. This example explains one way to better understand an audience's perspective and potential reactions and, hence, develop insight and foresight.

4.33. Any attempt to examine deterrent or escalatory (and de-escalatory) effect should include experts who, as far as it is possible, understand the target audience. As explained previously, consider placing these experts into a role playing situation, rather than just ask their opinion of what 'actor A'

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⁵⁹ JDP 04, *Understanding and Decision-making*, page 29.

might do. Influence-related activities that enable the examination of deterrence or escalatory effect might arise through dynamic gameplay, but it is likely to require either specific injects or a stand-alone or ‘game within a game’ approach. In the latter, the expert players are presented with a series of actions and their perceptions of, and reactions to, these are explored. This might take the form of ‘walking players up an escalation ladder’ that starts with actions that are unlikely to prompt a response but then introduces increasingly aggressive actions that will, at some point, cause a response. This might be outside the main game, conducted as a theoretical ‘what if?’ exercise, or be part of the actual gameplay and cause in-game effects. Hence, it might feature as part of a planning cycle (and can be connected to the vignette on course of action wargaming earlier in this chapter), form a stand-alone element of a larger wargame or be dovetailed into gameplay. The same approach can be applied to deterrence: the question simply becomes, ‘would this deter you?’, rather than, ‘would this cause you to escalate?’

4.34. As each action, or activity, is presented, the experts representing the adversary or target audience should explain their reactions and rationale using questions such as the ones below. This process cannot provide a definitive answer and must be subjected to the same caveats and checks outlined throughout this handbook. However, the questions below provide a clearer understanding of an adversary’s or audience’s perception of the situation and the factors they considered, rather than simply asking, ‘what do you do?’ as tends to be the case currently.

- What is your perception of the activity?
- What are the response options, or courses of action, available to you?
- What is your decision calculus? What factors are you considering in determining your response?
- What is your chosen response and why have you chosen it (based on your decision calculus)?

Example 3 – Using argument-based adjudication in the Information Warfighter Exercise wargame

4.35. Another relatively simple approach to adjudication is that developed by RAND to support the United States (US) Marine Corps' Information Warfighter Exercise (IWX). The US Marine Corps Information Operations Centre conducts an IWX once or twice per year. These are designed to provide training in the information environment. They involve information operations experts from different nations' militaries taking part in a tactical-level (corps and division) wargame in a warfighting context. 'The IWX wargame is an opposed event in which two teams of players compete against each other in and through the information environment to better support their respective sides in a notional scenario ... Teams represent an Information Operations Working Group or information-related operational planning team, or its adversary force equivalent.'⁶⁰

4.36. The wargame uses a matrix game format using argument-based adjudication. The wargame structure provides the framework for players to plan, present their plans, argue the reasons for success or failure against each other, resolve each action's outcomes and then receive a back brief of the outcomes that enables further planning. This cycle is summarised below.

- a. **Step 1 – receive scenario and situation update.** This initiates players' planning.
- b. **Step 2 – prepare to present.** Players plan their actions and prepare to brief these.
- c. **Step 3 – present actions for approval.** Actions are presented to their cell lead, who approves or disapproves them. The cell leads then brief judges, who start the adjudication process.
- d. **Step 4 – engagement and matrix debate.** Players present their actions with the reasons why they believe they will succeed. The adversary cell counterargue rebuttals. Judges complete their scoring and outcomes are determined by throwing dice.

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⁶⁰ *The Information Warfighter Exercise Wargame Rulebook*, prepared for the Marine Corps Information Operations Centre by RAND, August 2021, page 1. This is available for free on the RAND website.

- e. **Step 5 – results and reset.** The resulting storyline is shared, and the process is repeated from Step 1.

4.37. The salient points of the adjudication process are below. This is fully explained in *The Information Warfighter Exercise Wargame Rulebook*.

- a. During Step 3, judges assess each action and subjectively assign it a draft difficulty score (how hard it is to create the desired effect) and planning rank (how well planned is the action). These two metrics will be modified during the following debate to form three criteria that collectively determine the ‘target number’ used for outcome determination. The following points describe Step 4, the matrix debate.

- b. A player from the initiating team (‘the presenter’) describes the action and its intended effect. The presenter gives three reasons why the action will create the desired effect.

- c. The opposing team has a few minutes to prepare their rebuttal. They then state three reasons why the presenter’s action will be unsuccessful or less effective than indicated.

- d. The presenter’s team have a few minutes to consider and then brief up to three counterarguments to the rebuttal.

- e. During this debate, judges assign a debate modifier score (based on the strength of these arguments and counterarguments), and make adjustments to their draft difficulty score and planning rank. The judges’ scores are combined to provide a target number used to determine the outcome. Dice are rolled to decide the result.

- f. The difference between the dice thrown and the target number, whether greater or lower, is used by the judges to determine the success or failure of the action, and the degree of that success or failure. Outcomes can include ‘astounding success’ and ‘critical failure’.

- g. The outcome is then translated into a gameplay effect by the storyteller, which is back briefed to the players – assuming they have the ability to measure its effectiveness. This brief takes the form of a dynamic narrative commentary.

Red teaming

4.38. A red team is defined as: [a team that is formed with the objective of subjecting an organisation's plans, programmes, ideas and assumptions to rigorous analysis and challenge.](#)⁶¹ Effective red teaming is a primary mitigation to the risks associated with influence wargaming, many of which are caused by including human factors in the game's models and among participants. A properly resourced and empowered red team must feature throughout the wargame process, from initiation through design, development and execution. Detailed red teaming guidance and specific techniques can be found in the resources listed in the linkages section of the preface; this section simply highlights key points relating to wargaming influence.

4.39. The typical responsibilities of a red team are listed below. The red team:

- provides an introductory brief to all participants on cognitive biases and how to mitigate them;
- identifies and counters cognitive biases during the game;⁶²
- challenges invalid assumptions and beliefs;
- identifies risks and issues;
- identifies flaws in logic;
- identifies different options and alternatives;
- widens the scope of information searches;
- assists in determining qualitative confidence levels in the wargame itself and its outcomes; and
- writes a section in the final report describing observed cognitive biases and how these may have influenced the game.

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⁶¹ Joint Doctrine Publication 0-01.1, *UK Terminology Supplement to NATO Term.*

⁶² The most common instances of cognitive bias that feature in influence wargames are optimism bias, groupthink, confirmation bias, anchoring and mirror imaging.

Section 5 – Wargame participants

4.40. The level of expert support required will depend on the purpose of the influence wargame. An educational or training wargame might not need significant specialist support. Case study 3 at Annex A is a good example of a game where expertise was required during development but not during delivery. However, a wargame with a policy, force development or planning purpose will likely require access to diverse expertise. This could be accessed from the military, industry, media and the social sciences (for example, anthropology, economics and psychology). Whereas most military operators can fill non-specialist roles in conventional wargames, the complexity inherent in influence wargames will likely demand expertise in the specific activities and audiences being considered. Ideally, representatives of the actual actors and audiences would play, however, this is unlikely. While well-constructed game processes can partially mitigate a lack of cultural or background knowledge,⁶³ proxy players will probably be required who understand the beliefs, culture and motivations of the game’s audiences. However, this risks introducing bias,⁶⁴ so checks and balances are essential. Partners across government and civilian organisations are likely to be important contributors to influence wargames. Ensuring the correct attendance is essential and is the responsibility of the wargame sponsor.⁶⁵ Case study 1 at Annex A is a good example of a set of diverse players recruited specifically for the wargame.

4.41. **Teams, cells and sides.** Many of the challenges listed in Chapter 3 relate to the complexity of the information environment and the broad range of actors and audiences. The following suggestions are intended to help designers incorporate these actors and audiences into their wargames.

- a. The classic, two-sided approach to conventional wargames is likely to be replaced by multiple sides. Incorporating at least five teams, or cells, into an influence wargame ensures that the multi-sided nature of influence wargames can be played out.
- b. The relationships between these sides will be more nuanced and complex than in conventional wargames. For example, ‘allies’ who cooperate in some matters might be in a state of rivalry in others.

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63 For example, by limiting players actions to those the audiences would do or providing detailed player notes and guidance.

64 Players recruited from target audiences bring their own political views to the game and their biases may not be understood or clear to the wargame designers and analysts.

65 For example, the US Centre for Advanced Red Teaming recruited a total of 223 participants for one game who were born and grew up in one of the audience countries.

c. The use of cell ‘colours’, such as red for the adversary and orange for non-state actors, is unlikely to provide the fidelity necessary to differentiate between actors and audiences. Consider naming cells and sides to reflect the real actor or audience that they represent. None of the case studies at Annex A feature cell colours; all use proper labels and names.

d. Teams must be diverse and multifunctional so that the relevant aspects of the information environment can be played. The composition of teams might also differ, with distinct expertise required in one cell but not others.

4.42. **Player engagement and expectations.** As explained in Chapter 3, influence wargames can have fewer instances of discernible success and failure than conventional wargames, and may have no clear winner. Designers must find ways of enhancing the player experience to ensure they remain engaged. Player engagement is essential and directly contributes to the number and quality of insights.

Section 6 – Analysis, data capture and the after-action review

Analysis

4.43. Metrics in influence wargames are less tangible but still important. They must, therefore, be challenged and assured. As with psychological studies and other studies within the social science discipline, the subjectivity of collected data creates difficulties when determining cause-and-effect relationships. Hence, conclusions and findings will be indicative, requiring further examination. The appropriate methods and techniques will evolve; however, there will likely still be the need to accept greater levels of uncertainty in influence wargame outcomes for the foreseeable future.

Data capture

4.44. Many insights and data items will arise from players’ perceptions as well as from their recorded actions. Establishing a player’s perception of a situation, their reaction to an event, their decision calculus, the options available to them and their selected course of action provides greater

insights than simply recording their actions. Asking players to record their own decision rationale at the point at which they take decisions enables a deeper understanding of their perspectives than second-party data capture by recorders (which is still required, however). Specifics of the data capture requirement will vary depending on the wargame. Figure 4.8 shows part of an action card that players completed, including the cascading second and third order effects they anticipated. This data capture should be done in-game, so that players cannot retrospectively skew or try to justify their decisions. It may also form part of an after-action review. Simply noting who talks to who in a game involving negotiation can generate noteworthy observations. Requiring all players to note what they think were the outcomes of such meetings and interactions can also help generate insights. A similar data capture plan must also be applied to the adjudication team. An in-game data capture form features in Case study 1 at Annex A.

Counter-command and control warfare capability component:				Resources used:
Target:				Electronic warfare operations
Effect:				Computer network operations
Time:				Media operations
Persistence:				Cyber operations
Anticipated 2nd and 3rd order effects				Psychological operations
Political				Physical destruction
Military				Deception operations
Economic				Operational security
Social				
Infrastructure				
Information				

Figure 4.8 – An extract from a player action card from a counter-command and control warfare game illustrating bespoke data capture

The after-action review

4.45. The complexity of influence wargaming demands that significant effort is devoted to the after-action review. The after-action review: ensures data capture; enables the consolidation of the game narrative; starts the process of turning observations into insights; and provides a formal opportunity for the assurance of outcomes and findings. A properly structured and resourced after-action review is required. This must not be just a hurried 'hot wash-up'. A good after-action review takes time, planning and resourcing. It should occur shortly after the game and include all participants. This can take several hours. Important outputs from an after-action review are listed below.

- a. An agreed account of the narrative facts, including a common understanding of events and identification of significant branch points.
- b. An initial analysis of the observations arising from the game, with these grouped into provisional insights, for example, by using cluster analysis. This is a crucial step towards deriving lessons identified.
- c. Formal assurance of the initial findings from the wargame. This is a primary mitigation for many of the risks raised throughout this handbook. As such, both the sponsor and red team should take leading roles in the after-action review.
- d. Confirmation of the confidence levels relating to the game and its outputs.
- e. A consolidated list of observations concerning the wargame processes and delivery (as opposed to insights concerning the game's aim). These should feature in the final report.

Section 7 – Building confidence

Building confidence in the game outputs

4.46. The users of a wargame must understand the associated levels of confidence in the fitness for purpose of the whole solution. These levels of confidence will vary according to the purpose; for example, a training wargame may require less than a wargame that supports operations. This allows them to further explore or apply the game's outcomes knowing that these have,

as far as possible, been assured and are safe to use. The quantification of influence effects should be avoided unless the system includes a validated set of formulae describing how the numbers involved are combined to give credible answers. It is important to consider the qualitative confidence levels that can be applied to any estimation or representation of influence effects in a wargame. This highlights the first aspect of an influence wargame that requires an understanding of the required qualitative levels of confidence – the outputs from the game.

Building confidence in the game itself

4.47. People are a key element of all wargames: players, subject matter experts and control staff. The increased risks associated with cognitive bias in an influence wargame have been highlighted. These are exacerbated by widely varying views and opinions held by those playing in, or supporting, the wargame. Hence, confidence levels in the wargame participants also need to be understood. As well as people, the game also comprises the processes and mechanics that allow it to be played. These elements, plus the aim, players, data capture and analysis constitute the second aspect of an influence wargame that requires an understanding of levels of confidence – the game itself.

Specific factors to consider when building confidence

4.48. The following paragraphs highlight issues and considerations specific to assessing confidence levels in influence wargames and suggests approaches that can be used to understand these in both training and analytical wargames. These approaches include verification and validation, which are primary methods of determining levels of confidence. No wargame, especially one examining influence, will ever be perfect and produce a single optimal ‘right’ answer. However, the validity of a wargame can be improved by using proven scientific and experimentation principles and techniques to evaluate evidence. The goal is to produce a set of outputs that are fit for the purpose intended.

4.49. **Qualitative data and the quantification of effects.** Some techniques to quantify influence effects have been developed. However, these typically generate more consistent, not necessarily more accurate, quantification. Data sources should similarly be reviewed and assessed against the required level of accuracy to ensure their fitness for purpose.

4.50. **Uncertainty of outcomes.** Assessing the sensitivity of outcomes to uncertainty or variability in inputs is a particular problem for influence wargames. Influence factors are less well understood, and no generally accepted models currently exist that definitively shows how an individual or group will behave when subjected to particular influence-related activities. Under such circumstances of deep uncertainty, measures that can be used to help build confidence in outcomes include the following.

- Adhere to a rigorously developed and executed data collection and management plan, that is itself derived from clear aims and objectives.
- Subject findings to red teaming as they arise; additionally, consider whether outcomes are counter-intuitive (differ from the accepted wisdom before the event).
- Build and assess the evidence base to establish a coherent measure of confidence in the wargame and its outcomes.
- Conduct rigorous and well-resourced after-action reviews.
- Use post-event surveys to assess the perceived quality of the wargame outputs and to track political acceptance of the wargame results and any resistance to its conclusions.

4.51. **Players, including their levels of engagement.** The wargame must appropriately represent players' decisions and the consequences of these. If players are not suitably qualified and experienced, act unreasonably or are disengaged, the wargame itself and any outputs become questionable. Measures that help build confidence in the quality of players include the following.

- Explicitly assess players' background, expertise, authority and experience.
- Recruit the correct people, rather than invite open attendance.
- Recruit a diverse set of participants.
- Monitor in-game engagement and levels of attention.

- Determine if players exhibit realistic behaviour.
- Where appropriate, consider using models to replace players, but ensure this will not remove human expertise from the wargame because this is usually a key element.

4.52. **The wargame and supporting methods and techniques.** Due to the embryonic nature of influence wargaming, more effort is required to assess confidence levels in the game itself than in conventional wargames. Measures that can be used to do this include the following.

- a. Use appropriate analysis to assess verification and validation of the methods and techniques used to support the game. This may be through, for example: ensuring that assumptions and caveats are presented in an easy to understand manner; perceived uncertainties are openly exposed; testing techniques by using a well-defined plan and regime; independent and/or expert review of the game and its outputs; and comparison of the game and its outputs with real-world data. The UK government *Aqua Book* provides further advice on this topic.⁶⁶
- b. Compare results from, and between, diverse experts and methods and techniques to help understand confidence levels. Use multidisciplinary teams of players and analysts to improve confidence levels.
- c. Ensure that outcomes are, as a minimum, explainable and auditable.

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⁶⁶ HM Treasury, *The Aqua Book: guidance on producing quality analysis for government*, March 2015.



Wargaming is a trusted analytical technique that provides structured, intellectually liberating and safe-to-fail environments where decision-makers can differentiate ‘what works’ from ‘what doesn’t’. It can be used to better represent and explore influence effects across a range of policy, force development, planning, education and training problems.



Dr Nick Joad
Director Defence Science and Technology

Annex A

Influence wargaming case studies

Case study 1 – Strategic Command: a negotiation influence wargame

Wargaming offers a novel experimental approach to inform policy-making. We continually monitor events and developments in our area of operation and value the contributions made by the wargaming team. The insights developed through wargaming are integral in ensuring the proactive stance required for the development of information activities and delivery of influence.



Strategic Command sponsor

Introduction

A.1. Strategic Command supports the Ministry of Defence (MOD) by ensuring that joint capabilities are developed and managed across all five operational domains, in the UK and in overseas joint operations. A requirement arose to develop a game to help decision-makers and operational personnel better understand the information environment dynamics in an overseas country, and to generate insights that would help shape foreign policy.

Aim and objectives

A.2. The aim was to develop an interactive and open-ended influence game. The objectives were to:

- understand the impact and outcomes of a given scenario in the country or area under consideration and the range of consequential impacts on the UK government;

- generate actionable insights to help shape policy and information activities options from a position of considered analysis and sound understanding; and
- create a collaborative space to work with partners on a shared problem and thereby strengthen working relationships.

Factors represented

A.3. Significant factors to be incorporated into the game design were the behaviours, available options and decisions of key actors. Particular importance was assigned to the interactions between actors, their influence networks, and how these were shaped by their dealings with each other and emerging events. The game structure had to enable these factors to be explicitly represented, with decision criteria and rationale a key data capture requirement. Accordingly, the game design included the features described below.

- a. An explicit negotiation phase for meetings between players from all factions.
- b. Constraints on who each player was allowed to talk to and guidance to frame these discussions. This took the form of a relationship matrix, illustrated in Figure A.1, showing who was an ally, neutral or adversary.
- c. Bespoke data capture forms that were used to record players':
 - intentions, decision criteria, decisions taken and the rationale for these; and
 - perceptions of a meeting's purpose, narrative and outcomes.
- d. The use of simple and abstracted resource (budget and political capital) allocation cards, which could be exchanged between players. These:
 - limited players' actions and forced them to prioritise;
 - were used in negotiations with other teams;
 - allowed the visualisation of the game state; and
 - enabled a semi-rigid adjudication process that featured the outcomes of influence diagrams being used as a starting point for player discussion.

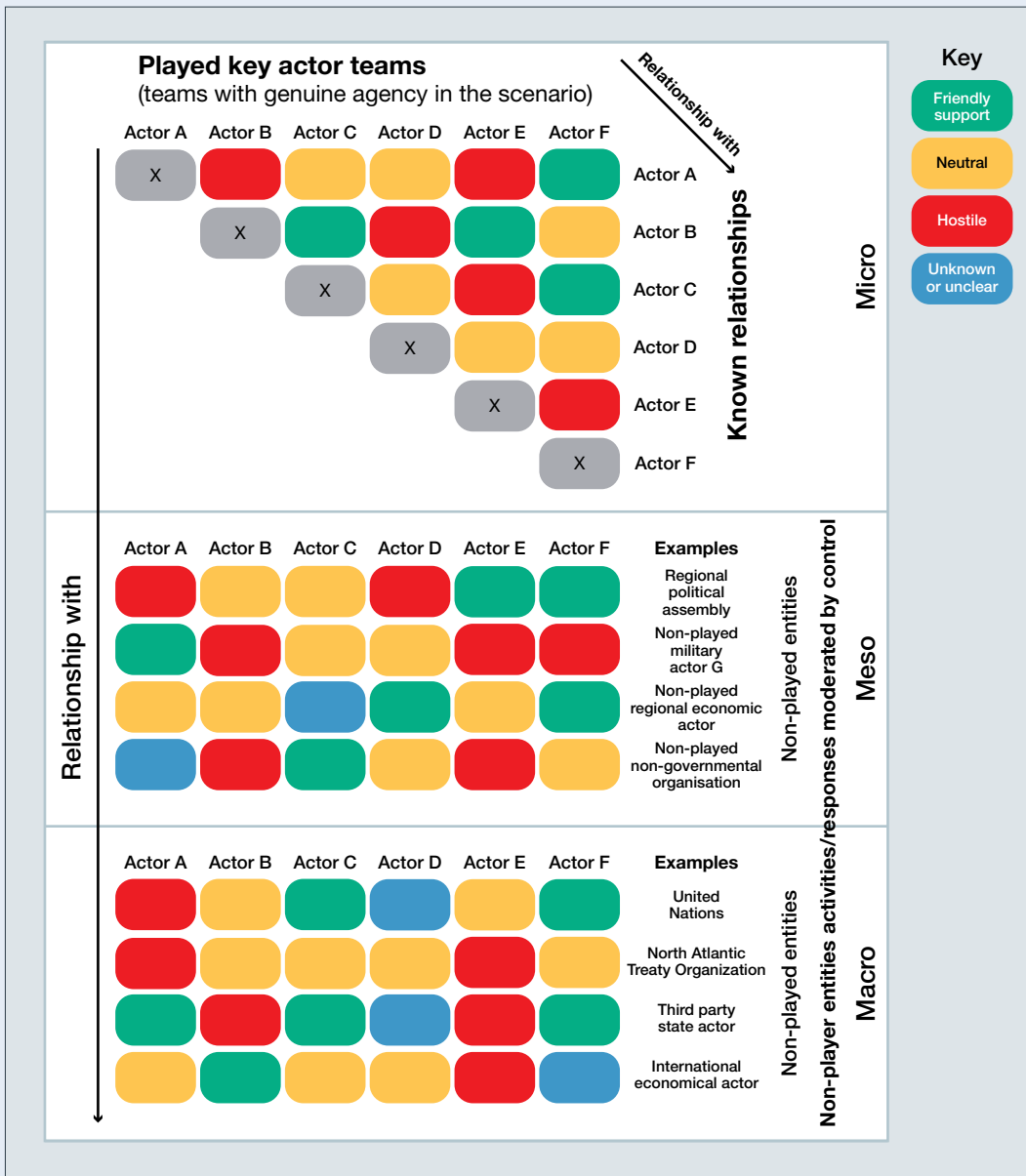


Figure A.1 – Relationship matrix

A.4. The changing state of areas within the country, and of each key actor, was reflected in several simple metrics displayed on cards on a central map. This card was marked each turn indicating simply whether the metric was increasing, static or decreasing. These metrics related to influence diagrams used to support adjudication (see below and Figure 4.7 on page 65), and hence informed outcomes. Each key actor had an arbitrary score representing

the level of political influence in each area. This was related to tribal affiliations, military affiliations, and power and influence. The base metrics were poverty, crime, violent incidents, well-being and migration levels.

Adjudication

A.5. Adjudication was semi-rigid and deliberative. An outcome was derived using influence diagrams, which produced consistent results. This was proposed as a starting point for a forced discussion between relevant players and experts. The game controller concluded each adjudication decision by selecting, moderating or overruling the group's proposed outcome. The influence diagram connected potential actions with effects on the game parameters. Paper copies of the diagram were used, which delivered a rapid outcome that was easy to understand and allowed players to see why an effect had occurred. There was little debate of these outcomes due to player confidence in the technique.

Data capture and analysis

A.6. **Data capture.** A one-page bespoke data capture form, illustrated at Figure A.2, was used to capture each player's perspective of meeting and negotiation outputs. The approach was validated through the provision of data (for example, to inform the relationships matrix) and examination by experts from within the customer organisation, together with historical analysis using open-source material. This validation was conducted prior to the execution of the game as part of the development process.

A.7. **Analysis.** Analytical consolidation took place the day after the wargame in a 4-hour after-action review. This featured:

- in-depth analysis of the gameplay, actors' interactions and the narrative emerging from these;
- analysis of the observations captured, which were refined and grouped into prospective insights;
- confirmation of the resulting insights arising that were deemed worthy of inclusion as candidate lessons identified in the final report;

- consideration of any biases that might have been introduced, primarily by red teaming the game process (including factors such as the level of player engagement) and game outcomes; and
- an initial discussion of the game report.

Cards are pre-printed with the actor name (to save time). You must record which actor(s) were present at the discussion and what you think was agreed in that conversation. It is entirely possible (likely even) that different participants may have different views on what was agreed.

These are not to be thought of as minutes, so can be abbreviated (so long as they are legible for post-game analysis). It is possible that the outcome of a meeting was 'nothing'.

It is also important to record any transfers of budget or political capital cards when you hand cards to other actors.

Turn number: <u>4</u>	Kissenger
Met with: Mao Zedong	
Outcome: Agreed to arms limitations	
Resource transfers (if any):	
In:	Out: 2 PC to Mao

Figure A.2 – Example meeting data capture form with instructions

Execution

A.8. **Overview.** The final version of the game was a structured manual representation of the political support for, and influence wielded by, key actors in the region under consideration. Teams of two people represented each of the country's key actors or organisations that warranted being actively played. Each was given detailed objectives and direction concerning who they considered to be allies, adversaries or neutral to their position. After a planning phase, they engaged in dynamic role play, negotiating with other players. A 'non-player cell' represented other actors (organisations, countries and characters) that were not actively played but were required to provide the wider international context. Participation was restricted to invited personnel from within Strategic Command and across government. Two wargames were played over one day, which examined discrete scenarios with different starting conditions and assumptions.

A.9. **Turn process.** The turn process described in the game guide is shown at Figure A.3. At the end of four game turns there was an ‘epilogue phase’, when the game controller relayed further actions or consequences that had an impact beyond the time frame of the game itself.

10 Minutes – team time

The players remain in their teams and plan for the coming turn. This is important thinking time. This is also when players record their intent, allocate resources (if they have any) and decide on their planned actions. During this time control will provide feedback on outcomes from the previous turn as appropriate.

20 Minutes – negotiation time

Players have opportunities to negotiate with the other teams, conduct formal or informal meetings and/or reach agreements. Negotiations might not be completed within the 20 minutes, and teams may have to carry over unresolved issues into the following turn(s).

5 Minutes – player action confirmation

Players confirm their planned actions for the turn. This might include last-minute changes as a result of negotiation.

5 Minutes – control adjudication/update

In this phase control updates the visualisation on the master map and creates feedback for the player teams. This can run over into the next turn’s team time.

Figure A.3 – Turn process

Lessons identified

A.10. The lessons identified are below.

- a. **It is necessary to conduct analysis to determine key actors and the relationships between them.** These relationships can be displayed on a relationship matrix (Figure A.1). It should be noted that actors can range from individuals (micro level) to groups (meso level) to institutions (macro level). The derivation of the relationship matrix is a critical part of the game design process.

-
- b. **Sponsor engagement is crucial.** Close involvement with Strategic Command and the game design team throughout the entire process was essential. The customer ensured that resources (primarily personnel and time) were allocated to the design, development and execution phases. This included a commitment to weekly workshops involving the design team and Strategic Command.
 - c. **Selecting and recruiting the correct players was essential.** This approach is required rather than issuing an open invitation to whoever might want to attend.
 - d. **Data capture in a rapid game featuring many simultaneous interactions is challenging.** It required several dedicated recorders and bespoke data capture forms populated by players to augment centralised scribing.
 - e. **A well-resourced after-action review is essential.** A lengthy, well-structured and well-resourced after-action review was essential to consolidate and confirm the data captured, and then to rigorously analyse this to derive candidate insights.
 - f. **Role play is an effective approach.** The dynamic approach to gameplay, featuring resource- and capability-driven negotiations in line with players' objectives generated more insights than a conventional 'static' discussion.
 - g. **Dual benefits will arise.** One player who was about to deploy for the first time to the country in question said on returning from the deployment that they were better prepared (trained) by the (analytical) wargame than any amount of reading and briefing.
 - h. **Effective and appropriate adjudication is key.** The semi-rigid deliberative approach featuring a combination of influence diagrams and subject matter expert (SME) discussion, all moderated by the game controller, enabled a transparent discussion that helped data capture and general understanding.

Case study 2 – Strategic communication: wargaming future force development for influence and cyber



Despite the high degree of simplification necessary, players described the decisions they had to make as being remarkably close to reality and in some cases a scarily accurate reflection of their situation. The game demonstrated the existing fragile ecosystem and enhanced our understanding about future force structures. The wargame also highlighted the possible need for an entire paradigm shift in our force structures in order to move beyond the current practice of generating short-term, performance-based, activity to generating significant strategic influence effect.

Strategic communications sponsor

Introduction

A.11. Strategic communications (cyber) were seeking ways to understand the limiting factors inherent in the current organisational structure, and how the trade-offs required to meet evolving demands might affect operations and their resulting influence effects given the trends towards an unpredictable global environment. The use of a wargame to simplify the nested range of complicated issues proved an effective way of drawing attention to the core dependencies and the potential requirements for trade-offs to both maximise influence and effectively meet a high-level demand signal.

Aim and objectives

A.12. The aim was to understand current trade-offs to inform and improve the design of future force structures across competition, crisis and conflict.

A.13. The objectives were to elicit actionable insights that informed the following research questions.

1. How do trade-offs between force components vary across the conditions of competition, crisis and conflict?

2. What are the consequences of prioritising support across a wide range of nationally directed outcomes for effects and influence?
3. To what extent is activity dependent on external capabilities?
4. What aspects of the relevant activity have both intended and unintended consequences?

Factors represented

A.14. A number of factors were represented in the wargame. These were:

- existing capabilities to generate influence;
- means of delivering influence;
- the capacity to understand the problem;
- the time taken to develop influence operations;
- organisational growth through recruitment, training and experience;
- organisational constraints; and
- the risk of unintended consequences.

Metrics and measurements

A.15. The following metrics and measures were captured.

- a. Positive measures were the:
 - ability to meet externally directed tasks;
 - number of operations conducted; and
 - levels of influence effect created.
- b. Negative measures were:
 - adversary effect, measured on a tracker; and
 - the risk of unintended consequences arising from operations.

A.16. Effects scores were representative, with associated numbers being an abstraction, as shown in Figure A.4. These differed depending on whether the target was in a state of competition, crisis or conflict. The metric measured was the delta (difference) between the numbers, and whether this was rising, falling or stable. This relative and indicative approach was sufficient to inform research questions concerning ‘required levels of...’. Effects and risks arising

from any given simulated operation were recorded as persisting from turn to turn, but scores related to those effects and the risk were also diminished over time.

Category	Effect score in:			Risk level (in competition or crisis only)
	Competition	Crisis	Conflict	
Political	8	6	4	Low (1)
Military	Not available	4	8	Medium (2)
Economic	4	6	8	Medium (2)
Social	4	6	4	Low (1)
Information	4	6	8	Low (1)
Infrastructure	Not available	6	8	Medium (2)

Figure A.4 – Metrics used in the strategic communications (cyber) game

Approach and mechanics

A.17. **Overview.** The core mechanic of the wargame was based on interactive resource allocation (worker placement), with the game state recorded using a series of trackers. It was a multi-team collaborative game, focused on both intra-team discussion and inter-team negotiation. Teams were structured to cover global influence along both functional and international regional lines.

A.18. **Scenario.** Adversary activity was scenario-driven, with events presented to the players being selected from a menu of future situations spanning a five to ten year period. Hence, the scenario was a more integral component of the process than in conventional wargames and was critical to delivery. Options included changing states of competition, crisis and conflict, which could be different for various adversaries at the same time, and player actions could affect the scenario. The scenario had to be sufficiently complex and demanding to test the research questions. The ‘future worlds’ options that the scenario featured were derived from a comprehensive analysis of open sources such as the United States Office of the Director of National Intelligence

(ODNI), *Global Trends 2040 – A More Contested World*⁶⁷ and the UK MOD's *Global Strategic Trends – The Future Starts Today* (GST),⁶⁸ among others. This is shown at Figure A.5.

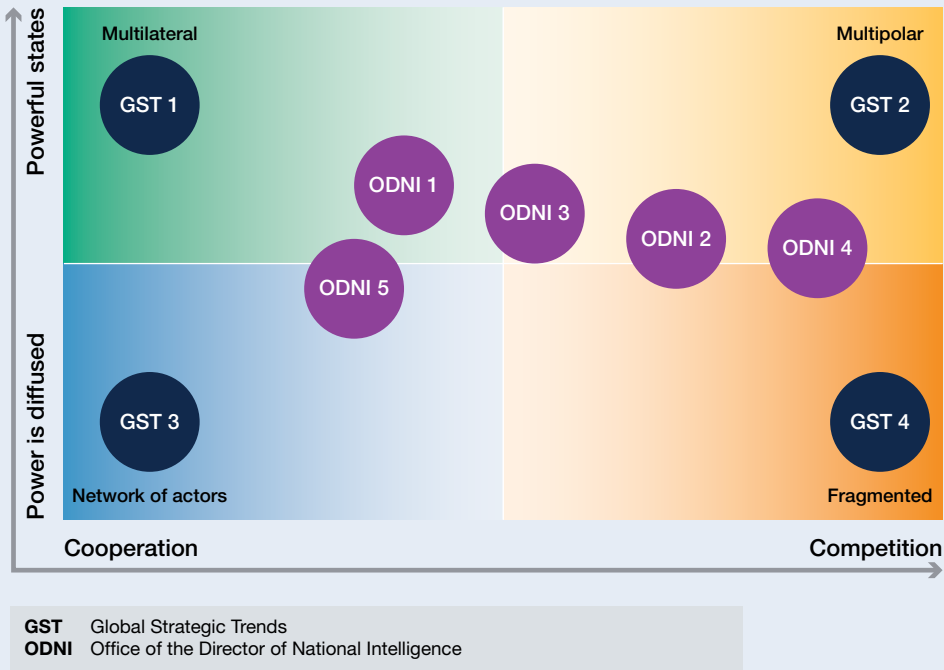


Figure A.5 – Compilation of ODNI and GST futures

A.19. **Mechanics.** Operations intended to create a desired influence effect were categorised using an expansion of the political, military, economic, social, information, infrastructure (PMESII) framework. Using just the PMESII headings would not have captured the necessary differentiation between operations.

A.20. **Adjudication.** All adjudication was deterministic: a given operation delivered an effects score and generated levels of risk that were predetermined and only modified by player decisions. Effects scores, levels of risk and modifiers varied depending on whether the target was in a state of competition, crisis or conflict with the player cell initiating the operation. A deterministic approach was used because it was acknowledged that metrics such as effect and risk were relative, indicative and abstracted.

67 ODNI, *Global Trends 2040 – A More Contested World*, 'Charting the Future and Uncertainty'.

68 MOD, *Global Strategic Trends – The Future Starts Today*.

Data capture and analysis

A.21. **Data capture.** Data capture focused on the changing metrics and the delta, not on the absolute numbers. These were captured and presented primarily on trackers, so they were clear and transparent to all.

A.22. **Analysis.** As well as quantified outcome metrics, subjective judgements were elicited using questionnaires. Questions asked included the following.

- What could be done to de-risk the situation?
- What was the rationale for taking that decision?
- What alternative courses of action could have been considered?

Lessons identified

A.23. The lessons identified are below.

- a. The game helped the sponsor to demonstrate that a complex problem existed, and to better understand it – even revealing the possibility that an organisational paradigm shift might be required.
- b. The ‘competition – crisis – conflict’ terminology and categorisation worked well. These states could be asymmetric and not mirrored; different states can exist between various actors at the same time, and one actor might view the state they were in with another actor differently to that actor.
- c. Frameworks such as PMESII can be useful as checklists or as a basis for development, but their direct application should not be assumed. The unmodified PMESII framework was too limiting and had to be extended to provide a sufficiently detailed categorisation to cover the operations conducted.
- d. There is a risk in using a deterministic methodology that players will ‘min-max’ or ‘game the game’. This was mitigated by using players who were all SMEs and invested in the scenario. This ensured they related the game to their jobs and the real world. Pre-prepared and deterministic adjudication outcomes minimised the risk of in-game bias.
- e. The scenario approach, using open-source future worlds, was effective and formed a good basis for the more detailed influence and information environment factors to be included.

Case study 3 – Behaviour science education game: COM-B (Edition 1)

The Behaviour Science Education Game for COM-B is an invaluable resource for students on JIAG courses, offering an innovative and engaging way to reinforce learning whilst providing Defence context to the COM-B model. The game encourages healthy debate around the application of the theory, enhancing student understanding in a memorable and enjoyable format.

Captain Nick Atkinson, Chief Instructor, Military Psychological Operations Course, Joint Information Activities Group



Introduction

A.24. Behaviour change is integral to influence, so Defence personnel must understand the foundational theory that underpins behaviours. The capability, opportunity and motivation equals behaviour (COM-B) theory is one model – from many – with which to understand behaviour. Whilst no behaviour model is entirely complete, each can add utility in supporting Defence planning and execution.

A.25. The Behaviour Science Education Game (BSEG) is an educational tool that uses gamification to enhance and develop understanding of the COM-B theory. The game was designed to support Joint Information Activities Group (JIAG) training courses, specifically the Military Psychological Operations Course and the Target Audience Analysis Practitioner Course. These are run routinely for students who are military planners and practitioners in the areas of psychological operations and audience analysis.

COM-B theory

A.26. The COM-B theory was developed in 2011 by academics Susan Michie, Maartje van Stralen and Robert West.⁶⁹ At that time, many frameworks existed on the subject of behaviour change interventions. The COM-B theory was initially applied in a health psychology context, for example, to reduce patients' smoking habits. The intent of the COM-B theory was to recognise

69 See Social Change UK, *A Guide on The COM-B Model of Behaviour*.

the levers that led to a behaviour by identifying clear examples in a specific context.

- **Capability** could be a person’s ability to buy a packet of cigarettes and a lighter because they are over a legal age limit.
- **Opportunity** could be a person’s opportunity to smoke a cigarette during a break time because their working environment allows rest periods and provides a smoking shelter.
- **Motivation** could be a person’s desire to have frequent breaks to get away from the office, which may be linked to a desire to distance themselves from their work.

In this example, the above levers led to the **behaviour** of the individual smoking tobacco cigarettes. The COM-B theory is illustrated in the model shown at Figure A.6.

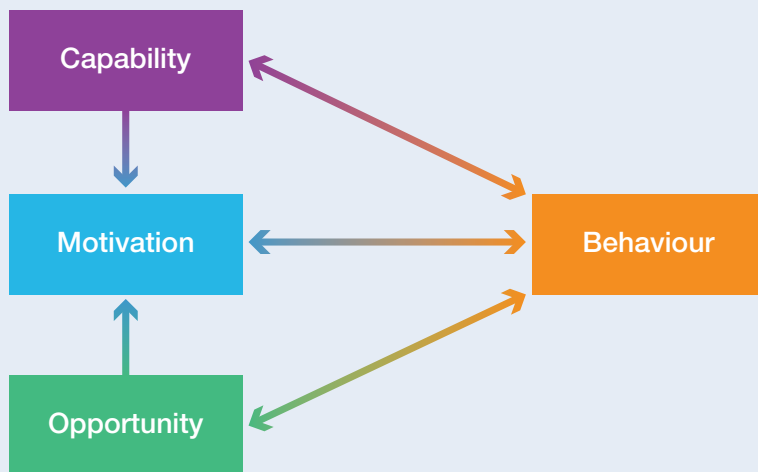


Figure A.6 – The COM-B model

A.27. Understanding this, the next step of behaviour change is to identify the necessary intervention; in this instance that would lead to a decrease in smoking by the individual. Michie, et al., cover this detail with their behaviour change wheel, within which the COM-B theory sits.

Requirement and design criteria

A.28. JIAG requested an easy-to-learn, quick-to-play educational game that raised the level of understanding of the COM-B theory for a specific audience within a Defence context. The game was required to meet the following criteria:

- play time was to be under one hour;
- a facilitator need not be present for every game (there would be multiple games running simultaneously with just one instructor present); and
- the game should be quick to learn, to maximise available time.

Approach and mechanics

A.29. A series of capabilities, opportunities and motivations (COMs) were mapped out that were relevant to each behaviour included in the game. This content was designed to help military planners and practitioners identify levers that might be applied to future plans and operations. The game requires players to assign potential elements/qualities to the COMs, in response to a behaviour that is presented to them on a 'behaviour card'. These elements/qualities may either be automatically accepted (shown as a green answer on the scoring matrix) or rejected (shown as a red answer) or require the player to present a verbal justification of their choice to the other players (shown as a grey answer). An example behaviour card with scoring matrix showing this colour-coding is at Figure A.7. Adjudication of the justification for any grey answer is by consensus of the other players or, in the case of disputes, by using a resolution document (information booklet) provided in the game. The players have time to play through several behaviour cards within the hour of game play.

A.30. Although the BSEG highlights appropriate indicators and warnings that could lead to relevant behavioural interventions, the game does not cover the interventions represented within the behaviour change wheel due to specificity and time constraints.

Behaviour cards

- Behaviours presented have already happened and, while generic, are contextually relevant to Defence.
- There are a mixture of positive behaviours, such as: key leader engagement; presence, posture and profile; and being cyber secure. There is also a mixture of negative behaviours, such as: an incident of violence; an incident of sexual harassment; and a security breach. This is to represent realistic situations.
- The reverse side of the behaviour card contains a scoring matrix.
- There are a total of 15 behaviour cards, including a demonstration starter card.

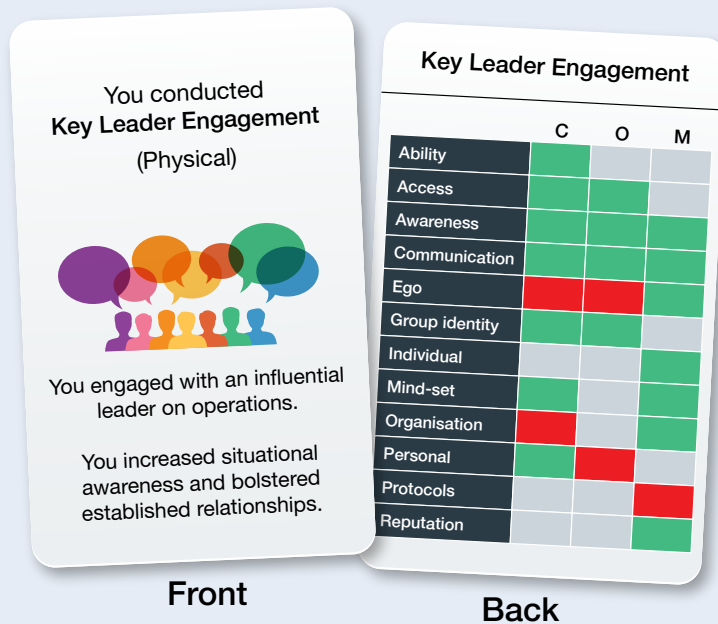


Figure A.7 – Example behaviour card with scoring matrix

Capability, opportunity and motivation cards

- There are 12 COM cards, which contain qualities that may be used to describe specific COMs underlying a given behaviour.
- An example COM card is shown at Figure A.8.

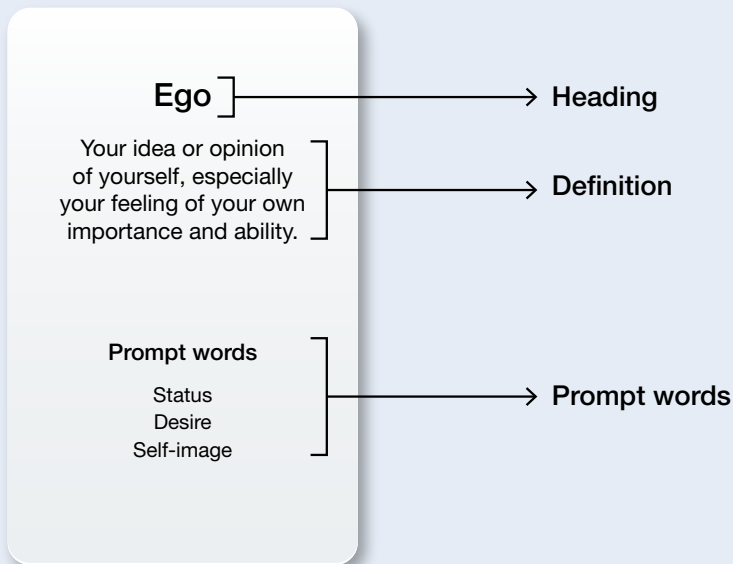


Figure A.8 – Example COM card

Player mat

A.31. The COM-B theory specifies that each behaviour is supported by a COM. These are sometimes referred to as the legs of a three-legged stool; if one leg is missing, the stool falls over. In COM-B terms, if one is missing, then achieving the behaviour is challenging. Hence, the player mat incorporates the COM columns, and incentives are provided in the game to recognise all three by assigning bonus points if a player achieves a complete set of COM. The player mat is at Figure A.9.

Behaviour Science Education Game
Capability + opportunity + motivation = behaviour (COM-B)

	Capability Physical/psychological	Opportunity Physical/social	Motivation Automatic/reflective
Green: +1			
Grey: You: +2 Other: +1 Rejected: 0			
Red: -1			
	If all cards = complete COM +3		

Figure A.9 – Player mat

Scoring

A.32. Scoring is recorded on a score tracker. This enables players to collectively track their scores as they gain or lose points during the game and introduces an element of friendly competition.

Lessons identified

A.33. The lessons identified are below.

- a. **Gamification of a behaviour model for educational purposes requires significant SME input.** This ensures that the model is not misrepresented. For example, the process of down-selecting the COM card headings involved assigning as many prompt words as possible using mind-mapping predicated on the knowledge and experiences of SMEs. This process was carried out for each behaviour to include as many actor perspectives as possible, which were down selected to three or four key prompt words. Headings and prompt words

chosen were as applicable to as many behaviours as possible, whilst also being extant in more than one column of COM. This proved to be a useful approach to systemising outputs from mind-mapping possibilities.

b. **Pre-determining adjudication outcomes requires considerable effort.** The ‘information booklet’ that outlines the reasoning behind the green/red/grey scoring matrix underpins adjudication by consensus and is an essential component of the game. However, this required considerable effort by several experts during design to ensure that scoring matrices were sufficiently accurate. This was necessary because, in an educational setting, the ratio of students to instructors is often many to one, and so the prevalent adjudication approach of using subjective judgement for every outcome is not possible.

c. **The choice of colours to be used as visual clues is important.** The use of grey answers on the scoring matrix was deliberate because of its association with the US ‘gray zone’ concept.

d. **Balancing complexity against playability is a key design consideration.** For example, the COM-B model is complex, and ensuring the game was simple enough to be played within an hour by Defence students with a mixture of Services, ranks and cultures required generic and non-prescriptive behaviours to be selected.

Case study 4 – Defending DEFENDER: an educational influence game designed for Joint Information Activities Group



Joint Information Activities Group has a history of using ‘gamification’ to support Defence communication and Information Operations training. Wargaming as a technique allows the testing of learned skills in a live, adversarial environment, that other forms of training/exercising does not. Keeping scenarios relevant to the contemporary operating environment is key to bringing training to life for students, and in this respect the opportunity to develop an updated game based on Defender adds tremendous training value.

Lt Col Pat Owen
Commanding Officer Joint Information Activities Group

Introduction

A.34. JIAG trains over 600 students a year in a wide variety of influence skills, ranging from media to psychological operations. With courses both in the UK and overseas, their diverse student body includes civilians, enlisted personnel and officers up to 1*. One subject which can be challenging to make relevant is strategic communication, particularly for junior ranks. Gamification has been used for several years to make the subject more engaging, but the approach needed a significant refresh.

Aim and objectives

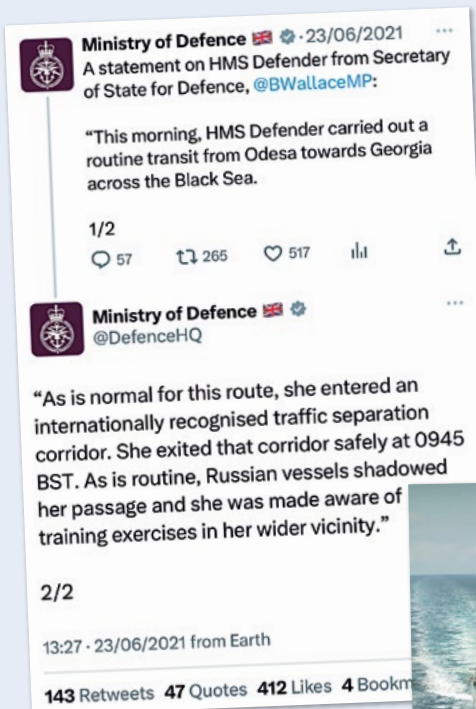
A.35. The aim was to develop an engaging, high-tempo and practical method of bringing strategic communication theory to life that was based on real-world experience. The context was HMS Defender’s Freedom of Navigation Operation (FONOP) in the Black Sea in June 2021. The objectives were to:

- demonstrate the principles of strategic communication;
- deliver a high-tempo activity that forces students to make decisions under time pressure;
- illustrate that different real-world actors play with different rules;

- illustrate the risk of unintended consequences;
- provide an insight into competitors' perspectives by delivering an opportunity to experience multiple and alternative perspectives; and
- ensure the physical game is small, quick to play and easily transported.

Factors represented

A.36. The game represented the narrative battle which occurred between the UK and Russia during and after Defender's FONOP. Rather than the traditional physical space of a wargame, it focused on the virtual and cognitive dimensions. It was to include activities that occurred for real, while also allowing players to experiment with more extreme approaches. It is important to bear in mind the activity's training objectives: the importance of planning and permissions; the differences in communications strategy between the UK and Russia; and the congested, adversarial and unpredictable nature of the information environment.



Metrics and measurements

A.37. The game was based around two metrics: influence and tension. Players used activities ranging from ‘Tweetstorms’ to diplomatic pressure to try and generate more influence, but some actions had potential consequences which could raise tension. Statistical analysis of the game by the Defence Science and Technology Laboratory (Dstl) showed that the most likely outcome in any given game would be close to a draw – a realistic outcome which highlighted the need to maximise value from planning and implementation.

Mechanics

A.38. The game had two teams of up to four, one playing the UK and the other Russia. Played on a simple board, shown at Figure A.10, the game was divided into three phases representing the 24-hour period before the FONOP to the 48 hours afterwards. To make the game physically engaging and to encourage debate among players, there was a focus on components. Poker chips, cards and dice were all used to represent limited resources and the unpredictability of actions in the information environment. In each phase teams were allocated set amounts of points to buy capabilities, represented by cards. These cards generated six-sided dice, giving teams the chance to change both the influence and tension tracks. The game played asymmetrically, with the UK benefiting from planning and early permissions, and the Russians from a ‘firehose’ approach of distraction, deceit and disinformation.

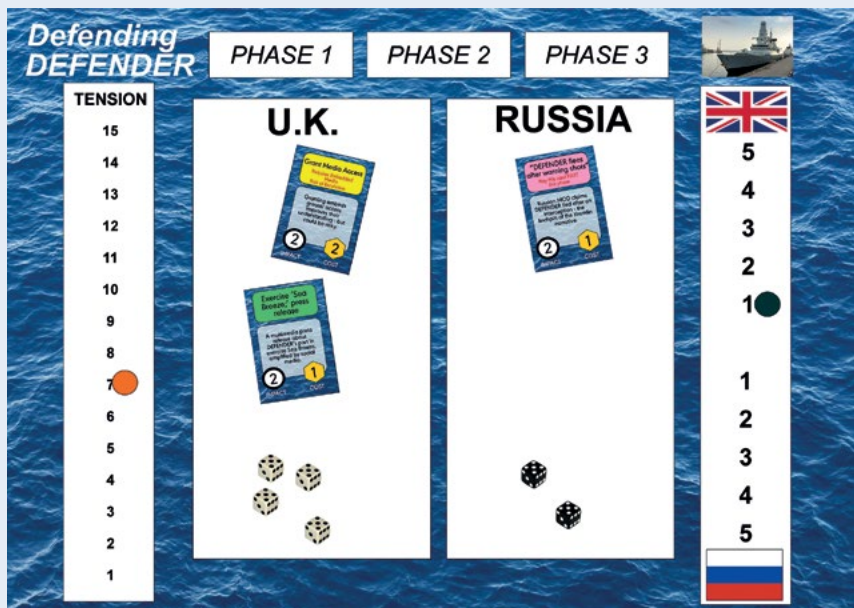


Figure A.10 – Defending Defender board and illustrative cards

A.39. Defending Defender was designed to be quick to grasp and fast to play, while still giving players time to debate and absorb the training objectives. Teams were given a number of ‘resource points’ and a hand of colour-coded cards representing potential capabilities for deployment. The number of points and the cards were unique to each team to represent the game’s asymmetrical nature. Teams could also choose a limited number of ‘reaction cards’, which they could play at any time. Each card described a specific tactic or capability and included ‘flavour text’ to enhance the training value. In simple terms, resource points buy cards which buy dice. At the end of each phase, after playing their hand of cards, teams rolled their generated dice pool simultaneously. Sixes cancelled each other out on each side, with any left over increasing their influence on the main track. If a card was played which could lead to escalation, any dice that rolled a one moved the tension track up one place.

Adjudication

A.40. An instructor was on hand to explain mechanics and ensure players were presenting their chosen cards with a supporting narrative, one of the key training objectives. Adjudication consisted of the instructor rewarding strong narrative play with extra dice, and then dice being rolled by both teams simultaneously to determine movements on the influence and tension tracks.

Data capture and analysis

A.41. Data capture was minimal because the game was designed to be a training tool rather than an analytical one. An instructor led the post-game after-action review to discuss the narratives the teams had created and to encourage reflective learning.

Lessons identified

A.42. The lessons identified are below.

- a. **Historical case studies add value.** While there is some debate about the value of historical case studies in wargaming and how prior knowledge may affect decision-making, it was clear that in this case basing the game on a real event gave it added weight and credibility. Allowing the players to push boundaries and try ‘What If?’ scenarios also increased engagement.

- b. **Specialist support is essential.** The advice, play-testing and analytical support from Dstl added tremendous value and increased confidence in the concept through the design to delivery phase. It also added credibility when presenting the game to the training audience.

- c. **Diversity in learning approaches is desirable.** Defending Defender is not a typical military wargame, but a card and dice game that has more in common with commercial products. It is fast to play and easy to learn, with a typical game lasting about twenty minutes. The large dice pools generated in the later stages increased engagement by being fun to roll and interpret. This highly engaging approach worked well with the training audience, who were expecting a different kind of experience.

Case study 5 – Malign: a strategic influence wargame

Introduction

A.43. Malign is a card-driven educational game with rigid rules, where players grapple with the pernicious effects of malign influence while attempting to foster social resilience. The game is set in a fictional world that enables an exploration of a range of factors from foreign electoral interference to domestic disinformation campaigns. Players representing different countries compete to increase their malign influence on others, while simultaneously mitigating the influence of others. Players must build successful influence campaigns through a combination of cards that represent an ‘intent’, ‘method’ and ‘multiplier’. The game is designed for two to five players but can accommodate up to ten if two players represent a single country. The game duration is two to three hours.

Aim

A.44. The aim of the game is to familiarise players in an engaging and discursive manner with the different tools used to create malign influence and develop resiliency, and show how these combine to create the narratives seen in international affairs today.

Factors represented

A.45. Malign represents the push and pull between competing strategic influence campaigns as they vie for dominance. The two primary factors represented are malign influence and resiliency.

A.46. Malign influence is influence with malicious intent. Two of the most widely recognised tools of malign influence are disinformation and misinformation. Disinformation is a concerted effort to spread false or intentionally misleading information with the intention to achieve an economic, political or military goal. Misinformation is similar fictional information, though it is not spread with intent to deceive or mislead. Malign influence is represented by red cubes placed on the targeted population centres.

A.47. Resiliency is the ability to detect, negate and potentially deter malign influence. This takes a variety of forms, such as fact-checking (a process of verifying facts and identifying inaccuracies), media literacy courses and platform regulation (enforcing stricter regulations and policies on companies, particularly social media companies), among others. Resiliency is represented by blue cubes that are placed on the targeted population centres.

A.48. Players are given numerical thresholds of malign or resiliency cubes on population centres to gain victory points towards a set victory condition.

Mechanics

A.49. Players create influence campaigns to achieve objectives given to them at the start of the game. Objectives are secret, and only revealed at the end of the game. For example, two countries have a territorial dispute, and each has a political objective of persuading the adversary to relinquish the territorial claims. Each player assembles a campaign of malign influence to overwhelm the adversary country with a narrative that leads to them giving up their territorial claims, while at the same time creating resiliency in their country. The actions that countries take were categorised as described below.

- a. **Intent.** This represents what the country is attempting to influence, which is paired with a specific demographic token.
- b. **Method.** This represents how the country intends to achieve influence.

- c. **Multiplier.** This is a means through which the country intends to amplify the message.

A.50. The players construct campaigns through a card mechanic. Cards reflect actions of various influence campaigns. They contain symbology to indicate if they are an intent, method or multiplier, as shown in Figure A.11. Using the cards, players develop two or three campaigns, each with an intent, method and optional multiplier. Players then construct a supporting narrative that describes the campaign and is presented to the other players for discussion.

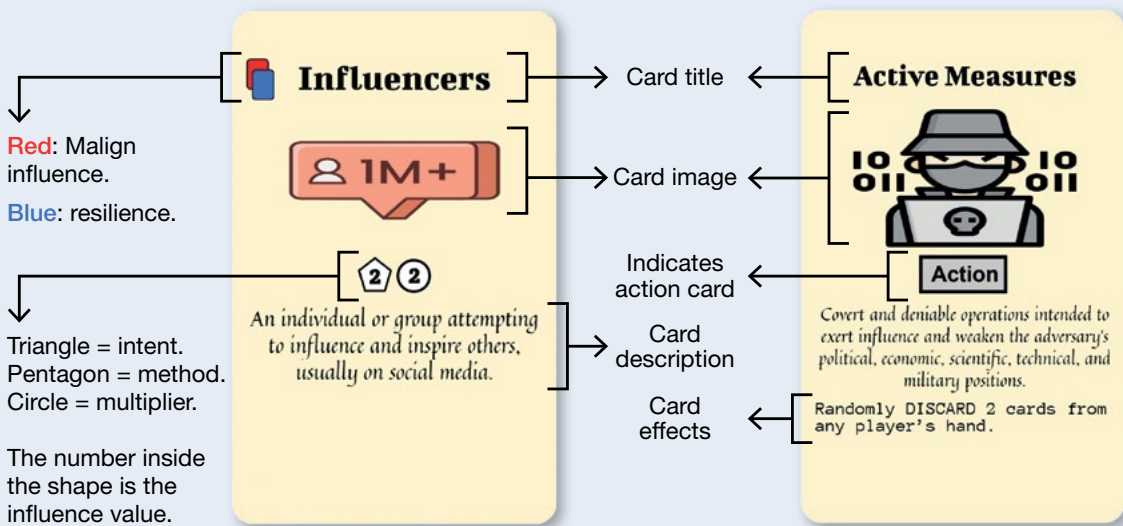


Figure A.11 – Malign card taxonomy

Metrics and measures

A.51. Over the course of gameplay, the players' successes in influencing one another are represented by malign and resiliency cubes placed on population demographics, as shown in Figure A.12. Players victory conditions specify that they are to reach a certain number of malign or resiliency in specific population demographics. This represents asserting a dominant narrative that achieves their national objectives.



Figure A.12 – Population demographics set up according to a scenario

Adjudication

A.52. Each card in a campaign includes a ‘campaign value’ that represents the strength of that card. When a player activates a campaign, they sum the value of the individual campaign values to get an overall total. This value determines the likelihood of success, as well as the cost of the campaign (through discarding cards). Players roll a die and cross-reference the value on the effects results table to determine if the campaign was successful and, if so, how many points of malign influence or resiliency they created.

A.53. To encourage the discursive element of activating campaigns, players can intervene using a veto card after the narrative has been described but before the campaign is adjudicated. If a player does not believe a campaign is credible, they can place the veto card on the table and trigger a discussion. The player who launched the campaign provides a brief explanation of why their campaign is legitimate, while the other player(s) may argue against this. All players then vote on whether the campaign was credible and should be permitted. This provides a forum for discussion about the tools of malign influence and resiliency, and what determines whether a campaign is credible. **This engaging creative storytelling and discussion is integral to Malign, so the game’s adjudication allows for a campaign to fail for reasons outside of**

the player’s control, but the players themselves are part of the adjudication process and their discursive ability can affect outcomes as well as increase their understanding of influence.

Lessons identified

A.54. The lessons identified are below.

- a. **Balancing the elements of education, gaming and reality.** Achieving a correct balance was one of the greatest design challenges. For example, many campaigns are not effective in the real world; bots may fail to reach a wide array of their target population, or the message of a campaign may backfire. Furthermore, influence campaigns, regardless of intent, are not instantaneous, with effects building over time. However, in earlier iterations, players were disappointed or became disengaged from the game if their well-constructed campaigns continually failed due to low probability dice rolls, regardless of the well-researched probabilities. To mitigate this, the effects results table enables players to take risk but still have the opportunity to achieve success, balancing player frustration with realistic gameplay.
- b. **The collective storytelling dynamic became a key hallmark of the game.** The game design required a delicate balance between providing guidance to the players and encouraging them to be creative, experiment and learn. The generic world has elements of reality while allowing players to try different narratives and strategies that they might not consider if they were ‘anchored’ to perceptions of what a real country would or would not do.
- c. **Layering ideas onto a core mechanic.** The game design team employed a layered approach, whereby the core mechanic (a card driven game using the intent, method and multiplier anatomy of influence) was established, and then new ideas were added. This solid foundation can be augmented and experimented with, for example, by adding regime special effects for each country and a viral mechanic where influence can jump from one population to another – as long as these build on the core ‘engine’. This allows the diversity and complexity of the information environment to be explored.

Case study 6 – iWarrior: wargaming cyber, electronic warfare and influence

Introduction

A.55. In early 2021, the Australian Defence Science and Technology Group (DSTG) Information Warfare STaR Shot (IWSS)⁷⁰ initiative required a wargaming environment within which emerging influence concepts could be explored and tested. In the absence of mature systems which could represent the full spectrum of information warfare at the time, a bespoke wargame was designed to meet the project’s needs. This game design was called iWarrior.

Objectives

A.56. Three distinct streams of research form the core of the IWSS: cyber, electronic warfare and influence. Therefore, the sponsor commissioned a wargame able to represent these disparate functions, but also examine how to integrate them into cohesive and complex operations.

Factors represented

A.57. The functions spanned a huge array of potential player actions, such as: cyber defence and attack; electronic warfare surveillance and deception; narrative dominance and social media weaponisation; and civil reconstruction and key leader engagements. It was apparent that all these effects could not be represented within a single, unified model of a map with actions, units and adjudication techniques.

Approach and mechanics

A.58. iWarrior used a rigid closed wargaming approach to ensure as much structure, objectivity and repeatability as possible. It was designed to serve as a reliable data generation source for future analysis.

A.59. One turn notionally represented a month, but this is an abstract concept and players were advised to think of the game as a series of sequenced events. Many player actions required preparation time before the action took effect. This represents the cost of coordinating different elements,

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70 For more information see: <https://www.dst.defence.gov.au/strategy/star-shots/information-warfare>

synchronisation, logistics and so forth. For example, a cyber player might need to spend months preparing a botnet attack.

Players

A.60. **Military.** Military players were given a geographic map of the theatre which, in the first play-test, was Papua New Guinea. The world was separated into three major urban areas and 16 rural territories. Military players were given typical conventional units, which could move between areas according to simple restrictions and conduct conventional tasks. They also had limited access to higher assets such as an air warfare destroyer, aerial surveillance and a submarine.

A.61. **Cyber.** Cyber players had ‘units’ which represented teams of operators, each assigned to one task and target at any given time. They did not use a map, but the in-game world was constructed based on three ‘sectors’: government, military and industry. Each sector contained several distinct targets, primarily consisting of specific computers or databases. Each target was seeded at the start of play with a selection of information sets which could be tapped or manipulated. The industry targets were largely host-nation port and mining facilities, and military targets included various headquarters from both competing nations. Each cyber unit and each sector location in the game was assigned an abstract ‘cyber security level’ between one and five, which broadly indicated the skill level of the operators or the protection level of the network. The base probability for any successful cyber action was then derived from a look-up table. There were four classes of cyber actions available to cyber units: passive reconnaissance; active reconnaissance; cyberattack; and information assurance.

A.62. **Influence.** Influence players operated against a series of communities and individual characters. Within the game, each character and community had several issues that were important to them (or the game scenario). For each issue, an associated ‘belief’ and ‘sentiment’ value was assigned. These represented their stance on the issue and the strength of their conviction. Where discrete decisions were required at any point in the game narrative, the value of the belief for each entity was used to determine an outcome. The strength of an entity’s sentiment moderated how easy it was to shift their belief; if they were extremely passionate or completely apathetic, it would be difficult to change their stance. However, targets with mid-range sentiments were more open to being convinced to change their belief on an issue. This is depicted in Figure A.13.

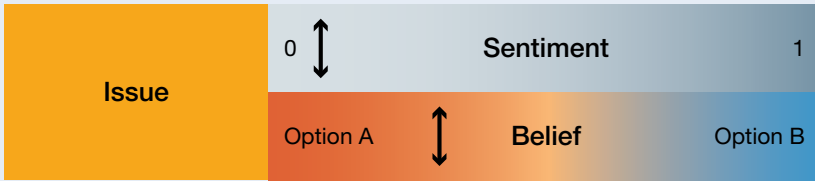


Figure A.13 – Representation of a character and community issue, based on sentiment and belief values

A.63. Influence players could undertake three classes of action, each of which could be conducted against individual characters or larger communities. These are listed below and depicted at Figure A.14.

- a. **Intelligence actions.** These helped influence players understand issues of interest and the respective sentiments and beliefs of the target. These actions would return a report on the target’s key sentiments and beliefs.
- b. **Shaping actions.** These affected a target’s sentiment score on a selected issue. Prior intelligence actions could increase the effectiveness of shaping activities.
- c. **Influence actions.** These manipulated the beliefs of the target by using specific techniques of increasing aggressiveness, such as: persuasion, manipulation or coercion. Prior shaping operations could increase the effectiveness of influence operations.

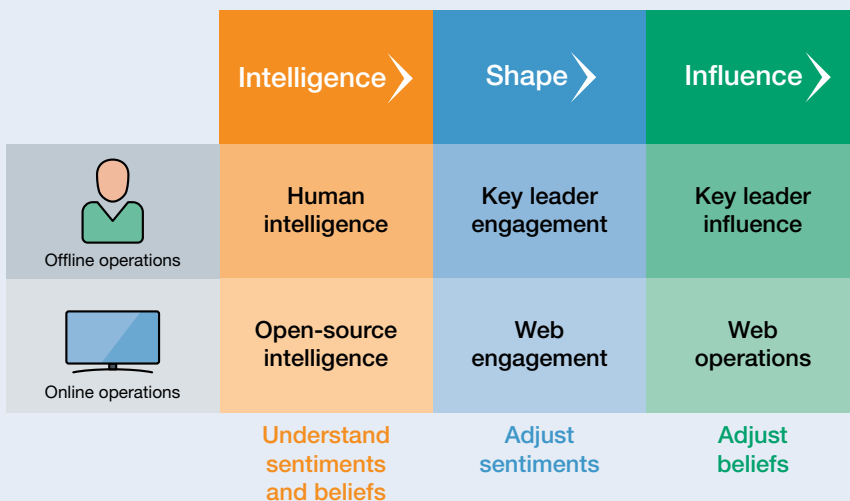


Figure A.14 – Example sets of actions for the influence players⁷¹

⁷¹ Note that specific labels are indicative of the type of effect.

A.64. **Electronic warfare.** The electromagnetic domain posed the greatest problems for the iWarrior game design. Electromagnetic operations are grounded in physics and are generally point-to-point effects (they use kinetic effecters) but the impacts occur in the virtual dimension. After numerous failed attempts to build a rich ‘electromagnetic world’, the approach selected was to give electronic warfare players a set of air, maritime and land units and permit them to conduct three broad classes of actions: electronic support; electronic attack; and electronic protection.

Adjudication

A.65. In an attempt to create a responsive and quasi-repeatable wargame, iWarrior used rigid adjudications as much as possible. Each action available to the individual player roles listed the amount of effort required and then described the expected outcome. Generally, these outcomes would change the world models in some way. For example, the military action ‘reconstruction’ would increase the sentiment of the population in the unit’s location towards the active side by 10%, or the influence action ‘key leader engagement’ would (if successful) change the target audience’s sentiment score by 20% for a chosen issue. Other actions would operate outside of the world models, and required control personnel to provide subjective adjudication to the players, or to provide information to other adjudicators.

Lessons identified

A.66. The lessons identified are listed below.

- a. **The difficulty of integrating influence effects across functions.** The creation of separate ‘worlds’ for each of the player types made it difficult for them to integrate their actions across the information warfare functions. Despite the fact that actions would benefit other players within the team, participants fixated on their own part of the problem space.
- b. **Different times-to, and persistency of, influence effects caused game design issues.** This posed problems for the game design because imposing a fixed time for each turn would alienate players whose actions had no effect in that time period. No compromise solution was found for this.

- c. **Scenario development effort is significant.** The resources required to create a structured and quantified information environment is prohibitive. It took the team all the time they had to populate a relatively sparse scenario.
- d. **Adjudication is challenging.** The adjudication process involved a convoluted combination of rigid (automated) outcomes and subjective judgements concerning actions within one function or spanning several or all areas. It proved very difficult to coordinate and track the information across the player teams and different information warfare functions.

Case study 7 – The Brynania Peacebuilding Simulation: role play and free adjudication

Introduction

A.67. This case study describes the large ‘Brynania’ Peacebuilding Simulation, which was conducted annually at McGill University between 2000 and 2019.⁷² Each week-long simulation typically involved more than 100 active participants and was used to teach undergraduate and graduate students about the politics of complex peace and humanitarian operations. It was also used by outside researchers to study processes of radicalisation and violence⁷³ and to evaluate the effectiveness of educational games and simulations.⁷⁴ The simulation was set in the fictional country of Brynania to allow the incorporation of various issues covered in class in a single scenario.

72 For a more detailed account, see Rex Brynen, ‘(Ending) Civil War in the Classroom: A Peacebuilding Simulation’, *PS Political Science & Politics*, Volume 43, Issue 1, 2010.

73 Michael King, *The radicalization of homegrown terrorists: A social-personality mode*, PhD thesis, Department of Psychology, McGill University, 2012.

74 Nancy Nowlan, *From Brynania to Business: Designing an Evidence-Based Business Education Simulation from an Exploration of a Blended Real-Time Model*, EdD thesis, Faculty of Education, Simon Fraser University, 2016.

Aim and objectives

A.68. The two key objectives are described below.

- a. To highlight the challenges of friction and coordination in complex peace and humanitarian operations.⁷⁵
- b. To highlight the fundamental centrality of politics and political influence. A successful transition from civil conflict to sustainable peace requires convincing a multiplicity of actors to support, or acquiesce to, a new political order in which disputes are resolved by political process rather than armed violence. The deterrent threat represented by a peacekeeping force is often part of this. But so too is understanding the motivations and interests of key stakeholders, shaping the information environment, building coalitions, and using a broad range of political and economic incentives and disincentives to influence behaviour.

Factors represented

A.69. Although some components of the simulation used written rules or computer assistance, the political aspects were almost exclusively addressed through entirely open and free gameplay. Players could take any action their actor might plausibly take by simply requesting the action through an email to the control cell (which consisted of a single game controller). There was no need to decide in advance exactly what was modelled or represented because there was no rigid rule set or algorithm built into the game. New elements could easily be introduced.

A.70. To accurately represent the multiplicity of stakeholders and a complex information environment, many different actors were represented by players in the game: government and its key departments; separatists and various other rebel forces; elements of local civil society; international aid and human rights non-governmental organisations; United Nations (UN) agencies; the European Union; and major states, regional states and key peacekeeper contributing nations. About 20 participants from outside the class also played the role of ordinary citizens.

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⁷⁵ For a more detailed account of this aspect of the Brynania simulation (and others), see Rex Brynen, 'Gaming 'Fog and Friction': How Simulations Enhance Student Learning of Complex Policy Processes', in Matthew Schnurr and Ann Macleod, eds., *Simulations and Student Learning: An Interdisciplinary Perspective*, 2021.

A.71. Extensive information was provided to players to provide a full political, social and historical context: simulated Wikipedia-type entries, news reports and videos, even blogs and music set in the simulation universe. In addition, a considerable ‘oral tradition’ on the conflict in Brynania also developed on campus over the years, addressing everything from culinary preferences to poetry and ethnic identifiers.

A.72. The media environment included three player-run media outlets (a local pro-government news station, local reformist media and a regional/global mainstream news organisation), a group email LISTSERV⁷⁶ to which most players could post public announcements, and other media controlled by the game controller.⁷⁷ The resulting information flow was overwhelming, by design: during a typical run of the simulation, up to 16,000 public and private email messages might be generated in the simulation by participants and the game controller, plus the additional information transmitted during in-person role play meetings.

A.73. The situation in Brynania was designed as a so-called ‘hurting stalemate’, in which there is no immediate path to military victory.⁷⁸ This represents a condition which is more amenable to peace negotiations and agreements. However, it was possible to shift the military balance of power by reshaping the pattern of local alliances, for example, the rebels might cooperate more fully, or the government might convince some rebels to defect. Here again, successfully exerting influence was key.

Metrics and measures

A.74. No quantitative metrics were used to measure influence. **Players were influenced by themselves being influenced in a role playing simulation.** There was no need to ‘measure’ this since it was manifest in actual behavioural and attitudinal change. Public opinion in Brynania’s various ethnic and political communities was informally tracked by the game controller, and the current status of this signalled to players through events, responses and media coverage. There might be reports of discontent or protests, for example,

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76 LISTSERV is defined as: [an application that distributes messages to subscribers on an electronic mailing list](#). *Concise Oxford English Dictionary*.

77 At times, the media component comprised a simulation within the simulation, with a separate international journalism class at Concordia University collectively covering Brynania for the ‘Global News Network’. See Lisa Lynch, ‘Foreign correspondents in a simulated civil war’, PAXsims, 8 July 2013.

78 I William Zartman, ‘The Timing of Peace Initiatives: Hurting Stalemates and Ripe Moments’, *The Global Review of Ethnopolitics*, Volume 1, Number 1, September 2001.

or declining morale or even desertions in the military. Players could ask for a more detailed assessment of their constituents' attitudes by emailing requests to their 'staff' (meaning, the game controller).

Adjudication

A.75. The control 'team' for Brynania consisted of a single person, the course instructor. The workload could be overwhelming, with thousands of emails, meeting summaries and documents to read. However, given how deliberately complex the political environment was, it proved difficult to share this task with a broader team since any one statement or action could well have consequences for many others across multiple areas – requiring that at least one person has a full picture of all simulated interactions. Since information overload was an essential part of the simulation experience for the players, curtailing message traffic to reduce the adjudication burden would have undermined the learning value of the simulation.

A.76. The adjudication approach was a combination of free adjudication and role playing with over a hundred players. Players would initiate actions by emailing the game controller, who would adjudicate the effects and update players as necessary. More rigid adjudication approaches were only used for military combat (where a simple die roll and combat results table was used) and the humanitarian situation, which used a more complex spreadsheet-based system for tracking infrastructure damage, transportation access, population displacement, aid disbursement, and programme effectiveness across 11 aid agencies and 30 geographic locations. This spreadsheet is shown in Figure A.15.

A.77. Questions might be raised about the potential idiosyncratic effects of having a single game controller without a more structured analytical process. However, in this case the game experience was designed to support and reinforce months of political science classroom learning, so adjudication that reflected course content and the broader foundations of the discipline was desirable. In an analytical game, however, a more rigorous process would be required.

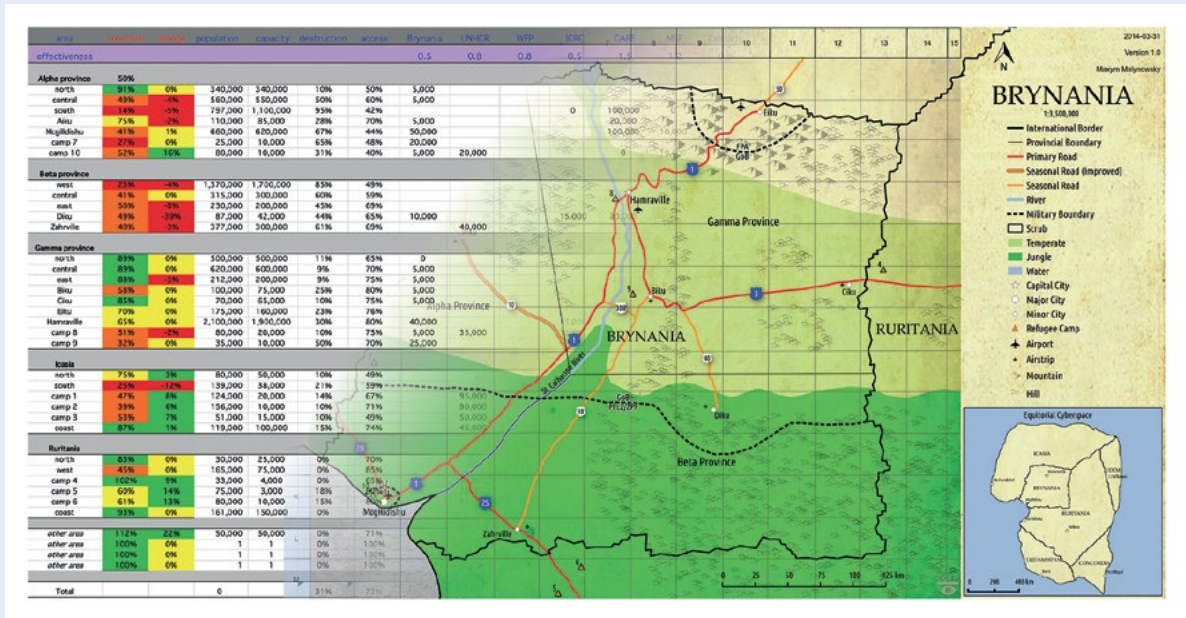


Figure A.15 – The Brynania map and infrastructure spreadsheet

Mechanics

A.78. Players communicated with other players through public statements or through private messages (in real or virtual meetings or via email). They could also address messages to their constituents, the broader public, or actors not in the game through public statements, much as in the real world. Some had access to military forces (local combatants and peacekeeping forces, if deployed) or to development assistance (for example, UN agencies or international donors) that could be leveraged to influence others. There were limits on this, though: no actor could behave unrealistically or out of character. Humanitarian agencies, for example, needed to place the humanitarian imperative first, even when under political pressure from donors to do otherwise. Any grossly unrealistic actions would be penalised through realistic consequences, such as being overruled by their superiors, adverse media coverage, a political backlash or even a legislative enquiry.

A.79. Little specialist infrastructure was required to support the game. Background materials were posted to a website. Email accounts were set up for each player or team. Players were free to use email, text messaging, face-to-face meetings, telephone, Internet voice and video applications, Twitter, Facebook and any other communications technique.

A.80. The game used a combination of live (real time) and turn-based play. From 09.00 to 21.00, the game ran live with adjudication as required. During this period each hour of real time represented one day in Brynania. Since the simulation took place during the regular term, participants were often distracted by other classes and other aspects of their lives. This added realistic delays and distractions. At the end of the daily live period a turn-based approach was used for 21.00 to 09.00. The game controller would adjudicate any additional effects, fill in any necessary information (including a daily newspaper summarising developments), and advance the clock to start of the next simulated month. Thus, the week-long simulation covered seven months of operations.

Data capture and analysis

A.81. Students were required to copy all digital communications (emails, texts) to the game controller, as well as a summary of in-person meetings. This provided a vast amount of data for analysis and debrief.

A.82. Debriefing occurred in two parts. First, participants prepared written debriefs based on their participation in the game. The instructor read all of these, and then provided a verbal debrief to the entire class based on their overview of the game process as well as insights (or errors) in student debriefs.

A.83. Game outcomes varied from continued civil war to successful democratic transition, but clustered around a central tendency of a precarious and incomplete peace. The basic scenario altered little across these various games, although changes in the real-world global setting (for example, changes in UN peacekeeping and the growing importance of China) were reflected in the game.

A.84. In December 2022, the Brynania setting was also used by CNN Academy for a week-long journalism training simulation. Here the focus was not on influence, but more on investigation, fact-checking, and avoiding manipulation and cognitive bias in a complex and dynamic information environment.

Lessons identified

A.85. Lessons identified are listed below.

- a. **Role play and free adjudication are effective approaches.** Given the educational context, it was possible to measure influence effects through the changing attitudes and behaviours of the actual players. This as opposed to moving markers or other metrics.
- b. **An influence wargame need not have a large control team.** However, the effort required of the game controller is significant.
- c. **Scenario development requires significant resources.** The Brynania scenario has been developed over nearly 20 years and is enriched by the products of thousands of participants. It is rare to find this level of detail across all dimensions of the information environment.

Notes

Lexicon

Section 1 – Acronyms and abbreviations

AJP	Allied joint publication
ARRC	Allied Rapid Reaction Corps
BAA	baseline audience analysis
BSEG	Behaviour Science Education Game
COA	course of action
COED	Concise Oxford English Dictionary
COM	capability, opportunity and motivation
COM-B	capability, opportunity and motivation equals behaviour
DCDC	Development, Concepts and Doctrine Centre
DIME	diplomatic, information, military and economic
DIMEFILET	DIME plus finance, infrastructure, legal, environmental and technology
DSTG	Defence Science and Technology Group
Dstl	Defence Science and Technology Laboratory
FONOP	freedom of navigation operation
GST	Global Strategic Trends
HM	His Majesty's
HMS	His Majesty's Ship
IWSS	Information Warfare STaR Shot
IWX	Information Warfighter Exercise
JDP	joint doctrine publication
JIAG	Joint Information Activities Group
MAA	mission audience analysis
Marvel	method to analyse relations between variables using enriched loops

MOD	Ministry of Defence
NATO	North Atlantic Treaty Organization
ODNI	Office of the Director of National Intelligence
PMESII	political, military, economic, social, information and infrastructure
PMESII-PT	PMESII plus physical and time
SCAEF	Strategic Communication Actions and Effects Framework
SME	subject matter expert
STEMPLES	social, technological, environmental, military, political, legal, economic and security
STIM	Simple and Transparent Influence Model
TAA	target audience analysis
UK	United Kingdom
UKDD	UK Defence Doctrine
UN	United Nations
US	United States

Section 2 – Terms and definitions

This section includes endorsed doctrinal definitions along with other terms readers of this publication may find useful.

actor

An individual, group or entity whose actions are affecting the attainment of the end state. (NATOTerm)

adversary

An individual, group or entity whose intentions or interests are opposed to those of friendly parties and against which legal coercive political, military or civilian actions may be envisaged and conducted. (NATOTerm)

audience

An individual, group or entity whose interpretation of events and subsequent behaviour may affect the attainment of the end state.

Note: The audience may consist of publics, stakeholders and actors. (NATOTerm)

audience analysis

The understanding and segmentation of audiences in support of the achievement of objectives. (NATOTerm)

audience-centric approach

The understanding, planning, execution, and monitoring of activity, to influence audiences' attitudes, beliefs or behaviours, to achieve desired outcomes. (JDP 0-01.1)

baseline audience analysis

The foundational level of audience analysis to support planning and inform mission and target audience analysis. (JDP 0-01.1)

behavioural modelling

Modelling of representative entity behaviours in which individual or group behaviours are derived from the physical, psychological or social characteristics of the sentient and non-sentient systems represented. (NATOTerm)

campaign

A set of military operations planned and conducted to achieve a strategic objective. (NATOTerm)

cognitive bias

A systematic error in thinking that occurs when individuals (and teams) are searching for, processing and interpreting information and which affects the decisions and judgements made on the basis of this information.
(*Red Teaming Handbook*, 3rd Edition)

comprehensive approach

Combining all available political, military and civilian capabilities, in a concerted effort to attain the desired end state. (NATOTerm)

control (of a wargame)

The minute-by-minute activity that ensures the wargame proceeds as required to address the problem. (*Wargaming Handbook*, page 23)

course of action wargame

A systematic method of analysing a plan to visualise the ebb and flow of an operation or campaign. (*Army Planning and Execution Handbook*)

deceive

To mislead an entity by manipulating its perceptions in order to induce it to react in a manner prejudicial to its interests. (NATOTerm)

deception

Deliberate measures to mislead targeted decision-makers into behaving in a manner advantageous to the commander's intent. (NATOTerm)

Defence strategic communication

Advancing national interests by using Defence as a means of communication to influence the attitudes, beliefs and behaviours of audiences. (JDP 0-01.1)

deterrence

The convincing of a potential aggressor that the consequences of coercion or armed conflict would outweigh the potential gains. This requires the maintenance of a credible military capability and strategy with the clear political will to act. (NATOTerm)

disinformation

The deliberate creation and dissemination of false and/or manipulated information that is intended to deceive and mislead audiences.

(HM Government, *Online Harms White Paper: Full Government Response to the consultation*)

diversity

The state within an organisation defined by the presence of a variety of individuals displaying different characteristics such as gender, gender identity, age, nationality, ethnic origin, religion or belief, cultural background, sexual orientation and disability. (NATOTerm)

effect

A change which is a result or consequence of an action or other cause.

(COED)

effect dimensions

An analytical construct that translates actions in the engagement space into the physical, virtual and cognitive consequences that these actions may have.

(NATOTerm)

electromagnetic warfare

Military action that exploits electromagnetic energy to provide situational awareness and create offensive and defensive effects. (NATOTerm)

Note: This was previously termed electronic warfare.

engagement space

The part of the operating environment where actions and activities are planned and conducted. (NATOTerm)

environment

The surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelations. (NATOTerm)

influence

The capacity to have an effect on the character or behaviour of someone or something, or the effect itself. (COED)

information activities

Activities performed by any capability or means, focused on creating cognitive effects. (NATOTerm)

information environment

An environment comprised of the information itself, the individuals, organizations and systems that receive, process and convey the information, and the cognitive, virtual and physical space in which this occurs. (NATOTerm)

information operations

A staff function to analyze, plan, assess and integrate information activities to create desired effects on the will, understanding and capability of adversaries, potential adversaries and audiences in support of mission objectives. (NATOTerm)

integrated action

The audience-centric orchestration of military activities, across all operational domains, synchronised with non-military activities to influence the attitude and behaviour of selected audiences necessary to achieve successful outcomes. (Description from JDP 0-01)

levels of experimentation

Discovery, development and validation.

levels of operations

Strategic, operational and tactical.

macro

In a social science context described as society as a whole, therefore representing different political, military, economic, social, infrastructural and information factors.

manoeuvrist approach

An approach to operations in which shattering the enemy's overall cohesion and will to fight is paramount. It calls for an attitude of mind in which doing the unexpected, using initiative and seeking originality is combined with a ruthless determination to succeed. (JDP 01)

measure of effectiveness

A criterion used to assess changes in system behaviour, capability, or operating environment, tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect. (NATOTerm)

measure of performance

A criterion that is tied to measuring task accomplishment in order to assess friendly actions. (NATOTerm)

meso

In a social science context described as the parts or a part of society, these could be groups of organisation situated in different areas, which may be interlinked.

micro

In a social science context described as the actions of individuals, therefore an individual demographic, culture or motivation.

military public affairs

The strategic communications capability responsible for promoting military aims and objectives by communicating accurate and truthful information to internal and external audiences in a timely manner. (NATOTerm)

misinformation

Inadvertently sharing false information.

(HM Government, *Online Harms White Paper: Full Government Response to the consultation*)

mission audience analysis

The focused understanding of target audiences in support of a mission or task to create the desired planning effect. (JDP 0-01.1)

mission command

A philosophy of command that seeks to convey understanding to subordinates about the intentions of the higher commander and their place within the plan, enabling them to carry out missions with the maximum freedom of action and appropriate resources. (JDP 0-01.1)

narrative

A spoken or written account of events and information arranged in a logical sequence to influence the behaviour of a target audience. (NATOTerm)

operational domain

A specified sphere of capabilities and activities that can be applied within an engagement space. (NATOTerm)

UK note: The operational domains recognised by UK Defence are: maritime, land, air, space, and cyber and electromagnetic.

operations security

All measures taken to give a military operation or exercise appropriate security, using passive or active means, to deny an adversary knowledge of the essential elements of friendly information or indicators thereof. (NATOTerm)

propaganda

Information, especially of a biased or misleading nature, used to promote a political cause or point of view. (NATOTerm)

psychological operation

Planned activities using methods of communication and other means directed at approved audiences in order to influence perceptions, attitudes and behaviour, affecting the achievement of political and military objectives. (NATOTerm)

red team

A team that is formed with the objective of subjecting an organisation's plans, programmes, ideas and assumptions to rigorous analysis and challenge. (JDP 0-01.1)

scenario

The background story that describes the historical, political, military, economic, cultural, humanitarian and legal events and circumstances that have led to the specific current exercise, crisis or conflict. The scenario is designed to support exercise and training objectives and, like the setting, can be real, fictionalised or synthetic as is appropriate.

(NATO Bi-Strategic Collective Training and Exercise Directive 075-003)

setting

A geographic and strategic situation designed to provide all the conditions required to support the achievement of high-level exercise aims and objectives. The setting, which can be real world, fictionalised or synthetic, is the framework on which the scenario can be developed.

(NATO Bi-Strategic Collective Training and Exercise Directive 075-003)

social science

Described as the scientific study of people and their environments. Disciplines can include anthropology, archaeology, economics, geography, linguistics, politics and international relations, psychology and sociology.

strategic communications

In the NATO military context, the integration of communication capabilities and information staff function with other military activities, in order to understand and shape the information environment, in support of NATO strategic aims and objectives. (NATOTerm)

target audience analysis

The focused examination of targeted audiences to create desired effects. (NATOTerm)

wargaming

A scenario-based warfare model in which the outcome and sequence of events affect, and are affected by, the decisions made by the players. (*Wargaming Handbook*)

zero-sum

Described as a situation, originating from game theory, in which one person's gain is equivalent to another's loss, so the net change in wealth or benefit is zero.

Notes



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