



P. Dobias, K. Christensen & W. Freid

Connections QJ 21, no. 2 (2022): 97-109

<https://doi.org/10.11610/Connections.21.2.07>

Research Article

Gaming Intermediate Force Capabilities: Strategic Implications of Tactical Decisions

Peter Dobias,¹ Kyle Christensen,¹ and William Freid²

¹ *Defence Research and Development Canada, Centre for Operational Research and Analysis, 60 Moody Drive, Ottawa, Canada, <http://www.drdc-rddc.gc.ca>*

² *Joint Intermediate Force Capabilities Office, U.S. European Command, Kurmacherstrasse Gebaude 2304, Stuttgart, Germany, <https://jnlwp.defense.gov>*

Abstract: This article reviews the development and tests of two Intermediate Force Capability (IFC) concept development hybrid wargames. The first wargame plays out a maritime Task Force's ability to counter hybrid threats in the grey zone. The second wargame examines the ability of a NATO Task Group, deployed to a third country to train local security forces, to counter a hostile militia trained and supported by a neighboring country. IFCs offer a class of response between doing nothing and using lethal force in a situation that would be politically unpalatable. As such, the aim of the wargame series is to evaluate whether IFCs can make a difference to mission success against hybrid threats in the grey zone. This wargame series was particularly important because it used traditional game mechanics in a unique and innovative way to evaluate and assess IFC's effects on strategic mission success. Specifically, the hybrid wargame series has demonstrated that IFCs have a high probability of filling the gap between doing nothing and using lethal force. IFCs have the potential to improve operational effectiveness by allowing for more restrained use of force to escalate/de-escalate a situation and increasing decision time and space for tactical decision-makers. Both counter-personnel and counter-materiel capabilities (including miniaturization) are needed to act effectively in the current hybrid threat environment.

Keywords: grey zone, hybrid threats, kriegsspiel, matrix, non-kinetic, non-lethal, wargaming.

Introduction

Hybrid Threats

In recent years, analysis of the international security environment has increasingly focused on hybrid threat tactics in the grey zone. The “grey zone” is defined in a recent RAND study as “...an operational space between peace and war, involving coercive actions to change the status quo below a threshold that, in most cases, would prompt a conventional military response, often by blurring the line between military and non-military actions and the attribution for events.”¹

The goal of hybrid threat tactics in the grey zone is to create strategic, operational, and tactical dilemmas for an opponent while avoiding a head-to-head confrontation.² By keeping these activities below the threshold of interstate war, these tactics aim to force an opponent to either accept the emerging status quo or use force to resolve the dilemma (and thus become the aggressor themselves). Operationalizing hybrid threats involves all elements of state power. Russia, China, and Iran provide the most prominent examples of undertaking and implementing these approaches.³ They consider state interactions as a “continuum of conflict” in which the area between peace and war is simply a conflict by other means. The implementation of these hybrid tactics differs between Russia and China on the one hand (relying on economic coercion, political influence, unconventional warfare, information operations, and cyber operations)⁴ and Iran (military and technological aspects) on the other. The overall strategic aim,

¹ Frank G. Hoffman, “Examining Complex Forms of Conflict: Gray Zone and Hybrid Challenges,” *PRISM* 7, no. 4 (November 8, 2018): 30-47, <https://cco.ndu.edu/news/article/1680696/examining-complex-forms-of-conflict-gray-zone-and-hybrid-challenges/>; Lyle J. Morris et al., *Gaining Competitive Advantage in the Gray Zone: Response Options for Coercive Aggression Below the Threshold of Major War*, Research Report (Santa Monica, CA: RAND Corporation: 2019), 8, https://www.rand.org/pubs/research_reports/RR2942.html.

² Andrew F. Krepinevich, Barry Watts, and Robert Work, *Meeting the Anti-Access and Area-Denial Challenge* (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2003), 2-3, <https://csbaonline.org/uploads/documents/2003.05.20-Anti-Access-Area-Denial-A2-AD.pdf>.

³ Peter Hunter, “Political Warfare and The Grey Zone,” in *Projecting National Power: Reconciling Australian Air Power Strategy for an Age of High Contest*, Special Report 142 (Australian Strategic Policy Institute, August 2019), <https://s3-ap-southeast-2.amazonaws.com/ad-aspi/2019-08/SR%20142%20Projecting%20national%20power.pdf>; Erik Reichborn-Kjennerud and Patrick Cullen, “What is Hybrid Warfare?” Policy Brief 1 (Norwegian Institute for International Affairs, January 2016), https://nupi.brage.unit.no/nupi-xmlui/bitstream/handle/11250/2380867/NUPI_Policy_Brief_1_Reichborn_Kjennerud_Cullen.pdf; James K. Wither, “Making Sense of Hybrid Warfare,” *Connections: The Quarterly Journal* 15, no. 2 (2016): 73-87, <https://doi.org/10.11610/Connections.15.2.06>.

⁴ Sydney J. Freedberg Jr., “Cyber Warfare in The Grey Zone: Wake Up, Washington,” *Breaking Defense*, April 9, 2019, <https://breakingdefense.com/2019/04/cyber-warfare-in-the-grey-zone-wake-up-washington/>.

however, is similar: to challenge, constrain, or deny an adversary's access to geostrategically important areas.⁵

Intermediate Force Capabilities

While exploiting the space below the threshold of armed conflict and employing Anti-Access/Anti-Denial (A2/AD) type activities are not new in and of themselves,⁶ the prevalence of their use by Russia, China, and Iran in recent years poses unique challenges for military planners. Although it is important to maintain lethal military capabilities in order to deal with these situations in extremis, it is becoming increasingly important to develop capabilities that would enable Allied forces to respond to situations below the threshold of lethal confrontation. Otherwise, coalition forces will be faced with the dilemma of either doing nothing or employing lethal force (either of these options may lead to potentially serious strategic outcomes) when responding to challenges posed by an adversary. The desirable class of response between these two extremes is what has become known as Intermediate Force Capabilities (IFC).

Early IFC development began in the mid-1990s—driven in part by the events that took place in Somalia—and, at that time, was focused on Non-Lethal Weapon (NLW) development. Efforts focused primarily on implementing existing systems to decrease the risk of casualties, such as rubber bullets/ bean-bag rounds, electro-muscular incapacitation devices (such as Taser™), water cannons, stun grenades, and even nets.⁷ Most of these systems were aimed primarily at crowd control. In some cases, their use was legally restricted, e.g., while tear gas could be used by law enforcement, its use by front-line combat military forces was covered under the chemical weapon ban.⁸

However, the necessity for NLWs was highlighted again during the wars in Iraq and Afghanistan, particularly their need to evolve beyond simple crowd control and force protection measures and focus on decreasing civilian casualties.⁹ In recent years the focus has shifted to broader IFC development in order to facilitate better and more comprehensive solution sets applicable in the grey zone. The fact that adversaries are exploiting this zone is driving the need to develop,

⁵ Morris et al., *Gaining Competitive Advantage in the Gray Zone*.

⁶ James Lacey, "Battle of the Bastions," *War on the Rocks*, January 9, 2020, accessed March 28, 2020, <https://warontherocks.com/2020/01/battle-of-the-bastions/>.

⁷ Joint Non-Lethal Weapons Directorate, "Intermediate Force Capabilities: Bridging the Gap Between Presence and Lethality," Executive Agent's Planning Guidance 2020 (United States: Department of Defense, March 2020), <https://mca-marines.org/wp-content/uploads/DoD-NLW-EA-Planning-Guidance-March-2020.pdf>.

⁸ Office for Disarmament Affairs, "1925 Geneva Protocol: Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare" (Geneva: United Nations, June 17, 1925), accessed March 28, 2021, <https://www.un.org/disarmament/wmd/bio/1925-geneva-protocol/>.

⁹ NATO Science and Technology Organization (STO), "Analytical Support to the Development and Experimentation of NLW Concepts of Operation and Employment," Technical Report STO-TR-SAS-094 (NATO STO, April 2017).

test, and implement IFCs. According to the Joint Intermediate Force Capabilities Office (JIFCO), “gray zone” competition dominates any conceptual “spectrum of warfare” and is ideally suited for IFC development.¹⁰

IFCs are intended to enable effective escalation management and control from tactical to strategic levels of operation and across all domains. Being able to control and manage escalation would allow coalition forces to gain and maintain the operational and strategic initiative and thus have a deterrence effect on a potential adversary. IFCs also encompass a much wider concept than NLWs. For example, IFC development explores a wide range of options for anti-personnel and anti-materiel options (including non-lethal directed energy systems). However, IFCs also include information operations, cyber, and electronic warfare capabilities (targeting an adversary’s decision-making options in the cyber and information domains, for example).¹¹ Most importantly, IFCs do not come at the expense of the lethality of the overall force.¹² IFCs are a strategic risk mitigation investment that provides warfighters the tools to seize the initiative while competing below the level of armed conflict and, as such, enable more targeted and effective use of lethal force.

NATO R&D Response

Under the auspices of the NATO Science and Technology (STO) Systems Analysis Studies (SAS) panel, there has been a series of studies (SAS-035, SAS-060, SAS-078, and SAS-094) studying NLW options. Of these studies, SAS-078 led to a NATO Bi-Strategic Command NLW requirements list. This study also identified then-in-existence NLW capabilities and resulting gaps in NATO NLW capabilities/systems.¹³ It was followed by the SAS-094 study that looked at the operational effects of NLWs during combat operations. The analysis of post-conflict operations identified opportunities for NLWs to extend the decision time and space for soldiers in an escalation of force incidents. NLWs were viewed as means to isolate and degrade targets to be engaged or to engage targets when the use of

¹⁰ Wendell B. Leimbach Jr., “DoD Intermediate Force Capabilities: Bringing the Fight to the Gray Zone,” Information Brief (Joint Non-Lethal Weapons Directorate), https://jnlwp.defense.gov/Portals/50/Documents/Resources/Presentations/IFCOOverviewBrief_CoL_short.pdf.

¹¹ Joint Non-Lethal Weapons Directorate, “Strategic Plan 2016-2025: Science & Technology Joint Non-Lethal Weapons Program” (United States: Department of Defense, 2016), https://jnlwp.defense.gov/Portals/50/Documents/Resources/Publications/Government_Reports/JNLWP_ST_Strategic_Plan_FINAL_Distro_A.pdf.

¹² Joint Non-Lethal Weapons Directorate, “Strategic Plan 2016-2025,” 1.

¹³ NATO Research and Technology Organization (RTO), “Non-Lethal Weapons Capability-Based Assessment,” RTO Technical Report RTO-TR-SAS-078 (AC/323(SAS-078)TP/461, December 2012).

lethal force would not be appropriate.¹⁴ These observations were further reinforced by identical conclusions from two NATO Non-Lethal Technology Exercises executed in close collaboration with the SAS-094 study.¹⁵

The latest in this series of these studies, designated SAS-151, has the goal of exploring “Solutions Enabling Intermediate Force Capabilities (IFC)/Non-Lethal Weapons (NLW) Contributions to Mission Success.” The research aims to build on the work of SAS-094 and examine and determine whether IFCs make a difference in mission success and to what extent. As a part of the overall methodology, SAS-151 elected to use a series of wargames to evaluate IFC effectiveness in the grey zone. These wargames were designed specifically to assess the strategic and operational effects of the tactical employment of IFCs in hybrid threat environments. The following sections briefly cover the design, implementation, and findings from two hybrid wargames that took place in September 2020 (assessing mission effectiveness of IFCs in naval task group operations) and April 2021 (assessing mission effectiveness of IFCs in a land /urban/ operation).

Wargaming and Intermediate Force Capabilities

At their core, wargames are tools for exploring and informing human decision-making in an environment with incomplete and imperfect information.¹⁶ As such, they can be used to assess and/or generate innovative ideas, address defense problems of the future, and can be applied to all levels of warfare. There are a variety of different wargame types. The most common tabletop tactical games employ a kriegsspiel approach, while strategic games generally employ a matrix approach.¹⁷ Nevertheless, in a strategic situation such as the one described here, where coalition forces must respond to hybrid threats in the grey zone and where tactical effects of various capability mixes can have dramatic strategic consequences both in terms of success and failure, neither a kriegsspiel game nor a matrix game would work in isolation.

A Kriegsspiel and a Matrix Game

Kriegsspiel games are generally effective at the tactical level. However, their normally compressed time scales and often limited scope preclude the development of strategic considerations. Even large-scale operational kriegsspiel games that

¹⁴ NATO STO, “Analytical Support to the Development and Experimentation of NLW Concepts.”

¹⁵ NATO STO, “Analytical Support to the Development and Experimentation of NLW Concepts.”

¹⁶ U.S. Naval War College, *War Gamers’ Handbook: A Guide for Professional War Gamers* (Newport, RI: U.S. Naval War College, November 2015), <https://apps.dtic.mil/sti/pdfs/AD1001766.pdf>.

¹⁷ U.K. Ministry of Defence, *Wargaming Handbook* (London: Development, Concepts and Doctrine Centre, Ministry of Defence, August 2017), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/641040/doctrine_uk_wargaming_handbook.pdf.

typically take place against a strategic backdrop do not consider changes to the strategic environment itself.¹⁸ In contrast, matrix games can effectively model strategic decision-making and strategic implications of operational decisions. Still, because they are generally high-level and use generalized/ aggregate military capabilities, they are ill-suited to compare two or more tactical capability options. Therefore, the approach adopted by SAS-151 was to execute a modified/shortened version of a matrix game to assess the outcome of an initial tactical-level kriegsspiel engagement game. The kriegsspiel game itself was set up within the strategic and operational context of the matrix game that enabled changes in the strategic environment.¹⁹ While the key components to a player's action and the key steps to a gameplay turn were retained, how they are used together to assess IFC effectiveness in the grey zone is a unique adaptation to these traditional games.²⁰

Wargame Implementation

The hybrid wargame was initially intended as a tabletop wargame. However, with the advent of the SARS-CoV-2 virus (COVID-19) and the resulting travel restrictions imposed by many national governments, it was decided to design and execute the game online in a virtual environment. Several different web-based solutions were considered. The key constraint was that the proposed solution had to accommodate different user requirements – some players used personal computers while others used work/government/NATO computers. The gaming setup did not require significant login or joining instructions, was stable enough for prolonged gameplay, and was cost-effective. In the end, the SAS-151 Wargame Working Group settled on a combination of a simple video teleconferencing platform (WebEx^(TM) was used due to easy availability for video) combined with Google Docs^(TM)/Google Slides^(TM) for team text chats and gameplay. Due to the complexity of the hybrid game setup, SAS-151 ran a full-scale test game to validate the methodology, scenarios, and online execution of the gameplay tools.

The naval scenario considered the harassment of coalition vessels by maritime militia, go-fasts and rigid-hull inflatable boats, other military vessels, and medium-sized unmanned aerial vehicles (UAV) by two aligned hostile countries.

¹⁸ Matthew B. Caffrey Jr., "On Wargaming: How Wargames Have Shaped History and How They May Shape the Future," *The Newport Papers* 43 (U.S. Naval War College, January 2019), <https://digital-commons.usnwc.edu/newport-papers/43>.

¹⁹ "International Safety Research, Summary Report 1: Vignettes, Scenarios and Tasks," *Force Protection Requirements for the Canadian Surface Combatant*, Report 7.06, CORA Task 019, ISR Report W7714-156105-T019 7.06, Version 2.0 (DRDC-RDDC-2017-C054, March 17, 2017).

²⁰ Kyle D. Christensen and Peter Dobias, "Wargaming the Use of Intermediate Force Capabilities in the Gray Zone," *The Journal of Defense Modeling and Simulation* (April 2021), <https://doi.org/10.1177/15485129211010227>.

These vessels impeded the NATO Maritime Task Force's navigation in a contested waterway and interfered with the Task Force's air operations. The adversaries could utilize harassment, swarming, and/or hit-and-run tactics in order to challenge the decision-making of the NATO Maritime Task Force Commander. Furthermore, the scenario presented players with a complex security situation that involved a very tense security environment. In effect, any miscalculation or excessive use of force could have significant strategic consequences. In the game, the two aligned hostile countries also waged an ongoing information operation campaign aimed at discrediting NATO and the Task Force's mission.²¹

The land scenario considered a NATO Task Group deployed to a third country to train local security forces. The combined Host Nation-NATO security force was confronted by a militia (trained and/or controlled by a neighboring country) attempting to expel NATO from the region. The militia used civilians as human shields and/or "influenced" crowds to limit NATO's freedom of action. Popular opinion in the Host Nation was largely opposed to NATO presence in the region. In addition, the neighboring country was massing forces at its border with the stated intent of protecting its ethnic minority population in the Host Nation. Consequently, any use of force could have significant strategic consequences for NATO forces in the region.²²

Wargame Execution

Participants in the wargame included operational analysts, military personnel, strategic and regional analysts, and subject matter experts with expertise in IFCs. The participants were from multiple NATO countries (Belgium, Canada, Denmark, Germany, Italy, UK, US) and organizations (NATO Allied Command Transformation (ACT), Warfare in Confined and Shallow Water Centre of Excellence (COE), Military Police COE, and Littoral Warfare COE).

Two capability options were considered for each scenario:

- Option A. Baseline (no IFCs/legacy NLW systems such as FN-303 rifles), and
- Option B. Near Future IFCs (technology available now or expected to be operational within five years).

IFCs used in the games included Active Denial Systems (ADS), Laser Dazzlers, Long-Range Acoustic Devices (LRAD), and various mounted and handheld Anti-UAV Systems that can not only harass and warn but also interdict and incapacitate potential threats at a standoff distance. It was expected that this would give

²¹ Kyle D. Christensen, and Peter Dobias, *Use of Intermediate Force Capability Game Series: Game 2 – NATO Naval Task Group in Confined Waterway* (NATO Science and Technology Organization, Pre-Released Technical Report, STO-TR-SAS-151 Annex F, March 2021).

²² Maude Amyot-Bourgeois, Brittany Astles et al, *Use of Intermediate Force Capability Game Series: Game 3 – NATO Task Group in Land Wargame Scenario* (Pre-Released Technical Report, STO-TR-SAS-151 Annex G, October 2021).

the friendly forces more options to control (escalate/de-escalate) the situation and to take the strategic initiative.

Key Observations

Option A: Observations

Despite vast differences between the scenarios, the tactical situations developed similarly in both analyzed options. For example, in Option A, during the tactical kriegsspiel game, the adversary was generally able to maintain the initiative and demonstrate an aggressive stance toward friendly forces. In both scenarios, escalation spun out of control. For the naval scenario, the tactical game resulted in missiles fired against friendly vessels and torpedoes fired by both friendly and adversary forces. For the land scenario, the friendly forces were pushed into using excessive force (including the use of CS gas against a crowd and firing high explosive rounds at civilian targets), which provided the impetus for the adversary to send forces across the border and fire missiles toward a joint Host Nation-NATO base. In both cases, NATO's inability to constrain and control escalation gave a significant strategic initiative to the adversary. The adversary was able to exploit these tactical developments and use them very effectively in an information operations campaign and in diplomatic efforts to undermine coalition objectives and efforts in the game (as will be discussed later).

However, it must be noted that similar tactical outcomes resulted from very different approaches to counter tactical dilemmas encountered in both the naval and land games. In the naval game, friendly forces were generally passive and often resorted to doing nothing (or recording aggressive adversary actions). The limited range of responses (i.e., doing nothing or using force) appeared to embolden the adversary to undertake more aggressive actions. Even seemingly innocuous events, such as using small arms to down a UAV in order to recover a helicopter, had profound and significant consequences in the information space. In the land game, limited response options resulted in an early escalation of force against the crowd (use of rubber bullets and CS gas from the game opening) and rapid and excessive use of lethal force against the militia in the presence of civilians (use of high explosives to suppress the adversary's shooters). While this enabled the friendly forces to regain some freedom of action, it also gave the adversary the excuse to escalate further while successfully using information operations to paint the friendly force as aggressors. At no point in the Option A land game were the friendly forces able to control the cycle of escalation or put themselves in a position to de-escalate the situation.

In both scenarios, the adversary's assertive behavior carried over to the strategic matrix game. In the matrix game, the adversary was able to monopolize the narrative they created in the tactical game and painted friendly forces as belligerent and reckless, inept and incapable, and the cause for escalating tensions in the region. The naval game resulted in a neutral country that initially supported

NATO forces reconsidering its partnership with NATO. Similarly, in the land scenario, the adversary was able to use the excessive civilian casualties and damage to infrastructure to get a vote of non-confidence against the government supporting NATO's presence in the region. The neighboring country was even able to reinforce its international standing and justify its interference in the Host Nation. From this perspective, in both scenarios, Option A resulted in a strategic achievement for the adversary, with the adversary's position strengthened and NATO's position in the region weakened.

Option B: Observations

In both scenarios, the use of IFCs turned the strategic equation on its head in favor of friendly forces. At the tactical level, during the naval scenario, the adversary's attempt to use force was hampered by NATO's use of IFCs. IFCs allowed to discourage unwanted behavior and/or degrade/disrupt the adversary's ability to use force. By the end of the tactical game, there was little to no response from the adversary to NATO's actions. It appears the knowledge and presence of IFCs, in and of themselves, caused the adversary to consider the use of their own non-lethal options more seriously. The adversary was also more restrained in their escalatory behavior. In the land scenario, friendly forces were able to use IFCs to disrupt the initial hostile actions of the anti-government elements in the crowd. Just as important, friendly forces were able to use IFCs to suppress hostile militia actions and were thus able to use lethal force more judiciously. Limited use of lethal force significantly reduced the number of civilian casualties and, more importantly, undermined the adversary's narrative that NATO forces were belligerent and reckless.

However, it must be noted that the Option B wargame was not without its escalatory attempts or behaviors. In the naval game, the adversary directed warning shots at a NATO supply ship and one of the frigates (following verbal warnings to NATO vessels). These warning shots resulted in damage to the frigate. However, as the game progressed, and the adversary's attempts to elicit a forceful response from NATO (being more aggressive) were stymied by the IFCs. Consequently, the adversary force became more reactive in their actions during the naval war game. Similarly, in the land game, the militia was able to cause some damage to NATO and the Host Nation's forces, vehicles, and infrastructure using UAVs laden with explosives, RPGs, IEDs, and general-purpose machine guns. However, the use of IFCs disrupted and degraded the hostile actions, so the damage was significantly less than in Option A. In both scenarios, rather than controlling the narrative and escalation, IFCs appeared to take away the pretext/justification for the adversary's use of force and shifted the tactical initiative in favor of the friendly forces.

Most importantly, the change in the initiative in favor of the friendly forces caused a significantly different strategic outcome from the Option A scenario. In the naval game, the position of NATO in the region was strengthened, and a neutral country sought closer alignment with NATO. In the land scenario, while the

overall opposition to NATO within the region was not eliminated, it at least did not become any worse and remained manageable for the Host Nation government. Moreover, the outcome increased NATO's appeal as a regional partner and limited the international appeal of the adversary, particularly their objective to reduce or eliminate NATO's presence. The hostile country was unable to strengthen its position in either scenario. From this perspective, the availability of IFCs helped facilitate a strategic achievement for NATO.

One important aspect to note during the land game was that of the weight/size limits and, consequently, of mobility of IFCs. This was most apparent during the land scenario. While this was not really a concern in the naval game, in the land scenario, it would have been desirable to have, for instance, ADS (which was the most versatile and effective system in the game) mounted on vehicles or even on helicopters. It was noted that a mobile ADS would increase a convoy's operational effectiveness, even if at the cost of the system's range.

IFCs and Tactical Decisions: Space and Time in the Face of Dilemmas

As mentioned above, the most important tactical aspect of IFCs was that they expanded the NATO Task Force commander's decision time and space when faced with tactical dilemmas. In this specific case, these dilemmas were posed by the escalatory behavior and provocations of the adversaries. The IFCs gave NATO forces the ability to control the escalation, which eventually led to a shift in the dilemma to the adversary. Whereas without IFCs, friendly forces were either limited to doing nothing or reacting to hostile actions with significant lethal force, they were able to take the initiative with IFCs. In the end, it was the adversary who became reactive. For instance, in the naval game, the NATO commander was able to recover a helicopter in such a way that the initial attempt by hostile forces to interfere with the landing worked to strengthen NATO's narrative. Similarly, in the land game, the hostile elements in the crowd, as well as the militia, were forced to adopt a more passive-aggressive posture and "encourage" the crowd to block the road. This gave an opportunity to friendly forces to present themselves as providing aid to civilians affected by these hostile actions.

Being able to acquire greater time and space for decision-making reinforces findings and observations made during the two NATO Non-lethal Technology Exercises referenced earlier. At the time, it was determined that the availability of non-lethal capabilities gave tactical commanders critical decision time and space to choose courses of action that reduced collateral damage, resulted in fewer civilian casualties, and increased the probability of engaging actual threats.²³ Similar observations were made based on modeling ship force protection options against small boat swarms.²⁴

²³ NATO STO, "Analytical Support to the Development and Experimentation of NLW Concepts."

²⁴ Peter Dobias and Cheryl Eisler, "Modeling a Naval Force Protection Scenario in MANA," *Operational Research and Management Science Letters* 1, no. 1 (2017): 2-7, <https://www.orlabanalytics.ca/ormsl/archive/v1/n1/ormslv1n1p2.pdf>.

IFCs and the Strategic Initiative

In both wargames, a shift in the tactical initiative led to a corresponding shift in the strategic initiative. Once NATO forces were able to shift the initiative in their favor at the tactical level, it was reflected in both the strategic narrative and NATO's relationship with allies at the operational level. The availability of IFCs prevented a situation where coalition partners questioned their continued support of the NATO mission (as happened during the Option A wargame). In fact, in the naval game, IFCs caused the exact opposite. During their planning, NATO allies consistently referred to staying close to and under NATO's protective IFC umbrella. One player summed up the effectiveness of IFCs as "No moves/ actions this turn. Stay under the protective umbrella of IFCs and watch the enemy impale themselves on the IFCs." In the land scenario, the presence of IFCs enabled NATO forces to limit the escalatory behavior of the Host Nation's security forces. In one of the turns, a Host Nation unit planned to use rubber bullets and CS gas. However, the use of ADS by NATO forces changed the tactical situation, and the Host Nation's security forces were no longer required to consider using escalatory courses of action or systems.

On the operational side, IFCs provided NATO forces with the time and space to plan ahead. In the naval scenario, as opposed to Option A, where the Naval Task Force was dispersed, not in control, and under increasing levels of threat or attack, the Task Force was in control in Option B, the threat level was diminishing, and most importantly, the NATO Maritime Task Force was growing in strength. Thus, during the war game, IFCs allowed the Maritime Task Force to preserve its power and freedom of action and maneuver. Within the scenario's strategic context, this was quite important. In the scenario, the adversary's Naval Task Force—a modern, capable fleet—was less than five hours away from the NATO Maritime Task Force. As a result of IFC availability, the NATO Task Force would be in a much better position to deal with the potential threat. Similarly, in the land scenario, the use of IFCs, particularly the vehicle stopper and laser dazzler, co-mounted on a remote weapon stations, enabled NATO and Host Nation forces to suppress/degrade the hostile militias and use lethal force very selectively and under less immediate pressure.

Another important key takeaway was that the adversary was less successful in turning innocuous events into profound and significant advantages. For example, the lack of video footage of NATO personnel using overt force hindered the adversary's information campaign. While the adversary still pursued an outright misinformation campaign during the strategic matrix game, their narrative had less or no supporting evidence, which led to their reliance on fake news.

Need for Strategic Narrative

There was one important observation that occurred in the naval scenario. Once NATO forces employed IFCs, more specifically ADS, the adversary resorted to calling it a "death ray" and used fake photos and videos of injuries to manufacture their claims. This put NATO on the defensive with regard to the narrative.

The NATO counter-narrative approach of speaking the truth and being transparent (i.e., offering test results, showing historic IFC use/testing, scientific studies, and demonstrations) did not appear to be overly effective during the war game. This post-fact approach may have challenges gaining acceptance not only in adversary populations (less surprising) but even in allied populations (more concerning). Unfortunately, the very nature of directed energy IFCs lends itself to a narrative of death or heat rays even when these articles attempt to present these capabilities in a positive light.²⁵ And in recent alleged examples of use, IFCs have been characterized as “cooking soldiers” and “burning you from the inside out.”²⁶

Summary and Future Research

The NATO SAS-151 maritime and land wargames have shown conclusively that IFCs provide an important capability set to manage escalation during conflict below the threshold of interstate war. In the analyzed scenarios, the IFCs allowed the coalition commander to resolve security dilemmas posed by the adversary’s provocative, even escalatory behavior. This resulted in the friendly forces’ ability to seize the initiative and forced the adversary to rely on misinformation and fake news. However, it was also observed that the adversary very effectively employed a “death ray” narrative concerning the IFCs, using fake news and falsified videos. This suggests that it will be important to be very transparent with safety trials prior to the deployment of such systems to pre-empt such a narrative should IFCs be employed.

The land wargame brought up issues of mobility (consequently, the weight/size limits of IFCs). For example, while ADS was very effective in both scenarios, in the land scenario, it would have been much more effective if it could be mounted on vehicles or even airborne.

The wargame results will be used for the NATO IFC concept development and additional gaming, where integrated modeling and simulations are already planned to help validate IFC effects and concepts. It is anticipated that a joint scenario can be used for concept refinement and validation and, at the same

²⁵ Benjamin Bissell, “The Navy’s Scary New Death Ray,” *Lawfare*, November 17, 2014, accessed December 1, 2020, <https://www.lawfareblog.com/navys-scary-new-death-ray>; Luke Fleet, “Dreaming of Death Rays: The Search for Laser Weapons,” *Nature*, January 9, 2019, accessed December 1, 2020, <https://www.nature.com/articles/d41586-019-00024-0>.

²⁶ Tim Stickings, “China ‘Used Secret Microwave Pulse Weapon to Cook Indian Soldiers Alive’ and Force Them Into Retreat in Himalayan Border Battle,” *Daily Mail*, November 17, 2020, accessed November 30, 2020, <https://www.dailymail.co.uk/news/article-8957019/China-used-secret-microwave-pulse-weapon-Indian-soldiers.html>; James Plafke, “China’s New Microwave Pain Beam Burns You From the Inside Out,” *Extreme Tech*, December 10, 2014, accessed December 10, 2020. www.extremetech.com/extreme/195671-chinas-new-microwave-pain-beam-burns-you-from-the-inside-out.

time, can help validate IFC effectiveness for other IFC categories (such as cyber and electronic warfare) across multiple domains.

Disclaimer

The views expressed are solely those of the authors and do not represent official views of the PfP Consortium of Defense Academies and Security Studies Institutes, participating organizations, or the Consortium's editors.

Acknowledgment

Connections: The Quarterly Journal, Vol. 21, 2022, is supported by the United States government.

About the Authors

Peter Dobias – see the CV on p. 9 of this issue, <https://doi.org/10.11610/Connections.21.2.00>.

Kyle Christensen – see the CV on p. 54 of this issue, <https://doi.org/10.11610/Connections.21.2.03>.

Bill Freid began his military career as an infantry officer moving from platoon leader to anti-tank company commander. Mr. Freid then transitioned to Psychological Operations (PSYOP), where he supported the Green Berets during two deployments to Kandahar, Afghanistan. Mr. Freid was then a company commander for Tactical Psychological Operations Company. He again deployed to Kabul, Afghanistan, with NATO as the Media Director for the Combined Joint Psychological Operations Force. Upon his return, he was the executive officer for the 13th PSYOP battalion. Mr. Freid transitioned to be a civilian PSYOP planner at US European Command. He was then the non-lethal weapons planner for US European Command and a participant in the NATO Systems Analysis and Studies working group studying how to counter malign actors' activities in the grey zone. Currently, Mr. Freid serves as a PSYOP Planner at US Cyber Warfare Command.