2022-09

2035 AND U.S. NAVY INTELLIGENCE: COMMUNITY MANNING FOR SUCCESS IN THE INDO-PACIFI

Goorsky, Luke W.

Monterey, CA; Naval Postgraduate School

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

2035 AND U.S. NAVY INTELLIGENCE: COMMUNITY MANNING FOR SUCCESS IN THE INDO-PACIFIC

by

Luke W. Goorsky

September 2022

Thesis Advisor: Erik J. Dahl
Second Reader: Robert F. Hight Jr.

THIS PAGE INTENTIONALLY LEFT BLANK

REPORT DOCUMENTATION PAGE			*Form Approved OMB No. 0704-0188*

1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** September 2022	**3. REPORT TYPE AND DATES COVERED** Master's thesis

4. TITLE AND SUBTITLE
2035 AND U.S. NAVY INTELLIGENCE: COMMUNITY MANNING FOR SUCCESS IN THE INDO-PACIFIC

5. FUNDING NUMBERS

6. AUTHOR(S) Luke W. Goorsky

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Naval Postgraduate School
Monterey, CA 93943-5000

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
N/A

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release. Distribution is unlimited.

12b. DISTRIBUTION CODE
A

13. ABSTRACT (maximum 200 words)

This thesis seeks to understand the best method for employing the Naval intelligence community in 2035 and beyond. Naval intelligence manning has remained largely unchanged since the end of the Cold War. As the United States adapts to a new geopolitical paradigm involving peer military forces and the rapid technological advances, the Naval intelligence community must adapt to ensure U.S. success in all phases of conflict. This thesis sets the stage for a future geopolitical scenario defined by multipolarity, confrontation with China, and the rise of artificial intelligence and remote technologies. This thesis examines the problem of strategic warning to enable deterrence, effective team building to optimize information flow, and the effectiveness of tactical intelligence in the modern and future naval battlefield. Ultimately, this thesis argues the Naval intelligence community should expand its support to tactical warfighting units to ensure sustained U.S. naval dominance.

14. SUBJECT TERMS Navy, intelligence, distributed maritime operations, DMO, manning, strategic warning, Indo-Pacific, decision making, unmanned systems	**15. NUMBER OF PAGES** 129
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	**18. SECURITY CLASSIFICATION OF THIS PAGE**	**19. SECURITY CLASSIFICATION OF ABSTRACT**	**20. LIMITATION OF ABSTRACT**
Unclassified	Unclassified	Unclassified	UU

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release. Distribution is unlimited.

2035 AND U.S. NAVY INTELLIGENCE: COMMUNITY MANNING FOR SUCCESS IN THE INDO-PACIFIC

Luke W. Goorsky
Lieutenant, United States Navy
BA, University of California, San Diego, 2012

Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(EAST ASIA AND THE INDO-PACIFIC)**

from the

**NAVAL POSTGRADUATE SCHOOL
September 2022**

Approved by: Erik J. Dahl
Advisor

Robert F. Hight Jr.
Second Reader

Afshon P. Ostovar
Associate Chair for Research
Department of National Security Affairs

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

This thesis seeks to understand the best method for employing the Naval intelligence community in 2035 and beyond. Naval intelligence manning has remained largely unchanged since the end of the Cold War. As the United States adapts to a new geopolitical paradigm involving peer military forces and the rapid technological advances, the Naval intelligence community must adapt to ensure U.S. success in all phases of conflict. This thesis sets the stage for a future geopolitical scenario defined by multipolarity, confrontation with China, and the rise of artificial intelligence and remote technologies. This thesis examines the problem of strategic warning to enable deterrence, effective team building to optimize information flow, and the effectiveness of tactical intelligence in the modern and future naval battlefield. Ultimately, this thesis argues the Naval intelligence community should expand its support to tactical warfighting units to ensure sustained U.S. naval dominance.

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF ACRONYMS AND ABBREVIATIONS

A2/AD	Anti-Access/Area-Denial
A.I.	Artificial Intelligence
AOR	Area of Responsibility
ASW	antisubmarine warfare
BDA	Battle Damage Assessment
CCP	Chinese Communist Party
CDCM	Coastal Defense Cruise Missiles
CG	Guided Missile Cruiser
CIC	Combat Information Center
CJCS	Chairman of the Joint Chiefs of Staff
CMF	Combined Maritime Forces
COP	Common Operational Picture
CNO	Chief of Naval Operations
DDG	Guided Missile Destroyer
DL	Distributed Lethality
DMO	Distributed Maritime Operations
HADR	Humanitarian Assistance and Disaster Relief
I2	Identity Intelligence
IRC	Information-Related Capabilities
ISR	Intelligence, Surveillance, and Reconnaissance
MOC	Maritime Operations Center
NCIS	Naval Criminal Investigative Service
NWP	Naval Warfare Publication
PLAN	People's Liberation Army Navy
PRC	People's Republic of China
S&T	Scientific and Technical
TTP	Tactics, Techniques, and Procedures
UN	United Nations
U.S.	United States
UUV	Unmanned Underwater Vessels

USINDOPACOM	U.S. Indo-Pacific Command
USN	United States Navy
VLS	Vertical Launch System

I. INTRODUCTION

A. RESEARCH QUESTION

The rise of strategic competition abroad paired with flattening defense budgets domestically place the U.S. Navy (USN) and more specifically, naval intelligence, at a crossroads. Naval intelligence, along with the rest of the U.S. intelligence community, has significantly emphasized supporting U.S. Central Command and U.S. Special Operations Command in addressing asymmetric threats from the Middle East during the past two decades. However, some of the most significant challenges for naval intelligence will concern the Indo-Pacific region, particularly the rising threat from China. At the same time, the idea of fielding a traditional 355-ship navy appears to be fading. The USN will need to adjust its intelligence capabilities and focus on enabling U.S. success within this new reality and the growing threat from competing nations.

This thesis will address the question: how does the USN intelligence community need to employ its manpower to support strategic competition in the U.S. Indo-Pacific Command (USINDOPACOM) area of responsibility (AOR) in the mid-2030s and beyond? The question will be partially explored by examining the evolving aspects of naval warfare and how the intelligence community needs to be aligned to support future, distributed battles fought in all warfare domains. The thesis will seek to understand how intelligence can be most effectively passed to warfighters and policymakers to enable decision advantage across the competition continuum while enabling effective intelligence operations should conflict break out. The analysis will determine the proper placement of naval intelligence professionals to ensure support for strategic warning at senior levels of the military and government to prevent strategic surprise and enable deterrence. The analysis will also examine the intelligence needs of the tactical naval warfighter conducting distributed maritime operations (DMO) in both the deterrence and conflict phases of warfare.

B. PROBLEM STATEMENT

The USN needs to devise new capabilities to counter the growing naval threat of potential adversaries.[1] As the United States continues to adopt a new geopolitical paradigm involving peer military forces, advances in "grey zone" warfare, and the widespread use of remote technologies, the naval intelligence community must also adapt to ensure U.S. success in all phases of conflict. While much has been written regarding future naval warfare in the information age, there has been little public discussion about how the intelligence community, and especially the naval intelligence community, needs to adjust itself to provide the support necessary to ensure U.S. success.

Non-military factors will also influence the role of the naval intelligence community; for example, as noted by the Chairman of the Joint Chiefs of Staff (CJCS) Mark Miley, the military is likely to face "flattening budgets" in the future.[2] Thus, the naval intelligence community must take a hard look at how to employ its manpower, given the increased demand for new capabilities without a corresponding growth in the overall number of personnel. This challenge will be paired with declines in overall numbers of USN naval, air, and special forces platforms, personnel, and equipment. With a smaller force, the need to ensure that force is in the right place at the right time becomes of supreme importance for the USN and U.S. national security. As noted by Secretary of the Navy Del Toro in his 2021 Strategic Guidance, the Navy "will make difficult trade-offs, but also fight tenaciously for the resources needed to fulfill our national security responsibilities properly."[3] As reliance on the information sphere increases, the naval intelligence community will play a key role in facilitating information flow and enabling decision-making advantage. As noted by Secretary of the Navy Del Toro in his 2021 Strategic Guidance, the Navy "will make difficult trade-offs,

[1] James Wirtz et al., "The Maritime Strategic Imperative," *The RUSI Journal* 166, no. 3 (April 16, 2021): 34–44, https://doi.org/10.1080/03071847.2021.1954544.

[2] Aaron Mehta, "Milley: Budget 'Reality Check' May Impact Foreign Exercises, Basing Plans," Defense News, December 2, 2020, https://www.defensenews.com/pentagon/2020/12/02/milley-budget-reality-check-may-impact-foreign-exercises-basing-plans/.

[3] Carlos Del Toro, "One Navy-Marine Corps Team: Strategic Guidance From The Secretary of the Navy" (Department of the Navy, October 8, 2021), 8, https://media.defense.gov/2021/Oct/07/2002870427/-1/-1/0/SECNAV%20STRATEGIC%20GUIDANCE_100721.PDF.

but also fight tenaciously for the resources needed to fulfill our national security responsibilities properly."[4] Therefore, the naval intelligence community needs to take a hard look at its operations and manning to maximize its value. As reliance on the information sphere increases, the naval intelligence community will play a key role in facilitating information flow and enabling decision-making advantage. Naval intelligence, therefore, needs to be aligned in the best way possible to achieve operational success.

The naval intelligence community must ensure that it is effectively providing timely, relevant, and accurate information to the proper person in the chain of command who can ensure naval forces are at the right place at the right time to advance U.S. interests. This thesis will look at direct support to the tactical warfighter and how best to integrate the naval intelligence community with decision-makers to ensure the Navy is best positioned to advance U.S. national interests.

At the tactical level, operations against a peer competitor with advanced precision-guided munitions in an electromagnetically contested environment will be a new operational paradigm for the USN. The DMO concept is the Navy's answer to this new reality. DMO aims to combine distribution, integration, and maneuver to concentrate combat power and effects via distributed platforms across all domains to exploit uncertainty and achieve surprise.[5] Naval intelligence manning needs to be structured in the best way possible to support distributed naval forces in an electromagnetically contested environment. The current naval intelligence manning paradigm has been relatively unchanged for over 30 years. It is structured to support traditional, post-cold war, carrier strike group operations projecting power and conducting forward presence missions. With the advent of new technologies and the rise of peer competitors, the USN is adjusting its operations to maintain its supremacy. Along with this, the naval intelligence community needs to assess the ability of its current manning structure to

[4] Carlos Del Toro, "One Navy-Marine Corps Team: Strategic Guidance From The Secretary of the Navy" (Department of the Navy, October 8, 2021), 8, https://media.defense.gov/2021/Oct/07/2002870427/-1/-1/0/SECNAV%20STRATEGIC%20GUIDANCE_100721.PDF.

[5] Kenneth Braithwaite et al., "Advantage at Sea Prevailing with Integrated All-Domain Naval Power" (Department of the Navy, December 1, 2020), 31, https://apps.dtic.mil/sti/pdfs/AD1118532.pdf.

support a new warfare paradigm defined by unmanned systems, a contested electromagnetic environment, and the presence of peer competitors able to hold U.S. platforms at risk.

C. LITERATURE REVIEW

This thesis will examine naval intelligence support to future USN and joint operations in the INDOPACOM AOR through two primary lines of investigation: the role of a navy and naval warfare theory; the role of naval intelligence in supporting the missions of the USN.

1. Naval Theory, Doctrine, and Guidance

Alfred Thayer Mahan and Sir Julian Corbett provide the underlying arguments for most modern naval theories. Mahan advocated for naval power, arguing that naval power enabled control of the seas, and control of the seas was necessary for any global power.[6] The Navy would exercise control of the sea by clearing the sea of hostile forces or convoying friendly ships to support distant operations.[7] Mahan advocated for the primacy of offensive maneuvers via the establishment of local superiority, culminating in large naval battles.[8]

Corbett's strategy, in many ways, lined up with Mahan with a few points of difference centered on the importance of singular large engagements to establish sea control. Corbett argued that naval strategy aimed to achieve command of the sea and defined command of the sea as the "control of communications in which the belligerents are adversely concerned."[9] Corbett identified three functions of a fleet: The prevention or

---

[6] H. Kaminer Manship, "Mahan's Concepts of Sea Power: A Lecture Delivered at the Naval War College on 23 September 1963," *Naval War College Review* 16, no. 5 (1964): 6, http://www.jstor.org/stable/45236517.

[7] A. T. Mahan, *The Influence of Sea Power Upon History, 1660-1783* (New York: Dover Publications, 1987), 514.

[8] A.T. Mahan, *The Interest of America in Sea Power, Present and Future* (New York: Books for Libraries Press., 1970); Manship, "Mahan's Concepts of Sea Power," 26; Mahan, *The Influence of Sea Power Upon History, 1660-1783*, 196.

[9] Julian Corbett, "The Project Gutenberg EBook of Some Principles of Maritime Strategy," 316–17, accessed August 6, 2021, https://www.gutenberg.org/files/15076/15076-h/15076-h.htm.

securing of alliances, the protection or destruction of commerce, and the furtherance or hindrance of military operations ashore.[10] These functions could be filled in two ways: direct territorial attacks from the sea or by gaining command of the sea to enable freedom of operations.[11] Corbett assessed sea power as important but not decisive, as it rarely won wars independently.[12] Corbett, therefore, argues for an approach focused on denying command of the sea and pushed for a divided fleet enabling deterrence and denial rather than a mass of large capital ships seeking a pivotal battle with the enemy fleet.

Modern naval thinkers, most prominently Wayne Hughes and Milan Vego, have applied many of the theories advanced by Mahan and Corbett to the modern age. Hughes, along with co-author Robert Girrier, in their seminal work *Fleet Tactics and Naval Operations,* used both statistical and historical analysis to inform their discussions. The authors boiled down their ideas underlying naval tactics into six cornerstones. The sixth cornerstone, which they considered essential for naval combat success, was "attack effectively first."[13] Envisioning future combat, they predicted technological advances would create vast swaths of at sea no man's lands exploited by small units or task groups to scout and probe the enemy and emphasized the need for aggressive, effective scouting to enable victory.[14] Milan Vego, in his work *General Naval Tactics: Theory and Practice*, argued for the importance of mission command as one of the most critical factors for naval success.[15] In the information sphere, Vego focused less on scouting and gaining information on the enemy and more on the importance of synthesizing and analyzing information to enable decision-making advantage during at-sea conflicts.

Modern U.S. naval doctrine and guidance align with the points advocated by naval theorists. *Advantage at Sea*, the Navy's strategic guidance authored by then-

[10] Corbett, 317.

[11] Corbett, 317.

[12] Corbett, 133–35.

[13] Wayne P. Hughes and Robert Girrier, *Fleet Tactics and Naval Operations*, Third edition, The U.S. Naval Institute Blue & Gold Professional Library (Annapolis, Maryland: Naval Institute Press, 2018), 30–31.

[14] Hughes and Girrier, 175, 183–91.

[15] Milan N. Vego, *General Naval Tactics: Theory and Practice*, The U.S. Naval Institute Blue & Gold Professional Library (Annapolis, Maryland: Naval Institute Press, 2020), 156, 165.

Secretary of the Navy, Kenneth J Braithwaite, outlined the three primary missions of American naval forces as "preserving freedom of the seas, deterring aggression, and winning wars."[16] The plan was built upon by current Secretary of the Navy, Carlos Del Toro, who envisions enabling these three tenets by ensuring naval forces have the right mix of platforms via sustained, persistent mobile operations and the ability to transition from competition to crisis to conflict effectively.[17] The defined mission of the USN, at its essence, is sea control. While sea control has many different definitions depending on the author and context, Joint Publication 1-02 defines sea control operations as "the employment of naval forces…to achieve military objectives in vital sea areas. Such operations include destruction of enemy naval forces, suppression of enemy sea commerce, protection of vital sea lanes, and establishment of local military superiority in areas of naval operations."[18] Navy doctrine calls for the USN to conduct continual missions and be ready to respond to crises quickly.[19] Navy operations are conducted through the central tenet of "centralized planning/decentralized execution," via command by negation under the Composite Warfare Commander concept.[20] Decentralized command enables tactical commanders to act with freedom in environments with limited communication with higher authorities. It also enables quick action at the tactical level to achieve overall mission success.

2. Intelligence Support to Naval Operations

Naval Warfare Publication (NWP) 2-0 provides the baseline doctrine for the role of intelligence in the USN. As defined in this document, naval "intelligence is much less a product than a process that must completely integrate within the commander's decision

[16] Braithwaite et al., 5.

[17] Del Toro, 4.

[18] "Doctrine for the Armed Forces of the United States, the DOD Dictionary of Military and Associated Terms" (Deparment of Defense, November 2021), 190, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/dictionary.pdf?ver=J3xmdacJe_L_DMvIUhE7gA%3d%3d.

[19] "Navy Warfare Publication 3-32 Maratime Operations at the Operational Level of War" (Department of the Navy, August 2010), 1–5.

[20] "NWP 3-32," 1–2, 1–6.

cycle."[21] The document then defines how intelligence supports the three levels of war strategic, operational, and tactical. For the Navy, strategic intelligence "means understanding how an enemy intends or needs to use the sea in peace and war to achieve its national and military objectives in support of broader strategic aims."[22]. Naval intelligence at the operational level of war supports operations by "analyzing enemy strategy, warfighting capabilities, objectives, and intentions to anticipate future activity, develop effective campaigns, and guide major force deployment."[23] Naval intelligence at the tactical level "focuses on supporting the effort to defeat enemy forces, primarily by providing insight on enemy capabilities, tactics, and perceptions."[24]

As defined in Joint publication 2-0, the U.S. joint military doctrinal document regarding intelligence, within each level of war, there are eight types of intelligence: "warning, current, general military, target, Scientific and Technical (S&T), counterintelligence, identity intelligence (I2), and estimative intelligence."[25] For this thesis, S&T, I2, and counterintelligence will be placed to the side to focus on the more core aspects of intelligence support to the warfighter. This is not to say that those three categories are irrelevant. Rather, they are narrowly focused, unique categories in their own right and would require a specific, in-depth look at each category and how it fits into the overall naval intelligence community. The remaining five categories of intelligence can be defined as follows. Warning intelligence communicates threats against U.S. forces to a decision maker focusing on the opportunities to counter and alter the threat. There are two types of warning: emerging and enduring. Emerging warning issues are tied to unfolding situations. The issues may be ambiguous and less formalized than enduring warning, which focuses on long-term standing threats to the U.S.[26] Current intelligence provides support for ongoing operations and involves integrating "time-sensitive, all-

[21] "Naval Warfare Publication 2-0 Naval Intelligence" (Department of the Navy, July 2022), 3.

[22] "NWP 2-0," 4.

[23] "NWP 2-0," 4.

[24] "NWP 2-0," 5.

[25] "Joint Publication 2-0" (Department of Defense, October 22, 2013), I–18, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp2_0.pdf.

[26] "JP 2-0," I–18.

source intelligence information into concise, objective reporting on the current situation in a particular area."[27] General military intelligence analyzes foreign military capabilities. General military intelligence is typically associated with long-term planning and identifying trends affecting national security to ensure an efficient allocation of resources.[28] Target intelligence locates the parts of a military target to include the networks associated with that target to identify vulnerabilities, recommend engagement options, and provide post-strike battle damage assessment (BDA).[29]

J.P. 2-0 lays out the baseline expectations for intelligence support to any military operation: first and foremost, no matter the mission set, phase of war, or type of intelligence, the information provided by intelligence professionals to decision makers must be "anticipatory, timely, objective, relevant, thorough, accurate, available, and useable."[30] As defined in NWP 2-0, the USN's primary functions are "sea control, power projection, deterrence, maritime security, and sealift."[31] Naval intelligence supports these missions through "informed analysis and reasoned judgment regarding enemy capabilities, intentions, objectives, and actions."[32]

D. POTENTIAL EXPLANATIONS AND HYPOTHESES

There are multiple paths the USN could pursue to ensure the naval intelligence community is best positioned to support the U.S. national interest maintaining its current course to completely re-thinking the role of intelligence and discarding the traditional operational intelligence model the naval intelligence community has focused on since World War II.

The USN could continue along its current course and keep its current manning paradigm. This would represent the least change to the current order and maintain

[27] "JP 2-0," I–18.

[28] "JP 2-0," I–19.

[29] "JP 2-0," I–19.

[30] "JP 2-0," II–14.

[31] "NWP 2-0," 3.

[32] "NWP 2-0," 3.

institutional stability. The stability would create the least risk for the naval intelligence community and USN since there would not be a time period of organizational disruption that could allow geopolitical opponents to exploit the disruption for their own political gains. The fact that the naval intelligence community has remained largely unchanged since the Cold War does not mean that it needs to be changed. Intelligence support onboard capital ships could continue to be successful within DMO as the intelligence community is able to have a central node to plug into and distribute information to subordinate forces as needed. This would allow only the most critically needed information to be passed along the information chain, limiting the overall chance of detection. Also, advances in artificial intelligence and machine learning could replicate much of the lower-level analysis done by intelligence professionals at the tactical level.

A possible alternative would be to move personnel away from capital ships and towards the tactical level of war. This would enable naval intelligence professionals to act more independently and provide tailored support to the tactical commander. There is no guarantee that any U.S. vessel will be able to communicate with higher headquarters in an electronically contested environment. Therefore, tactical units need all the resources necessary to fight and win engagements available to them organically. Operational and strategic level assessments have less relevance when missiles are in the air, and the most important contributor to deterrence is ensuring individual units can inflict significant harm against any adversary at any time.

Additionally, for intelligence to be effective, it must be trusted, and there is no replacement for direct face-to-face interaction when building trust. Tactical level experience would also give naval intelligence professionals better insight into naval operations and how commanders use intelligence in their decision-making process. This would enable naval intelligence professionals to give more insightful and relevant intelligence assessments.

Instead of distributing intelligence professionals to the tactical level, the USN could further consolidate them into central intelligence nodes, likely within MOCs. This would allow for the formation of a consistent corps of intelligence professionals that share strong interpersonal relationships and trust. It would allow for better

standardization of intelligence practices and create an environment where process changes could be rapidly adapted to address perceived gaps. This would also significantly reduce the amount of non-intelligence-related duties naval intelligence professionals are required to perform, such as Special Security Officer or Security Manager. The elimination of administrative duties would allow intelligence professionals to have more time to devote to developing their craft and gaining a better knowledge of the enemy.

The USN could completely disrupt the OPINTEL-based system, which is the foundation of naval intelligence. It could shift the mission set of finding and tracking enemy units to the cryptologic warfare community and have the intelligence community focus solely on understanding the enemy. This would include everything from strategic culture; to doctrine, tactics, techniques, and procedures of various unit types; and even the personalities of individual unit commanders. Naval intelligence professionals would be masters of Red. They would not be directly tasked with coordinating collections or concerned with how to locate and track enemy vessels precisely. Under this construct, naval intelligence would look to create regional subject matter experts and value in-depth specific knowledge over the understanding of a wide range of matters.

E. RESEARCH DESIGN

This thesis will incorporate foundational naval theory works nested with current naval strategy and planning guidance to envision how the USN intends to compete and fight in a future conflict. The thesis will then pull from naval doctrine and theories about naval and military intelligence to determine the best way for the naval intelligence community to mold itself to USN plans for strategic competition and future warfare in the Indo-Pacific. It will also look at the challenges of the Indo-Pacific and how the theater will look in 2035 and beyond. Finally, the research will incorporate studies looking at organizational information flow to understand better how intelligence professionals can effectively communicate the necessary information to decision-makers to enable decision advantage in any future conflict.

The key findings and results from these analytical inquiries will then be fused and applied to case studies to test the findings. A case study of strategic warning in the

Falklands War will be used to understand strategic warning in a modern naval context and the need to project power across great distances. A case study on the development of Combat Information Centers (CIC) will test the understanding of how information needs and flow change in new strategic environments. Finally, the thesis will use combat modeling to examine the usefulness of intelligence support at a tactical level to increase the lethality of individual units.

The research will include several limiting factors. First, this thesis will not cover three of the eight categories of intelligence: science and technology, counterintelligence, and identity intelligence. While important, especially in the pre-conflict phases of competition, these three categories represent a small group of highly skilled individuals. For example, the Naval Criminal Investigative Service (NCIS) is the primary lead for all counterintelligence matters in the Navy. It is primarily comprised of civilian law enforcement agents with only a small number of active-duty Marine Corps personnel as investigators.[33]

This thesis will also not draw on classified material. This choice was made to ensure the broadest form of distribution for the key findings of the thesis. Additionally, publicly available doctrine and scholarly work provide a solid foundation for envisioning future naval warfare and intelligence support for those operations. Classified material is only expected to be necessary when looking at minute details of intelligence operations and USN Tactics, Techniques, and Procedures (TTP), which this thesis will not cover.

F. CONCLUSION

This thesis finds that the geographic, geopolitical, and military realities of the Indo-Pacific, combined with the warfighting needs of operators in the future naval battlespace, signify that the naval intelligence community needs to reorient itself to provide the necessary level of support to the fleet and the joint force. To provide this, the naval intelligence community must ensure it can offer adequate strategic warning to decision-makers while maintaining the ability to provide intelligence support to warfighters in a distributed, electromagnetically contested environment. To this point,

[33] "About NCIS," accessed September 1, 2022, https://www.ncis.navy.mil/About-NCIS/.

this thesis argues that the naval intelligence community needs to reorient itself in three primary ways:

- Increase organic intelligence support to naval surface vessels with a focus on providing OPINTEL, collection management of organic assets, and dynamic targeting to the tactical commander
- Enhance training given to naval intelligence professionals prior to their first sea duty assignment. The training should focus on the warfare area the sailor is assigned to and provide the knowledge base necessary for integration into their new unit.
- Created specialized tracks within the naval intelligence community based on warfare areas.

This plan is not expected to be the absolute best method to provide perfect intelligence to every unit and command at every war level. Implementing these findings would create significant strains on the intelligence community as the USN operates in a fiscally constrained environment. The plan aims to maximize the deterrence capabilities of the USN by ensuring the right forces are at the right place at the right time, thus ensuring the persistence of a rules-based order and limiting the chance of conflict escalation. Improved intelligence support will increase the lethality of operational forces by ensuring accurate, local MDA through analysis and effective collection management strategies while providing for ensured, effective integrated fires through targeting support.

G. CHAPTER OVERVIEW

This thesis includes six chapters. Following the introduction, Chapter II lays out a vision for the Indo-Pacific theater in 2035, including assessments of the geopolitical situation, military capabilities, and general technological advancement. It demonstrates the likely operating environment for the USN and sets the foundation for understanding the needs of the USN from the naval intelligence community. The assessment draws from official government documents predicting global affairs in 2040 and future Chinese military capabilities assessments. The chapter then applies those challenges to the 2035 context to demonstrate likely U.S. challenges in the INDOPACIFIC. The goal is to understand the future challenges for the USN and the role naval intelligence will be asked to play in a future conflict.

Chapter III focuses on strategic warning and deterrence as two key areas requiring intelligence support to enable U.S. success across the competition spectrum. A case study of the Falklands War is discussed to provide historical context for difficulties in global power projection in support of national interests. The analysis focuses on the role tactical level intelligence played in the decision-making process for British policymakers. The Falklands conflict is the most recent example of long-range, contested naval power projection. The goal of incorporating the case study is to demonstrate the challenges Great Britain and the Royal Navy experienced both from a strategic warning and deterrence standpoint to understand better how the naval intelligence community can be leveraged to keep decision-makers informed and avoid a fait accompli against U.S. interests in the Pacific.

Chapter IV discusses naval warfare theory, intelligence support to naval operations, and the future of naval warfare. The study centers around DMO and how the naval intelligence community can best support DMO. This chapter will include a case study on CIC development in WWII to inform considerations on the importance of information flow and networking in an evolving strategic environment.

Chapter V centers on the tactical level of warfare, which is the level at which most surface ships will operate. The Chapter takes a different approach from previous chapters and will use combat modeling to analyze the effects of tactical level intelligence support in combat scenarios. This analysis will draw from Salvo Equations as discussed by CAPT Wayne Hughes in his seminal work, *Fleet Tactics, and Naval Operations Third Edition*. The research focuses on the advantages of an in-depth understanding of enemy tactics; the benefit of accurate, timely battle damage assessment; and the importance of counter-targeting efforts for a numerically inferior force.

Chapter VI is a discussion that ties previous chapters' findings into a vision for the U.S. naval intelligence community in 2035. The analysis includes general billeting considerations and a framework for implementation. This chapter also identifies areas for future work.

THIS PAGE INTENTIONALLY LEFT BLANK

II. ENVISIONING THE INDO-PACIFIC IN 2035 AND BEYOND

The Indo-Pacific will likely be the primary theater for strategic competition into 2035 and beyond and the naval intelligence community should be prepared to face threats in that region. As of 2021, approximately 60 percent of USN forces are in the Indo-Pacific region.[34] The region is also home to two of the United States' most relevant geopolitical rivals, China and Russia; territorial possessions of close U.S. allies; and every adversarial nation-state with declared nuclear weapons. The key geographic feature of the Indo-Pacific is the Pacific Ocean, whose sheer size leads to logistical complexities not seen in other areas of the globe. As noted by President Joe Biden, echoing the statements of Presidents before him, the geopolitical, geographic, and military considerations for the Indo-Pacific combine to place it as a central pillar of U.S. strategic policy.[35]

The challenges the United States faces in the Indo-Pacific will be shaped by the global trends circulating throughout societies today and how they will affect the USN's operational environment in the Indo-Pacific in 2035 and beyond. This chapter will first look at broad global trends to understand how worldwide events may shape geopolitical realities in the Indo-Pacific and influence U.S. operations. The chapter will then look at two areas most likely to influence U.S. military deployments, the potential rise of the Global South and the continued rise of China as a world superpower. Finally, the chapter will discuss how emerging technologies such as A.I. and unmanned systems will impact the character of war and change how the U.S. and other militaries conduct operations in the Indo-Pacific.

A. GEOPOLITICAL TRENDS

Predicting the future is inherently a fraught task and long-term predictions of ten or more years are even more difficult. However, observers can point to broad trends in

[34] Braithwaite et al., 5.

[35] Joseph Biden, "Interim National Security Strategic Guidance" (The White House, March 2021), 10, https://www.whitehouse.gov/wp-content/uploads/2021/03/NSC-1v2.pdf.

the present to help inform their view of the future. The 2021 Global Trends report produced by the ODNI envisions 2040 as a more contested world that will challenge the abilities of countries and institutions to maintain stability.[36] The report states that "at the international level, the geopolitical environment will be more competitive—shaped by China's challenge to the United States and Western-led international system. Major powers are jockeying to establish and exploit new rules of the road."[37] The situations in the report range from the proliferation of democracies, to the creation of regional blocs dominated by a single hegemon, to climate disaster reorienting the world to cooperation.[38] Three of the five scenarios laid out by the ODNI paint the U.S. and China as distinct competitors fostering control in their spheres of influence and vying for influence on the global stage. The outcomes of this competition largely depend on the perseverance of the international system as it stood in 2022. ODNI assesses that erosions in the power of international systems and conventions such as the U.N. will lead to greater competition between China and the U.S. and increase the risk of military confrontation.

Zach Cooper, a professor at Georgetown with experience working in both the White House and Pentagon, envisions three possible futures for the Indo-Pacific: an American-led order, a Chinese-led order, and a bipolar order.[39] Cooper argues that the key considerations for determining a future outlook for the Indo-Pacific revolved around the questions regarding the ability of China to continue its rise, U.S. willingness to engage in the region, and the willingness of regional states to choose sides in a U.S.-China competition.[40] Cooper ultimately argues that a multi-polar order, while not

[36] "Global Trends 2040 A More Contested World" (National Intelligence Council, March 2021), 9, https://www.dni.gov/files/ODNI/documents/assessments/GlobalTrends_2040.pdf.

[37] "Global Trends 2040," 11.

[38] "Global Trends 2040," 118–26.

[39] Zack Cooper, "The Future Indo-Pacific Order," *Security Challenges* 16, no. 3 (2020): 5, http://www.jstor.org/stable/26924332.

[40] Cooper, 6–8.

acceptable to the U.S. or China, would likely create the best outcomes for the region as a whole.[41]

The seeds of multipolarity have already been sown and are likely to continue to sprout over the coming decades. The Russian invasion of Ukraine demonstrated the risk of the continued expansion of western-backed security institutions.[42] The long-term effects of the war may give western powers a reason to adopt a more hands-off policy in world affairs and give the United States a lesson to draw from as it continues to expand military ties with Taiwan. The conflict also demonstrated the limited ability of the U.S. to create and enforce global sanctions as China and India continue to purchase Russian oil in the face of U.S. calls for an international boycott.[43] If Indo-Pacific countries decline to pick sides in the U.S.-China competition, the United States will be challenged to leverage its traditional security partners in the regions. While Japan and South Korea may remain staunch U.S. allies even in the face of a global trend towards neutrality, other states may not wish to allow U.S. basing or transit rights for fear of alienating China. This would be particularly relevant in Southeast Asian states such as Indonesia, Singapore, and Malaysia, which control strategic trade and communication chokepoints in the South Pacific.

In 2035, the U.S. military should be prepared to operate in a multi-polar world, an environment starkly different from the one the U.S. enjoyed in the years following the Cold War. An ongoing example of this shift is the growing ties between the U.S. and Japan and the renewal of the Quadrilateral Security Dialogue, more broadly known as the Quad, between the U.S., Japan, India, and Australia. As noted in a readout from a trip to Japan by U.S. Pacific Fleet Admiral Samuel Paparo, Japanese and U.S. officials "agreed that the Japan-U.S. alliance is indispensable to maintain and strengthen a free and open Indo-Pacific, and the importance of Quad cooperation together with India and Australia

[41] Cooper, 8.

[42] John J. Mearsheimer, “The Causes and Consequences of the Ukraine Crisis,” Text, The National Interest (The Center for the National Interest, June 23, 2022), https://nationalinterest.org/feature/causes-and-consequences-ukraine-crisis-203182.

[43] “India and China Increasingly Welcome Shunned Russian Oil,” PBS NewsHour, June 13, 2022, https://www.pbs.org/newshour/world/india-and-china-increasingly-welcome-shunned-russian-oil.

in maintaining the international rules based order."[44] A rise in multi-polarity will have significant effects on the Indo-Pacific as cooperation with states traditionally aligned with the U.S. will not be a given, and economic coercion will be a less effective tool for advancing U.S. interests in the region. Traditional allies will have their dedication to the U.S. security framework tested. The U.S. must be ready to quickly and decisively demonstrate resolve to support allies and U.S. national interests. New challenges associated with the shifting geopolitical environment will require the U.S. military to be flexible, adaptable, and tailorable to a wide range of missions in support of U.S. interests.

B. GLOBAL SOUTH

While mentions of U.S. security interests commonly evoke images of China, Russia, Iran, or North Korea, the potential for new hot spots to emerge over the next 20 years cannot be ignored. The Global South broadly groups Latin America, South Asia, Africa, and Oceania into a single geopolitical category.[45] Demographic trends in the Global South have the potential to significantly impact the world order and raise the geopolitical profile of these countries, particularly in the Indo-Pacific. Population increases and threats to maritime trade due to weak governance structures create an environment that could call for U.S. military intervention across a wide range of operations, from Humanitarian Assistance and Disaster Relief (HADR), to non-combatant evacuations, to military interventions. The U.S. Navy must ensure that it remains ready and able to support such operations and does not wholly abandon other warfare areas as it shifts its focus to the high-end fight needed to counter more militarily capable nations such as China.

Population growth will significantly determine the importance of the Global South over the next twenty years. As noted in a report published by the United Nations

[44] "READOUT: Pacific Fleet Commander's Travel to Japan, June 23-24," United States Navy, accessed September 5, 2022, https://www.navy.mil/Press-Office/News-Stories/Article/3074541/readout-pacific-fleet-commanders-travel-to-japan-june-23-24/https%3A%2F%2Fwww.navy.mil%2FPress-Office%2FNews-Stories%2FArticle%2F3074541%2Freadout-pacific-fleet-commanders-travel-to-japan-june-23-24%2F.

[45] Nour Dados and Raewyn Connell, "The Global South," *Contexts* 11, no. 1 (February 1, 2012): 12, https://doi.org/10.1177/1536504212436479.

(U.N.),

"world population is projected to reach 8.5 billion in 2030, and more than half of the global population growth between 2022 and 2050 is expected to occur in Africa."[46] By 2050, India is expected to be the most populous country in the world, with Pakistan and Bangladesh projected to be among the top ten most populated countries.[47] Historical tension between India and Pakistan as well as India and China continue to persist and are potential hotspots for conflict, particularly as each nation's experiences demographic shifts, stretching the availability of resources. These population trends give countries in the Global South the potential to accelerate their economic growth. Most countries in sub-Saharan Africa, South Asia, and Latin America are increasing their share of working age population, which as a U.N. study notes, "provides a time-bound opportunity for accelerated economic growth known as the 'demographic dividend.'"[48] The structural changes in these countries attempting to maximize their demographic dividend could create instability in already fragile nations. If these countries are able to overcome some of the structural weaknesses within their governance systems, their demographic advantages over the next 20 years could propel them to be significant players on the world stage and present potential alternatives to traditional security institutions such as NATO.

These changes could have significant impacts on the Indo-Pacific. Movement of manufacturing capabilities into Africa and Latin America from Asia could create significant economic problems for countries that rely upon manufacturing for a significant portion of their national economies. China, Thailand, South Korea, Malaysia, Bangladesh, Singapore, Indonesia, and Japan are in the Top 20 worldwide of countries in value added by the manufacturing sector as percent of GDP.[49] Shifts in manufacturing

[46] United Nations, "Population," United Nations (United Nations), accessed July 31, 2022, https://www.un.org/en/global-issues/population.

[47] United Nations, *World Population Prospects 2022: Summary of Results*, 2022, 6, https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf.

[48] United Nations, ii.

[49] "Share of Manufacturing by Country, around the World," TheGlobalEconomy.com, accessed August 31, 2022, https://www.theglobaleconomy.com/rankings/Share_of_manufacturing/.

capacity will have significant effects on these countries, particularly those that rely upon less skilled workers. The economic reverberations of such movements will influence the stability of these countries as the global economy shifts.

The Global South, particularly Southeast Asia and India, will likely continue to play a key role as influencers of international trade into the 2030s and beyond. Indian Ocean shipping lanes play a critical role in the flow of goods into the Indo-Pacific. As a report by the Carnegie Endowment notes, "Of the ten countries that supply three-fourths of China's crude oil, nine rely on a safe, secure, and stable Indian Ocean to transport their goods." U.S. allies such as Japan, South Korea, Australia, also depend on shipping transiting the Indian Ocean shipping for energy and basic commodities such as food stuffs.[50] Additionally, the report notes, "Japan, South Korea, Australia, and India also rely on Indian Ocean shipping lanes to receive critical energy resources and other important commodities like coal and seafood."[51] Piracy in the Gulf of Aden, Northern Arabian Sea, Strait of Malacca, and the Sulu-Celebes Seas area, paired with government instability in Sri Lanka, the Philippines, and Indonesia, could also create threats to shipping routes used to move goods in and out of Asia. The near-continuous presence of international coalitions of warships in the Gulf of Aden since 2009 demonstrates that dealing with threats to maritime trade requires an enduring presence and the devotion of significant resources to ensure the free flow of trade.[52]

While U.S. defense policy focuses on defending against the threat from China, the U.S. Navy must ensure it retains its capability to respond to a myriad of threats including those arising in the Global South. As the global political situation continues to evolve, the U.S. Navy must be able to address the threats associated with a high-end fight against China and the capability to spread American influence across the globe through non-combat operations such as Humanitarian Aid and Disaster Relief. Ensuring the free and

[50] Baruah Darshana and Caroline Duckworth, "We're Thinking About the Indian Ocean All Wrong," Carnegie Endowment for International Peace, accessed July 28, 2022, https://carnegieendowment.org/2022/05/02/we-re-thinking-about-indian-ocean-all-wrong-pub-87028.

[51] Darshana and Duckworth.

[52] "About Combined Maritime Forces (CMF)," *Combined Maritime Forces (CMF)* (blog), August 18, 2010, https://combinedmaritimeforces.com/about/.

open use of the seas for commerce is a central component of U.S. naval operations and will likely continue to be a primary mission of the U.S. Navy in 2035 and beyond. The future may force the U.S. Navy to operate in unfamiliar areas or rapidly shift between various mission sets. Therefore, the naval intelligence community must be ready to support every unit to maximize its capabilities.

C. CHINA

The Indo-Pacific AOR has threats from across the spectrum. North Korea remains an international pariah focused on regime security. It uses nuclear weapons and conventional ballistic missiles to threaten U.S. allies in the region and U.S. territory. Russia's war against Ukraine demonstrates its unwillingness to accept the western-led community of nations. While the conflict is concentrated mainly in Europe, the global economic implications and significant Russian naval bases in the Pacific create the potential for conflict to spin into the Indo-Pacific.

Nevertheless, China represents the greatest threat to U.S. interests in the Indo-Pacific AOR. In his initial strategic guidance, Secretary of the Navy Carlos Del Toro stated, "the People's Republic of China (PRC) represents the pacing challenge against which we must plan our warfighting strategies and investments."[53] By 2049, the PRC aims to "match or surpass U.S. global influence and power, displace U.S. alliances and security partnerships in the Indo-Pacific region."[54] The PRC assesses that global military competition is intensifying, and a Chinese defense white paper claimed that "major countries" are adjusting their security and military strategies to "seize the strategic commanding heights in military competition."[55]

[53] Del Toro, 2.

[54] "Military and Security Developments Involving the People's Republic of China" (Office of the Secretary of Defense, November 3, 2021), III, https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF.

[55] "Military and Security Developments Involving the People's Republic of China," 31.

1. Military Modernization

The PLA aims to adopt a more joint force enabled by integration across all PLA services to achieve these goals.[56] In 2017, General Secretary Xi Jinping announced two PLA goals: to modernize the PLA by 2035 and to transform the PLA into a world-class military by 2049.[57] By 2035, the PLAN can be expected to "conduct long-range precision strikes against land targets from its submarine and surface combatants using land-attack cruise missiles."[58] Chinese forces will not only be operating in and around China. By 2035, China is expected to sustain forward operations in waters throughout the globe with support from a widening web of PRC-controlled logistic bases to help control strategic chokepoints such as the Strait of Malacca and the Suez Canal.[59]

In the naval realm, the People's Liberation Army Navy (PLAN) has expanded in size and capabilities to become the world's largest fleet in 2020.[60] In addition to its traditional naval surface force, Beijing can command hundreds of coast guard and maritime militia vessels to compete in the "gray zone."[61] Since the Gulf War, China has pursued significant undertakings aimed at holding the U.S. Navy at risk, especially within the first island chain.[62] In accordance with modernization goals laid out by Xi, the PLAN is slated to deploy 450 surface ships and 99 submarines by 2030, twice as many as the number of ships in the U.S. Navy in 2020.[63] By 2035, the PLAN can realistically be expected to have the capability "to conduct long-range precision strikes against land targets from its submarine and surface combatants using land attack cruise missiles."[64]

---

[56] "Military and Security Developments Involving the People's Republic of China," 38.

[57] "Military and Security Developments Involving the People's Republic of China," I.

[58] "Military and Security Developments Involving the People's Republic of China," 48.

[59] James Fanell, "Asia Rising: China's Global Naval Strategy and Expanding Force Structure," *Naval War College Review* 72, no. 1 (2019): 19, https://digital-commons.usnwc.edu/nwc-review/vol72/iss1/4.

[60] Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress" (Congressional Research Service, October 7, 2021), 2, https://crsreports.congress.gov/product/pdf/RL/RL33153.

[61] Del Toro, 2.

[62] Wirtz et al., 34–44.

[63] Wirtz et al., 34–44.

[64] "Military and Security Developments Involving the People's Republic of China," 48.

Modernizing the submarine force is a top priority for the PLAN, and it will likely field between 65 and 70 submarines into the 2030s.[65] While the PLAN currently lacks a robust antisubmarine warfare (ASW) capability, planned investments in ASW hope to address this issue by the 2030s.[66] PLAN surface force modernization goals emphasize anti-surface warfare capabilities demonstrated by the continued building of the Luyang III DDG (Type 052D) and the Renhai CG (Type 54).[67] The PLAN also recognizes the need for over-the-horizon targeting capabilities and is investing significantly in Intelligence, Surveillance, and Reconnaissance (ISR) capabilities to support this goal.[68]

There are some limitations to China's maritime ambitions. As noted by Jennifer Rise and Erik Robb in the U.S. Naval War College's China Maritime Report, China's pursuit of an overseas basing and port network may be overly optimistic as it depends on host countries to accommodate the PLAN and does not provide a binding incentive for the host nation to aid China during wartime.[69] Additionally, as noted by James Fanell, projections of China's maritime power relies on assumptions such as continued Chinese Communist Party (CCP) investment in maritime capabilities regardless of potential domestic, political, or economic difficulties.[70]

2. Potential U.S.-China Flashpoints

As China continues on its path to becoming a global power, the potential for conflict and confrontation between the U.S. and China will continue to grow. While there are many potential areas for the competition to play out, the Taiwan issue is the most prevalent and likely source of significant contention between the U.S. and China for the foreseeable future. The closeness of the U.S. relationship with Taiwan, paired with the U.S. desire to protect and expand the liberal international order, puts the U.S. on a

[65] "Military and Security Developments Involving the People's Republic of China," 49.

[66] "Military and Security Developments Involving the People's Republic of China," 49–50.

[67] "Military and Security Developments Involving the People's Republic of China," 50.

[68] "Military and Security Developments Involving the People's Republic of China," 51.

[69] Jennifer Rice and Erik Robb, "China Maritime Report No. 13: The Origins of 'Near Seas Defense and Far Seas Protection,'" *CMSI China Maritime Reports*, no. 132 (2021): 14, https://digital-commons.usnwc.edu/cmsi-maritime-reports/13.

[70] Fanell, 9.

collision course with China which views the island as a rebel province and an integral part of China as a whole. Other areas for conflict, such as the South China Sea, East China Sea, or Sino-Indian border, represent significant security challenges in the U.S.-China relationship but the existence of other stakeholders in those cases paired with the centrality of the Taiwan issue to the CCP make Taiwan the most likely area for conflict between the U.S. and China.

As argued by Alan Romberg in his book *Rein in at the Brink of the Precipice*, Taiwan is the primary issue that China and the U.S. could realistically come into conflict over.[71] And thus, it represents an important issue that guides the current U.S.-PRC relationship and can serve as a bellwether for the state of relations between the superpowers. The post-WWII history of relations in the Strait has endured periods of increased tension bordering the outbreak of nuclear war, and a new crisis over Taiwan could be a significantly more severe event than the events of the 1950s and 1996-97.[72] This was demonstrated in the ongoing tensions following Speaker of the House Nancy Pelosi's visit in August 2022. NPS professor Christopher Twomey summarized the immediate Chinese response to the visit:

> five to nine missiles passed over Taiwan en route to targets east of the main island. Portions of two of the initial exercise boxes fell within territorial waters claimed by Taiwan, and one comes within just a few miles of a small Taiwanese island. The initial set of six declared boxes bracket the island as a whole and key ports, much more than the closure zones in 1995 and 1996. Five missiles targeted areas within Japan's claimed exclusive economic zone beyond those that China disputes.[73]

The crisis is also likely to continue to play out as the previous crises played out over a period of three to eight months with various highs and lows in military and diplomatic activity.[74] According to a U.S. Department of Defense report on China's

---

[71] Alan D. Romberg, *Rein in at the Brink of the Precipice: American Policy Toward Taiwan and U.S.-PRC Relations* (Washington/D.C: Henry L. Stimson Center, 2003), 231.

[72] Brendan Taylor, *Dangerous Decade: Taiwan's Security and Crisis Management*, Adelphi Series 470–471 (Abingdon, Oxon: Routledge, for the International Institute for Strategic Studies, 2019), 9.

[73] Christopher P. Twomey, "The Fourth Taiwan Strait Crisis Is Just Starting," War on the Rocks, August 22, 2022, https://warontherocks.com/2022/08/the-fourth-taiwan-strait-crisis-is-just-starting/.

[74] Twomey.

military, military modernization efforts demonstrate China's focus on Taiwan contingencies, highlighted by the drive to increase credible military operations in a Taiwan contingency by 2027.[75] Additionally, citing a Chinese military source, the document claims the goal of Chinese capabilities is to "counter the U.S. military in the Indo-Pacific region and compel Taiwan's leadership to the negotiation table on Beijing's terms." For the U.S., Taiwan represents a stronghold for the liberal international order on the border of the revisionist PRC. Taiwan's democratization changed the U.S.-Taiwan relationship, and now support for Taiwan can be viewed as a referendum for U.S. support of the liberal international order.[76]

The potential for any near-term, peaceful solution to the Taiwan situation appears remote. It is unlikely that Xi Jinping and Tsai Ing-wen are willing to engage in any sort of high-level summit which could reduce cross-strait tensions or restart serious dialogues between the two sides.[77] Xi has used more aggressive rhetoric toward Taiwan than any of his predecessors.[78] This was highlighted in Xi's speech to China's October 2017 National Party Congress, where Xi stated that "we have the resolve, the confidence, and the ability to defeat separatists' attempts for 'Taiwan independence' in any form … We will never allow anyone, any organization, or any political party, at any time or in any form, to separate any part of Chinese territory from China."[79] In addition to statements on the PRC side, Tsai has repeatedly argued against Taiwan accepting the PRC's version of the one-China policy. It would likely be political suicide for Tsai to make concessions to the PRC since Taiwan's sovereignty is a central pillar of the DPP party platform.[80]

Beyond the political leadership, domestic political support for a compromise does not appear on either side of the Taiwan Strait. The lack of support on the Taiwan side was particularly apparent in a January 2019 public-opinion poll which found 80.9% of

[75] "Military and Security Developments Involving the People's Republic of China," 36.

[76] John W. Garver, *China's Quest: The History of the Foreign Relations of the People's Republic of China* (New York, NY: Oxford University Press, 2016), 621.

[77] Taylor, *Dangerous Decade*, 93.

[78] Taylor, 29.

[79] Taylor, 29.

[80] Taylor, 94.

Taiwanese people "rejected the one country, two systems model as a basis for cross-strait relations."[81] On the PRC side, Xi's actions on the world and domestic stage have limited his maneuvering space on the issue. Xi has established explicit preconditions for negotiations with Tsai, and any concessions to Taiwan could be viewed as a sign of weakness by China's domestic audience, potentially threatening Xi's political survival.[82] Without a clear mandate from domestic audiences and a lack of personal support by leadership on either side of the Strait, a political solution to the Taiwan question is unlikely to come to fruition. This leaves only coercive options, usually backed by significant military force, for leaders on either side of the Strait to resolve their differences.

As the PRC continues its rise in the global world order, the U.S. and PRC will need to be ready to address the instability in the international order created when the U.S. is no longer a singular superpower. Furthermore, as the U.S. and PRC edge closer to parity in military capability, both sides must be acutely aware of how these changes can increase the chance of conflict breaking out. The U.S. must maintain an effective deterrent against the PRC in the Strait. At the same time, China must ensure that its rapid military rise does not force the U.S. to act against them before PRC military capabilities outpace U.S. military capabilities. The stability and credibility sides of the equations are very intertwined. While the U.S. must maintain the credibility of its dedication to the defense of the ROC, it cannot do so at the point where either the ROC believes it can push for greater independence from the PRC. A push by any of the three parties towards a more concrete statement on intentions in Taiwan can lead the relationship in the Strait down a slippery slope, forcing each side to react to popular demands or succumb to internal political pressures. Any imbalance in the general deterrence relationship in the Strait creates the chance for unintending escalation and dire consequences for all involved.

[81] Taylor, 98.

[82] Taylor, 95.

3. Possible Challenges to China's Rise

While China has maintained its steady rise over a significant period of time, societal issues could challenge its continued ascendency on the global stage. Demographic challenges, particularly China's growing middle class, could threaten the political control of the CCP and create large-scale institutional change in China if left unchecked. To transition toward a more democratic, open, inclusive society, the Chinese middle class needs to overcome the authoritarian tendencies of the current CCP leadership to force reform. However, the CCP under Xi Jinping is addressing possible democratization efforts and issues resulting from an expanding middle class by attempting to strangle the movement in the grave by creating both reliance on and fear of the CCP in the burgeoning Chinese middle class.

Xi Jinping's rise to power in the CCP came out of the blue for most western political commentators and even for some within the CCP itself. Despite this, Xi has overtaken the Chinese political stage by storm. Xi has rebuilt the idea of a "collective presidency" in China and emerged as the most authoritarian leader in China since Mao Zedong.[83] While Xi's early reforms were a noticeably clear assault on the upper echelons of the CCP political class, the more lasting and potentially far-reaching reforms will have a much more significant effect on limiting the power of the middle class. Xi commissioned a careful study into the collapse of the Soviet Union, and while the key takeaways from the studies have varied somewhat over the years, the central theme that can be traced throughout is that contagions within the communist party create the environment for political collapse.[84] For Xi, one of the greatest contagions already exists in China. He sees the commercialization of Chinese society, with its "attendant nouveaux riches" as a central issue for the continuation of CCP rule.[85] To address the issue, Xi has led initiatives to diffuse the power of the upcoming middle class and also make the growing middle class more reliant on the government for their livelihood. With the centralization of party power in China under Xi, China's middle class is "largely

[83] Evan Osnos, "Born Red," *New Yorker*, April 6, 2015, 3–4.

[84] Osnos, 15.

[85] Osnos, 9.

comprised of civil servants, state-enterprise employees, and staffers of institutions such as universities, hospitals, and media enterprises that either belong to or are controlled by the state."[86] The CCP has effectively created a system where CCP membership is the central factor for sway and success in nearly every field.[87] As a result, as long as the Xi-led CCP can continue to provide economic security and coopt an increasing share of the rising middle class, one can expect the CCP to be able to weather the anticipated social and demographic changes.

To combat the growth of liberalism, Xi has steered hard into authoritarian reforms. Whereas western political ideas could once be discussed in an academic sense, these values have largely been expunged from all discourse in China.[88] The CCP has also led to an increased crackdown on anti-CCP activity and increased internet and social media controls.[89] Xi centralized CCP control over previously semi-autonomous institutions in China.[90] While these reforms are not necessarily unique to the Xi-led CCP, especially compared to the post-1989 Tiananmen Square reforms, Xi's efforts have demonstrated a unique understanding of the need to pair limited-economic freedom with hardline, dogmatic reforms. By directly engaging in potential middle-class agitations while the middle-class is small and controllable, Xi has engaged a potential CCP threat in its infancy and is attempting to strangle the movement for liberalization while it is still in the crib.

Xi's current course of action is not without its pitfalls and could create an environment that encourages change within the authoritarian system. From 1985 to the present, China has seen five changes in political orientation, ranging from Liberal Neo-Authoritarianism in the late 1980s to Hard Authoritarianism in the present, mirroring the familiar cycle found in Leninist one-party systems.[91] While Xi's reforms aim to prevent

[86] Andrew J. Nathan, "The Puzzle of the Chinese Middle Class," *Journal of Democracy* 27, no. 2 (April 2016): 9.

[87] Nathan, 10.

[88] Osnos, 17.

[89] David L. Shambaugh, *China's Future* (Cambridge, UK ; Malden, MA: Polity, 2016), 117.

[90] Shambaugh, 119.

[91] Shambaugh, 99-100.

the cycling of political orientation from continuing and prevent the spiraling of political turmoil within the CCP, his authoritarian methods may prove to create fertile training and recruiting grounds for pro-liberalization forces. As part of Xi's effort to rebrand and build China into a global superpower, the CCP has leveraged nationalism to reinforce regime legitimacy.[92] To become a force for liberalization, the middle class needs to overcome its cultural and social isolation from other classes.[93] Nationalism provides a conduit for this to occur. If economic growth stagnates or the CCP makes foreign policy mistakes, Xi has already laid the foundation for a move by the middle class to see itself as the saviors of China against a corrupt, ineffectual CPP. Economic issues may supply the kindling for political change, but it is issues of rights and national identity which spark the fire of that change.[94]

Xi has demonstrated acute political maneuvering and faction-building skills. He is undoubtedly aware of the potential issues his policies risk. Xi sees his essential project as a rescue.[95] Coopting the middle class will take some pain within society now but will supply immense long-term benefits. Xi's policies "deter the middle class from challenging the regime but at the cost of increasing that class's sense of anxiety."[96] Xi is banking on the idea that he can keep the CCP's influence over the growing middle class strong enough that by the time the middle class becomes a potent force for change, they will have already been brought up as models of social harmony and political compliance, unlikely to challenge Xi's legitimacy and ensuring the continued rule of the CCP.

4. Conclusion

The U.S. should expect China to continue to be its main competitor into the 2030s and beyond. China is advancing its domestic military capabilities and is focusing its efforts on countering U.S. power projection capabilities. By 2035, China's quantitative

[92] Elliot Zaagman, "China's Own 'Great Delusion,'" n.d., https://www.lowyinstitute.org/the-interpreter/china-s-own-great-delusion.

[93] Nathan, "The Puzzle of the Chinese Middle Class," 16.

[94] Zaagman.

[95] Osnos, 3.

[96] Nathan, 16.

military advantage in the Indo-Pacific will expand, further complicating the ability of the U.S. to operate in the areas close to China's shores. Taiwan remains a significant flashpoint that could lead to a U.S.-China conflict. The centrality of the Taiwan issue to the CCP and the U.S. commitment to the spread of global democracy leave few avenues for diplomatic negotiations to temper tensions should conflict flare over the issue. While China faces significant demographic and economic problems in the coming decades, ongoing efforts by the CCP will likely reduce the destabilizing effects of these societal changes and ensure continued CCP dominance in China. The USN must continue to advance technologically and organizationally to be prepared to conduct a successful naval campaign against China to ensure the supremacy of the United States in the Indo-Pacific. The naval intelligence community should be prepared to support naval warfighters in achieving this goal by providing timely, relevant, and accurate information to warfighters at all levels.

D. TECHNOLOGICAL DEVELOPMENTS

In addition to geopolitical changes in the coming decades, the advent and advancement of new technologies will significantly shape the operating environment for U.S. Naval forces in 2035 and beyond. The Congressional Research Service has identified "artificial intelligence, lethal autonomous weapons, hypersonic weapons, directed energy weapons, biotechnology, and quantum technology" as emerging technologies that will significantly impact U.S. national security.[97] This section will focus on artificial intelligence as the widespread implementation of A.I. is here today, and its presence is expanding. Additionally, quantum technology will likely enable advances in artificial intelligence and directly affect the development and proliferation of unmanned and autonomous weapons; therefore, a discussion centered on artificial intelligence lays the foundation for advancements in those other technology areas. Finally, this section will discuss how future technologies will affect the naval battlefield and U.S. Navy plans for future fleet operations against peer competitors such as China in the Indo-Pacific in 2035.

[97] Kelley Sayler, "Defense Primer: Emerging Technologies" (Congressional Research Service, December 21, 2021), 1, https://crsreports.congress.gov/product/pdf/IF/IF11105.

1. Artificial Intelligence

While the exact definition of A.I. remains debatable, a generally accepted definition is "a computer system capable of human-level cognition."[98] Technology experts generally agree that human-level cognition by a computer system across a wide range of tasks, referred to as general AI, will take significant technological developments over the coming decades.[99] However, smaller, more focused tasks, known as narrow A.I., are in use today in logistics, image recognition, and self-driving vehicles. For the military, applications of artificial intelligence range from optimizing logistics to image recognition, command and control, and even lethal autonomous systems.[100]

The development of A.I. and its incorporation into military systems raises the potential for warfare's character to change between now and 2035. The expansion of A.I. will likely continue to augment, and in some cases replace, human actions and decisions in the military space. This is most readily demonstrated by envisioning the use of image-recognition software to comb through ISR footage to identify potential targets for prosecution. Beyond that capability, A.I. has already been used to conduct automatic engagements against threats to military units. While these engagements are primarily conducted by self-protection and defensive systems, errors in A.I. recognition have led to real-world human fatalities.[101]

The continuation of turning over engagement authority to an A.I. remains a significant point of policy discussions both within the U.S. and throughout the globe. For the DoD, ethical considerations for the development and implementation were outlined by five principles advanced by the Defense Innovation Board in October 2019.[102] The

---

[98] Kelley M Sayler, "Artificial Intelligence and National Security" (Congressional Research Service, November 10, 2020), 2, https://crsreports.congress.gov/product/pdf/R/R45178/10.

[99] Sayler, 2.

[100] Sayler, 9–12.

[101] Kelsey Atherton, "Understanding the Errors Introduced by Military AI Applications," *Brookings* (blog), May 6, 2022, https://www.brookings.edu/techstream/understanding-the-errors-introduced-by-military-ai-applications/.

[102] "DOD Adopts Ethical Principles for Artificial Intelligence," U.S. Department of Defense, accessed August 3, 2022, https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/.

principles advanced were: responsible, equitable, traceable, reliable, and governable. Layered together, these principles outline a measured and cautious approach to the risks associated with advancing and implementing A.I. technologies. China is taking a less restrained approach to implementing A.I. Chinese military scholars echoed Russian President Vladimir Putin's statement that A.I. is the critical component to ensuring future military success.[103] As a former naval intelligence officer and naval attaché to China, Michael Dahm notes,

> The American military tends to focus on how A.I. can enable lethal attacks against opposing forces. Chinese strategists tend to argue that A.I. technologies should be used kinetically and non-kinetically to dominate information systems and networks, to effectively paralyze an opponent's joint force.[104]

China has already demonstrated the ability to utilize A.I. for wide-ranging population surveillance and is utilizing the technology to enhance the control and security of the CCP.[105] China can also be expected to have a significant advantage in A.I. development over the coming decades. In 2017, China released the New Generation A.I. Development Plan, which called for China to lead the world in A.I. by 2030.[106] China is actively expanding the human capital needed to surge A.I. development by expanding educational programs at some of China's most prominent universities.[107] Additionally, by 2030, China is expected to have access to 30% of the world's data.[108] Furthermore, Chinese military leaders believe that China's ability to access these massive databases

---

[103] School of Information and Communication, National University of Defense Technology, "The AI Arms Race is Quietly Emerging," China News, October 17, 2019, https://m.chinanews.com/wap/detail/zw/gn/2019/10-17/8981224.shtml.

[104] Michael Dahm, "Chinese Debates on the Military Utility of Artificial Intelligence," War on the Rocks, June 5, 2020, https://warontherocks.com/2020/06/chinese-debates-on-the-military-utility-of-artificial-intelligence/.

[105] Elsa B. Kania, "Battlefield Singularity: Artificial Intelligence, Military Revolution, and China's Future Military Power" (Center for a New American Security, 2017), 8–9, JSTOR, http://www.jstor.org.libproxy.nps.edu/stable/resrep16985.

[106] "Full Translation: China's 'New Generation Artificial Intelligence Development Plan' (2017)," *DigiChina* (blog), accessed August 3, 2022, https://digichina.stanford.edu/work/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017/.

[107] Kania, 11, 47–49.

[108] Kania, 11.

will give China a significant advantage in machine learning, enabling significant advances in A.I.[109]

The widespread application of A.I. in militaries throughout the globe will significantly shape the future battlefield. With the widespread adoption of A.I., there is a real possibility that the "cost" of going to war will be lowered as human casualties will be replaced by machine casualties.[110] The application of A.I. to ISR missions can also undermine strategic stability, founded on at least a degree of uncertainty.[111] A.I. will also affect the speed of warfare. A.I. will likely increase the speed of decision-making by humans, and the speed and reliability of automated actions controlled by A.I. A.I. will also enable the accomplishment of "long duration tasks that exceed human endurance."[112] The continued adoption of A.I. also creates new sets of risks. As countries develop their algorithms to inform A.I. decision-making, inherent bias and strategic culture could create unintended or unforeseen interactions between automated systems on the battlefield.[113] Military planners and decision makers must make deliberate efforts to understand the implications of a battlefield emersed in AI-enabled systems. The development of warfare alongside A.I. presents unique challenges that will need to be addressed by actors across the globe, and the U.S. must be prepared to fight against an enemy that has few ethical concerns in the adaptation of A.I. Senior decision-makers also need to understand the inherent risks created when the decision-making process is sped up or automated particularly in the realm of escalation management.

---

[109] Chong Yak Ng, "The Prohibition and Control of Autonomous Weapons Systems in Future Warfare" (Singapore Armed Forces, March 2021), 4, https://www.mindef.gov.sg/oms/safti/pointer/documents/pdf/monthlyissue/mar2021.pdf.

[110] Jiang Tianjiao, "The Impact of Military Artificial Intelligence on Warfare," in *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk*, ed. Lora Saalman, vol. II (Stockholm International Peace Research Institute, 2019), 51, https://www.sipri.org/sites/default/files/2019-10/the_impact_of_artificial_intelligence_on_strategic_stability_and_nuclear_risk_volume_ii.pdf.

[111] Tianjiao, 51–52.

[112] Sayler, "Artificial Intelligence and National Security," 26.

[113] Kania, 44; Edgar Jatho and Joshua Kroll, "Artificial Intelligence: Too Fragile to Fight?," U.S. Naval Institute, February 1, 2022, https://www.usni.org/magazines/proceedings/2022/february/artificial-intelligence-too-fragile-fight.

2. Technology and Naval Warfare

Looking at the future naval operating environment, Wirtz et al. discussed how smarter weapons and sensors, combined with high-power warheads employed from small weapons systems, will significantly change the future naval battlefield.[114] They also advocated for flexible, self-aligning formations of naval platforms to overwhelm and destroy larger formations.[115] As noted by Admiral Michael Gilday, the Chief of Naval Operations, in the USN Unmanned Campaign Framework,

> a hybrid fleet will be necessary for the Navy to meet emerging security concerns. We need platforms to deliver lethal and non-lethal effects simultaneously in all domains across multiple axes. [Unmanned systems] will provide added capacity in our Future Fleet — in the air, on the surface, and under the water.[116]

This statement is in line with the Congressional Research Service's report, which stated that future USN forces would feature fewer large ships and an increased number of smaller ships tied in with "a new tier of surface vessels that will be either lightly manned, optionally manned, or unmanned, as well as large Unmanned Underwater Vessels (UUVs)."[117]

U.S. plans to adopt a distributed fleet architecture aims to "respond effectively to improving maritime anti-access/area-denial (A2/AD) capabilities of other countries, particularly China."[118] A 2019 Center for International Maritime Security article authored by two former USN officers described the DMO concept: the USN plan to operationalize its future fleet. DMO is the successor to the Distributed Lethality (DL) concept and calls for the USN to leverage networks and platforms operating above, on, and below the sea in a geographically separated manner to increase the survivability of USN combat power

---

[114] Wirtz et al.

[115] Wirtz et al.

[116] "Department of the Navy Unmanned Campaign Framework" (Department of the Navy, March 16, 2021), 2, https://www.navy.mil/Portals/1/Strategic/20210315%20Unmanned%20Campaign_Final_LowRes.pdf?ver=LtCZ-BPlWki6vCBTdgtDMA%3d%3d.

[117] O'Rourke, 41.

[118] O'Rourke, 41.

in modern naval combat.[119] An NPS capstone project by a systems engineering cohort researching the employment of manned and unmanned systems under the DMO concept defined DMO as,

> an employment concept in which multi-domain platforms and technologies are integrated and leveraged with the objective of increasing overall lethality while also decreasing susceptibility to attack from an adversary. A system of systems that performs DMO is capable of projecting offensive firepower and executing collective defense over a large geographical area from a unified set of naval forces across all operating domains.[120]

Technological advances such as the proliferation of unmanned systems and new command and control networks will be critical enablers for the DMO concept. In addition to building and fielding these new technologies, U.S. Naval Warfighters must also understand how to employ the new platforms to the best effect. The successful employment of new platforms and technology will likely require in-depth knowledge and understanding of enemy capabilities, limitations, and tactics. As the USN evolves to employ this new form of warfare, the Naval Intelligence community must ensure that it is not left behind and understands friendly doctrine and enemy capabilities. The development of unmanned systems with increasing levels of autonomy will demand that militaries can quickly and effectively integrate new tactics and procedures for employing the combat systems available to them.

E. CONCLUSION

The world the USN should expect to operate in 2035 is not the same as its operational environment today. While China will likely continue to be the most pressing threat to the U.S. and be a significant focus for the USN, advancements in Chinese capabilities will introduce significant new challenges for the USN. The Navy should also expect to operate in an increasingly factionalized world where traditional allies may not

[119] Kevin Eyer and Steve McJessy, "Operationalizing Distributed Maritime Operations," Center for International Maritime Security, March 5, 2019, https://cimsec.org/operationalizing-distributed-maritime-operations/.

[120] Christopher H. Popa et al., "Distributed Maritime Operations and Unmanned Systems Tactical Employment" (master's thesis, Navy Postgraduate School, 2018), xix–xx.

be able to be counted on when the bullets start flying. The rise of a multi-polar order will introduce new challenges and considerations for U.S. operations across the globe. The USN must also be ready to operate in new and unfamiliar environments. As the importance of the Global South continues to grow, new global paradigms will emerge. New power centers will sprout in areas outside of the western-based world order that dominates global politics in 2022. Flexibility and adaptability will be required for the USN to advance U.S. interests across the globe successfully. New technologies will bring about new operational constructs. Untested in combat, these constructs will need to be well understood by all involved so that they can be adapted and formed to the realities of future warfare. Addressing all the problems and challenges associated with this future world will be a significant challenge for the naval intelligence community and calls for significant shifts in how the USN employs its intelligence personnel.

III. INTEL SUPPORT TO STRATEGIC WARNING ENABLING DETERRENCE

To support naval operations in 2035 and beyond, the naval intelligence community must be organized to provide timely strategic warning to decision-makers to support the Navy's deterrence role and avoid surprise attacks due to intelligence failures. The chapter begins with a discussion about strategic warning and its role in preventing intelligence failures. As demonstrated by the devastating impact of intelligence failures such as Pearl Harbor and the September 11 attacks, the intelligence community must be aligned appropriately to identify and communicate threats in a timely and effective manner to give decision makers the ability to take actions to avoid the devastating effects of being on the wrong side of a strategic surprise. This is largely achieved via tactical intelligence as decision makers are most likely to act on tactical-level intelligence.[121] This chapter then discusses deterrence and how strategic warning provided by the intelligence community enables the effective employment of deterrence strategies. Naval intelligence can contribute to deterrence by being experts on opposing forces and informing commanders of the potential outcomes of their action or inaction. Moreover, tactical intelligence support can increase the combat power of an individual unit thus making it more threatening and thereby provide a greater contribution to the deterrence equation. These ideas are tested by a case study of the role of intelligence in the lead-up to the Falklands Islands war. Ultimately, this chapter finds that tactical-level intelligence provides the most effective warning for decision-makers. Tactical intelligence enables strategic warning by providing commanders with signals they are more likely to listen to and act upon and contributes to the prevention conflict through the proper use of deterrent strategies and increasing the deterrent value of individual units.

[121] Erik J. Dahl, *Intelligence and Surprise Attack: Failure and Success from Pearl Harbor to 9/11 and Beyond* (Washington, DC: Georgetown University Press, 2013).

A. STRATEGIC WARNING AND INTELLIGENCE FAILURE

Intelligence communities need to ensure appropriate staffing, collection, analysis, and dissemination to avoid the dreaded "intelligence failure." The idea of an intelligence failure comes in many forms but can be defined by a key theme: "decision-makers were surprised."[122] An intelligence failure is generally manifested due to one of two events: either the intelligence community failed to produce the intelligence needed by decision-makers, or decision-makers failed to act on intelligence appropriately.[123] The failure has disastrous results on the strategic level, as seen in the Japanese attack on Pearl Harbor or the 9/11 terror attacks. As the speed of war and offensive firepower increases, it is now even more critical to prevent strategic surprise through strategic warning. As asserted by Prof. James Wirtz, intelligence failure manifesting in a surprise attack results in defeat for the victim; it creates unnecessary wars, which should have been avoided through credible deterrence.[124]

Strategic warning is the attempt to prevent surprise attacks from happening. One of the first authors to discuss strategic warning was Cynthia Grabo in her previously classified textbook *Anticipating Surprise: Analysis for Strategic Warning*. Garbo argued that the purpose of warning intelligence was "to enable the policymaker to make the best possible decisions in the light of the facts and judgments sent to him, and if needed to take military and political actions to counter the threatened attack."[125] There is a non-trivial difference between strategic warning and strategic intelligence. As noted by Susan Kimmelman in her thesis work at NPS, strategic intelligence involves conducting analysis and communicating future threats to decision-makers, while strategic warning "orients national decision makers to emerging threats, and provides assessments of global

[122] Dahl, 6.

[123] Dahl, 7.

[124] James J. Wirtz, *Understanding Intelligence Failure: Warning, Response and Deterrence*, Studies in Intelligence (London; New York, NY: Routledge, 2017), 19.

[125] Cynthia M Grabo, *Anticipating Surprise: Analysis for Strategic Warning* (Lanham: University Press of America, 2004), 15.

events that can affect national security."[126] This demonstrates that naval intelligence must be able to both understand future threats and be able to communicate the threats effectively to decision-makers.

Even when the intelligence community can identify and communicate a pending threat to decision-makers, the warning must be believed and acted upon to ensure that adversarial powers cannot follow through on their plans. In this vein, Prof. Erik Dahl described the "paradox of strategic warning," which notes:

> Strategic-level intelligence and warnings are surprisingly easy to acquire and are often readily available before major attacks. But they are unlikely to be acted upon by decision makers, and in any case are too general to be useful in preventing attacks. Tactical-level intelligence is much harder to acquire, but when available it is much more likely to be useful and actionable. This is largely because surprise attacks, even when they have strategic-level consequences, are essentially tactical events, involving relatively few decision makers and occurring in a relatively confined space and time.[127]

Tactical-level intelligence is most useful when policymakers and leaders are receptive to it.[128] History demonstrates that leaders are often more willing to make decisions based on precise tactical intelligence rather than broad strategic assessments.[129] An assessment issued by the RAND Cooperation stated that advancements in data analytics and related fields could aid in developing more precise warnings as new technologies enable more extensive data collection and fusion.[130] However, even the best information must be believed and acted upon to enable effective action by higher-ranking officials. To provide adequate strategic warning, The naval intelligence community needs to ensure it is postured to collect and disseminate tactical level intelligence to decision-makers at every level.

---

[126] Susann Kimmelman, "Indications and Warning Methodology for Strategic Intelligence" (master's thesis, Navy Postgraduate School, 2017), 13, http://hdl.handle.net/10945/56742.

[127] Dahl, 22.

[128] Dahl, 177.

[129] Dahl, 178–79.

[130] Cortney Weinbaum et al., "Perspectives and Opportunities in Intelligence for U.S. Leaders" (RAND Corporation, September 24, 2018), 6, https://www.rand.org/pubs/perspectives/PE287.html.

B. DETERRENCE

Deterrence is a core mission of the U.S. Navy, and the naval intelligence community plays a crucial role in enabling it.[131] As explained by Patrick Morgan, a foundational scholar on the study of deterrence, deterrence is when one side prevents a challenging power from taking an action that the first side does not want by threatening the challenging side with dire consequences.[132] As noted by William Kaufmann, effective deterrence requires your opponent to know three things: (1) that you have an effective military capability; (2) that you can impose unacceptable costs with it; and (3) that you will use your military capability if your goals are not achieved via other means.[133] It is worth emphasizing the need for the imposed costs to be unacceptable and requires the deterring side to understand the cost-benefit analysis of the target of the deterrence. The total cost to the deterred side of pursuing a course of action unfavorable to the deterring side must outweigh the total benefits of any alternative course of action via defensive measures, retaliation, or a combination of the two pursued by the deterring side.[134] The naval intelligence community should be well versed in adversary thought processes and able to communicate to decision-makers how opposing forces are likely to perceive U.S. actions to ensure the U.S. Navy can achieve its deterrence mission.

For deterrence to succeed, three fundamental pillars must be maintained: credibility, stability, and capability. As Morgan notes, deterrence fails due to a political decision with foundations in either the opponent's primary goals or the nature of the deterrer–challenger relationship that the challenger finds intolerable.[135] These changes cause the deterrent situation to change and therefore lead to conflict. Deterrence fails without capability, stability, and credibility to maintain constant, effective pressure on all

[131] "Naval Warfare Publication 2-0 Naval Intelligence" (Department of the Navy, March 2014), 2–4.

[132] Patrick M. Morgan, *Deterrence Now*, Cambridge Studies in International Relations 89 (Cambridge [England] ; New York: Cambridge University Press, 2003), 1.

[133] William Kauffman, "The Requirements of Deterrence," in *Essays on Arms Control and National Security* (U.S. Arms Control and Disarmament Agency, 1986), 7.

[134] Morgan, 15.

[135] Morgan, 112.

sides. Therefore, it is necessary to understand each of these pillars and their role in maintaining general deterrence.

In deterrence theory, credibility is "the quality of being believed."[136] A key point in this discussion is that credibility must be viewed from the deterred side's point of view. That is, credibility is not necessarily about the deterring side's ability to inflict harm but rather the challenging side's belief that the opposing side is willing to inflict harm to achieve their goals. Stability in deterrence theory refers to the unintended consequences of one side attempting to increase their deterrent pressure against the other.[137] The stability issue is most clearly demonstrated when a deterring party begins moving troops to the border of the deterred country in an attempt to show greater resolve and increase the credibility of the deterrent threat. The massing of troops then can cause the opposing side to act aggressively if they believe the deterer has left them no other options. To facilitate an effective deterrent strategy and support the credibility and stability pillars, the intelligence community should be experts on enemy decision-making processes in order to properly advise decision makers on the possible outcomes of their chosen course of action. While the intelligence community often has many competing tasks ranging from managing the employment of collection assets, to locating enemy ships at sea, or exploiting captured technology, it cannot lose sight of its central role of understanding the enemy. At every operational level, decision-makers need to have an understanding of how the opposing side will perceive the actions of friendly forces and ensure that the operational intent of the overall mission is followed. This is particularly true when the military is conducting operations outside of war aimed at deterring the break out of hostilities. The successful employment of a deterrence strategy relies heavily on the insights provided by the intelligence community.

Capability refers to the capacity of one side to inflict unacceptable harm on the other.[138] As Morgan notes, capability is generally viewed as pure military might, such as

[136] Morgan, 15.

[137] Morgan, 18.

[138] Morgan, 16.

the number of ships, airplanes, and missiles.[139] Capability also includes having military forces in the right place to respond to a challenge in a timely manner. Capability does not only reference offensive force but includes the defender's ability to withstand an attack or inflict unacceptable losses on an attacker. In this case, the defender must ensure that its threat has enough capability behind it that the challenger prefers backing down to escalating. To support the capability pillar of deterrence, intelligence professionals need to ensure they are positioned to increase the fighting power of each unit. The ability of the intelligence community to enhance military capabilities at the tactical level is discussed in depth in Chapter V. The discussion in that chapter finds that the placement of intelligence professionals at the tactical level can provide individual units with significant increases in combat power and enable outnumbered forces to inflict significant losses on the enemy. At the operational and strategic level, intelligence professionals can support the capability pillar of deterrence by providing military planners with insights into enemy capabilities and intentions so that combat power can be massed in specific areas and thereby increase the capability of military units in an area as a whole.

1. Naval Deterrence

Navies can play a crucial role in enabling effective deterrence. *Advantage at Sea*, the Navy's strategic guidance authored by then-Secretary of the Navy, Kenneth J Braithwaite, outlined the three primary missions of American naval forces as "preserving freedom of the seas, deterring aggression, and winning wars."[140] The plan was built upon by current Secretary of the Navy, Carlos Del Toro, who envisions enabling these three missions by ensuring naval forces have the right mix of platforms via sustained, persistent mobile operations and the ability to transition from competition to crisis to conflict effectively.[141] The defined mission of the U.S. Navy, at its essence, is sea

[139] Morgan, 14.

[140] Braithwaite et al., 5.

[141] Carlos Del Toro, “One Navy-Marine Corps Team: Strategic Guidance From The Secretary of the Navy” (Department of the Navy, October 8, 2021), 4, https://media.defense.gov/2021/Oct/07/2002870427/-1/-1/0/SECNAV%20STRATEGIC%20GUIDANCE_100721.PDF.

control. While sea control has many different definitions depending on the author and context, the DOD Dictionary of Military and Associated Terms defines sea control operations as "the employment of forces to destroy enemy naval forces, suppress enemy sea commerce, protect vital sea lanes, and establish local military superiority in vital sea areas."[142] These ideas all combine to show that the design of the USN, currently the most dominant global Navy, is to enforce U.S. interests across the globe and a vital part of that rests on the Navy's ability to deter conflict.

More broadly, maritime power can communicate and execute many of the abilities necessary for successful conventional deterrence.[143] The ability of naval forces to loiter in an area with minimal direct intrusion on geopolitical redlines is an essential and unique naval contribution to deterrence.[144] Additionally, naval forces can rapidly respond to an emerging crisis and bring combat power to areas where no power projection existed before. Naval forces can also augment existing forces and increase the local power balance in favor of allied forces. As such, naval forces can get operate in potential combat areas to communicate credible threats of prompt punishment while not getting so close that the leadership fears an impending attack triggering a first strike.[145] Finally, as will be discussed further in Chapter 5, intelligence support at the tactical level can provide a single ship with the ability to deliver the combat power necessary to deter a conflict from occurring or de-escalate a crisis through the overwhelming and effective employment of firepower against the enemy.

C. STRATEGIC WARNING TO ENABLE DETERRENCE: FALKLANDS CASE STUDY

The Falklands War provides an apt parallel for the U.S. to learn from as it operates in the Pacific. The vast distance between the Falklands and Great Britain, nearly

[142] "DOD Dictionary of Military and Associated Terms" (Department of Defense, May 2022), 190, https://jdeis.js.mil/jdeis/.

[143] Michael Gerson and Daniel Whiteneck, "Deterrence and Influence: The Navy's Role in Preventing War. Revision 1" (Center for Naval Analyses, March 1, 2009), 73, https://apps.dtic.mil/sti/citations/ADA497123.

[144] Gerson and Whiteneck, 74.

[145] Gerson and Whiteneck, 74.

7,000 miles, is approximately the same distance as the U.S. West Coast to Taiwan or the South China Sea. The U.S. also faces some of the same domestic challenges as Great Britain in the 1980s, with economic issues often rising to the top of the political discourse. The British failure to prevent conflict in the Falklands can largely be placed on the failure of the intelligence community to provide adequate strategic warning to British policymakers. This was due to the intelligence community's failure to convincingly communicate the tactical level indicators of the pending invasion as well as a failure by the intelligence community to understand Argentine strategic thinking. These two issues combined led to all three pillars of deterrence to fail as Argentina assessed that British forces in the region did not have the capability to resist an invasion and Great Britain was not willing to provide the needed forces to retake the islands. Additionally, the British intelligence community failed to understand how a changing political situation in Argentina eroded the stability that had undergirded the relationship between the two countries since Argentine independence. This case study will focus on the indicators available to the British in the lead up to the Argentine invasion of the Falklands. It will then investigate the effect of the respective domestic political situations in Great Britain and Argentina.

1. Background

Following a protracted series of failed diplomatic negotiations, and the failure of the British to deter Argentine aggression, Argentina invaded the Falkland Islands on 2 April 1982. The Falkland Islands, or the Malvinas as they are called in Argentina, are a remote British territory in the South Atlantic consisting of a small archipelago of mostly wind-swept grasslands approximately 300 miles east of the Strait of Magellan. The total size of the islands is roughly equivalent to the state of Connecticut and was home to fewer than 3,000 British citizens at the outbreak of war. Despite the remote location and diminutive size, the Falkland Islands were center stage of the ongoing Cold War between the U.S., the USSR, and their allies. A perfunctory garrison of 80 Royal Marines was quickly overwhelmed and taken prisoner, and with their defeat, the 150-year reign of British control of the islands was interrupted. Over the next two and a half months, the isolated British dependency was occupied by an Argentine task force that claimed

sovereignty that traced back to the Spanish empire in the 1500s before being dislodged by a British expeditionary naval force.

While British forces quickly reversed the course of the war by retaking the island in short order, the failure of the Royal Navy to prevent conflict --by sending a deterrent task force, for example--merits investigation. The Royal Navy was shrinking but still one of the most powerful in the world.[146] Much as it is today, the goal of any blue water navy in the 1980s operated by a world power was to protect sea lines of communication and project power ashore.[147] However, with the ousting of the British garrison on the Falklands Islands, the Royal Navy appeared inept and unable to effectively protect British interests on the world stage. The outbreak of war can ultimately be boiled down to an overall failure of British deterrence against Argentine interests in the South Atlantic fueled by both intelligence failures and domestic political concerns, which kept the British government from wholly focusing on the potential conflict.

2. Great Britain Intelligence Picture

In order to understand why Britain failed to act by sending the Royal Navy as a deterrent force into the South Atlantic, this case study will first look at what the British intelligence community observed and what was passed to policymakers. As noted by Lebow in his work "Revisiting the Falklands Intelligence Failures," the British intelligence communities' failure to predict the Argentine invasion was not a result of a lack of intelligence on Argentine intentions and preparations.[148] Instead, Britain made communicative and analytical failures that contributed to the absence of strategic warning passed to decision-makers and led many to label the surprise Argentine invasion as an intelligence failure.

---

[146] Scott Nietzel, "The Falklands War Understanding the Power of Context in Shaping Argentine Strategic Decisions" (Thesis, Monterey, CA, Navy Postgraduate School, 2007), 21, http://hdl.handle.net/10945/3231.

[147] John J. Mearsheimer, "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe," *International Security* 11, no. 2 (1986): 4–6, https://doi.org/10.2307/2538957.

[148] Richard Ned Lebow, "Revisiting the Falklands Intelligence Failures," *The RUSI Journal* 152, no. 4 (August 1, 2007): 68, https://doi.org/10.1080/03071840701574755.

Tactical indicators of the Argentine invasion were primarily drawn from operations conducted by the HMS Endurance, which was ostensibly a naval research vessel forward deployed to the Falkland Islands but also functioned as an intelligence collection ship. Operations by the HMS Endurance demonstrated the importance of having forward collection platforms that are able to collect tactical indicators of enemy movements and intentions. Two reports, in particular, stand out with the benefit of hindsight. On 25 March HMS Endurance reported it observed the Argentine Navy ship Bahia Paraíso at Leith "flying the pennant of the Senior Officer Antarctic Squadron and operating three landing craft and a military helicopter."[149] Despite the report, which indicated the presence of senior defense officials preparing to conduct landing operations, a report by FCO officials the following day stated there was no evidence of a military capability at Leith. Prior to these, on 25 January, the HMS Endurance's commanding officer, Captain Nick Barker, reported on the change in atmospherics during an Argentine port call.

> [the Argentines] declined to play football against the ship and even refused the use of their ground for a match against a local civilian side. All this was completely against the pattern of cordiality we had experienced on previous visits to Argentine ports, even as recently as our visit to Puerto Belgrano two months earlier. There was a partial belief that this may have had something to do with the fact that we were going on to Punta Arenas in Chile, but was this enough to explain such a complete snubbing? I did not think so and reported my misgivings in a signal. When I went to call on Captain Russo, in the absence of Admiral Zaratiegui [Chief of the Southern Naval Force], I was informed that I was in the Malvinas War Zone... I laughed and asked who the Argentines were fighting. "You," he said without a flicker of emotion... All this I reported to London.[150]

Additional tactical indicators also came via unnamed British intelligence sources that stated that the Argentine fleet (to include an aircraft carrier) was preparing to put to sea on 27 March, ostensibly to conduct an exercise with Uruguay, and had loaded

[149] David E. King, "Intelligence Failures and the Falklands War: A Reassessment," *Intelligence and National Security* 2, no. 2 (April 1, 1987): 338, https://doi.org/10.1080/02684528708431896.

[150] Nicholas Barker, *Beyond Endurance: An Epic of Whitehall and the South Atlantic Conflict* (London: Leo Cooper, 2002), 220–21.

wartime stocks.[151] Moreover, on 31 March, British intelligence learned that the Argentine naval units on maneuver had broken away from the Uruguayan force and were heading towards the Falklands.[152] However, by this time, only two days before the invasion, the deployment of the Royal Navy would have had little deterrent effect and would not have been able to defeat an invasion force before the island fell. This demonstrates that while tactical indicators can be helpful, they need to be provided in an overall accepting strategic and operational context, making them valuable. This is particularly true when naval forces offer the bulk of a deterrent force, given great oceanic distances and limited transit speeds.

The British intelligence community and decision-makers ignored or downplayed some warnings on the operational and strategic side. As noted by David King in his article "Intelligence failures and the Falklands war: A reassessment," three significant events occurred in the lead-up to the Falklands War, which did not alter British assessments of the situation. [153] The first was an informal Argentine diplomatic communication delivered to the British on 27 January, which demanded a rapid resolution of the dispute over the islands. The second was a unilateral communiqué issued on 1 March in which Buenos Aires threatened to "choose freely the procedure which would best achieve speedy recognition of Argentine sovereignty." Moreover, the final communication was a warning passed to London by the British Ambassador in Buenos Aires on 3 March, which stated that "Argentina meant business" in reference to the Falkland Islands dispute. The final communication led Prime Minister Margaret Thatcher to call for contingency plans to be developed regarding the defense of the Falklands. However, while these plans were drawn up, they were not acted upon in time for them to deter Argentine action effectively. These diplomatic communications were paired with numerous and increasingly aggressive Argentine press reports regarding the ongoing negations over the islands.[154] As such, it was not necessarily the lack of

[151] Lebow, 69.

[152] Lebow, 69.

[153] King, 338.

[154] Lebow, 69.

information that prevented the British intelligence community from providing adequate strategic warning but rather other problems within the intelligence analysis and dissemination chains, including analytical bias, a perceived tendency to cry wolf, and a lacking strategic framework.

Analytical bias also prevented the British intelligence community from providing sufficient strategic warning to policymakers. Great Britain made only limited attempts to understand the "nationalistic fervor of the Argentine people, the instability of their economy, or the radically different circumstances in a less developed country."[155] British intelligence professionals and decision makers underestimated the centrality of the Falklands issue to the Argentinians.[156] Additionally, British intelligence based its assessments on the British doctrine of progressive escalation, which assessed a gradual increase pressure, with Argentina only resorting to force as a last resort.[157] An intelligence community that makes assumptions imparts significant risk and can look for information that affirms its foundational beliefs rather than being open to changing assessments. This was demonstrated by the British intelligence community's highlighting of reports which stated that senior Argentine naval officers (considered the most hawkish wing of the Junta government) "doubted that Argentina would invade the Falklands."[158] These reports formed the core of intelligence assessments and were used as a lens through which new information was analyzed, assessed, and disseminated. Being open to new information and exploring alternative analyses gives intelligence professionals the ability to interpret information more thoroughly and provide decision-makers with actionable intelligence.

The intelligence community was also hampered by their perceived tendency to "cry wolf." In 1977, relations between Argentina and Britain had deteriorated to the point where Argentine naval forces had fired upon a British research ship in the south Atlantic,

---

[155] Luis Andarcia, “Falkland’s War: Strategic, Intelligence and Diplomatic Failures” (ARMY WAR COLL CARLISLE BARRACKS PA, May 1, 1985), 11, https://apps.dtic.mil/sti/citations/ADA157369.

[156] Gerald W. Hopple, “Intelligence and Warning: Implications and Lessons of the Falkland Islands War,” *World Politics* 36, no. 3 (1984): 348, https://doi.org/10.2307/2010378.

[157] King, 338.

[158] Oliver Franks, *The Franks Report: Falkland Islands Review* (London: Pimlico, 1992), 44.

and Argentina cut off fuel supplies to the Falklands Islands. Britain sent a submarine into the area in response to assessments of a possible Argentine invasion of the islands. Follow-on diplomatic negotiations were able to end the crisis peacefully. While war was avoided in the 1977 crisis, it made it more difficult for the intelligence community to communicate the 1982 threat to decision-makers as their case was weakened by the peaceful resolution of the 1977 crisis.[159] The impossible situation the British intelligence community was in for the 1982 crisis demonstrates the importance of ensuring decision-makers have a clear view of the intelligence assessments passed to them and the importance of following up on past assessments and communicating success or failure in those cases. For example, the Argentine landing on South Georgia in mid-March was assessed by Britain as "trivial and low-level misbehaviour" rather than a testing of British resolve and attempt to alter the status quo ownership of the islands by the Argentines.[160] In this case, the tactical indicators (Argentine willingness to break international rules to advance sovereignty issues) were interpreted more as a diplomatic maneuver than a test of British resolve.

As noted by Lebow, in the absence of a strategic framework from which indicators can be derived, decision-makers are required to rely upon tactical indicators, which are prone to misinterpretation or ignorance.161 In the case of the Falklands, whether attack warning indicators and immediate pre-crisis signals could have allowed for a deterrence force to be sent is debatable.162 Given the reoccurring nature of crises surrounding the Falklands, the British needed to develop indicators to help distinguish diplomatic bluffs from kinetic threats.163 Without this, British decision-makers waited for indisputable evidence of impending attacks. Looking back on the situation, it is arguable that even with perfect intelligence collection, assessment, and communication, reliance on intelligence alone placed the Falklands in an indefensible position, given the

[159] Hopple, 346.

[160] King, 338.

[161] Lebow, 72.

[162] Hopple, 354.

[163] Lebow, 70.

seemingly more significant political concerns of the British government.[164] In the case of the Falklands, British decision-makers only fully understood Argentine intentions when deterrence provided by Royal Navy was irrelevant. This forced Britain to take the offensive and reseize the islands.[165]

3. Great Britain's Political Picture

The intelligence community's missteps were not solely to blame for the British failure to deter the outbreak of the Falklands War; the political elites and environment they operated in also played a significant role. The difficulty in mustering a deterrent force to the Falklands can be attributed to ongoing British domestic political and budgetary issues. In the 1970s, the British Chiefs of Staff concluded the military presence needed to deter Argentine aggression would be "very expensive and would engage a significant portion of the country's naval resources… [and] its dispatch could precipitate the very action it was intended to deter."[166] Britain's failure to dispatch the Royal Navy in response to the Georgia incident "can be mainly attributed to economic problems, especially the exorbitant cost of sending a naval task force to a British outpost 8,000 miles away."[167] Thus a willingness to demonstrate British resolve was limited by budgetary concerns. In order to have strategic signals acted upon by government decision-makers, intelligence professionals would need to overcome a significant hurdle to provoke action.

The Thatcher government's focus on economic concerns suggests that immediate, predictable, and visible costs unduly influence policymakers in crisis situations. In this case, short-term considerations prevented policymakers from understanding the weight or probability of the long-term cost of inaction.[168] The risk of a potential conflict changed for the British in March 1982. With the increasingly aggressive Argentine actions in the

---

[164] King, 338.

[165] Lebow, 70.

[166] Lawrence Freedman and Virginia Gamba-Stonehouse, *Signals of War: The Falklands Conflict of 1982* (London ; Boston: Faber and Faber, 1990), 19.

[167] Andarcia, 13.

[168] Lebow, 73.

South Atlantic, the "Thatcher government faced a significant risk of losing power if it did not respond to the Argentine invasion."[169] Once committed to the fight, Britain was forced to go all-in, sending a significant naval fleet into the south Atlantic to reoccupy the islands. As a result of its unwillingness to commit a deterrent force to the Falklands, Britain then risked losing a war to a third-world regional power which would have decreased its already poor self-image and put the position of the Thatcher government in jeopardy. Luckily for Britain, as noted by Gerald Hopple in "Intelligence and Warning: Implications and Lessons of the Falkland Islands War," a large portion of the Royal Navy fleet was back home for Easter when the Argentines invaded. This facilitated the rapid assembly of the British task force with enough power projection capabilities to quickly retake the islands. Hopple notes that if Argentina had waited just two more months, the Royal Navy fleet would have been dispersed with some of the warships conducting operations in the far-off Indian Ocean.[170] In that case, the British would have taken even longer to respond and give the Argentine military additional time to reinforce the island against the coming British forces.

4. Argentine Point of View

The position and viewpoints of the Argentine Junta are also worth studying to understand how intelligence and political missteps led to the failure of deterrence and the outbreak of war over the Falklands Islands. The Junta hoped using force vice diplomacy would stoke nationalist fervor with quick victorious war to and redirect national attention from Argentina's failing economy.[171] Under the Junta, the Argentinean economy had decayed and faced mounting unemployment paired with an annual inflation rate of 150%.[172] Additionally, the Argentine Junta was under both domestic and international pressure due to the brutal nature of its government. The human rights violations of the *Guerra Sucia,* paired with domestic protests such as the *Madres de la Plaza de Mayo*,

[169] Troy J Beattie, "Conventional Deterrence and the Falkland Islands Conflict" (Navy Postgraduate School, 2010), 79, http://hdl.handle.net/10945/5357.

[170] Hopple, 351.

[171] Ken Watman et al., "U.S. Regional Deterrence Strategy" (RAND Corporation, January 1, 1995), 64, https://www.rand.org/pubs/monograph_reports/MR490.html.

[172] Watman et al., 64.

began nearing the point when the pressures on the government could exceed its capacity for repression.[173] Great Britain failed to understand the larger strategic pressure that the Argentine government was under, which led Britain to fail to anticipate the Falklands invasion.

The Argentine government also failed to assess the British will to defend the island properly. To the Argentinians, stalls in the negotiations over the islands signaled British unwillingness to resolve the dispute via diplomacy.[174] On the military side, the withdrawal of the HMS Endurance was taken by the Argentines as a lack of a long-term British military commitment in the South Atlantic.[175] These actions strengthened Argentina's assessment that London considered the sovereignty of the Falklands an insignificant matter. As noted by Hopple,

> If anything, the premise in Buenos Aires that the other side would not fight was held more strongly and perhaps with considerably more justification (based on signals and indications) than the equivalent assumption in London that Argentina simply would not go to war.[176]

To the surprise of the Argentines, the British government quickly responded to the invasion.[177] The British government's response demonstrated its intent to fight to reclaim the islands with the dispatch of a large naval force. While the distances involved would give the Argentines enough time to reinforce the newly captured islands, it was beginning to become clear that the Junta's assessments of the situation were unraveling.

5. Conclusion

Intelligence and political factors affected the Royal Navy's ability to provide adequate deterrence to prevent the outbreak of war in the south Atlantic. This was due to the British intelligence community ignoring or misinterpreting information collected by

---

[173] Daniel Upp, "Risky Invasions Decisions Made by The Argentine Junta Regarding Disputed Islands, 1978--1982" (Monterey, CA, Navy Postgraduate School, 2011), 44, http://hdl.handle.net/10945/5536.

[174] Andarcia, 7.

[175] Andarcia, 8.

[176] Hopple, 351.

[177] Yniol A Cruz, "CV or Not to Be? Alternatives to U.S. Sea-Based Air Power" (master's thesis, Monterey, CA, Navy Postgraduate School, 2008), 49, http://hdl.handle.net/10945/4077.

various intelligence and diplomatic missions that conflicted with the intelligence community's original assessment. Intelligence failures were further exacerbated by the British focus on domestic issues centered on economic and budgetary constraints, which placed limits on the ability of the British military, particularly the Navy, from meeting their global responsibilities.

The lesson the USN needs to learn from the Falklands Islands conflict is the importance of strategic warning and the effective communication of intelligence to decision and policymakers. The situation between Great Britain in the 1980s and the U.S. today has some parallels, most notably strained military budgets and concerns about the cost of maintaining a global naval presence. However, the U.S. should learn from British failures in the lead-up to the Falklands Island conflict that the failure to use a navy to deter war can have more significant financial impacts than sending a deterrent force.

D. CONCLUSION

Intelligence professionals must be able to communicate the risk that exists and the potential repercussions of failing to mitigate possible hostile actions. The upholding of a state of deterrence requires timely and accurate strategic warning, which will, in turn, enable the deployment of naval forces to quell potential geopolitical hotspots. While strategic intelligence is important to enable long term planning, it is vital that tactical level intelligence be available to senior level decision makers. Tactical level intelligence is the most likely to be acted upon by senior decision makers and thus is extremely important to ensure U.S. actions will be undertaken quickly and prevent the outbreak of conflict through effective deterrence. Intelligence officers should be subject matter experts on the collection assets at the disposal of the commander and ensure that collection efforts are not wasted or redundant. Intelligence officers also must understand how to work within the traditional intelligence community framework and can ensure that once collected, vital information is provided up the chain of command through the proper channels and in the right format. This will give decision-makers more ready access to information in a form that can be quickly digested and acted up. It can avoid some of the issues that may arise when operational reporting is taken in by intelligence analysts far

removed from the tactical situation where the information was collected, which can welcome the introduction of personal or institutional biases.

While many of these observations could be drawn with common sense and a general understanding of the inner workings of the intelligence process, they are noteworthy as they undergird the foundation of an effective intelligence team. Naval intelligence professionals must take these observations to heart and be ready to support strategic warning to enable deterrence via the collection and dissemination of tactical level intelligence. While tactical level intelligence was available in the Falklands Islands case, it was not integrated into the overall intelligence assessment leading to Britain's deterrence framework against Argentina to collapse. While the Falklands War was fought over a small set of sparsely populated islands with limited geo-political and economic importance, a similar scenario playing out in the more contested waters of the Indo-Pacific could have dire consequences for the U.S. and would give U.S. competitors in the region a chance to conduct a fait accompli to achieve their goals.

IV. INFORMATION FLOW, TEAM BUILDING AND THE DEVELOPMENT OF THE COMBAT INFORMATION CENTER IN WWII

Intelligence capabilities at the tactical level are necessary to enable effective information flow. Naval intelligence should be focused on understanding, anticipating, and finding opposing forces, thus freeing operational warfighters to focus their mental efforts on the effective employment of the combat power available to them. This chapter will first discuss how effective teams are formed, with intra-team trust as a central measure of success. The team-building discussion leads to an examination of the importance of the naval intelligence community integrating with and understanding the end users of intelligence assessments. The chapter will then look into the effects of information overload on decision-making. Finally, this chapter will apply these lessons to a case study into the development of CIC in WWII to understand how these lessons can be translated to success in an operational context. Ultimately, this chapter finds that for intelligence to be effective, it must be incorporated at the tactical level. For success in the future Indo-Pacific naval intelligence professionals to be trusted members of warfighting teams and ensures that the intelligence team fully understands the needs of the warfighter and warfighters understand the capabilities and limitations of intelligence. This two-way trust enables warfighters to quickly and effectively employ the combat systems available to them to rapidly and decisively defeat the adversary. Advancing U.S. national interest in the future with be a difficult task, without the necessary intelligence support, the USN risks losing in both competition and conflict with its Indo-Pacific adversaries.

A. NAVAL INTELLIGENCE AS AN EFFECTIVE TEAM MEMBER

Naval intelligence must be an accepted part of the overall Navy team for it to provide effective support to other warfare areas. Acceptance requires the creation of an effective team that can develop a distributed or team cognition in which all team members understand their roles and responsibilities and the roles and responsibilities of their teammates.

1. Team Building and Trust

Intelligence is most useful when it is believed and acted upon promptly. Prompt action requires trust. Intelligence professionals must be relied upon to provide specific and unbiased information on opposing forces to enable broader warfighting success. To understand how naval intelligence professionals can be trusted team members, we must first understand what creates effective teams. In a paper published as part of the *Encyclopedia of Applied Psychology,* Salas et al. defined a team as "a collective of interdependent individuals who work together, have shared objectives, mental models, and procedures that guide their perceptions, thinking, and behaviors toward a common goal."[178] This definition broadly aligns with the organization and relationships built within military units. Importantly, it demonstrates the importance of a shared understanding of goals and how they can be achieved. Naval intelligence professionals must understand their unrestricted line counterparts' goals and roles to integrate into warfighting teams effectively.

For naval intelligence, this means that to be an effective team member, intelligence professionals must have an intimate understanding of how warfighter will use the intelligence provided to defeat the adversary. This understanding within a team is built by establishing team cognition. Team cognition is "the organized structures that support team members' ability to acquire, distribute, store, and retrieve critical knowledge."[179] Team cognition allows teams to coordinate group actions and effectively facilitate faster decision-making. Units consisting of individuals with shared understanding and experience can effectively synchronize their efforts to achieve a common goal, an overall positive indicator of team effectiveness.[180] Team cognition is built when teams work together to accomplish a goal.[181] The built experience allows the

[178] Charles Donald Spielberger, ed., *Encyclopedia of Applied Psychology*, 1st ed (Amsterdam ; Boston: Elsevier / Academic Press, 2004), 498.

[179] Rosemarie Fernandez et al., "Developing Team Cognition: A Role for Simulation," *Simulation in Healthcare : Journal of the Society for Simulation in Healthcare* 12, no. 2 (April 2017): 96–103, https://doi.org/10.1097/SIH.0000000000000200.

[180] Janis A. Cannon-Bowers and Eduardo Salas, "Reflections on Shared Cognition," *Journal of Organizational Behavior* 22, no. 2 (2001): 200, https://doi.org/10.1002/job.82.

[181] Cannon-Bowers and Salas, 245–64.

team to understand each team member's skills, knowledge, and abilities and how they can be leveraged to succeed in the task environment.[182]

To support warfare at the tactical level, naval intelligence professionals must ensure they are part of the team operating at the tactical level. This does not necessarily mean that they need to be walking alongside a SEAL team as they approach a compound or conduct a raid, but the intelligence team must have an in-depth understanding of what the operational team is doing, what it is capable of, and how it can accomplish its mission. The reverse is also true. In order for the SEAL team members to successfully execute their mission, they must understand how the intelligence team collected the information that informed this mission, what the knowns and unknowns are from an intelligence perspective, and how any intelligence gained from this mission would be helpful to the intelligence community as a whole. This shared understanding of roles and capabilities is critical in forming team cognition and leading to overall unit success.

Once naval intelligence professionals are integrated into a team, they must work to be trusted. A foundational study into the development of trust within organizations defined trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party."[183] Mutual trust must exist within teams to enable effective operations and plays a vital role in good teams where "individuals support one another through rapport building and trust repair activities."[184] Teams with high levels of trust can effectively and rapidly share feedback between team members. As noted in a Health Services Research study focused on building effective teams in a medical context, team members must monitor each other

[182] Eduardo Salas, Stephen M. Fiore, and Michael P. Letsky, *Theories of Team Cognition: Cross-Disciplinary Perspectives* (London, United States: Taylor & Francis Group, 2011), 266, http://ebookcentral.proquest.com/lib/ebook-nps/detail.action?docID=957246.

[183] Roger C. Mayer, James H. Davis, and F. David Schoorman, "An Integrative Model of Organizational Trust," *Academy of Management. The Academy of Management Review* 20, no. 3 (July 1995): 712.

[184] Peter J. Coombe, "Exploring the Development of Trust Between Human and Autonomous Teammates" (Monterey, CA, Naval Postgraduate School, 2020), 11, http://hdl.handle.net/10945/66060.

and provide immediate, unbiased feedback to maximize a team's ability.[185] This study further stated that feedback must focus on processes and outcomes; therefore, team members must understand their teammates' roles in-depth. Similarly, the study found that teams make fewer mistakes when each other team member recognizes the responsibilities of each member of the team. Naval intelligence professionals and the warfighters they support must be tightly intertwined to develop a shared understanding of each other's roles and abilities. The trust fostered within a team enables rapid dissemination of information, and feedback from trusted individuals can be quickly incorporated to increase a team's overall effectiveness.

2. Being There and Understanding Blue

Effective intelligence is based upon a keen understanding of friendly operations and built upon the bonds of trust established between the intelligence community and its customers. The naval intelligence community must have an in-depth understanding of U.S. naval forces' capabilities and objectives to provide the analysis and assessments commanders need to conduct effective operations.[186] Naval intelligence professionals may be able to provide insights into opposing capabilities and intentions, but without understanding the USN's operational practices, it is impossible to understand the full scope of the enemy's activity. [187] Understanding red without the operational context of blue leads the intelligence community to make assessments based on only half of the story.

Experience operating alongside blue forces can give the naval intelligence community the needed insight to understand friendly operations and capabilities. As noted by CAPT Dale Rielage, when calling on a more robust red-cell for wargaming,

---

[185] David P. Baker, Rachel Day, and Eduardo Salas, "Teamwork as an Essential Component of High-Reliability Organizations," *Health Services Research* 41, no. 4 Pt 2 (August 2006): 1589, https://doi.org/10.1111/j.1475-6773.2006.00566.x.

[186] Christopher Nelson and Eric Pedersen, "Naval Intelligence Must Relearn Its Own Navy," U.S. Naval Institute, February 1, 2020, https://www.usni.org/magazines/proceedings/2020/february/naval-intelligence-must-relearn-its-own-navy.

[187] Christopher A. Ford, David Alan Rosenberg, and Randy Carol Balano, *The Admirals' Advantage: U.S. Navy Operational Intelligence in World War II and the Cold War* (Annapolis, Md: Naval Institute Press, 2005), 5.

> Because U.S. players are less familiar with [adversarial capabilties], they are precisely the threats whose effects are likely to be over- or underappreciated. For example, in my experience, U.S. naval officers tend to underrepresent the threat posed by coastal defense cruise missiles (CDCMs), particularly those that are integrated effectively with other strike and naval forces. When played, the U.S. default is to employ them as long-range coastal artillery. This approach arises from the fact that essentially no U.S. Navy officer has employed a modern CDCM. Similarly, ballistic missiles, long-range naval aviation, mines, and conventional submarines all represent unfamiliar potential adversary threats in a war game.[188]

While CAPT Rielage was referring to the actions of unrestricted line officers during war games, it is easy to reverse his assessment and see that it applies to naval intelligence professionals attempting to understand friendly operations. Knowledge of blue operations can also allow intelligence professionals to quickly prioritize threats and identify adversary weaknesses for exploitation by blue forces.[189] Most importantly, without including knowledge of blue in intelligence assessments, the naval intelligence community forces operational commanders to "sort through threat assessments and apply them to blue capabilities."[190] Under its current construction, the naval intelligence community is failing at teaching its officers about friendly capabilities. As noted in a 2020 *Proceedings* article,

> Anecdotal evidence shows that both junior and senior [intelligence] officers lack key knowledge of U.S. naval combat capabilities, platforms, weapons, and sensors. For example, we recently conducted an informal four-question survey with 20 junior intelligence officers: What is an SM-2? What is its range? What is a Mk 48? What is its range? The results were not surprising—disheartening, yes, but not surprising. Only half could identify an SM-2, and only three could identify a Mk 48 (it is a torpedo). Only two came close to the weapons' ranges, and they were both former surface warfare officers.[191]

---

[188] Dale Rielage, "War Gaming Must Get Red Right," U.S. Naval Institute, January 1, 2017, https://www.usni.org/magazines/proceedings/2017/january/war-gaming-must-get-red-right.

[189] Nelson and Pedersen.

[190] Nelson and Pedersen.

[191] Nelson and Pedersen.

To effectively support the USN conducting operations in the Indo-Pacific in 2035 and beyond, the naval intelligence community needs to ensure this knowledge gap is filled and intelligence professionals are making assessments across the whole scope of operations, not just through a red lens. Incorporation at all levels of warfare is important, from the Pentagon, to MOCs, to individual units. The more the intelligence community understands blue to complement the more effective

In his memoir, *And I Was There,* Admiral Nimitz's intelligence officer during WWII, Edward Layton, discussed how important it is for Naval intelligence professionals to work alongside decision-makers.[192] This truth has not changed in the intervening eighty years. As noted by CAPT David Fields, military planners at USINDOPACOM were often frustrated when told the intelligence community did not have the answer to a question.[193] However, as Fields and his team began to integrate with the intelligence community more closely, they gained an understanding of how intelligence assessments were formed and found themselves both more understanding of the intelligence community's limitations and an appreciation for the assessments they were given. Unrestricted Line Officers from the USS Kearsarge demonstrated a similar frustration with the Information Warfare community.[194] The officers lamented the inability of commanding officers and watchstanders to discuss the full spectrum of a ship's warfighting capability. Additionally, they called for greater integration of the Information Warfare community into unrestricted line officers' training and professional experience to better "leverage I.W. capabilities to win wars."[195] As noted by RADM Studeman, the current Commander of the Office of Naval Intelligence, in a 2009 article, "intelligence analysts offer context at all levels of war, evaluating the ever-shifting behavior of

[192] Edwin T. Layton, *And I Was There: Breaking The Secrets - Pearl Harbor And Midway* (Connecticut: Konecky & Konecky, 2001).

[193] Christopher Nelson, "A Navy Planner Speaks—Captain David Fields on the Challenges and Future of U.S. Navy Planning," U.S. Naval Institute, December 8, 2020, https://www.usni.org/magazines/proceedings/2020/december/navy-planner-speaks-captain-david-fields-challenges-and-future.

[194] Jason Rimmer et al., "What the Unrestricted Line Needs from the IW Community," U.S. Naval Institute, October 15, 2019, https://www.usni.org/magazines/proceedings/2019/october/what-unrestricted-line-needs-iw-community.

[195] Rimmer et al.

adversaries, calculating red's next moves, and helping operators adjust tactics… commanders rely on local intelligence analytical expertise to inform and guide their warfighting effort."[196] Working with the ultimate customers of intelligence product also allows naval intelligence professionals to tailor their information delivery to the particular decision-maker. The "effective depiction of information reduces mental load and maximizes the potential for understanding, retention, and recall… decreasing the likelihood of mind-set and information overload."[197] Working alongside sailors in other warfare areas is critical for the Naval intelligence community to develop its understanding of friendly forces. While there are warranted concerns that intelligence professionals at the tactical level are often overburdened with collateral duties, naval intelligence professionals must advocate for the proper balance between intelligence work and functions needed to ensure command success. The Naval intelligence community should be empowered to display its value to other warfighting areas and create the integration necessary for success in a fight with a peer adversary in the Indo-Pacific.

B. CONTROLLING INFORMATION FLOW

To be an effective part of the decision-making process within a unit, naval intelligence professionals should focus on being an efficient filter of incoming information, highlighting important red-force information for tactical-level decision-makers. This should provide increased decision space and, therefore, better decision-making to central decision-making nodes at the unit level by negating the effects of information overload. Simply having more information does not mean commanders will be successful. NPS thesis work by John McGunnigle demonstrated this via a game where each side is given ten units, with strengths from 1-10 to be assigned to 10 possible positions on a board. The game's goal is to control the majority of the ten positions by having a unit with superior strength at the majority of the positions. Figure 1 shows an

[196] Mike Studeman, "7 Myths of Intelligence," U.S. Naval Institute, February 1, 2009, https://www.usni.org/magazines/proceedings/2009/february/7-myths-intelligence.

[197] Kevin Hoadley, "Achieving Decision Superiority in Great Power Competition," U.S. Naval Institute, February 4, 2021, https://www.usni.org/magazines/proceedings/2021/february/achieving-decision-superiority-great-power-competition.

example of the game, how it is evaluated and how information advantage is tested.[198] The game ran under six different scenarios, each with varying degrees of force and information advantage. Information advantage was tested by revealing one or more of the opponent's positions. Force advantage was represented by increasing the strength of all units on one side (i.e., a force advantage of one gives the player's units values from 2-11). Figure 2 demonstrates the results of running 100,000 computer simulations of the game and how force advantage results in a better winning percentage than information advantage.[199]

Sample Game with Player Inputs

Opponent										
Subject	1	5	8	2	3	10	7	4	6	9

Sample Game Evaluated (Subject wins)

Opponent	10	4	7	5	8	6	3	2	9	1
Subject	1	5	8	2	3	10	7	4	6	9

Sample Game with Player Information Advantage of Two

Opponent	9	5								
Subject	10	6	8	2	3	1	7	4	5	9

Figure 1. Adaptation of figures 2.1, 2.2, and 2.3 in thesis by John McGunnigle displaying the game used to test force and information advantage.[200]

[198] John McGunnigle, "An Exploratory Analysis of the Military Value of Information and Force" (Thesis, Monterey, California: Naval Postgraduate School, 1999), 12, https://calhoun.nps.edu/handle/10945/13459.

[199] McGunnigle, 14–16.

[200] Adapted from McGunnigle, 10, 11, 12.

	Information Advantage	Force Advantage	Winning proportion
Case 1	None	None	.2936
Case 2	One	None	.4742
Case 3	Two	None	.6808
Case 4	Three	None	.8602
Case 5	None	One	.6874
Case 6	None	Two	.9239

Figure 2. Overview and results of computer simulations of the six scenarios applied to the game used in McGunnigle's 1999 thesis demonstrating increases in force advantage providing a greater increase in the proportion of games won[201]

In these simulations, information advantage translated to increased success but not as effectively as force advantage. Additionally, the advantage of having more information decreased as humans played the game. Thirty military decision-makers were brought in as subjects to play the game and compare the results of human subjects to computer simulations. As demonstrated in Figure 3, military decision-makers performed worse than the simulation in five of the six cases.[202] However, the only statistically significant results were in Case 4, where the player had an information advantage of three, and in Case 6, where the player had a force advantage of two. This demonstrates how having more information available to a decision-maker can sometimes cause them to conduct too much analysis and not effectively use the information available to them.

[201] Adapted from McGunngle.

[202] McGunnigle, 20.

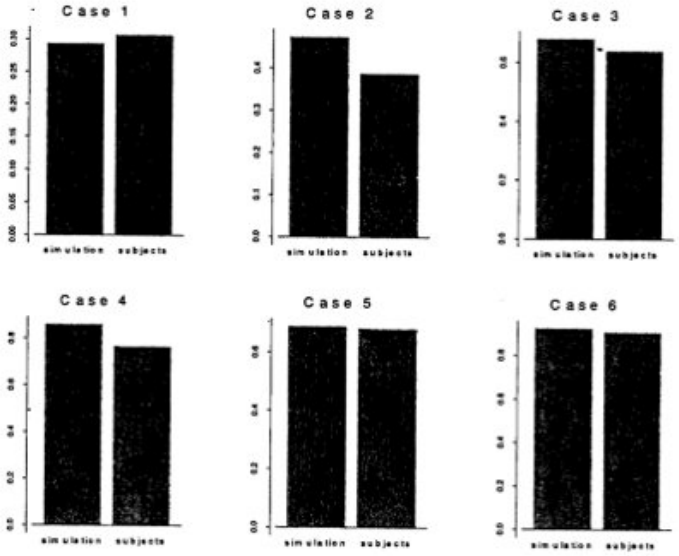

Figure 3. Comparison of game results between simulations (left) and human subjects (right)

In addition to the team-building advantages discussed earlier in this chapter, intelligence professionals should ensure that information advantage is translated into operations success. As will be further revealed in the CIC case study, relieving the cognitive load of the commander by providing concise and understandable information leads to operational success. More information is not always better, and the role of the naval intelligence community should be to help manage the flow of actionable data to tactical decision-makers.

C. CIC CASE STUDY

The development of the CIC in World War II provides significant insight into the challenges placed upon naval forces during conflict, especially a conflict that occurs during a revolution in naval operations. Along with the advent of carrier-based aviation, a significant technological innovation that defined naval operations in WWII was the introduction of radar. Radar greatly increased the ability of warships to coordinate effective fires and surveillance over the horizon. However, with this awesome upgrade came new waves of information flowing into the ship, which had to be assessed, analyzed, and acted upon promptly. In this new environment, Naval commanders needed

to be able to navigate this sea of information to fight effectively. As asserted by Timothy Wolters in his book *Information at Sea: Shipboard Command and Control in the U.S. Navy, from Mobile Bay to Okinawa* published as part of the *Johns Hopkins Studies in the History of Technology*, operational success "derived not only from an individual's audacity and innate mental aptitude but also from an ability to master the cognitive skills critical for processing vast quantities of information"[203] The United States is in an era of heightened global competition. The rapid spread of new technologies, such as artificial intelligence and hypersonics, will create new and unforeseen challenges on the naval battlefield. The USN should look to the past to see how previous generations were able to navigate similar challenges.

This case study will examine the development of the CIC during World War II to identify how the naval intelligence community should be positioned to adapt to the realities of the future naval battlefield. The case study will first look at the development and integration of radar in the U.S. Navy. It will then discuss early naval battles in WWII with a particular focus on the role of radar and information flow. Finally, the case study will examine how lessons learned from those early naval battles were incorporated to create the combat information center and how the CIC was implemented and improved throughout the fleet. Ultimately, this case study finds that for the U.S. Navy to be successful in future conflicts, it must be situated to rapidly adopt new technologies into standing doctrine and then edit that doctrine to gain the maximum advantage from the new technology. For the Naval intelligence community, intelligence professionals must be an integral part of the navy team and understand how blue commanders employ their warfighting capabilities and how red forces operate in their warfare areas. This dual understanding will allow the naval intelligence community to play an essential role in developing tactics and doctrine which maximize friendly advantages and target adversarial weaknesses.

[203] Timothy S. Wolters, *Information at Sea: Shipboard Command and Control in the U. S. Navy, from Mobile Bay to Okinawa* (Baltimore, MD: Johns Hopkins University Press, 2013), 3, http://ebookcentral.proquest.com/lib/ebook-nps/detail.action?docID=3318724.

1. Development of Shipborne Radar

The years between WWI and WWII saw great leaps in technological and doctrinal development. From the widespread adoption of Henry Ford's production lines to the German blitzkrieg, the developments in the interwar period significantly altered the realities of the battlefield during the two intervening decades. For the world's navies, advances in fire control, fuses and shells, and torpedoes significantly increased the lethality of ships.[204] However, these advances were limited by relying on visual observation to coordinate fires. The development of shipborne radar unleashed these weapons to their full potential and created "an environment in which commanders could make informed tactical decisions with limited input from subordinates to one characterized by epistemic actions and distributed cognition."[205]

As the global geopolitical situation began to crumble in the mid-1930s, the development of radar was hastened, with war looming on the horizon. Scientists at Navy Research Labs conducted the first practical test of radar in the U.S. in 1936 and demonstrated the capability to track aircraft at a range of approximately nine miles using a 250-foot antenna.[206] By January 1939, the USN conducted its first at-sea test and demonstrated the capability to track aircraft out to forty miles and surface vessels out to nearly ten miles.[207] Against surface targets, this nearly doubled the effective range of the ship's weapons systems.[208]

While the implementation of radars on ships significantly increased their ability to coordinate effective long-range fires, operational use of radars in fleet problems and exercises revealed a new challenge. Making sense of the significant increase in information available to commanders significantly stressed the existing system for passing information from sensor to decision maker. Early radar operators found

[204] Trent Hone, *Learning War: The Evolution of Fighting Doctrine in the U.S. Navy, 1898-1945*, Studies in Naval History and Sea Power (Annapolis, Maryland: Naval Institute Press, 2018), 151.

[205] Wolters, 4.

[206] Wolters, 176–77.

[207] Wolters, 179–81.

[208] Wolters, 181.

themselves distracted by cross-talk on sound-powered phones and complained about receiving conflicting orders from different stations within the ship.[209] LCDR Henry E. Bernstein forged early efforts to streamline the information flow aboard the battleship USS California.[210] Bernstein was able to leverage the significant technical expertise he received from completing master's degrees at the Naval Postgraduate School and Harvard with his operational navy experience to develop the predecessor to CIC, Radar Plot.[211] The original Radar Plot was "a makeshift plotting room, one that incorporated a horizontal plotting table, voice radios, and several other appurtenances next to the [radar] console."[212] The creation of a singular radar control center allowed for the creation of a central hub for radar information that was plotted on traditional naval charts. Radar plot allowed for the creation of a unified picture that those within Radar Plot could quickly reference to inform their situational awareness.

The adaptation and modification of Radar Plot was also underway on the USS Yorktown. The Yorktown was focused on addressing a different problem, the timely and accurate dissemination of the information from Radar Plot to other stations on the ship. Radar operators needed significant effort to translate information from their displays into an operational context.[213] Additionally, due to the primitive nature of early radar equipment, operators were only responsible for identifying contacts, not tracking them. Even with a dedicated Radar Plot, the ship was soon overwhelmed with information.[214] As noted by the Commanding Officer of USS Yorktown in February 1941,

> It has been increasingly apparent that separate and complete plotting facilities must be provided in order that full and intelligent use may be made of the information which is obtainable from radar. As at present installed and operated, a mass of unrelated and heterogeneous ranges and bearings is sent from radar by telephone…It is manifestly impossible for any person receiving this information to form from it a mental picture

[209] Wolters, 185.

[210] Wolters, 184.

[211] Wolters, 184–86.

[212] Wolters, 186.

[213] Hone, 156.

[214] Hone, 156.

> which will show him incipient air attacks or approaching targets for gun fire. Furthermore, such a mass of unrelated information is likely to confuse the picture of the tactical situation obtained from other means such as contact reports and reports from lookouts.[215]

While the Radar Plot room may have an understanding of the ship's surroundings based on the fusing of radar data, they were unable to communicate this information to the rest of the ship effectively. Despite this weakness, the USN understood the importance of Radar Plot, and in August 1941, the Chief of Naval Operations (CNO) Harold Stark had Radar Plots installed onboard all Aircraft Carriers.[216] From this point, success on the naval battlefield would depend not only on advances in radar equipment but also on creating a system that could manage the growing amount of information flowing into a ship.[217]

Within two years of its first at-sea radar test, the USN was quickly and decisively implementing the technology which would be invaluable in the coming war. The work on the USS California and Yorktown demonstrated how operational personnel could rapidly and aggressively exploit the possibilities brought about by new technologies. A critical factor in enabling this success was the ability of those experimenting with the new systems to create an effective working relationship with naval shore commands due to "an institutional ethos that dated back decades."[218] In the case of radar, the situation "led to the creation of devices and facilities that assisted operational commanders in managing the tactical information made available by the new technology."[219] Shore commands understood and trusted their commanders at sea. The commanders, in turn, trusted their subordinates to aggressively attack and solve the complex problems created by new technologies. This relationship even flowed down to the civilian engineers assigned to the project. As the captain of the USS New York noted of the engineers, "We found them very agreeable shipmates and cooperative at all times, so much so in fact that I came to

[215] Wolters, 188.

[216] Wolters, 188.

[217] Wolters, 181.

[218] Wolters, 193.

[219] Wolters, 193.

look upon them as regular members of the ship's company and called on them for service just as I would any other officer of the ship."[220] The trust built at all levels of warfare enabled the rapid adoption of radar into the U.S. fleet. While the system did not create a perfect solution, it did create the environment necessary for some operational success which could evolve to unleash the potential of the exciting new technology fully.

The naval intelligence community must be seen as a team member that can be relied upon and trusted. Significant advances in technology will create uncertainty on the naval battlefield. If naval intelligence professionals are not fully integrated within naval units at the tactical level, they will likely be seen as outsiders and less likely to be asked or leveraged to address emerging problems. The naval intelligence community has access to a vast knowledge base of adversary tactics and capabilities. The USN needs to leverage that information to test and validate new systems and tactics to be employed to their highest potential. Warfighters on the future naval battlefield will likely have to contend with the same knowledge problem the developers of Radar Plot were attempting to solve. The naval intelligence community should play a central role in these discussions, especially as collection platforms such as small, unmanned aerial, and surface vessels continue to proliferate. The increased number of sensors available to blue commanders will increase the amount of information available to them, all adding to the cognitive burden of attempting to deploy these sensors effectively. The Naval intelligence community needs to be alongside unit-level commanders to ease these cognitive loads and be a true subject matter expert on adversary operations.

2. Opening Salvos of the War: Radar Plot Under Fire

Two of the first significant tests of Radar Plot would come in the South Pacific, first north of the Solomon Islands, then later in the Battle of the Coral Sea. These two battles demonstrated the limitations of Radar Plot as constructed during the opening phases of the War in the Pacific. In both scenarios, Radar Plot could not process the information available quickly and effectively. In the first situation, Radar Plot was limited by its equipment, and U.S. success was a result of personal initiative and bravery

[220] Wolters, 190.

rather than the tactical advantages brought out by Radar Plot. At Coral Sea, Radar plot was overwhelmed by the amount of incoming information and was limited by communication issues with allied pilots. The lessons learned from these two engagements have two key takeaways for the naval intelligence community. First, information overload is a real threat to operations. Intelligence professionals must be able to use their abilities to decipher adversary movements and pass that information to decision-makers quickly. With the intelligence community concentrating on red, blue decision-makers should be able to spend more time thinking about how to employ their forces rather than trying to understand the situation. Second, personal knowledge, experience, and instinct can play a decisive role during a battle. Naval intelligence professionals must have a keen understanding of the operational environment to hone those instincts and build their knowledge base. Both of these will be relied upon as stress and uncertainty build during the execution of combat operations.

Radar Plot's first test occurred in the South Pacific in February 1942, as the USN was conducting operations north of the Solomons. As laid out in the book *Information at Sea: Shipboard Command and Control in the U. S. Navy, from Mobile Bay to Okinawa*, the aircraft carrier USS Lexington was conducting operations when the Lexington's radar identified an unknown air contact.[221] Radar Plot worked with the ship's fighter director officer to identify the unknown contact and scramble six fighters to intercept the assessed Japanese patrol plane. While four fighters engaged and destroyed the contact and four Japanese fighters, Radar Plot focused on a series of unknown radar contacts fading in and out of the radar scopes. As the aerial battle was ongoing, Radar Plot received a report from one of the destroyers ten miles from the carrier identifying enemy aircraft circling in the distance. Less than three minutes later, while the fighter direction officer was still assessing the incoming report, lookouts on the Lexington reported sighting eight Japanese bombers overhead. The two fighters held in reserve were vectored to intercept the bombers. In a fantastic display of aerial marksmanship, which would earn him the Medal of Honor, LT Edward "Butch" O'Hare "singlehandedly shot down three bombers and

[221] Wolters, 194–96.

severely damaged two more, "allowing the Lexington to escape the battle unscathed."[222] Despite the lack of damage, the clash revealed some of the shortcomings of the Radar Plot. First, radar operators had difficulty conducting a full 360-degree search around the carrier while maintaining situational awareness of friendly and enemy aircraft locations.[223] Second, as noted by the Lexington's Commanding Officer, success was primarily the result of the fighter director officer acting on incomplete information based on instinct and an intuitive understanding of the tactical situation.[224]

These limitations had deadly effects in the Battle of Coral Sea ten weeks later. A U.S. naval force led by two aircraft carriers, the USS Lexington and Yorktown, faced off against a Japanese naval force led by two aircraft carriers of its own. Scout planes for each force spotted each other, and the battlegroups launched near simultaneous strikes with carrier-based aircraft.[225] In the fray, Japanese dive and torpedo bombers were able to conduct a successful attack against the Yorktown, sinking her.[226] Three main issues contributed to the sinking of the Yorktown. First, Radar Plot had to track nearly three times more aircraft than they did in the February battle and were fighting against more technologically advanced platforms and experienced pilots.[227] Second, equipment deficiencies and malfunctions severely limited the ability of Radar Plot aboard the Lexington to keep an accurate track of enemy planes, leading to delays in sending out interceptors and causing the interceptors to be sent at too low an altitude.[228] Third, communication between pilots and the fighter director officer was inefficient as the pilots did not understand the importance of passing information back to Radar Plot.[229] Shortly after the battle, the Yorktown's Commanding Officer noted that during the engagement,

[222] Wolters, 196.

[223] Wolters, 196.

[224] Wolters, 196.

[225] Wolters, 197–98.

[226] Wolters, 198.

[227] Wolters, 198.

[228] Wolters, 198.

[229] Wolters, 199.

Radar Plot could not fully use all the information radars could provide on the Yorktown and its accompanying warships.[230]

In both clashes, Radar Plot fell victim to the unpredictability of both enemy operations and their own equipment. Information overload created significant hurdles for the Radar Plot team as they attempted to build situational awareness and effectively employ the forces under their direction. Misunderstandings between pilots and Radar Plot led to omitted vital information, which could have allowed Radar Plot to regain situational awareness and make sense of identifying friend and foe. The naval intelligence community should heed these lessons and be prepared to support tactical-level decision-makers by easing their cognitive burden. Additionally, the intelligence community must build ties and understanding with other warfare areas so that each side understands what information is important and why.

3. Guadalcanal and the Development of CIC

The Guadalcanal campaign kicked off on August 7, 1942, as U.S. Marines conducted a landing on the island to secure the airfield there and prevent Japanese occupation.[231] The campaign would last for over six months and claim the lives of nearly 1,600 U.S. Soldiers and Marines.[232] Naval losses were even more significant. In its efforts to support land operations and to prevent the resupply of Japanese soldiers on the island, the USN lost 24 warships and over 5,000 sailors.[233] While the battles of Midway and Coral Sea seemed to cement the airplane as the central striking arm of the USN, the naval battles off of Guadalcanal relied upon the sailors of the surface navy, fighting from battleships, cruisers, and destroyers, to ensure an allied victory.[234] U.S. arrogance and

---

[230] Wolters, 199.

[231] "Guadalcanal Campaign: August 1942-February 1943," National Museum of the U.S. Navy, accessed August 4, 2022, https://www.history.navy.mil/content/history/museums/nmusn/explore/photography/wwii/wwii-pacific/wwii-pacific-guadalancanal.html.

[232] James D. Hornfischer, *Neptune's Inferno: The U.S. Navy at Guadalcanal*, 1st ed (New York: Bantam Books, 2011), 11.

[233] Hornfischer, 12.

[234] Hornfischer, 13.

miscalculation of Japan's tactical and technological capabilities paired with the continued failures of Radar Plot to employ their radars to maximum operational value. The CIC grew out of operational necessity and, once employed in the South Pacific, was soon distributed to the rest of the U.S. fleet for adoption. The creation of CIC allowed ship and task force commanders to receive concise, analyzed reporting directly from a trusted team of individuals. The reporting eased the cognitive burden on the commanders enabling them to concentrate on employing their forces to maximize their operational advantage rather than trying to gain situational awareness.

Before operations in the Solomon Islands, the USN "had long assumed would prevail in any direct action with Japanese surface ships. In the cold trade of naval warfare, such preconceptions held no value."[235] The opening phases of the Guadalcanal campaign led to significant defeats for the USN. In early August 1942, during the Battle of Savo Island, a Japanese Naval Task Force of eight ships sunk four allied cruisers, USS Astoria, USS Quincy, USS Vincennes, and the Royal Australian Navy's Canberra acting as a screening force for the transport ships ferrying men and supplies to Guadalcanal.[236] Japan's success in the battle can be attributed mainly to its ability to achieve complete surprise against the allied forces, primarily due to the U.S. and its allies underestimating Japanese intentions and their ability to conduct surface attacks at night.[237] The first indication of the Japanese approach came at 1:47 am when the USS Patterson communicated to allied forces the appearance of unknown contacts on its radar, but the message was largely ignored as the radio channel was filled with "commanders exchanging the administrivia of the midwatch."[238] The radar team on the USS Astoria also tracked an unknown contact on their scopes, but their warnings were ignored by the Officer of the Deck, who was less familiar with radar technology and assessed that the contact was merely an echo from a nearby allied destroyer.[239] Failures to identify the

[235] Hornfischer, 157.

[236] Hone, 159.

[237] Hone, 159.

[238] Hornfischer, 87.

[239] Hornfischer, 87.

oncoming Japanese force were further exacerbated as no one in the allied task force "believed a Japanese fleet could reach them before morning."[240] This assessment was based mainly on a misidentification of the Japanese force earlier that day by allied reconnaissance aircraft, which incorrectly identified two seaplane tenders in the force leading allied commanders to determine that the Japanese force was en route to establish a seaplane base on a nearby island.[241] Despite the best efforts of the allied warships, they could not overcome the advantage the Japanese force had by firing the first salvo. In less than an hour, the allies had lost four cruisers while inflicting only light damage on the Japanese forces.[242]

The failures in the Battle of Savo Island provide essential lessons for the Naval intelligence community. While U.S. naval officers in the battle had access to superior technology to enable situational awareness, radar's effectiveness was hampered due to a lack of understanding of Japanese capabilities and tactics as well as a fundamental lack of trust in the new technology. Additionally, the misidentification of Japanese ships earlier in the day resulted in flawed intelligence assessments, bolstering the allies' belief that they were safe from Japanese attack that fateful night. An incorrect understanding of the enemy directly contributed to Japan's ability to surprise the allied formation at night and provide a devastating opening volley. To avoid such failures in future battles, the naval intelligence community must be aligned to provide commanders with the insights necessary to understand adversary intentions, capabilities, and likely courses of action. Additionally, the naval intelligence community needs to be an active participant in observing and understanding adversary forces during battles. Much of the success of Japanese torpedoes in the naval battles around Guadalcanal can be traced to the United States underestimating the range of Japanese torpedoes.[243] Torpedo strikes against allied ships from outside the assessed effective range of Japanese torpedoes were often falsely

[240] Hornfischer, 88.

[241] Hone, 160.

[242] Hornfischer, 88–102.

[243] Hone, 184.

attributed to submarines operating unnoticed closer to the formation.[244] The failure to recognize the actual range of Japanese torpedoes was understandable as commanders were often overloaded with information merely trying to keep track of friendly ships and made the simple deduction that they could not adequately track the already stealthy Japanese submarines. The Battle of Savo Island demonstrates that the USN needs an entity focused primarily on enemy forces with an understanding of friendly capabilities to improve communication with decision makers. As noted by Nicholas Machiaveli, ""Whoever is more vigilant in observing the designs of the enemy in war, and endures much hardship in training his army, will incur fewer dangers, and can have greater hope for victory."[245] The naval intelligence community should be there to fill the cognitive gap at the tactical level and ease the commander's cognitive load by providing insights into opposing forces and focusing on predicting and tracking adversary units.

As the USN continued to adapt as they fought battles with Japan in the waters off the coast of Guadalcanal, efforts to improve communication between ships continued. These efforts would culminate aboard the destroyer USS Fletcher during the Naval Battle of Guadalcanal from 12-15 November 1942. Leading up to the battle, the ship's commanding officer, CDR W.M. Cole, had his Executive Officer, LCDR Joseph C. Wylie, positioned in the doorway to the radar room where he could observe the radar display.[246] Wylie was able to form his picture of the developing battle and communicate it to Cole and the ship's weapons systems via sound-powered telephone.[247] The system put in place by CDR Cole was effective for two reasons. First, it made Wylie the central node for information from the ship's radars and radios.[248] Once in receipt of this information, Wylie assessed and filtered it before providing it to the ship's captain in a format that the captain would readily understand, enabling rapid action.[249] Additionally,

---

[244] Hone, 196.

[245] Niccolò Machiavelli, *The Art of War: A Revised Edition of the Ellis Farneworth Translation*, The Library of Liberal Arts 196 (Indianapolis: Bobbs-Merrill Educational Publishing, 1965), 202.

[246] Hone, 187.

[247] Hone, 187.

[248] Hone, 191.

[249] Hone, 191.

the one-man CIC freed CDR Cole from the responsibility of directly coordinating with the ship's weapons department as Wylie's understanding of ship operations allowed him to anticipate when the commander would give the order to open fire and coordinated with the ships weapons department to get the guns and torpedoes prepared to engage potential targets.[250] CDR Cole was now free to focus on commanding the ship as a whole with the knowledge that "when he gave the order to engage, weapons were already on target."[251]

Commanders in the heat of battle around Guadalcanal were not the only ones looking to address the limitations of Radar Plot and information flow with ships. Staff officers at Pacific Fleet headquarters were observing battle reports from actions across the theater and saw the need for a better way to route information. Their efforts culminated in tactical bulletin 4TB-42, released in late-November 1942, which instructed ships to create CICs which would be used to "receive, assimilate and evaluate information" and pass that information to the ship's commanding officer.[252] A key point of this memo was that it did not lay out the precise details of how this should be accomplished but allowed each ship's commanding officer to make that determination.[253] 4TB-42 was well received by both tactical commanders and senior naval staff. CNO Ernest King sponsored a conference in January 1943, which more formalized and expanded CIC as created in 4TB-42.[254] The conference concluded that "a minimum of four plots should be present: one for navigation, one for air contacts, one for surface contacts, and a spare that might potentially be used for fighter direction."[255] While Wylie was able to track contacts in his head, this approach limited the potential of CIC, so the conference laid out the creation of a team within CIC. As an example,

> A destroyer CIC had at least eleven individuals. The *evaluator* oversaw the operation and presented a clear picture to the captain and other shipboard functions; a *CIC talker*, connected to the necessary

[250] Hone, 191.

[251] Hone, 191.

[252] Hone, 213.

[253] Hone, 213.

[254] Wolters, 205.

[255] Wolters, 205–6.

> communication circuits, spoke for him. The *surface-search radar operator* observed the radar display; he communicated with the *surface plot recorder*, who gave the *surface plotter* the information necessary to plot surface contacts. A similar three-man organization recorded aerial contacts. The *[radio] recorder* monitored the [radio] communication channels and recorded important details; another individual did the same for the task-force warning net. A *sound operator* tracked sonar contacts. The introduction of these new roles was a symmetry break that allowed a more sophisticated approach.[256]

The formalization of the CIC created a system of distributed cognition.[257] Each team member was assigned a role designed to distribute the cognitive load across the system.[258] Specialization within the team increased "the fidelity and capacity of the organization."[259] CIC's success was instrumental in its widespread adaptation. Commanders' confidence in their CICs grew as the "men manning them had to become more effective at storing, tracking, and making sense of all available information."[260] The widespread adoption of CIC would pay dividends for the USN in WWII as CIC facilitated the situational awareness needed to achieve significant victories at Vella Gulf in August 1943 and the Battle of Cape Saint George in late November 1943.[261]

4. Conclusion

CIC's development and widespread adoption provides a clear lesson for the USN as it prepares to re-engage with peer competitors: decisiveness is key, and information overload is a real threat. The commander must trust their subordinates to sort through the firehose of information coming onboard a ship and provide the commander with accurate, concise, actionable information for success on the naval battlefield. In 2035, the U.S. should expect to operate in an environment similar to that of the U.S. in WWII, defined by peer adversaries and rapid technological disruption. For the U.S. Navy to succeed in

---

[256] Hone, 215.

[257] Wolters, 208, 210–12.

[258] Hone, 215.

[259] Hone, 215.

[260] Hone, 200.

[261] Wolters, 210–11.

this environment, it must be situated to rapidly adopt new technologies and exploit them to its maximum advantage. The naval intelligence community must be an integral part of the Navy team. It must build trust with operational naval forces and understand blue doctrine and capabilities as well as red. The naval intelligence community will play an essential role in supporting USN operations by maximizing friendly advantages and targeting adversarial weaknesses.

D. CONCLUSION

The adoption of the CIC emerged from an obvious need to fuse the information available to commanders on the WWII naval battlefield. CIC was one of a series of significant changes that allowed the USN to fully exploit new technologies developed during and in the lead-up to WWII. CIC provided commanders with a clear tactical picture gifting them an exceptional level of coordination and understanding. In the war's opening phases, the information commanders needed was within their grasp, but it was not being efficiently exploited. CIC was the brain of the Navy's ships, enabled by the distributed cognition enabled by the fusion of incoming information into a single, focused team. Without CIC, radar and visual reports provided a chaotic and confusing picture, a problem further exacerbated by the other demands on a commander's cognition, such as the ship's safe navigation. The distribution of information allowed the USN to the Navy fully utilize the skills and abilities of its crew, making the whole greater than the sum of its parts.

The challenges of combat in the Indo-Pacific of 2035 will be similar to those faced by Navy forces in the Indo-Pacific during WWII. The adaptation of CIC in WWII was successful because it "integrated human-machine system where officers and enlisted personnel used automated, semiautomated, and manual techniques to collect, organize, process, evaluate, and disseminate information."[262] As unmanned systems proliferate, they will give commanders increasing access to data about their operational environment. Commanders will be challenged to make sense of that information and properly employ their sensors for optimal collection. The challenges to the USN in the Indo-Pacific in

[262] Wolters, 5.

2035 will be unpredictable. As experienced by the USN in the naval battles around Guadalcanal, "the faster information flowed, the more the questions proliferated."[263] CIC was able to be effectively implemented because sailors created it at the point of battle. They were able to build their understanding of the new technologies' capabilities and how they changed the operational environment. Paired with this understanding was the trust inherent in the team within the ships. They had operated, trained, bled, and died together during the war. The trust and understanding within these ships allowed for the rapid integration of CIC and the advantage the USN needed to claim victories in the Pacific Theater. Today and into 2035 and beyond, that trust will be built by having intelligence professionals working alongside their warfighting counterparts. Trust is built by creating a shared understanding of goals and the role each team member brings to the table. The naval intelligence community needs to ensure it is part of that team, operating with the sailors that will be using the intelligence community's analysis and collecting the information the intelligence community needs to keep them informed.

[263] Hornfischer, 198.

THIS PAGE INTENTIONALLY LEFT BLANK

V. COMBAT MODELING AND THE ROLE OF INTELLIGENCE AT THE TACTICAL LEVEL

In future battles in the Indo-Pacific, Navy doctrine will call for surface ships to operate alone and unafraid. And based on the geographic challenges of the Pacific Ocean and the location of geopolitical hot spots, USN ships will be outnumbered and face an extremely challenging operational situation. The advantage on the naval battlefield will be with the side effectively using independent reconnaissance-strike complexes acting alone, unafraid, and outside of the standard communications methods the USN has used to successfully conduct long-range power projection missions since the end of the Cold War.[264] Just such an operational environment has been intensively examined by a number of Navy experts, including at NPS, and this chapter reviews that work in order to draw lessons for the future employment of naval intelligence forces. The USN needs new capabilities and tactics to counter the growing threats on the naval battlefield. As noted in NWP 2-0, "IW integrates intelligence to gain insight and guide the targeting of information-related capabilities (IRCs) against enemy warfighting capabilities."[265] While intelligence support to decision makers at the operational and strategic level is important, the Navy cannot ignore the need for IW capabilities, specifically intelligence, at the tactical level.

Through the lens of the surface navy, this chapter uses a derivation of Wayne Hughes' Salvo Equations to examine how intelligence at the tactical level can give naval warfighters an advantage. The chapter ultimately argues that adding a more robust intelligence team onboard U.S. ships is necessary to maintain and advance U.S. naval supremacy worldwide, particularly in the Pacific, where the USN faces its most significant challenges. The new intelligence team should be incorporated with existing IW capabilities on board U.S. Navy warships to form a Scouting Cell. The intelligence function of the Scouting Cell should be built to enable rapid battle damage assessment, effectively search for and target enemy units, and frustrate enemy targeting efforts.

[264] James Wirtz et al., 38–40.

[265] "Naval Warfare Publication 2-0 Naval Intelligence" (Department of the Navy, March 2014), 8.

Together, these abilities will give the USN the advantage it needs to decisively defeat the enemy and maintain its naval supremacy.

A. ATTACK EFFECTIVELY FIRST: WAYNE HUGHES, SALVO MODELS, AND SCOUTING

Simply put, the role of naval intelligence, and the IW community as a whole, is to ensure U.S. naval forces have the necessary information to be in the right place, at the right time, with the right capabilities to defeat adversarial naval forces and advance U.S. interests. This role closely aligns with the idea of scouting, discussed by CAPT Wayne Hughes in his seminal work, *Fleet Tactics and Naval Operations Third Edition.*[6] Hughes defines scouting as "the act of search, detection, tracking, targeting and enemy damage assessment" and delivering that information to the commander.[7] Hughes also discusses antiscouting, which includes jamming enemy radars or radios, the employment of decoys, or the use of technologies to reduce radar cross-section. Scouting greatly influenced Hughes's 6th cornerstone of naval tactics, "attack effectively first."[266] As noted by Hughes in a 2018 interview, "the missile age and the longer range of weapons and sensors have changed the tactical needed to attack effectively first."[267] By striking first, especially against modern warships with large cruise missile magazines, the attacking side can quickly attrite the combat power of the opponent. A lopsided opening engagement gives the attacking side a significant advantage by immediately reducing the combat power of the opposing force. It is therefore imperative that Naval intelligence professionals are able to aid in the effective implementation of scouting efforts and ensure friendly antiscouting efforts are optimized to defeat enemy sensors and tactics.

Hughes defined five scouting-related measures required for an effective attack as denoted in Table 1.[268] Naval intelligence must be prepared and available to provide direct support to tactical units in each of these areas. As discussed in Chapter 4 of this thesis,

---

[266] Wayne P. Hughes and Robert Girrier, *Fleet Tactics and Naval Operations*, Third edition, The U.S. Naval Institute Blue & Gold Professional Library (Annapolis, Maryland: Naval Institute Press, 2018), 29.

[267] "Fleet Tactics Returns – A Conversation with Authors Wayne Hughes and Bob Girrier | Center for International Maritime Security," accessed August 20, 2022, https://cimsec.org/fleet-tactics-returns-a-conversation-with-authors-wayne-hughes-and-bob-girrier/.

[268] Hughes and Girrier, 29.

having naval intelligence professionals as an integrated team member enables significant advantages for tactical level units in decision-making processes and the effective execution of operations.

Table 1. Measures Required for Effective Attack as Advocated by Hughes

Measures Required for Effective Attack	
Strategic detection	Observation of major enemy force presence or future presence in a region
Tactical detection	Location of the enemy for the purpose of attacking him
Tracking	Knowledge of enemy position sufficient to launch a successful attack
Targeting	Determination of enemy dispositions in detail sufficient to attack with maximum effectiveness
Attacking	Control of a coordinated, concentrated attack
Damage assessment	Post-attack evaluation of the results

Breaking down the five scouting-related measures into potential roles for a scouting cell provides insights into the intelligence capabilities needed in the scouting cell. Strategic detection can be related to a fleet's overall Common Operational Picture (COP) management. Intelligence personnel working in a Maritime Operation Center or other operational level commands could likely fill this role to give general indications of where an enemy may be operating. Strategic detections would then inform where tactical units need to optimize their collection efforts to gain tactical detection. Efforts to improve tactical detection could come via communication with theater-level ISR platforms or the tasking of organic collection. This would require an in-depth knowledge of collection platform capabilities and the nuances of collection management and dynamic tasking. Once tactical detection is achieved, it will be of the utmost importance for the organic unit to increase its fidelity on the track to the point where a targeting solution can be achieved. Efforts to increase fidelity on a target will require a balance of risk between increasing collection against a target via more concentrated emissions or the proliferation of passive sensors. Either option creates risk in alerting an enemy unit that they have been

located and thereby able to deploy their antiscouting measures such as jamming or employing decoys.

Attacking itself does not directly relate to scouting as laid out by Hughes, but as discussed later in this chapter, informing firing doctrine based on known enemy capabilities can give a numerically inferior force a significant advantage by optimizing the employment of firepower against the enemy. Finally, damage assessment is necessary to determine if a re-attack is necessary or if the unit can return to the strategic detection measure and begin attempting to locate other enemy units. The advantages of superior battle damage assessment will be laid out later in this chapter. In conclusion, the enable an effective attack, Naval intelligence must provide tactical units with an accurate COP, collection management, knowledge of enemy capabilities, and the ability to conduct rapid and accurate battle damage assessment.

Salvo equations developed by Hughes provide further insights into the needs of naval forces to defeat the enemy while limiting friendly losses. Hughes developed Salvo Equations as a simple way to assess and understand how combat is likely to play out in an exchange of pulsed firepower, such as attacks by carrier-based aircraft against an opposing fleet or the launching of missile salvos by modern warships. The following equation shows the calculation for determining the number of Side B ships put out of action by Side A[269]

$\Delta B =$,

where:

A, B = number of ships,
$\Delta A, \Delta B$ = number of ships lost or put out of action,
, = number of hits to put a unit out of action, or staying power,
, = number of shots/salvo per unit (striking power) that would hit if no defense,
, = number of shots eliminated by the defending ship, or defensive power,
, = scouting effectiveness $0 < \sigma < 1$
, = defender alertness $0 < \tau < 1$

[269] Jeffrey Kline, "Exploring Effects of Counter-Targeting in Naval Warfare" (Naval Postgraduate School, April 14, 2021), 4–5.

Here is an application in a fictional future operational scenario to better understand the equation. The numbers and analysis are purely hypothetical and used for ease of understanding. Task Force A comprises three USN Arleigh Burke Destroyers, so *A* is set to 3. Task Force B comprises three PLAN Luyang III destroyers, so *B* is also set to 3. Damage control on the Arleigh Burke is superior to the Luyang, so the staying power (a_1, $b_{1)}$, or the number of hits required to put the Burkes out of action is 4, and the staying power of the Luyangs is 3. The Luyangs have more capable anti-ship cruise missiles, so their striking power (a_2, b_2) or the number of successful hits per salvo is higher than the Burkes. Therefore, b_2 is set 9 and a_2 at 5. The point defense systems aboard the Burkes are superior to the Luyang, giving the Burke a higher defensive power (a_3, b_3), meaning the Burke can shoot down more incoming missiles than the Luyang. Therefore a_3 is set at 2 and b_3 at 1. The Burke Task Force has better scouting via its newly implemented scouting cell, but its scouting is not perfect, so the Burke's scouting effectiveness, σ_A, is set to 0.75. The Luyang Task Force receives some third-party queuing in addition to its onboard sensors, the Luyang's scouting effectiveness, σ_B, is set to 0.4. Both Task Forces are aware that they are within striking range of the other and have set general quarters, the ships are fully manned and ready to fight, so each side's defender alertness (τ_A, τ_B) is set to 1, meaning they are fully alert. These numbers are summarized in Table 2.

Applying these numbers to Equation One yields the following.

$$\Delta B = \frac{0.75 * 5 * 3 - 1 * 1 * 3}{3}$$

$$\Delta A = \frac{0.40 * 9 * 3 - 1 * 2 * 3}{4}$$

Simplifying, the number of ships lost in the Luyang Task Force (ΔB) is 2.75 and the number of ships lost in the Burke Task Force (ΔA) is 1.2. Or in other terms the Burkes can expect to sink two of the Luyangs and severely damage the third. The Luyangs can expect to sink one Burke and lightly damage another.

While the equation cannot perfectly anticipate the results of modern naval combat, it allows individuals to draw insights into naval combat based on broad parameters to inform naval strategy, doctrine, and TTPs. In the fictional example presented, the Burke Task Force overcame the Luyang Task Force's superior firepower with a combination of superior scouting, point defense, and damage control. The equation's simplicity allowed its adaptation to various warfare scenarios over the years and provides a foundation to understand how various aspects of naval warfare will influence the outcome of naval combat.

Table 2. Hypothetical Scenario Values for Hughes' Equation

	Side A: Burke Task Force	**Side B: Luyang Task Force**
Number of Ships (*A/B*)	3	3
staying power (a_1/b_1)	4	3
striking power (a_2/b_2)	5	9
defensive power (a_3/b_3)	2	1
Scouting effectiveness (σ_A/σ_B)	0.75	0.4
Defender alertness (τ_A/τ_B)	1	1

B. SALVO EQUATIONS: THE VALUE OF INFORMATION

One derivation of Hughes' Salvo Equation is the Stochastic Salvo Model. The model applied probabilities related to missile targeting to the original Hughes Equation to evaluate the results of one or more salvo exchanges.[270] Thesis work at NPS by John McGunnigle used a Stochastic Salvo Model to assess the value of information advantage

[270] Michael J. Armstrong, "A Stochastic Salvo Model for Naval Surface Combat," *Operations Research* 53, no. 5 (October 2005): 830–41, https://doi.org/10.1287/opre.1040.0195.

in a like-force naval engagement.[271] His first set of simulations tested the value of information to otherwise equally matched naval forces in one, two, and three salvo engagements. McGunnigle ran three simulations with increasing levels of information advantage for the Blue force. This section outlines the results of each simulation individually and then includes a comparison of all three simulations at the end of the section.

The first simulation gives the Blue force perfect knowledge of Red's ability to defend against incoming missiles. An example would be Blue knowing that Red can shoot down 25% of the missiles in an incoming salvo, and in response, Blue increases its salvo size by 25% to offset Red's defensive capabilities. Figure 4 demonstrates that this significantly increases the fraction of red forces killed in the engagement compared to cases without blue enjoying an information advantage.[272]

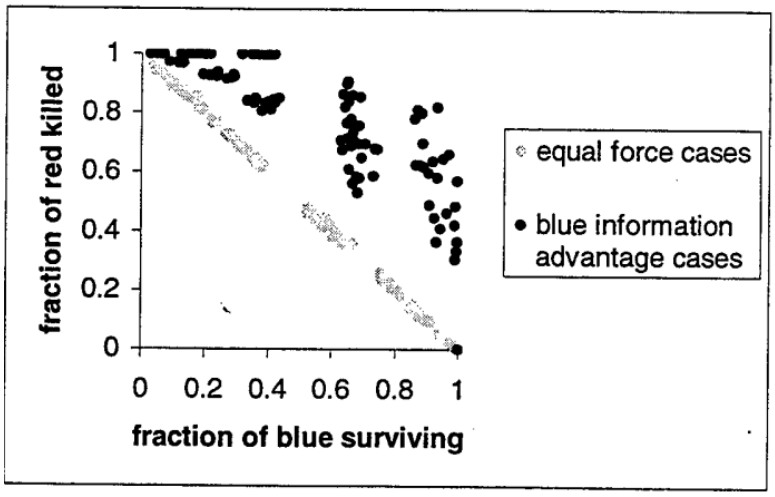

Figure 4. Simulation One: Results when Blue has perfect information on Red units' defensive capability compared to equal force cases[273]

[271] John McGunnigle, "An Exploratory Analysis of the Military Value of Information and Force" (Master's Thesis, Monterey, California: Naval Postgraduate School, 1999), https://cathoun.nps.edu/handle/10945/13459.

[272] McGunnigle, 36.

[273] McGunnigle, 36.

The second simulation gave Blue perfect knowledge of Red's defensive capability as well as Red's staying power, the number of hits needed to put an Red's units out of action. Figure 5 demonstrates that the dual information advantage continues to increase the likelihood of Blue completely annihilating Red while losing fewer units.

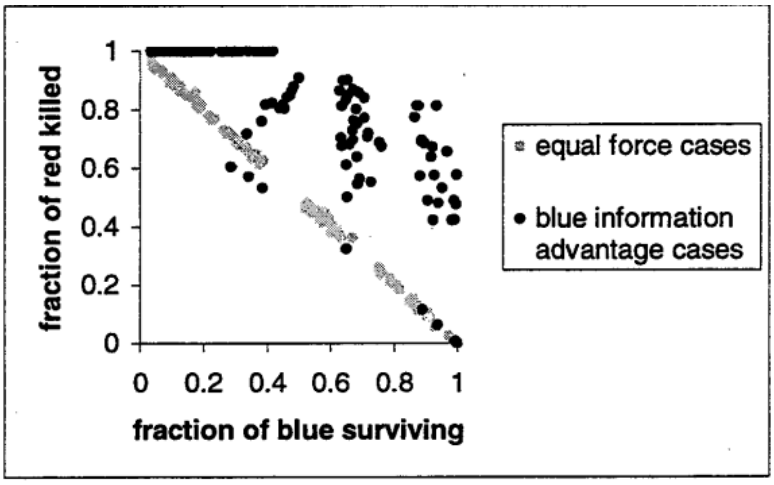

Figure 5. Simulation Two: Results when Blue has perfect information on Red units' defensive capability and staying power compared to equal force cases[274]

Interestingly, the figure also shows that information advantage could lead to less optimal results in some limited occasions. The negative results occur when "the firepower and staying power for each unit is relatively high compared to the defensive capability and number of units," and are caused by the random nature of the shot distribution in these scenarios as "a larger group of damaged units are significantly less effective than a group of fewer undamaged units."[275]

The third simulation provided Blue with perfect knowledge of Red's defensive capability, staying power, and the knowledge of which Red units are out of action. Figure 6 demonstrates the triple information advantage.

[274] McGunnigle, 37.

[275] McGunnigle, 37.

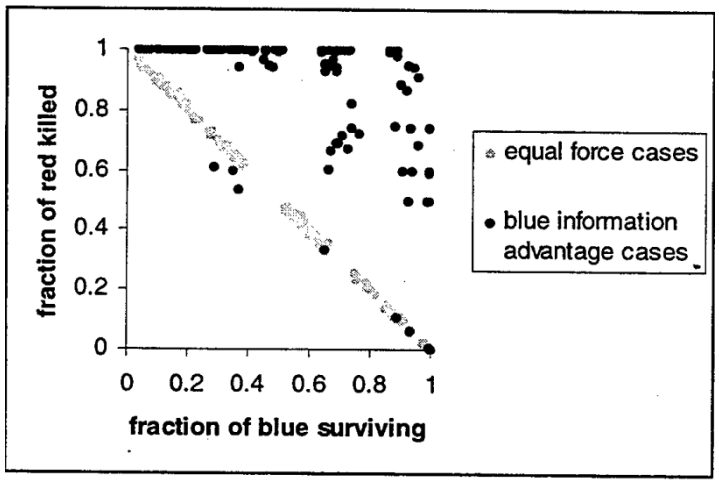

Figure 6. Simulation 3: Results when Blue has perfect information on Red units' defensive capability, staying power, and knowledge of when Red forces are out of action compared to equal force cases[276]

Blue was much more likely to annihilate the Red force completely. However, there were still cases when the additional information was less optimal for the same reason mentioned in the second simulation.

McGunnigle's simulations demonstrate the advantages of information advantage in naval combat. A comparison of all three simulations in Figure 7 clearly demonstrates the progressive advantage of additional information as more points are moved to the top and left of the chart as additional information is revealed to Blue.

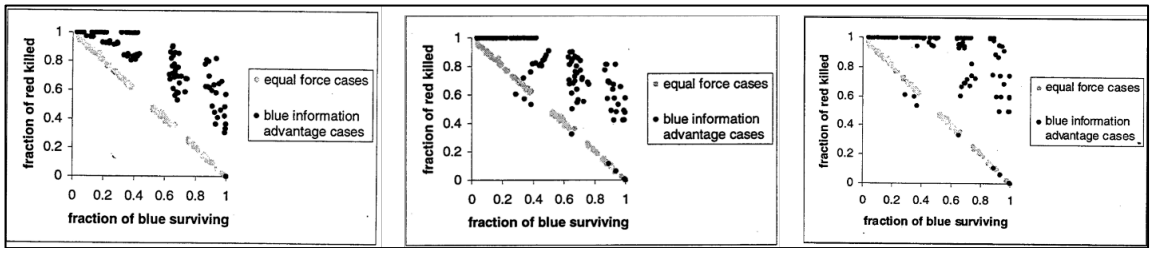

Figure 7. Results of the three simulations in order from left to right.[277]

[276] McGunnigle, 38.

[277] McGunnigle, 36–38.

Therefore, ships must be able to manage and exploit the information environment to their advantage. Some of the knowledge gained, such as enemy ships' defensive capability of enemy ships, can be collected in peacetime environments and used to determine shot doctrine. However, these assessments may change under battle conditions, and it is therefore imperative that the intelligence community be in a place to collect and analyze the information. In an electromagnetically contested environment, organic capabilities such as small unmanned systems or passive sensors will have the most limited electronic signature and therefore are the most likely platforms to collect this information. National and theater-level collections may not be in the right place to collect the needed information, and even if they are, they would require additional transmission to disseminate the information to the fleet. These extra transmissions increase the risk of interception, deception, or decoding in an electromagnetically contested environment. Intelligence professionals at the tactical level should be able to provide commanders with a realistic expectation and understanding of the assessments that go into the formation of shot doctrine, including areas derived from low-probability assessments. The commanders can then better understand the operating environment and the risks they are taking as they go harm's way. Intelligence professionals also need to take an active role in assessing enemy capabilities during battles to update and refine intelligence assessments leading to greater success in future engagements.

C. BE BETTER THAN A COIN FLIP: SCOUTING AND BATTLE DAMAGE ASSESSMENT

The Scouting Cell can also enable timely and accurate BDA by effectively using tactical collection assets paired with an in-depth knowledge base on enemy platforms. Charles R. Garnett studied this in "Sensitivity to Kill Recognition for Raid Survival," which investigated the statistical difference in missiles fired during an engagement based on recognizable kill instead of the commonly used metric, mission kill.[278] The basic

[278] Charles Garnett, “Sensitivity to Kill Recognition for Raid Survival” (Bowhead Support Services, n.d.), 1.

premise behind Garnett's work was that if one side can recognize a kill, it can reduce the overall number of salvos necessary to engage a target. The results of Garnett's study vary based upon shot doctrine but assuming a two salvo, two-round shot doctrine (that is, each salvo consists of two weapons, and the firing platform "looks" at the target to determine if it is still a threat in between salvos), by increasing kill recognition, fewer missiles are needed to achieve the same relative chance of defeating an enemy ship, as illustrated by Figure 8.[279]

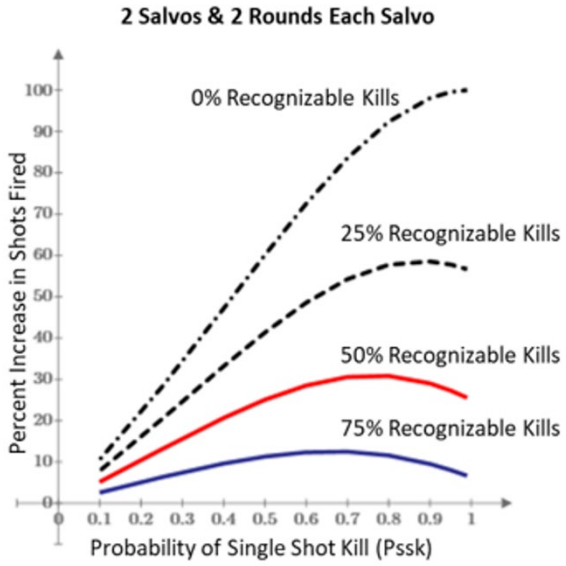

Figure 8. Percentage change in number of shots fired based on recognizable kills[280]

Given the data demonstrated in Figure 8, and without delving into classified discussions, assuming modern warships without a Scouting Cell can recognize a mission kill with a 25% success rate and the addition of a Scouting Cell could increase the rate of recognizable kills to only 50%, the presence of a Scouting Cell would decrease the overall number of missiles needed per engagement by 30%. Applied to the most modern

[279] Garnett, 3.

[280] Garnett, 3.

version of an Arleigh Burke destroyer, the value provided by a Scouting Cell could free up 29 Vertical Launch System (VLS) cells for either additional surface engagements or to increase the defensive power of the ship with the inclusion of additional air-to-air interceptor missiles. The ability to conduct rapid BDA would preserve missile stocks, thereby increasing the number of engagements per ship and decreasing the amount of locational and targeting data passed to the enemy via infrared emissions from missile firings and electronic emissions from fire control radars and other C2 systems.

The intelligence role of the members of a Scouting Cell to inform BDA would require the formation of a robust afloat collection management capability focused on linking national, theater, and organic capabilities. Collection capabilities are expanding at the tactical level. As noted by Col. Victor Argobright, the program manager for the Navy and Marine Corps Small Tactical Unmanned Aircraft Systems office, in an April 2022 presentation, in the near future, the U.S. Navy and Marine Corps will "field systems for use by individual squadrons and platoons who can operate and maintain the UAS without putting a strain on their resources."[281] While this increase in collection capabilities will certainly increase the ISR capability of each unit, it will require a dedicated professional to manage the optimal employment of the new systems. Unmanned arial, surface, and subsurface vehicles will all have different capabilities and limitations that will need to be understood and managed. While AI systems will likely be developed to aid in this planning process, they should not be solely relied upon by naval professionals focused on other missions aboard the ship. Intelligence professionals are all trained to at least a basic understanding of collection management and capabilities. And many also attend more specialized training focused on collection management and employment. However, many of these trained individuals are located at the operational level commands under current manning paradigms. During high-end combat operations in an electromagnetically

[281] "NAVAIR Shares New Vision for Small UAS Procurement," SeaWaves Magazine, accessed September 4, 2022, https://seawaves.com/?p=20847.

contested environment, individual units should not have to rely upon remote commands to provide them with much-needed help in optimally employing their collection capabilities. It is therefore imperative to place trained collection managers at the tactical level to leverage the increased collection capability that each unit will have given the proliferation of unmanned systems.

D. DEGRADE RED TO ENABLE BLUE: ANTI-SCOUTING

The ability to prevent Blue units from being targeted is just as crucial as targeting enemy units. In addition to increasing Blue's overall striking and combat power, a Scouting Cell would be responsible for defeating enemy scouting efforts, which Hughes defined as anti-scouting. In his article "Exploring Effects of Counter-Targeting in Naval Warfare," CAPT (ret.) Jeff Kline discussed such efforts and demonstrated the effectiveness of complicating a Red targeting solution using Hughes Salvo Equations.[282] Simplifying a salvo equation where offensive powers, defensive powers, staying powers, and defense alertness are equal on both sides, Kline determined that if a force is outnumbered, it must degrade the scouting ability of the opposing side by the inverse square of the opponent's force advantage. The following equation and Figure 9 illustrate the ramifications of the inverse square[283]

$$\sigma_A \kappa^2 = \sigma_b \text{ or } \sigma_A = \frac{\sigma_b}{\kappa^2},$$

where:

, = scouting effectiveness $0 < \sigma < 1$

κ = force advantage multiple

[282] Kline, 4–6.

[283] Kline, 7–9.

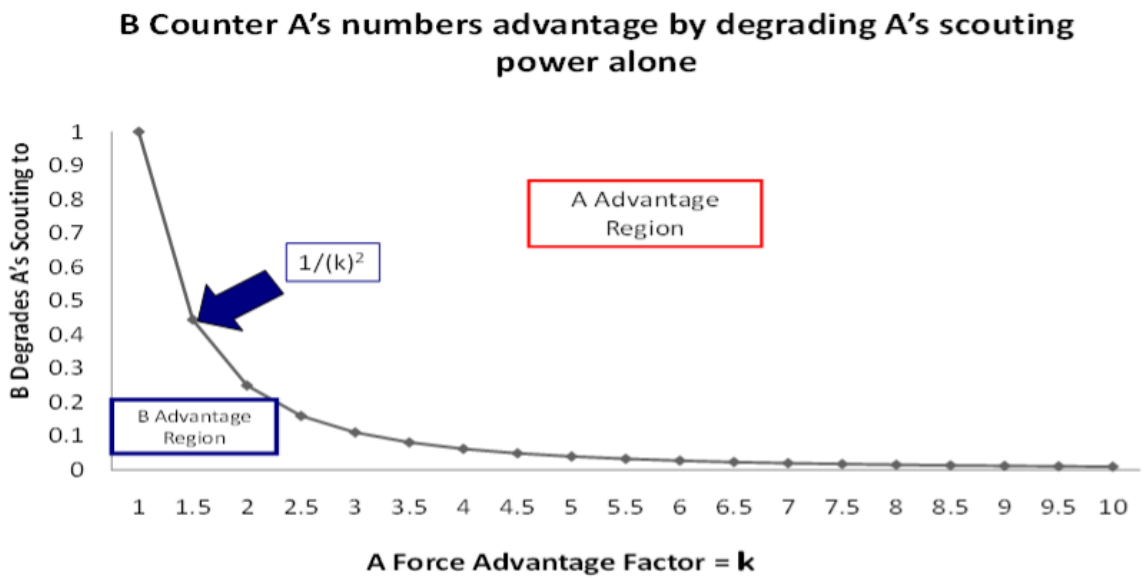

Figure 9. Relationship between scouting and force advantage based on Salvo Equations[284]

To expound on one set of results from the equation and chart, if Red has twice as many ships as Blue and Blue has 100% effective scouting, then Blue can achieve parity if it can degrade Red's targeting to 25% of its own and win with a 4x targeting advantage.[285] Kline's work demonstrates the need for a scouting cell to enable less numerous Blue ships to conduct effective operations, especially in the early phases of a potential Pacific conflict where the tyranny of distance will limit the number of available USN units. Each ship must fight and win independently, even when at a numerical disadvantage, a challenging task demonstrated by Salvo Equations. The Navy's embrace of the Scouting Cell on ships is a potential rapid change the Navy could employ and is a much simpler endeavor than acquiring new ships or weapons systems. Naval intelligence professionals should be ready to work closely with their cryptologic counterparts to conduct effective antiscouting operations mainly targeted at countering specific adversarial capabilities and tactics.

[284] Jeffrey Kline, 9.

[285] Kline, 8.

E. CONCLUSION

The USN needs to ensure warfighters have access to the tactical level information they need to succeed in a fight. Naval warfare in the Indo-Pacific in 2035 will place USN surface ships in a challenging operational environment, likely outnumbered and with limited communications to central fleet nodes. As forward strike platforms in an electromagnetically contested environment, individual combatants will need organic IW capabilities. Intelligence needs to be an integral part of this IW capability to provide ships with the information needed to leverage their full warfighting capacity. Key intelligence capabilities will be battle damage assessment, targeting, collection management, and, most importantly, an intimate knowledge of adversarial capabilities and tactics.

THIS PAGE INTENTIONALLY LEFT BLANK

VI. CONCLUSION

A. SUMMARY

The Indo-Pacific will be the primary theater for strategic competition into 2035 and beyond. The challenges faced there will be shaped by a number of global trends, most notably: the reemergence of multipolarity, the continued rise of China, the increasing importance of the Global South, and the introduction of new technologies. China will continue to be the most pressing threat to U.S. interests in the region despite China's domestic challenges such as demographic or financial-related issues. The independence of Taiwan will be a central issue influencing U.S.-China relations. The importance and integration of AI will continue to grow and give commanders access to increased amounts of curated information. Addressing all the challenges and opportunities in this future world will force the naval Intelligence community to shift its employment of intelligence personnel to ensure continued U.S. naval dominance.

As discussed in Chapter III, British failures to prevent the outbreak and seizure of the Falkland Islands in 1982 demonstrate how the intelligence community and political decision-makers need to leverage tactical intelligence to provide strategic warning and prevent a fait accompli by an opponent. Along this vein, to advance U.S. interests in the Indo-Pacific today and in the future, the USN needs to uphold an effective deterrence framework enabled by strategic warning and understanding of the adversary to prevent a similar situation from playing out in the Indo-Pacific. Successful strategic warning is achieved via tactical intelligence delivered to receptive decision-makers. Tactical level intelligence is the most likely to be acted upon by senior decision-makers and thus is extremely important to ensure U.S. actions will be undertaken quickly and prevent the outbreak of conflict through effective deterrence. Naval intelligence professionals can contribute to deterrence by providing expert advice on adversary forces and informing commanders of the potential adversary reactions

Lessons learned by the USN in the Indo-Pacific during WWII should serve as a guiding beacon for the USN today as it positions itself for success in the future. As

discussed in Chapter IV, the introduction of radar and the development of CIC demonstrate the importance of streamlined information flow on the naval battlefield. In the future Indo-Pacific, intelligence capabilities at the tactical level will be necessary to enable effective information flow. Naval intelligence should be focused on understanding, anticipating, and finding adversary forces, thus freeing operational warfighters to focus their mental efforts on the effective employment of the combat power available to them. Naval intelligence professionals need to be trusted members of warfighting teams. This means that naval intelligence should understand the warfighter's needs, and warfighters should understand the capabilities and limitations of intelligence. Effective information flow enabled by a team united by trust will be a crucial capability for the USN in the Indo-Pacific in 2035 and beyond.

In future battles in the Indo-Pacific, USN ships will be outnumbered and face an extremely challenging operational situation. Advantage on the naval battlefield will go to the side that is best able to leverage the information environment at the tactical level. Salvo models developed by Wayne Hughes at NPS and expanded upon by others demonstrate the value of information to naval forces at the tactical level. Naval intelligence should provide ships with organic capabilities to conduct battle damage assessment, collection management, targeting, and knowledge of the opposing force's strengths and weaknesses. Combat modeling demonstrates the value the naval intelligence community can provide to tactical level units if the intelligence community is oriented to provide decision-makers at the tactical level with the information they need to increase their combat power and prevail over their enemies.

B. RECOMMENDATIONS

This thesis found that tactical intelligence and intelligence support at the tactical level are the most important capabilities the Intelligence community can provide to ensure U.S. success in the Indo-Pacific in 2035. To ensure these capabilities are available to the fleet by 2035, the following three recommendations are provided.

First, the intelligence community should advocate for incorporating more intelligence personnel on surface ships. Currently, naval intelligence manning in the non-

flat deck surface fleet is limited to one experienced enlisted sailor, normally an E-6 or E-7 onboard cruisers, destroyers, and amphibious transport docks (LPD). Smaller surface platforms such as littoral combat ships and frigates do not have any organic intelligence support. The naval intelligence community should advocate the surface force to provide the funding necessary to increase the number of intelligence billets on ships. For Cruisers and Destroyers, adding one junior intelligence officer and three junior enlisted sailors could provide the intelligence support needed to support naval operations in the Indo-Pacific in 2035 and beyond. The junior enlisted sailors should include one all-source analyst, one imagery analyst, and one strike analyst. Littoral Combat Ship and Frigate manning should also be enhanced by adding one Chief Warrant Officer and at least two additional enlisted sailors, one an all-source analyst and the other a strike analyst. This model would necessitate a significant manning increase for the naval intelligence community, an increase of approximately 150 junior officers and 750 enlisted sailors. To meet this framework, the Navy would likely have to look to transferring billets from other commands as well as increasing ascensions. Billets could be freed up by consolidating intelligence support at operational-level commands and centralizing that support at intelligence nodes such as MOCs. Understanding the manning challenges, the expansion of the intelligence team on USN ships will provide the ships with the information advantage needed to conduct successful naval operations in the Indo-Pacific through an increase in organic intelligence capabilities and giving intelligence professionals a better understanding of blue force operations.

Second, the naval intelligence community should expand training to junior officers and enlisted sailors. Additional schooling following basic intelligence training and before arrival at a sailor's first sea duty assignment should be created, focused on teaching intelligence professionals more about the warfare area of their future assignment. For example, an intelligence officer assigned to a surface ship following basic intelligence training should attend a course that covers the baseline knowledge needed to become a trusted member of their new unit. This training would focus on instilling a deep understanding of adversary surface warfare capabilities and tactics. It would also give a baseline on friendly capabilities and tactics. It should be taught by

Warfare Tactics Instructors and those that have recently finished intelligence tours onboard surface vessels. A few potential models to emulate include the LCS "Train to Qualify" program, the EA-18G community's EA-18G Intelligence Basic Course and the EA-18G Intelligence PQS, or the Air Force's Intelligence Formalized Training Unit. Intelligence professionals should show up to their first sea duty armed with the knowledge needed to advise decision-makers aboard the ship and quickly integrate as a member of the ship's team. Unrestricted Line Officers such as aviators, special warfare operators, and submariners all show up to their first sea-going command with significant training under their belt; the intelligence community should follow the same path.

Third, the naval intelligence community should adopt specialized career tracks based on warfare areas. Under the current manning paradigm, a newly minted intelligence officer could serve their first tour onboard an Amphibious Assault Ship and focus on expeditionary warfare; go to a MOC to provide intelligence support at the operational level of war; follow their tour at the MOC with a shore tour supporting human intelligence operations; then go back to sea as an O-4 supporting a Carrier Air Wing. In each of these tours, the intelligence officer would be required to understand a different baseline knowledge of both friendly and adversarial operations. An intelligence professional's ability to provide the information decision-makers need relies upon the intelligence professional's capacity to leverage a deep knowledge base that can only be built with training and experience. Specialization can help ensure that the knowledge base continues to grow and be leveraged by the decision-makers that need it.

C. FUTURE WORK

There are several avenues for future research to build upon the findings of this thesis and are worth being explored to help inform the needed transition within the naval intelligence community.

A classified look into the same problem-set could disprove, validate or provide nuance to the findings in this thesis with a deeper dive into DMO doctrine, particularly concerning the exploitation of the electromagnetic spectrum. Classified information could also provide a more grounded look into the future of the Indo-Pacific by leveraging

classified analysis of the region. Classified analysis could also provide better information and insights for Chapter V's equations and models.

This thesis did not touch upon intelligence support to the submarine community, largely due to classification concerns. Tactical level intelligence support to the submarine force would likely look the same as the support needed in the surface force, but a dedicated study into the issue is warranted. A similar look into intelligence support to the Expeditionary Warfare community would also be warranted.

A detailed manning analysis on how to enact recommendations of this thesis, given budgetary, training, and recruiting constraints, would be helpful. The study could better identify potential areas for the Navy to accept risk to enable the needed changes in navy intelligence billeting.

A study into the level of integration and understanding that exists in the Navy Special Warfare and Aviation communities would be useful in determining the effect of increased naval intelligence support at the tactical level. These findings could be used to address training, manning, or cultural shortfalls as naval intelligence looks to expand its footprint into the surface community.

D. CONCLUSION

For success in the Indo-Pacific in 2035 and beyond, the naval intelligence community needs to orient itself tactically. It must ensure it is providing tactical-level intelligence to decision-makers at all levels to facilitate rapid response to emerging situations. The naval intelligence community must also ingrain itself at the tactical level. Tactical level support will allow intelligence professionals to build trust with their warfighting counterparts and understand their needs and concerns. As part of building this trust, the naval intelligence community needs to have a deep understanding of the adversary and a working knowledge of the USN’s own capabilities and tactics. Intelligence at the tactical level can provide the warfighting advantage the USN will need during a future conflict in the Indo-Pacific by ensuring decision-makers have the information they need to prevail in a fight when outnumbered.

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF REFERENCES

"About NCIS." Accessed September 1, 2022. https://www.ncis.navy.mil/About-NCIS/.

Andarcia, Luis. *Falkland's War: Strategic, Intelligence and Diplomatic Failures.* ADA157369. Carlisle Barracks, PA: Army War College 1985. https://apps.dtic.mil/sti/citations/ADA157369.

Armstrong, Michael J. "A Stochastic Salvo Model for Naval Surface Combat." *Operations Research* 53, no. 5 (October 2005): 830–41. https://doi.org/10.1287/opre.1040.0195.

Atherton, Kelsey. "Understanding the Errors Introduced by Military AI Applications." *Brookings*, May 6, 2022. https://www.brookings.edu/techstream/understanding-the-errors-introduced-by-military-ai-applications/.

Baker, David P., Rachel Day, and Eduardo Salas. "Teamwork as an Essential Component of High-Reliability Organizations." *Health Services Research* 41, no. 4 Pt 2 (August 2006): 1576–98. https://doi.org/10.1111/j.1475-6773.2006.00566.x.

Barker, Nicholas. *Beyond Endurance: An Epic of Whitehall and the South Atlantic Conflict*. London: Leo Cooper, 2002.

Beattie, Troy J. "Conventional Deterrence and the Falkland Islands Conflict." Master's Thesis, Navy Postgraduate School, 2010. http://hdl.handle.net/10945/5357.

Biden, Joseph. "Interim National Security Strategic Guidance." The White House, March 2021. https://www.whitehouse.gov/wp-content/uploads/2021/03/NSC-1v2.pdf.

Braithwaite, Kenneth, David Berger, Michael Gilday, and Karl Schultz. "Advantage at Sea Prevailing with Integrated All-Domain Naval Power." Department of the Navy, December 1, 2020. https://apps.dtic.mil/sti/pdfs/AD1118532.pdf.

Cannon-Bowers, Janis A., and Eduardo Salas. "Reflections on Shared Cognition." *Journal of Organizational Behavior* 22, no. 2 (2001): 195–202. https://doi.org/10.1002/job.82.

Combined Maritime Forces (CMF). "About Combined Maritime Forces (CMF)," August 18, 2010. https://combinedmaritimeforces.com/about/.

Coombe, Peter J. "Exploring the Development of Trust Between Human and Autonomous Teammates." Master's Thesis, Naval Postgraduate School, 2020. http://hdl.handle.net/10945/66060.

Cooper, Zack. "The Future Indo-Pacific Order." *Security Challenges* 16, no. 3 (2020): 5–9.

Corbett, Julian. “The Project Gutenberg EBook of Some Principles of Maritime Strategy.” Accessed August 6, 2021. https://www.gutenberg.org/files/15076/15076-h/15076-h.htm.

Cruz, Yniol A. “CV or Not to Be? Alternatives to U.S. Sea-Based Air Power.” Master’s thesis, Navy Postgraduate School, 2008. http://hdl.handle.net/10945/4077.

Dados, Nour, and Raewyn Connell. “The Global South.” *Contexts* 11, no. 1 (February 1, 2012): 12–13. https://doi.org/10.1177/1536504212436479.

Dahl, Erik J. *Intelligence and Surprise Attack: Failure and Success from Pearl Harbor to 9/11 and Beyond*. Washington, DC: Georgetown University Press, 2013.

Dahm, Michael. “Chinese Debates on the Military Utility of Artificial Intelligence.” War on the Rocks, June 5, 2020. https://warontherocks.com/2020/06/chinese-debates-on-the-military-utility-of-artificial-intelligence/.

Darshana, Baruah, and Caroline Duckworth. “We’re Thinking About the Indian Ocean All Wrong.” Carnegie Endowment for International Peace. Accessed July 28, 2022. https://carnegieendowment.org/2022/05/02/we-re-thinking-about-indian-ocean-all-wrong-pub-87028.

Del Toro, Carlos. “One Navy-Marine Corps Team: Strategic Guidance From The Secretary of the Navy.” Department of the Navy, October 8, 2021. https://media.defense.gov/2021/Oct/07/2002870427/-1/-1/0/SECNAV%20STRATEGIC%20GUIDANCE_100721.PDF.

DigiChina. “Full Translation: China’s ‘New Generation Artificial Intelligence Development Plan’ (2017).” Accessed August 3, 2022. https://digichina.stanford.edu/work/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017/.

“Department of the Navy Unmanned Campaign Framework.” Department of the Navy, March 16, 2021. https://www.navy.mil/Portals/1/Strategic/20210315%20Unmanned%20Campaign_Final_LowRes.pdf?ver=LtCZ-BPlWki6vCBTdgtDMA%3d%3d.

“Doctrine for the Armed Forces of the United States, the DOD Dictionary of Military and Associated Terms.” Department of Defense, November 2021. https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/dictionary.pdf?ver=J3xmdacJe_L_DMvIUhE7gA%3d%3d.

“DOD Dictionary of Military and Associated Terms.” Department of Defense, May 2022. https://jdeis.js.mil/jdeis/.

Eyer, Kevin, and Steve McJessy. “Operationalizing Distributed Maritime Operations.” Center for International Maritime Security, March 5, 2019. https://cimsec.org/operationalizing-distributed-maritime-operations/.

Fanell, James. “Asia Rising: China’s Global Naval Strategy and Expanding Force Structure.” *Naval War College Review* 72, no. 1 (2019). : https://digital-commons.usnwc.edu/nwc-review/vol72/iss1/4.

Fernandez, Rosemarie, Sachita Shah, Elizabeth D. Rosenman, Steve W. J. Kozlowski, Sarah Henrickson Parker, and James A. Grand. “Developing Team Cognition: A Role for Simulation.” *Simulation in Healthcare : Journal of the Society for Simulation in Healthcare* 12, no. 2 (April 2017): 96–103. https://doi.org/10.1097/SIH.0000000000000200.

“Fleet Tactics Returns—A Conversation with Authors Wayne Hughes and Bob Girrier | Center for International Maritime Security.” Accessed August 20, 2022. https://cimsec.org/fleet-tactics-returns-a-conversation-with-authors-wayne-hughes-and-bob-girrier/.

Ford, Christopher A., David Alan Rosenberg, and Randy Carol Balano. *The Admirals’ Advantage: U.S. Navy Operational Intelligence in World War II and the Cold War*. Annapolis, MD: Naval Institute Press, 2005.

Franks, Oliver. *The Franks Report: Falkland Islands Review*. London: Pimlico, 1992.

Freedman, Lawrence, and Virginia Gamba-Stonehouse. *Signals of War: The Falklands Conflict of 1982*. London; Boston: Faber and Faber, 1990.

Garnett, Charles. “Sensitivity to Kill Recognition for Raid Survival.” Bowhead Support Services, n.d.

Garver, John W. *China’s Quest: The History of the Foreign Relations of the People’s Republic of China*. New York, NY: Oxford University Press, 2016.

Gerson, Michael, and Daniel Whiteneck. “Deterrence and Influence: The Navy’s Role in Preventing War. Revision 1.” Center for Naval Analyses, March 1, 2009. https://apps.dtic.mil/sti/citations/ADA497123.

“Global Trends 2040 A More Contested World.” National Intelligence Council, March 2021. https://www.dni.gov/files/ODNI/documents/assessments/GlobalTrends_2040.pdf.

Grabo, Cynthia M. *Anticipating Surprise: Analysis for Strategic Warning*. Lanham: University Press of America, 2004.

Hoadley, Kevin. “Achieving Decision Superiority in Great Power Competition.” U.S. Naval Institute, February 4, 2021. https://www.usni.org/magazines/proceedings/2021/february/achieving-decision-superiority-great-power-competition.

Hone, Trent. *Learning War: The Evolution of Fighting Doctrine in the U.S. Navy, 1898-1945*. Studies in Naval History and Sea Power. Annapolis, Maryland: Naval Institute Press, 2018.

Hopple, Gerald W. “Intelligence and Warning: Implications and Lessons of the Falkland Islands War.” *World Politics* 36, no. 3 (1984): 339–61. https://doi.org/10.2307/2010378.

Hornfischer, James D. *Neptune’s Inferno: The U.S. Navy at Guadalcanal*. 1st ed. New York: Bantam Books, 2011.

Hughes, Wayne P., and Robert Girrier. *Fleet Tactics and Naval Operations*. Third edition. The U.S. Naval Institute Blue & Gold Professional Library. Annapolis, Maryland: Naval Institute Press, 2018.

Jatho, Edgar, and Joshua Kroll. “Artificial Intelligence: Too Fragile to Fight?” U.S. Naval Institute, February 1, 2022. https://www.usni.org/magazines/proceedings/2022/february/artificial-intelligence-too-fragile-fight.

“Joint Publication 2-0.” Department of Defense, October 22, 2013. https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp2_0.pdf.

Kania, Elsa B. “Battlefield Singularity: Artificial Intelligence, Military Revolution, and China’s Future Military Power.” Center for a New American Security, 2017. JSTOR. http://www.jstor.org.libproxy.nps.edu/stable/resrep16985.

Kauffman, William. “The Requirements of Deterrence.” In *Essays on Arms Control and National Security*. U.S. Arms Control and Disarmament Agency, 1986.

Kimmelman, Susann. “Indications and Warning Methodology for Strategic Intelligence.” Master’s thesis, Navy Postgraduate School, 2017. http://hdl.handle.net/10945/56742.

King, David E. “Intelligence Failures and the Falklands War: A Reassessment.” *Intelligence and National Security* 2, no. 2 (April 1, 1987): 336–40. https://doi.org/10.1080/02684528708431896.

Kline, Jeffrey. “Exploring Effects of Counter-Targeting in Naval Warfare.” Naval Postgraduate School, April 14, 2021.

Layton, Edwin T. *And I Was There: Breaking The Secrets - Pearl Harbor And Midway*. Connecticut: Konecky & Konecky, 2001.

Lebow, Richard Ned. "Revisiting the Falklands Intelligence Failures." *The RUSI Journal* 152, no. 4 (August 1, 2007): 68–73. https://doi.org/10.1080/03071840701574755.

Machiavelli, Niccolò. *The Art of War: A Revised Edition of the Ellis Farneworth Translation*. The Library of Liberal Arts 196. Indianapolis: Bobbs-Merrill Educational Publishing, 1965.

Mahan, A. T. *The Influence of Sea Power Upon History, 1660-1783*. New York: Dover Publications, 1987.

———. *The Interest of America in Sea Power, Present and Future*. New York: Books for Libraries Press., 1970.

Manship, H. Kaminer. "Mahan's Concepts of Sea Power: A Lecture Delivered at the Naval War College on 23 September 1963." *Naval War College Review* 16, no. 5 (1964): 15–30.

Mayer, Roger C., James H. Davis, and F. David Schoorman. "An Integrative Model of Organizational Trust." *Academy of Management. The Academy of Management Review* 20, no. 3 (July 1995): 709.

McGunnigle, John. "An Exploratory Analysis of the Military Value of Information and Force." Master's thesis, Monterey, California: Naval Postgraduate School, 1999. https://calhoun.nps.edu/handle/10945/13459.

Mearsheimer, John J. "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe." *International Security* 11, no. 2 (1986): 3–57. https://doi.org/10.2307/2538957.

———. "The Causes and Consequences of the Ukraine Crisis." Text. The National Interest. The Center for the National Interest, June 23, 2022. https://nationalinterest.org/feature/causes-and-consequences-ukraine-crisis-203182.

Mehta, Aaron. "Milley: Budget 'Reality Check' May Impact Foreign Exercises, Basing Plans." Defense News, December 2, 2020. https://www.defensenews.com/pentagon/2020/12/02/milley-budget-reality-check-may-impact-foreign-exercises-basing-plans/.

"Military and Security Developments Involving the People's Republic of China." Office of the Secretary of Defense, November 3, 2021. https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF.

Morgan, Patrick M. *Deterrence Now*. Cambridge Studies in International Relations 89. New York: Cambridge University Press, 2003.

Nathan, Andrew J. "The Puzzle of the Chinese Middle Class." *Journal of Democracy* 27, no. 2 (April 2016).

National Museum of the U.S. Navy. "Guadalcanal Campaign: August 1942-February 1943." Accessed August 4, 2022. https://www.history.navy.mil/content/history/museums/nmusn/explore/photography/wwii/wwii-pacific/wwii-pacific-guadalancanal.html.

"Naval Warfare Publication 2-0 Naval Intelligence." Department of the Navy, July 2022.

"Navy Warfare Publication 3-32 Maritime Operations at the Operational Level of War." Department of the Navy, August 2010.

Nelson, Christopher. "A Navy Planner Speaks—Captain David Fields on the Challenges and Future of U.S. Navy Planning." U.S. Naval Institute, December 8, 2020. https://www.usni.org/magazines/proceedings/2020/december/navy-planner-speaks-captain-david-fields-challenges-and-future.

Nelson, Christopher, and Eric Pedersen. "Naval Intelligence Must Relearn Its Own Navy." U.S. Naval Institute, February 1, 2020. https://www.usni.org/magazines/proceedings/2020/february/naval-intelligence-must-relearn-its-own-navy.

Ng, Chong Yak. "The Prohibition and Control of Autonomous Weapons Systems in Future Warfare." Singapore Armed Forces, March 2021. https://www.mindef.gov.sg/oms/safti/pointer/documents/pdf/monthlyissue/mar2021.pdf.

Nietzel, Scott. "The Falklands War Understanding the Power of Context in Shaping Argentine Strategic Decisions." Master's Thesis, Navy Postgraduate School, 2007. http://hdl.handle.net/10945/3231.

O'Rourke, Ronald. "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress." Congressional Research Service, October 7, 2021. https://crsreports.congress.gov/product/pdf/RL/RL33153.

Osnos, Evan. "Born Red." *New Yorker*, April 6, 2015.

PBS NewsHour. "India and China Increasingly Welcome Shunned Russian Oil," June 13, 2022. https://www.pbs.org/newshour/world/india-and-china-increasingly-welcome-shunned-russian-oil.

Popa, Christopher H., Sydney P. Stone, Choon Pei Jeremy Teo, Licun Edwin Cai, Wai Hoe Chong, Rachel Cline, Jiesheng Jackson Hong, et al. "Distributed Maritime Operations and Unmanned Systems Tactical Employment." Master's thesis, Navy Postgraduate School, 2018.

Rice, Jennifer, and Erik Robb. "China Maritime Report No. 13: The Origins of 'Near Seas Defense and Far Seas Protection.'" *CMSI China Maritime Reports*, no. 132 (2021). https://digital-commons.usnwc.edu/cmsi-maritime-reports/13.

Rielage, Dale. "War Gaming Must Get Red Right." U.S. Naval Institute, January 1, 2017. https://www.usni.org/magazines/proceedings/2017/january/war-gaming-must-get-red-right.

Rimmer, Jason, Tracy Culbert, Chad Geis, and Lucas Seeger. "What the Unrestricted Line Needs from the IW Community." U.S. Naval Institute, October 15, 2019. https://www.usni.org/magazines/proceedings/2019/october/what-unrestricted-line-needs-iw-community.

Romberg, Alan D. *Rein in at the Brink of the Precipice: American Policy Toward Taiwan and U.S.-PRC Relations*. Washington/D.C: Henry L. Stimson Center, 2003.

Salas, Eduardo, Stephen M. Fiore, and Michael P. Letsky. *Theories of Team Cognition: Cross-Disciplinary Perspectives*. London, United States: Taylor & Francis Group, 2011. http://ebookcentral.proquest.com/lib/ebook-nps/detail.action?docID=957246.

Sayler, Kelley. "Defense Primer: Emerging Technologies." Congressional Research Service, December 21, 2021. https://crsreports.congress.gov/product/pdf/IF/IF11105.

———. "Artificial Intelligence and National Security." Congressional Research Service, November 10, 2020. https://crsreports.congress.gov/product/pdf/R/R45178/10.

School of Information and Communication, National University of Defense Technology. "The AI Arms Race is Quietly Emerging." China News, October 17, 2019. https://m.chinanews.com/wap/detail/zw/gn/2019/10-17/8981224.shtml.

SeaWaves Magazine. "NAVAIR Shares New Vision for Small UAS Procurement." Accessed September 4, 2022. https://seawaves.com/?p=20847.

Shambaugh, David L. *China's Future*. Cambridge, UK ; Malden, MA: Polity, 2016.

Spielberger, Charles Donald, ed. *Encyclopedia of Applied Psychology*. 1st ed. Amsterdam; Boston: Elsevier / Academic Press, 2004.

Studeman, Mike. "7 Myths of Intelligence." U.S. Naval Institute, February 1, 2009. https://www.usni.org/magazines/proceedings/2009/february/7-myths-intelligence.

Taylor, Brendan. *Dangerous Decade: Taiwan's Security and Crisis Management*. Adelphi Series 470–471. Abingdon, Oxon: Routledge, for the International Institute for Strategic Studies, 2019.

TheGlobalEconomy.com. "Share of Manufacturing by Country, around the World." Accessed August 31, 2022. https://www.theglobaleconomy.com/rankings/Share_of_manufacturing/.

Tianjiao, Jiang. "The Impact of Military Artificial Intelligence on Warfare." In *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk*, edited by Lora Saalman, II:51–53. Stockholm International Peace Research Institute, 2019. https://www.sipri.org/sites/default/files/2019-10/the_impact_of_artificial_intelligence_on_strategic_stability_and_nuclear_risk_volume_ii.pdf.

Twomey, Christopher P. "The Fourth Taiwan Strait Crisis Is Just Starting." War on the Rocks, August 22, 2022. https://warontherocks.com/2022/08/the-fourth-taiwan-strait-crisis-is-just-starting/.

United Nations. "Population." United Nations. United Nations. Accessed July 31, 2022. https://www.un.org/en/global-issues/population.

———. *World Population Prospects 2022: Summary of Results*, 2022. https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf.

U.S. Department of Defense. "DOD Adopts Ethical Principles for Artificial Intelligence." Accessed August 3, 2022. https://www.defense.gov/News/Releases/Release/Article/2091996/dod-adopts-ethical-principles-for-artificial-intelligence/.

United States Navy. "READOUT: Pacific Fleet Commander's Travel to Japan, June 23-24." Accessed September 5, 2022. https://www.navy.mil/Press-Office/News-Stories/Article/3074541/readout-pacific-fleet-commanders-travel-to-japan-june-23-24/https%3A%2F%2Fwww.navy.mil%2FPress-Office%2FNews-Stories%2FArticle%2F3074541%2Freadout-pacific-fleet-commanders-travel-to-japan-june-23-24%2F.

Upp, Daniel. "Risky Invasions Decisions Made by The Argentine Junta Regarding Disputed Islands, 1978--1982." Master's thesis, Navy Postgraduate School, 2011. http://hdl.handle.net/10945/5536.

Vego, Milan N. *General Naval Tactics: Theory and Practice*. The U.S. Naval Institute Blue & Gold Professional Library. Annapolis, Maryland: Naval Institute Press, 2020.

Watman, Ken, Dean A. Wilkening, Brian Nichiporuk, and John Arquilla. “U.S. Regional Deterrence Strategy.” RAND Corporation, January 1, 1995. https://www.rand.org/pubs/monograph_reports/MR490.html.

Weinbaum, Cortney, John V. Parachini, Richard S. Girven, Michael H. Decker, and Richard C. Baffa. “Perspectives and Opportunities in Intelligence for U.S. Leaders.” RAND Corporation, September 24, 2018. https://www.rand.org/pubs/perspectives/PE287.html.

Wirtz, James J. *Understanding Intelligence Failure: Warning, Response and Deterrence*. Studies in Intelligence. New York, NY: Routledge, 2017.

Wirtz, James, Jeffrey Kline, Phillip Pournelle, and Mie Augier. “The Maritime Strategic Imperative.” *The RUSI Journal* 166, no. 3 (April 16, 2021): 34–44. https://doi.org/10.1080/03071847.2021.1954544.

Wolters, Timothy S. *Information at Sea: Shipboard Command and Control in the U. S. Navy, from Mobile Bay to Okinawa*. Baltimore, MD: Johns Hopkins University Press, 2013. http://ebookcentral.proquest.com/lib/ebook-nps/detail.action?docID=3318724.

Zaagman, Elliot. “China’s Own ‘Great Delusion,’” n.d. https://www.lowyinstitute.org/the-interpreter/china-s-own-great-delusion.

THIS PAGE INTENTIONALLY LEFT BLANK

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center
   Ft. Belvoir, Virginia

2. Dudley Knox Library
   Naval Postgraduate School
   Monterey, California