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**NAVAL WAR COLLEGE  
Newport, R.I.**

**DEFEATING ASYMMETRIC THREATS IN THE LITTORAL ENVIRONMENT**

by

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**A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.**

**The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.**

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## CONTENTS

LIST OF ILLUSTRATIONS.....	iii
ABSTRACT .....	iv
INTRODUCTION .....	1
WHY OPERATIONAL ART?.....	2
IRGCN BACKGROUND: A CASE STUDY .....	5
OPERATIONAL ART APPLIED .....	7
THE OPERATIONAL WAY AHEAD.....	12
CONCLUSION .....	15
NOTES.....	17
SELECTED BIBLIOGRAPHY.....	20

## LIST OF ILLUSTRATIONS

<b>Figure</b>	<b>Title</b>	<b>Page</b>
1.	Center of Gravity Flow.....	4
2.	Center of Gravity Deconstruction.....	5
3.	Iran Center of Gravity Flow.....	7
4.	Iran Center of Gravity Deconstruction.....	8

## **ABSTRACT**

When confronting asymmetric threats of the 21<sup>st</sup> century, it is important for the maritime commander to understand the theoretical construct of operational art in order to design an operation to achieve the objective. Regardless of the type of asymmetric threat or the platform that an adversary utilizes to employ that threat, the proper application of operational art to determine critical vulnerabilities has withstood the test of time. Utilizing historical examples during World War II and the Iran/Iraq War in the 1980s, this paper explores a fictitious combat scenario involving Iranian fast attack craft and demonstrates how an effective center of gravity deconstruction can lead to an enemy's ultimate defeat.

*The Navy leaders of World War II were practitioners of operational art and design long before these terms were adopted in joint doctrine. While technology has provided today's Navy leaders with a vast array of capabilities, the fundamental underpinnings of operational planning and operational decision making have not changed since admirals Halsey and Spruance were fleet commanders.*

- Department of the Navy  
*MARITIME OPERATIONS AT THE  
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## **INTRODUCTION**

Imagine a protracted war between the United States and a threat state. The enemy has been practicing asymmetric tactics to include suicide attacks, specifically enhancing their small boat tactics to disrupt U.S. operations. A single enemy maritime regiment contains over one hundred small suicide boats, each loaded with an explosive charge in the bow and created for the sole purpose of ramming targets of opportunity. There are seven total regiments, and each one is a fairly sophisticated organization: there are maintenance departments, administrative personnel, and a command and control structure that includes a full time staff. Manuals guide both the suicide and operational tactics, and they swarm significantly larger U.S. ships in groups of two to four. The destroyers USS *Charles C. Badger* and USS *Hutchins*, along with the cargo ship USS *Carina* all take damage from these attacks. Though this may sound like yet another asymmetric threat found somewhere in the Middle East, this threat is not new. These suicide boats, called “Shin’yo” (Sea Quake), were actually operated by the Japanese during the Battle of Okinawa during World War II, and were designed for attacking American transports and warships during landing invasions.<sup>1</sup>

Swarm tactics using multiple fast attack craft (FAC) is just one example of an asymmetric threat and it is still relevant today. The Navy has always operated in the littoral environment, but since the end of the Cold War the United States Navy has arguably shifted

its focus away from the decisive battle on the open seas to power projection ashore while operating in the littorals. As a result, the Navy finds itself operating in confined areas with assets designed and built primarily for blue water operations. The U.S. Navy will continue to operate a premier blue water navy into the foreseeable future; but for our adversaries the cheaper, faster, and often times best option for them is to build an “anti-navy” to deny opposing capabilities and protect their strategic interests.<sup>2</sup> As we find ourselves operating in the littoral environments and closer to our adversaries, we will continue to face the challenge of countering these asymmetric threats. To defeat the asymmetric threats with our current platforms and maintain varying forms of sea control in all operating areas, the United States Navy must begin with operational planning and must correctly apply all tenants of operational art in order to exploit the enemy’s critical vulnerabilities and protect the friendly center of gravity.

To better understand the asymmetric threats and methods to defeat them, it is first important to understand the basic concepts of operational art and design. The next few pages will address the reasoning and relevance behind the need for operational art and the theoretical construct of operational design. Utilizing the Islamic Revolutionary Guard Corps Navy (IRGCN) and the Battle of Okinawa as case studies, this paper will examine how deconstructing the center of gravity exposes both enemy and friendly critical vulnerabilities. This study will conclude with recommendations and the way-ahead for the operational commander.

## **WHY OPERATIONAL ART?**

Throughout the history of naval warfare, maritime commanders have been tasked with accomplishing objectives. These objectives have ranged from gaining various aspects

of sea control, defeating an enemy's naval forces, supporting land forces ashore, to peacetime operations. This list is by no means all-inclusive, but in each case it is imperative that the operational design includes the commander's thorough understanding of the strategic objectives, the identification of an enemy's critical strengths and weaknesses, and an operational concept that achieves both the strategic and operational objectives.<sup>3</sup> After determining the operational objectives, the concept of operational design drives the commander to the critical task of determining the enemy and friendly centers of gravity (COG), defined as the physical or moral source of strength used to accomplish an objective.<sup>4</sup>

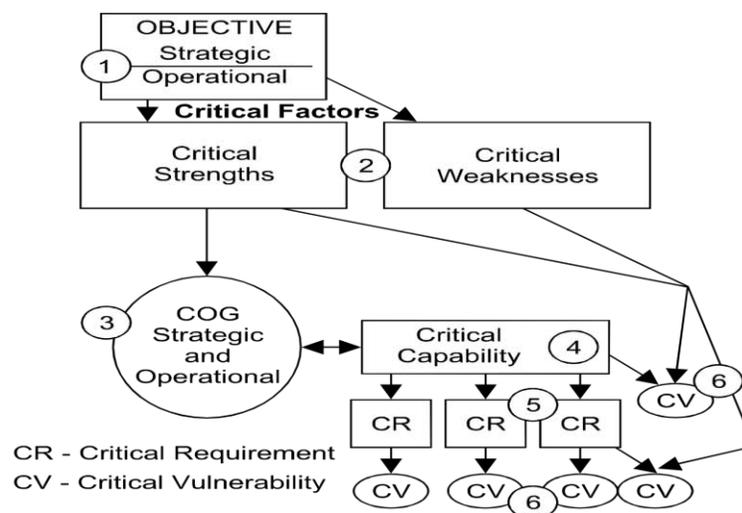
For example, during World War II the Japanese operational objective to invade the Philippines in December of 1941 ultimately led to their decision to destroy the United States' operational center of gravity in Pearl Harbor: the U.S. Pacific Fleet.<sup>5</sup> This is one example of designing a blue-water operation around defeating an enemy's center of gravity using traditional maritime forces.

As conflicts move from fleet versus fleet battles towards asymmetric threats against traditional maritime forces, the maritime commander finds himself faced with an "adversary that simultaneously and adaptively employs a fused mix of conventional weapons, irregular tactics, terrorism, and criminal behavior in the battle space to obtain their political objective."<sup>6</sup> The United States Navy has clearly recognized *hybrid threats*, and in January 2010 the Chief of Naval Operations released "The U.S. Navy's Vision for Confronting Irregular Challenges." In this vision he specifically addresses procurement of multi-mission platforms such as Littoral Combat Ship, riverine squadrons, manned and unmanned surveillance platforms, and investments in training.<sup>7</sup> Some will argue that we should stop building a Cold War Fleet and move towards a fleet designed to combat the asymmetric

threat.<sup>8</sup> While the topic of building new platforms designed around defeating asymmetric threats is beyond the scope of this paper, however, what is critical for the maritime commander to understand is that while the “stuff” we use to fight wars is important, operational art is key and still relevant in an asymmetric environment. The enemy, regardless of the platform he employs or the manner in which he employs it, is actively trying to defeat our center of gravity. In turn, the maritime commander must apply the identical theoretical construct against both conventional and unconventional threats in order to determine enemy centers of gravity, critical capabilities, critical requirements, and critical vulnerabilities.

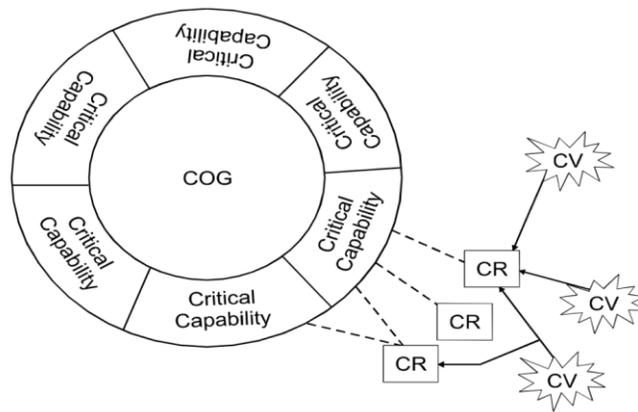
In order to determine the friendly and enemy center of gravity, the maritime commander must first determine critical factors. Figure 1 shows the relationship between strategic objective, the operational objective that supports it, and the critical factors that are defined as attributes crucial for the accomplishment of objectives. These tangible and intangible factors are then classified as either critical strengths or critical weaknesses. The center of gravity should be identified from the list of critical strengths.

Figure 1. Center of Gravity Flow<sup>9</sup>



Critical strengths that bear a relationship to the center of gravity are considered critical capabilities, or enablers to the center of gravity. Each critical capability has critical requirements (CR) to support that capability. Likewise, a critical vulnerability (CV) exposes a weakness or deficiency that can be exploited to create damage or effects on a center of gravity. Figure 2 shows the relationships between the critical capabilities, requirements, and vulnerabilities surrounding the center of gravity.

Figure 2. Center of Gravity Deconstruction<sup>10</sup>



Applying the theoretical construct against a real-world asymmetric example, the next section will show how a center of gravity deconstruction can be used to determine critical capabilities, requirements, and vulnerabilities.

### **IRGCN BACKGROUND: A CASE STUDY**

The Islamic Revolutionary Guard Corps Navy’s (IRGCN) unconventional units and tactics have been a major focus of development since the Iran-Iraq War. Separated from the Iranian Navy with over 20,000 personnel assigned, the IRGC focuses primarily on asymmetric warfare, drawing on the Shiite values regarding continuous jihad and cultures of martyrdom to emphasize its asymmetric naval tactics.<sup>11</sup> The Iranian Navy does operate in a

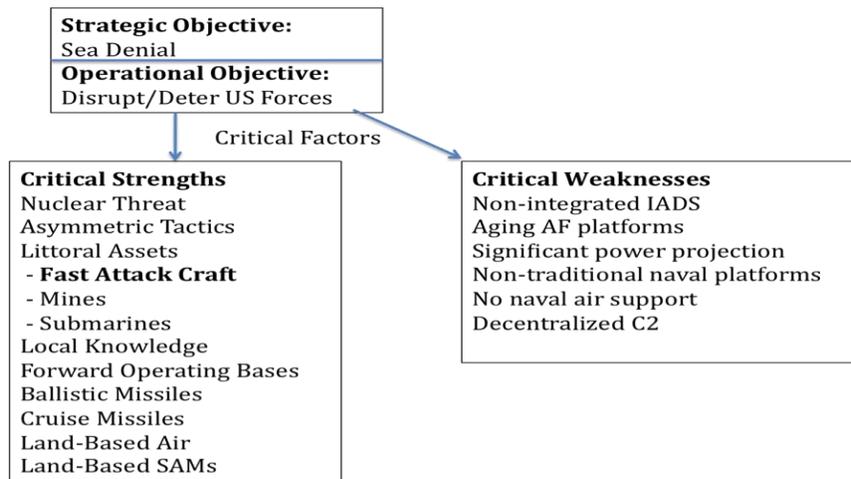
more conventional manner, while the IRGCN relies on coastal missile batteries, fast attack craft, midget submarines, and mines to execute their asymmetric tactics. It is Iran's lack of credible land-based or naval airpower that leads to their heavy dependence on anti-ship missiles launched from frigates or other smaller patrol boat sized craft.<sup>12</sup>

The IIRCGN surface fleet is comprised of 10 Houdeong fast attack craft armed with C-802 anti-ship missiles, 51 Boghammer patrol boats, and various smaller patrol craft and rubber dinghies based at a number of offshore islands and oil platforms.<sup>13</sup> While the exact proficiency level of the IIRCGN is not known, it is assessed that their training levels vary greatly by unit, and it is also probable that they have interacted jointly with their air force and army.<sup>14</sup> Though extremely maneuverable and armed with surface-to-surface threats, Iran's large patrol craft and fast attack craft lack sophisticated weapons systems and air defenses.

In a fictitious scenario pitting U.S. naval forces against the Iranian Navy and Islamic Revolutionary Guard Corps Navy (IRGCN), deconstructing the Iranian center of gravity is pivotal to successful operations in the littoral environment. In this scenario the operational planners, deducing an Iranian sea denial strategy, determine that Iran's operational objective is to "disrupt and deter U.S. Naval forces operating in the Persian Gulf."<sup>15</sup> The critical strengths of Iran at the operational level are nuclear threats, asymmetric land and sea tactics, littoral naval assets (including fast attack craft, mines, and midget submarines), local knowledge of the small operating area of the Persian Gulf, outlying islands for forward operating bases, ballistic missiles, cruise missiles, land-based air, and land-based surface-to-air missiles. The critical weaknesses include a non-integrated nationwide air defense system, aging air force platforms, lack of significant power projection, smaller surface navy platforms, lack of naval air, and decentralized command and control.<sup>16</sup> Iranian doctrine

would lead planners to believe that Iran would “carry out hit –and run- operations and exploit the protective umbrella of the inlets.”<sup>17</sup> Based on this information and looking at the list of critical strengths, planners would assess that the Iranian operational center of gravity in pursuit of a sea denial strategy would be their fast attack craft.<sup>18</sup> Figure 3 depicts the Iranian center of gravity flow.

Figure 3. Iran Center of Gravity Flow



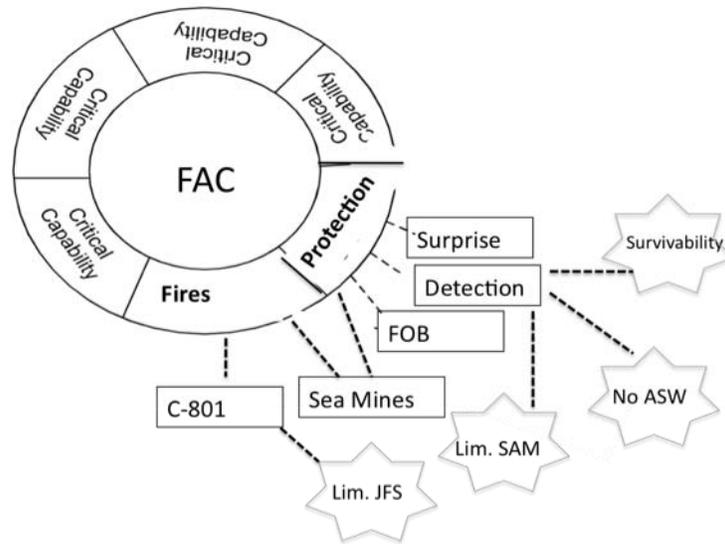
The U.S. planners then define the friendly operational objective: obtain and maintain maritime mastery through permanent sea control in the Persian Gulf. A similar list of friendly critical strengths and weaknesses would be identified, and for sake of discussion in this paper, planners determine that the carrier strike group is the initial operational center of gravity.<sup>19</sup> In order to protect the friendly center of gravity, planners would complete a thorough analysis of critical capabilities, critical requirements, and critical vulnerabilities.

### OPERATIONAL ART APPLIED

Further deconstructing the enemy center of gravity, planners would then identify the critical capabilities, requirements, and vulnerabilities that the maritime commander can

exploit to defeat that center of gravity. Figure 4 graphically depicts examples of the relationships between the critical items and the Iranian center of gravity, discussed in the following paragraphs.

Figure 4. Iran Center of Gravity Deconstruction



One of the critical capabilities of the enemy’s center of gravity is protection, and a critical requirement during employment of FAC swarm tactics relies on the element of surprise. As a factor of space and time, the biggest advantage that FAC leverage is ability to remain undetected while covering short distances in small amounts of time. Their small size, maneuverability, and speed make detection extremely difficult and lead to extremely effective operations in the close quarters found in littoral environments. Numerous fishing villages and towns offer outstanding hiding places for small craft to operate, and small craft can be launched undetected using darkness as cover. Small craft can also use dense shipping and fishing traffic to provide cover and concealment, gaining a distinct advantage over an adversary. Iran occupies many islands in the Persian Gulf, including Tunbs, Abu Musa,

Qeshem, Larak, Hormuz, Sirri, and Bani Forur: the IRGC operates its asymmetric FAC strategically from these islands and has the capability to attack shipping or military targets in the Strait of Hormuz or Gulf of Oman.<sup>20</sup> This capability gives the IRGCN an ability to deploy small forces in a short amount of time. All of these factors limit an adversary's ability to detect FAC. If FAC can remain undetected, then they can inflict serious damage. Removing the element of surprise eradicates that critical requirement and exposes the center of gravity.

Similar parallels can be found when examining the Japanese *Shin'yo* during the Battle of Okinawa. Like the FAC found in the IRGCN, the Japanese based their boats on forward islands and intended to swarm transports and other American ships at anchorage before they could carry out an amphibious landing.<sup>21</sup> These suicide boats were well dispersed throughout the Kerama Islands, many of them in camouflaged hideouts.<sup>22</sup> Additionally, they sat low in ocean swells and made it extremely difficult for operators to detect them on radar.<sup>23</sup>

A second critical capability of FAC is fires. Asymmetric attacks rely on interdicting enemy capabilities, i.e., diverting, disrupting, or delaying an adversary from achieving their objectives.<sup>24</sup> Their use of tactical fires against targets of opportunity is ultimately intended to achieve strategic effects. One of the critical requirements is the ability to launch surface-to-surface missiles, or achieve some other method of hard-kill through a suicide attack. The Japanese *Shin'yo* shared similar capabilities and requirements, using 264-pound explosive devices that rolled off racks to execute their suicide asymmetric tactics.<sup>25</sup>

Sea mines will also be a critical requirement of fires, and cannot be discounted. It is estimated that Iran has 3,500 naval mines in its inventory, consisting of the Sadaf-01 bottom-moored contact mine.<sup>26</sup> One placed, these mines are difficult to detect, and the IRGCN could

use a number of platforms to covertly mine shipping corridors or strategic choke points. Conversely, there are no indications that the IRGCN or Iranian Navy operates mine-clearing systems.<sup>27</sup> The IRGCN has also experimented with two-seat wet submersibles and manned torpedoes, along with kilo class submarines operated by the Iranian Navy.<sup>28</sup>

The IRGCN's small inventory of 12 Su-25 and 15 EMB312 Tucano aircraft, along with the Iranian Air Force's F-4 Phantom and SU-24 Fencer, will most likely provide some aspect of close air support for FAC operations.<sup>29</sup> Additionally, a separate air defense force established in 2009 that operates the I-HAWK, CSA-1, SA-5 and other surface-to-air missile sites will provide some envelope of protection for Iranian assets operating in the Persian Gulf.<sup>30</sup>

The critical vulnerabilities of fires (and closely related to protection) can be found in their limited counter-air and counter-surface threat capabilities, and their inability to effectively conduct ASW. Fast attack craft may have an ability to launch surface-to-surface missile at medium range; however, FAC are generally limited in surface-to-air protection, employing mainly man-portable air defense systems with limited ranges. The IRGCN relies heavily on Misagh-1 and Misagh-2 surface-to-air missiles with a maximum range of 3.1 nm.<sup>31</sup> While vulnerable to attack from the air, they are also overmatched and outgunned by traditional naval vessels and stand little chance of survival if hit. Additionally, they have limited targeting capability, limited joint fire support, and a finite amount of ammunition stores.<sup>32</sup>

Likewise, the Japanese *Shin'yo* had similar vulnerabilities. They had no surface-to-air threat, zero targeting capability, no joint fire support, and contained a single explosive

charge. Constructed of plywood and extremely slow, they were vulnerable to attack from the air and were easily sunk.<sup>33</sup>

A third critical capability of FAC is command and control. Anticipating enemy attempts at disrupting command and control, Iran has created autonomous district and sector combat units that are given mission-type orders that do not require them to remain in contact with their chain of command.<sup>34</sup> This decentralized command and control allows individual units to act without waiting for decisions and guidance. Additionally, their communications capabilities have vastly improved over the last fifteen years, integrating a variety of navigation, acoustics detection equipment, coastal radars, and electronic support measure stations throughout the Persian Gulf.<sup>35</sup> These improvements still lag behind the advantages that technological advanced net-centric warfare concepts employ; their lack of centralized command and control gives them a limited ability to effectively share information through fused sensor data outside of their assigned sectors. As a result, individual units must rely on organic targeting information and cueing data, often employing missiles at greater ranges than their detection capabilities.<sup>36</sup>

Other critical weaknesses of fast attack craft include limited operations outside of the littorals, simply based on lack of adequate sustainment and inability to effectively operate in the open ocean. Weather, a factor of space, will make FAC operations difficult; rough seas, sandstorms, limited visibility, and specifically the seasonal storms and high seas found in the Persian Gulf during the summer months and into autumn all limit operations.<sup>37</sup> These same weaknesses were shared by the Japanese Shin'yo during World War II, specifically high seas and night operations.

One other factor of force concerns loss and casualties. The need to protect a single FAC is far less important than the United States' need to protect one of their warships. Inherent to asymmetric tactics is the fact that sacrificing one loss is not only acceptable but often times expected, and in exchange substantial loss may be inflicted upon the enemy to negatively sway public opinion. This is ultimately the goal of asymmetry and the mere nature of swarm tactics offer the greatest chance of success if blue forces do not achieve one hundred percent attrition.

After exhausting all aspects of dissecting the enemy center of gravity, planners can then turn to the friendly center of gravity to determine its critical capabilities, critical requirements, and critical vulnerabilities. To achieve his own operational objective, the maritime commander must clearly understand the relationship between the two opposing centers of gravity as they move towards the achievement of their objectives. Whether the commander faces an asymmetric threat like the unpredictable nature of swarming fast attack craft, or a traditional blue-water threat, the path to defeating an enemy center of gravity lies with developing a course of action that exploits critical vulnerabilities and attacks the critical capabilities and requirements of that center of gravity.

### **THE OPERATIONAL WAY AHEAD**

In the fictitious scenario presented above, maritime planners have identified a number of critical requirements and vulnerabilities that can be exploited. The operational plan should then be designed around the results of the center of gravity deconstruction. For example, removing the element of surprise can be accomplished by maximizing maneuverability and achieving early detection. TACAIR could be used to attack vulnerabilities in protection. Attacking forward operating bases and destroying command and control nodes weaken the

critical requirements of the center of gravity. Even the use of standoff weapons can neutralize the advantages of littoral FAC. There are plenty of tactical and operational options to defeat an enemy center of gravity, but the only way to clearly understand those options is to have a firm grasp on the theoretical construct of properly applying operational art. History has shown that operational planning is not only successful but also critical, even against an asymmetric threat.

During OPERATION Ernest Will (1987-1988), the United States protected Kuwaiti owned oil tankers from Iranian attack in the Persian Gulf. The United States military capitalized on mobile sea bases to detect and neutralize FAC attacks, using two oil barges manned with 50 caliber machine-guns, MK-19 grenade launchers, 81mm mortars, and TOW and Stinger missiles.<sup>38</sup> MK-III aluminum-hulled patrol boats along with Army and Navy helicopters operated from these barges, effectively patrolling throughout the northern Gulf region. There were logistics and protection challenges inherent with these barges, but they provide one example of how the maritime commander can understand enemy vulnerabilities and capitalize on friendly capabilities to achieve the objective.

Referring back to the Battle of Okinawa, the small attack craft employed by the Japanese were successful inflicting damage on U.S. vessels, but they did not ultimately change the battle or the outcome of the war. Amphibious ships and transports used the cover of darkness to retire offshore, making it more difficult for the special attack boats to locate them.<sup>39</sup> The Allies also utilized a diversionary force to lead the Japanese towards an unintended landing spot, capitalizing on operational maneuver by increasing the Japanese factor of time to make long transits with slow moving boats and dividing up their forces to cover multiple areas. Due to heavy rains, equipment shortages, and damage from

bombardment, two regiments were unable to launch and withdrew their forces into the hills of Okinawa.<sup>40</sup> During the battle, Task Force 51 utilized lessons learned from previous engagements in the Philippines and aerial photographs to prepare their forces for attack. Despite the Japanese hiding their boats in caves and under camouflage cover before launching, they were detected early using sonar and a number of smaller U.S. craft patrols. A large number of boats were destroyed during the Allies bombing campaign of the Kerama Islands and initial seizure of the western islands of Okinawa. Although prepared for the major moves of the Allies for a majority of the campaign in the Pacific, the attacks on the Kerama Islands caught the Japanese off guard and frustrated their plan of using whirlwind attacks by suicide boats to blast the American transports to pieces.<sup>41</sup> Ultimately, the Task Force capitalized on operational and tactical maneuverability, speed, and overwhelming firepower to ultimately defeat the special boat attacks. But it was not without a cost: 700 suicide boats were deployed to Okinawa, and they were able to sink one ship, damage 6, and cause 29 casualties.<sup>42</sup>

On this point, the contents of this paper do not suggest that defeating an asymmetric threat is as easy as sketching out a few diagrams. There will be challenges, and arguments will be made about the extraordinary amount of losses that the United States will face when operating in the littorals. It is important for the maritime commander to understand that in any contested war, there will be losses. During the Battle of Okinawa there were 956 United States Navy casualties from Kamikaze attack – a World War II version of smart bombs - just in the month of April, 1945.<sup>43</sup> Even incidents such as the bombing of the USS *Cole* have shown that asymmetric threats during peacetime operations can be lethal. But in general, the Navy has operated in uncontested waters during the wars in Iraq and Afghanistan and

subsequently has become accustomed to dominating the sea; this will not be the case during the next conflict.

Nonetheless, current and future maritime commanders along with their planners must remember that the theoretical deconstruction of centers of gravity will ultimately win wars. Through increased joint planning education, future planners can apply this theoretical construct to any number of threats, whether that threat thrives in the open ocean or in the dangerous close quarters of the littorals. Building platforms to operate in the littorals against asymmetric threats will help level the playing field, but understanding how to operationally employ them cannot be accomplished without understanding the threats they will face.

## **CONCLUSION**

The Navy must remain a maritime power in all domains, including the utilization of its current assets to meet any mission. The Arleigh Burke, a guided missile destroyer, was the platform that launched Tomahawk missiles into Iraq, the platform that carried humanitarian supplies into Georgia, the platform that participated in anti-piracy, and the platform that embarked SEALs to rescue Captain Phillips of the Maersk Alabama.<sup>44</sup> The designers of this platform could not have envisioned all of these missions occurring. The accomplishment of any of these missions, regardless of platform, requires the proper application of operational art.

The maritime component commander will be faced with designing operations that cover myriad objectives, threats, and locations around the globe. In each scenario, it is critical for the operational planners to effectively identify the enemy's objective and operational center of gravity. From there, planners can determine critical vulnerabilities that can be exploited.

In “How the United States Lost the Naval War of 2015,” James Kraska stated, “over the past five hundred years, all of the world’s foremost powers achieved their position of leadership through reliance on unsurpassed naval capabilities.”<sup>45</sup> The United States has operated a superior navy for decades and will continue to dominate the seas for decades to come. Although asymmetric and littoral threats have been around for thousands of years, providing changing challenges for our operational planners and tactical operators and demonstrating asymmetric threats can be successful in achieving kills, history has also shown that superior navies win wars.<sup>46</sup> Defeating asymmetric threats is possible, and only through the proper application of operational art will maritime commanders discover the solution for defeating enemy centers of gravity and ultimately achieving the objective.

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13. Jane's Information Group. "Navy, Iran" and Anthony Cordesman, *Iran's Developing Military Capabilities* (Washington, DC: Center for Strategic and International Studies Press, 2005), 55-7.
14. Cordesman, *Iran's Developing Military Capability*, 47.
15. Based on open source articles, the author concludes that Iran would attempt to utilize fast attack craft and asymmetric tactics to disrupt enemy operations in the Persian Gulf. From the "Unclassified Report on Military Power of Iran," Iran's security strategy is based first on

detering an attack, and its asymmetric warfare doctrine has been discussed as a deterrent to any invader. Other sources used were: Fariborz Saremi, "Iran's Military Capabilities: A Near Term Threat for the Middle East and Israel," *The Henry Jackson Society*, 25 February 2009, <http://www.henryjacksonsociety.org/stories.asp?id=1047> (accessed 21 April 2010) and Bill Samii, "Iran: Naval Doctrine Stresses 'Area Denial,'" *Radio Free Europe, Radio Liberty*, 06 April 2006, <http://www.rferl.org/content/article/1067462.html> (accessed 21 April 2010).

16. Both critical strengths and weaknesses were taken from open source documents from: Secretary of Defense, "Unclassified Report on Military Power of Iran," reported by Fox News 21 April 2010, <http://www.foxnews.com/projects/pdf/IranReportUnclassified.pdf> (accessed 26 April 2010) and Haghshenass.

17. Fariborz Saremi, "Iran's Military Capabilities: A Near Term Threat for the Middle East and Israel," *The Henry Jackson Society*, 25 February 2009, <http://www.henryjacksonsociety.org/stories.asp?id=1047> (accessed 21 April 2010).

18. See note 14.

19. While the focus of this paper is to dissect the enemy center of gravity, it is equally important to understand the friendly strategic and operational centers of gravity that achieve their respective objectives. In this fictitious scenario, the author is nesting the friendly operational objective during the early phases of a campaign of "sea control in the Persian Gulf" under a broader strategic objective of "unconditional surrender of Iranian forces," and from a list of critical strengths determines that the carrier strike group (COG) will achieve this operational objective.

20. Cordesman, *Iran's Developing Military Capability*, 77.

21. Roy E. Appleman et al, *United States Army in World War II, The War in the Pacific, Okinawa: The Last Battle* (Washington DC: Center of Military History, 1948), 60.

22. Ibid.

23. James H. Belote and William M. Belote, *Typhoon of Steel: The Battle for Okinawa* (New York: Harper & Row, 1970), 86.

24. U.S. Office of the Chairman of the Joint Chiefs of Staff, 3-0, 3-18.

25. Gerald Astor, *Operation Iceberg* (New York: Donald I. Fine, Inc. 1995), 10.

26. Secretary of Defense, 5, and Haghshenass, 16.

27. Haghshenass, 16.

28. Ibid., 14.

29. Ibid., 17, and Secretary of Defense, 5.

30. Secretary of Defense, 6.

31. Haghshenass, 15.

32. Ibid., 12-13.

33. Astor, 10.

34. Haghshenass, 19.

35. Ibid., 17.

36. Ibid., 20.

37. Ibid., 9.

38. David B. Crist, "Joint Special Operations in Support of Earnest Will," *Joint Force Quarterly* no. 29, Autumn/Winter 2001-02, 17,

[http://www.dtic.mil/doctrine/jel/jfq\\_pubs/0629.pdf](http://www.dtic.mil/doctrine/jel/jfq_pubs/0629.pdf) (accessed 15 March 2010).

39. Rottman.

40. Ibid.

41. Appleman, 60.

42. Rottman and Appleman, 102.

43. Appleman, 102.

44. Gary Roughead, Remarks at the Current Strategy Forum Naval War College, Newport, R.I, June 16, 2009, [http://74.125.95.132/search?q=cache:0qWY8iQp8sUJ:www.navy.mil/navydata/people/cno/Roughead/Speech/6.16.09\\_Current%2520Strategy%2520Forum%2520FINAL.doc+2009+cno+naval+war+college+current+strategy+forum&cd=2&hl=en&ct=clnk&gl=us&client=safari](http://74.125.95.132/search?q=cache:0qWY8iQp8sUJ:www.navy.mil/navydata/people/cno/Roughead/Speech/6.16.09_Current%2520Strategy%2520Forum%2520FINAL.doc+2009+cno+naval+war+college+current+strategy+forum&cd=2&hl=en&ct=clnk&gl=us&client=safari) (accessed 31 March 2010).

45. James Kraska, "How the United States Lost the Naval War of 2015," *Orbis: Journal of World Affairs*, no. 54 (January 2010), 45.

46. Read Richard Gabriel, "From the Battle of Salamis," *Military History. Herndon*, no. 26 (Oct/Nov 2009) <http://proquest.com> (accessed 31 March 2010). In 480 BC, Xerxes intended to defeat the Greeks with 1,207 warships and 3,000 transports. The Greeks and their 332 ships lured the Persians into a narrow channel, ramming Persian ships and shooting arrows to kill sailors. In the end, more than 9,000 Persian sailors drowned.

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