The Advantage of a "Paperclip" Navy

Re-imagining Naval Platform Capabilities

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14. ABSTRACT

The growth of ballistic missile capabilities has threatened the role of the traditional aircraft carrier and its airwing. In a future confrontation, current platforms will need to be re-evaluated and assume new and non-traditional roles to fill the gap traditionally held by the carrier strike group. Submarines will need a new and more offensive-minded doctrine as an integral part of Distributed Maritime Operations (DMO). Amphibious platforms will perform new roles as surface platforms capable of dispersing air assets and bringing over the horizon strike capability to the fleet. Aircraft carriers will shed the traditional strike role and become a center for Command and Control (C2), Intelligence, Surveillance, Reconnaissance (ISR), and sustainment. Current platforms with integrated capabilities and innovative deployment can overcome the threat presented by long-range land-based missile defense.

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Introduction

"The best way to beat a problem is to make it work for you."[1] This elegant phrase was not uttered by the witty Mark Twain, the thoughtful Abraham Lincoln, or even the brilliant Albert Einstein, but by none other than the 80s television hero MacGyver. The long-running show follows the adventures of an ordinary hero with no superpowers and his extraordinary ability to use anything around him to solve a problem. MacGyver never used a paperclip for its intended purpose but instead created a unique workaround to achieve an intended goal. Thoughtfully and creatively repurposed, the paperclip found a new use and new meaning. Today the modern military has numerous "paperclip" platforms that have a variety of purposes and capabilities. Perhaps it is time for the Navy to take a similar MacGyver-like approach to its platforms to leverage capabilities in a conflict with a peer competitor.

The USS Gerald R. Ford is the United States Navy's newest and most modern aircraft carrier. A new Electromagnetic Aircraft Launch System (EMALS), revamped deck configuration, and flexible electronic architecture are just a few new upgrades on the 13-billion-dollar ship.[2] In modern conflict with a peer competitor, what would the United States Navy turn to if it loses the ability or outright refuses to risk the loss of a multi-billion-dollar asset? Because of the vulnerability of the aircraft carrier and the potential loss of its capabilities in theater, the United States Navy should investigate additional and non-traditional uses of current platforms to compete in the maritime environment with a peer competitor for sea control. First, nuclear submarines offer a substantial advantage as a platform capable of vying for sea control. Second,

[1] "50 MacGyver Quotes for Knowledge and Resourcefulness," Inspirational Web, accessed April 19, 2022, https://inspirationalweb.org/macgyver-quotes.
[2] *Janes On-Line*, s.v "Gerald R Ford (CVN7 8) class (CVNM)," last updated April 6th, 2022, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JFS_6040-JFS.

smaller amphibious ships loaded with aircraft and Unmanned Aerial Vehicles (UAVs) offer a viable alternative to one or two large aircraft carriers operating in a hostile environment. Finally, improving the modularity of the carrier air wing enhances its range and ability to influence operations in areas where current ranges preclude its use.

Problem

Land-Based ballistic missiles can cover a wide range turning a conveniently located country into a metaphorical fort. Captain Wayne Hughes's fifth cornerstone, "A ship is a fool to fight a fort," applies to the modern problem land-based long-range missiles pose.[3] The 2021 Military and Security Developments of the PRC report to Congress by the Secretary of Defense confirms this problem stating, "the PLA has fielded DF-21D ASBMs specifically designed to hold adversary aircraft carriers at risk when located within 1,500 km of China's coast, and it has an ASBM variant of the longer-range DF-26 IRBM (approximately 4,000 km)."[4] The Chinese ballistic missile threat is not the only capability concern to the U.S. in the Pacific. A growing Chinese fleet, including aircraft carriers and modern submarines, also threatens U.S. capabilities in the region. However, in March, Admiral Phil Davidson, Commander Indo-Pacom, speaking before the Armed Services Committee, emphasized that the August test launch of a DF-21 signaled a threat to carriers and a Chinese determination to stop third-party intervention in regional affairs.[5] The recent sinking of the Russian missile cruiser *Moskva* allegedly by anti-ship

[3] Wayne Hughes and Robert Girrier, *Fleet Tactics and Naval Operations*, (Annapolis: Naval Institute Press, 2018), 17.

[4] Office of the Secretary of Defense, *Military and Security Developments Regarding the Peoples Republic of China 2021*, Report to Congress, https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF, 78.

[5] "US Cites Threat to Carriers From Chinese Anti-Ship Missile," *Bloomberg/Quint*, March 9th, 2021, https://www.bloombergquint.com/business/china-tested-top-anti-ship-missile-in-drill-u-s-admiral-says.

cruise missiles further demonstrates the vulnerability of "modern" surface combatants to long-range missiles operating from shore.

Modern aircraft carriers such as the *Nimitz* and *Ford* class bring many essential capabilities to the battlespace. A modern carrier airwing can launch 125 sorties a day, surging up to 200 for two weeks.[6] During Operation Iraqi Freedom, carrier air wings made up 70% of the initial strike support at ranges between 400 and 750 miles away.[7] American aircraft carriers bring considerable strength and capability to an operating area, but their vulnerability makes their risk of loss very high. Other platforms need to be pressed into new roles to fill the gap of an aircraft carrier in a theater. The first step in addressing this issue may be to look at the problem from under rather than above the surface.

Attack…Submarines

A single attack submarine may not be able to bring the amount of firepower a carrier air wing can, but several offensively minded submarines working in unison might. By their nature, submarines are immune to the threat of long-range anti-surface ballistic and cruise missiles. Two ways to leverage this advantage involve embracing overt offensive operations and submarine integration into the Distributed Maritime Operations (DMO) construct. Both offer submarines an opportunity to exploit the "fort's" weakness and penetrate inside the Weapons Engagement Zone (WEZ) of a ballistic and cruise missile umbrella.

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[6] John Gordon, Peter Wilson, John Birkler, Steven Boraz, and Gordon Lee, "Leveraging America's Aircraft Carrier Capabilities: Exploring New Combat and Noncombat Roles and Missions for the U.S. Carrier Fleet" RAND Corporation, 2006, 11.

[7]Gordon, Wilson, Birkler, Boraz, Lee, "Leveraging Americas Aircraft Carrier Capabilities," 2006, 11.

SSGNs, *Virginia* class submarines, or multiple older *Los Angeles* class submarines could be used simply as underwater missile launchers to wreak havoc on an enemy at sea and onshore. *Los Angles* attack and *Virginia* class submarines can carry 12 tomahawk Block IV missiles.[8] Newer *Virginia* class submarines currently under construction contain the Virginia Payload Module (VPM), which ups the payload from 12 to 40.[9] Vice Admiral Johnny Wolfe, the director of Strategic Systems Programs, during his talk at the 2021 Annual Submarine Symposium, called the VPM a "game changer."[10] Married with Virginia's stealth capabilities, the VPM adds a capability currently only seen in the older SSGN platforms.

The air domain proves an excellent example of how submarines could leverage this new payload capability in a more offensive strike mindset. Stealth aircraft share many similarities with submarines. The primary purpose is to stay undetected as long as possible to meet an objective. Navy Integrated Fire Control-Counter Air (NIFCA-CA) fits into the DMO idea and allows stealth aircraft such as the F-35 to use their stealth and relay data for other less stealthy aircraft to prosecute targets.[11] Similar mutual support among submarines could allow for similar hunter-killer concepts. German and American submarines operated in wolf packs to coordinate strikes against convoys during World War II. American submarines have embraced group tactics in the past and should again. Multi-axis attacks allow submarines to attack targets with missiles

[8] *Janes On-Line*, s.v "Los Angles (SSN688i) class (SSN), last updated November 29th, 2021, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JFS_3523-JFS.
[9] Todd, Weeks, "Evolving the Attack Submarine Value Chain," *The Submarine Review*, 2021 Annual Symposium and Industry Update, March 2022, 64-66.
[10] Johnny, Wolfe, "Strategic Systems Technical Update." *The Submarine Review*, 2021 Annual Symposium and Industry Update, March 2022, 48.
[11] Dave Majumdar and Sam LaGrone, "Inside the Navy's Next Air War," USNI, January 23, 2014, https://news.usni.org/2014/01/23/navys-next-air-war#:~:text=The%20Navy%E2%80%99s%20Naval%20Integrated%20Fire%20Control-Counter%20Air%20%28NIFC-CA%29,connections%20%E2%80%94%20like%20the%20standard%20Link%2016%20data-link.

and torpedoes while also covering each other defensively to increase survivability. To accomplish this, the weapons available to submarines must also adapt to this new concept.

Long-range anti-ship missiles are a critical asset that submarines need to attack surface targets to augment the carrier gap. The weapons available to current submarines to fight at a more considerable distance against maritime targets in a fight tonight scenario is limited. Only older *Los Angeles* class submarines currently have a Harpoon capability with a limited range. A Naval Strike Missile (NSM) or Maritime Tomahawk cruise missile availability in the future opens many opportunities for submarines. In August 2019, Raytheon began phase 2 trials of incorporating a maritime seeker into the surface-launched RGM-109 "Tactical Tomahawk."[12] The undersea version, the UGM-109E, is one of the newest upgrades to the submarine strike arsenal, capable of being used with the new VPM.[13] Not originally built with an anti-ship seeker, compatibility between the UGM-109E and RGM-109E offers a segway into a maritime strike capability in the near future.[14]

Until that capability arrives, the current loadouts of land-attack Tomahawk cruise missiles are helpful in attacking sea targets. Although not designed and capable of dynamic maritime targeting, land-attack tomahawks provide enough distraction for enemy ships to be valuable. Enemy ships forced to focus on land attack tomahawks in their area of operations will be less able to focus on other domains where a further threat looms. The Ukrainian conflict provides an example of how a distraction helps defeat enemy surface combatants. Unconfirmed

[12] Janes On-Line, s.v "Tomahawk/RGM/UGM- 109A/B/C/D/E," last updated April 7th, 2021, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JNWS0162-JNW.
[13] Janes On-Line, s.v "Tomahawk/RGM/UGM- 109A/B/C/D/E," last updated April 7th, 2021, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JNWS0162-JNW.
[14] *Janes On-Line*, s.v "Tomahawk/RGM/UGM- 109A/B/C/D/E," last updated April 7th, 2021, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JNWS0162-JNW.

reports indicate that a UAV distracted the *Moskva* prior to a deadly attack by Neptune anti-ship missiles.[15] This example of coordination among platforms is essential to add a new surface strike capability to submarines.

Integrating submarines into the DMO construct greatly enhances a submarine's range and lethality. The idea of DMO is a wholly integrated maritime force that can use sensors and information between multiple assets to fight as a team while dispersed over a large battlespace. If integrated into a fighting system, the submarine could use a surface ship's radar to fire a missile at a target well beyond the sensor capability of that submarine. The challenge of DMO involves not just the equipment and software updated to a submarine but also the C2 structure. Submarines would need to operate with surface and air assets under an Officer in Tactical Command (OTC). This shift in mentality and doctrine for submarines would be difficult. No longer would submarines work alone. An utterly re-imagined command structure incorporating submarines into the battlespace is needed. The results of integration and a shift in mentality allow submarines to bring their weapons to bear quicker and more efficiently. Tactical commanders need to understand the value and limits of the submarine asset and how to use them efficiently in a new way. Submarines integrated with air and surface assets offer a further capability to attack at the heart of the ballistic missile issue and increase survivability. The air assets necessary for DMO, including UAVs, could come from the flight decks of some of the most overlooked ships in the Navy.

[15] David, Hambling, "Ukraine's Bayraktar Drone Helped Sink Russian Flagship Moskva," *Forbes*, April 14, 2022, https://www.forbes.com/sites/davidhambling/2022/04/14/ukraines-bayraktar-drones-helped-destroy-russian-flagship/?sh=7964b1103a7a.

A Mighty Fleet of Amphibious Ships

Smaller amphibious assets could be supplemented to the surface fleet and adapted to bring SUW and ASW capabilities to the area under the ballistic missile WEZ. Two ways to increase the capabilities of the surface fleet using amphibious ships are to increase their aircraft capability and offensive strike capability using already available platforms. During the Second World War, the United States operated aircraft from several smaller "jeep carriers" for anti-submarine and CAS support over land. These ships were smaller, cheaper, and more numerous. They could be produced quickly but lacked the speed and armament of the faster fleet carriers. Many of these small ships were precursors to the small deck amphibious ships the Navy uses today and could bring similar benefits to the fleet.

Smaller ships with flight decks offer an excellent opportunity to fit the "paperclip" role needed. Landing Platform Dock (LPDs), Landing Ship Dock (LSDs), Littoral Combat Ships (LCS), and Expeditionary Sea Base (ESBs) all offer large flight decks capable of carrying multiple aircraft. Increasing the capability to include ASW, SUW, and ISR assets increases these platforms' lethality and interoperability. These platforms currently carry a variety of Navy and Marine corps assets, including Navy MH-60S and unmanned MQ-8C and Marine Corps AH-1Z, UH-1Y, MV-22, or MH-53E. While these platforms offer a short-range capability for strike and logistics, they lack an ISR and ASW capability. Increasing the use of MH-60R with its AQS-22 dipping sonar and APS-147 airborne radar would instantly add an ASW and additional ISR capability to these ships.[16] Combining the finite amount of MH-60Rs with the MH-60S, MQ-8C, and Marine assets expands the capabilities. MH-60S and Marine assets all offer hardpoints on

[16] *Janes On-Line*, s.v. "Sikorsky MH-60R Seahawk," last updated November 8th, 2021, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JFS_5703-JFS.

wings for rockets and guns that could carry lightweight torpedoes. Practicing coordination, launching, loading, and employment are some of the obstacles involved in adding this capability, but coordination is already happening. In March 2022, Navy MQ-8C Firescouts conducted flights with Marine UH-1Y and AH-1Z helicopters during an exercise in El Centro, CA, building coordination and proof of concept for use in the battlefield environment.[17] Helicopters and UAVs would be quick off-the-shelf solutions to bringing new capabilities to amphibious ships quickly, allowing them to take up some of the capability lost by the absence of a carrier.

Adding an F-35B to the mix would bring fifth-generation fighter and sensor integration to the fight, especially useful inside the WEZ. The Navy and Marines have already looked at the possibility of deploying a Landing Helicopter Assault (LHAs) or Landing Helicopter Dock (LHDs) with an all F-35B complement with the idea of a smaller, more risk acceptable platform.[18] Taking this same idea one step further would be to look at ships like ESBs, essentially floating oil tankers, as opportunities to place a small number of F-35Bs in a theater. Bringing in civilian container ships could also be a last-ditch option. The accidental Harrier landing on a Spanish tanker in 1983, known as the *Alraigo* incident, could be viewed as accidental proof of the viability of using civilian tankers as floating airbases.[19] In 2014 the F-35B completed trials at Pax River, proving its ability to take off vertically.[20] The limit to how much fuel and arms it could carry would be a significant factor in its usefulness. However, given the

[17] Jorge, Hernandez, "Marine Corps and Navy Aviation Fly Together for Manned-Unmanned Training," *Rotor Review*, Spring 2022, 53.
[18] Gidget, Fuentes, "Marines Load Record 16 F-35Bs Aboard USS Tripoli Test of 'Lightning Carrier Concept," *USNI News*, April 5th, 2022, https://news.usni.org/2022/04/05/marines-load-record-16-f-35bs-aboard-uss-tripoli-test-of-lightning-carrier-concept.
[19] Tim, Wright, "Oldies and Oddities: The Alraigo Incident," *Smithsonian Magazine*, November 2008, https://www.smithsonianmag.com/air-space-magazine/oldies-amp-oddities-the-alraigo-incident-10366728.
[20] *Janes On-Line*, s.v. "Lockheed Martin F-35 Lightning," last updated August 24, 2020, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JAWA1347-JAWA.

ability to conduct aerial refueling, it could be a significant force multiplier if parceled out to the amphibious ships. The issues of loadouts, crews, and adapting flight decks and civilian tankers need consideration; however, the use of the ESB or tankers is not far off from the *Casablanca* type escort carriers used by the allies during the Second World War. Unlike those older ships, the newer amphibious ships offer the ability to strike over the horizon themselves.

In addition to air assets, a ship-launched weapon capability adds additional lethality and redundancy, especially when weather or maintenance precludes the use of air assets. Naval amphibious ships can attack targets beyond the horizon to establish, maintain, and use some amount of sea control underneath the enemy WEZ. Recently the Navy has used the same idea, testing the NSM on the USS Gabriel Gifford as a bolt-on addition to the ship's bow, adding a strike range beyond 100 nautical miles.[21] During Large Scale Exercise 2021, the U.S Marine Corps successfully sank a target ship from land using a NSM as part of the Navy-Marine Expeditionary Ship Interdiction System (NMESIS.)[22] Built to be a ground-based anti-ship unit, the system is mobile and capable of transport inside a C-130 or Landing Craft Air Cushion (LCAC) and also incorporates Navy compatible fire control systems.[23] Instead of bolting on NSM launchers, use NMESES as a roll-on roll-off capability. It will likely be stored in the well decks of many amphibious ships as part of the Marine Expeditionary Unit (MEU), uses familiar architecture, and adds a 100nm strike capability, increasing amphibious ships' opportunities to contribute to the DMO concept.

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[21] Janes On-Line, s.v. "Naval Strike Missile (NSM)," last updated November 11, 2021, https://customer-janes-com.usnwc.idm.oclc.org/Janes/Display/JNWS0911-JNW.

[22] Kelly, Flynn, "Marines Successfully Demonstrates NMESIS During LSE 21." Marine Corps Official Website, August 17th, 2021, https://www.marcorsyscom.marines.mil/News/News-Article-Display/Article/2735502/marine-corps-successfully-demonstrates-nmesis-during-lse-21.

[23] Flynn, "Marines Successfully Demonstrate NMESIS During LSE 21," 2021.

Combined with air platforms and other surface platforms acting as nodes, the addition of amphibious ships adds to the DMO concept of distributed lethality. Aircraft, UAVs, ships, and even ground platforms can bring weapons to bear, adding a combined arms mentality of SUW, STW, and ASW to the fight. Mutual support and integrated communication and targeting system make ships with less overt maritime lethality more lethal and worthy of enemy consideration. Spacing platforms out does increase the risk of the potential loss. However, like the small escort carriers of the Second World War, a single loss is not detrimental to the whole by spreading out the assets. A fully integrated force allows for a combined defensive presence from multiple domains. Coordination across the domains requires an integrated C2 system, and the "paperclip" asset best suited to adapt to this is the carrier air wing.

The Modular Carrier Airwing

Reconfiguring the carrier airwing allows the aircraft carrier to enhance and lead the DMO environment from outside a ballistic missile WEZ. The carrier airwing offers an immensely unique and highly configurable asset able to adapt to any scenario. By configuring an airwing to focus on ISR, C2, and Logistics, the carrier airwing can adapt to the challenge of a ballistic missile WEZ.

In order to deliver a modular airwing, the aircraft carrier must take on a familiar but non-traditional role. A 2006 RAND study called "Leveraging America's Aircraft Capabilities" explored the potential of non-traditional uses of the aircraft carrier. As helicopter carriers for hurricane relief, space capsule recovery platforms, and even city power plants, aircraft carriers are versatile and perhaps the gold plated paperclip.[24] Despite the many non-traditional uses, the

[24] Gordon, Wilson, Birkler, Boraz, Lee, "Leveraging Americas Aircraft Carrier Capabilities," 2006, 27-33.

study points out that "Although used occasionally in nontraditional roles, the carrier has normally operated as a conventional combat system that has an aircraft mix optimized for strike and offensive/defensive counter-air missions."[25] One recommendation from the RAND study is an increasing need for a more modular Carrier Air Wing, depending on the crisis at hand.[26] While maintaining distance outside the WEZ, the aircraft carrier can provide several services for forces operating inside it.

A carrier air wing built to provide an "ISR blanket" beyond 500nm from the carrier would be a critical capability in a DMO conflict. Focusing on MH-60R and E-2D platforms brings an ASW and ISR capability that can integrate with the other platforms in the fleet. The aircraft carrier in this configuration becomes a large C2 and sustainment command hub, working well behind the battle lines but still a crucial asset for the conflict. The OTC can reach out through these platforms to coordinate targeting and defensive maneuvering for the spread-out platforms. The OTC will require a knowledgeable staff from across the domains and services to interpret data and coordinate moves. The carrier is a perfect platform already built with the facilities to do so.[27]

Changing up the construct of the carrier air wing to provide a more robust aerial tanking and logistics capability inside the WEZ offers land-based and smaller amphibious-based aircraft increased range. Using unmanned MQ-25 refueling drones, the carrier can extend the range of aircraft across the services, including the forward-deployed F-35Bs. Shedding two fighter squadrons also increases the ability to on-load CMV-22s. These aircraft can service many

[25] Gordon, Wilson, Birkler, Boraz, Lee, "Leveraging Americas Aircraft Carrier Capabilities," 2006, 34.
[26] Gordon, Wilson, Birkler, Boraz, Lee, "Leveraging America's Aircraft Carrier Capabilities," 2006, xiii.
[27] Gordon, Wilson, Birkler, Boraz, Lee, "Leveraging America's Aircraft Carrier Capabilities," 2006, 43-50.

amphibious ships with supplies, using the carriers as a forward base logistics hub. Absorbing the functions of C2 and sustainment allows the carrier to maintain relative safety outside the WEZ from enemy ballistic missiles. A defensive air, surface, and subsurface presence are still necessary for protection. However, the carrier itself is still highly integrated into the DMO construct and brings new capabilities to the fight.

The ability of the carrier air wing to tailor its composition to the threat environment increases its lethality while maintaining standoff distance from a ballistic missile WEZ. Projecting the C2 and sustainment functions into the WEZ is a capability already available through current platforms. This concept with training could be implemented quickly and help support assets operating in the ballistic missile WEZ. The carrier air wing can also reconfigure again to adapt to a new environment if needed in a different theater or against a different adversary.

Counter

Creative ways of employing units keep an enemy off balance and offer an opportunity to overwhelm an adversary. The idea of the "paperclip" navy plays well into the use of platforms in new ways. Mutual support, employment of space, and interoperability create fewer points for a single failure and force the enemy to choose where to use assets. However, the idea is complex and requires interoperability and control of assets over a great distance. Sustainment of the spread-out amphibious ships and aircraft carriers will be the most significant overall challenge. The sustainment issue opens an opportunity for the adversary to target a critical vulnerability in this construct. The Navy will need to be ready to supply these vessels to maintain their lethality and readiness to overcome the sustainment problem.

Despite the challenges of sustainment, the United States is moving to make these plans viable. Outside the Military Sealift Command (MSC) support assets currently operating to maintain sustainment for the Navy, other options are available. The Maritime Security Program (MSP) currently enrolls 60 commercial vessels and their supply networks for use in wartime.[28] The 2020 National Defense Authorization Act (NDAA) extended this contract through 2035 and also required a report on the current capability of the United States tanker fleet with any deficiencies funded in the President's budget.[29] President Biden's Fiscal Year 2023 Budget request includes 60 million dollars for a Tanker Security Program (TSP) with ten tankers resulting from that report.[30] The ability to call upon these vessels and integrate them to free up logistics ships or in coordination with logistic ships is one small piece of the sustainment puzzle. However, it does provide a "paperclip" method to use the commercial capability to make the non-traditional use of military platforms a reality.

Conclusion

When resolved, a "paperclip" method fosters a creative aspect that is fundamentally important to possess in the war environment. A specific platform built for one particular type of mission may find itself capable of others. By the end of the Second World War, battleships had become platforms that protected the carriers with their bristling anti-aircraft guns and pounded the shores of enemy beaches. Although not intended for those missions, they found a new purpose in wartime. Submarines could be the next capital ships of the navy and may already be

[28] U.S. Department of Transportation Maritime Association, "Maritime Security Program," accessed April 28, 2022, https://www.maritime.dot.gov/national-security/strategic-sealift/maritime-security-program-msp.
[29] National Defense Authorization Act for Fiscal Year 2020, Pub. L. No. 116-92, 133 Stat 1969 (2019).
[30] Department of Transportation Fiscal Year 2023 Budget Estimate, p. 968, https://www.whitehouse.gov/wp-content/uploads/2022/03/dot_fy2023.pdf.

in some respects. Amphibious ships offer an excellent opportunity to use their large flight decks and loadout of Marine equipment in a new way. The aircraft carrier may change in size and shape over the years but the simplest change, if needed, is to adapt the airwing to the environment and bring a particular combination of capabilities to a specific fight. MacGyver had another excellent quote, "Desperation tends to make one sort of…flexible."[31] The military will know how to flex in a fight tomorrow through integration and creativity today.

[31] "50 MacGyver Quotes for Knowledge and Resourcefulness," Inspirational Web, accessed April 19, 2022, https://inspirationalweb.org/macgyver-quotes/.

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