

# CSBA

Center for Strategic and Budgetary Assessments

# WAR LIKE NO OTHER

MARITIME COMPETITION IN A  
MATURE PRECISION-STRIKE REGIME



ANDREW F. KREPINEVICH



# WAR LIKE NO OTHER

## MARITIME WARFARE IN A MATURE PRECISION-STRIKE REGIME<sup>1</sup>

For over two decades, the U.S. military has enjoyed a near-monopoly in precision-guided munitions (PGMs) and their associated battle networks. Recently, however, the proliferation of these capabilities to other militaries and non-state entities is gathering momentum. How will this emerging precision-strike regime impact the character of maritime warfare? This essay summarizes and presents findings regarding the likely character of future maritime warfare and options for preserving U.S. freedom of maneuver in the maritime domain.

The extended period during which the U.S. military has enjoyed a major advantage in precision-strike weaponry suggests it may be slow to appreciate the progressive loss of this advantage. Nowhere is this more the case than in the maritime domain, where U.S. freedom of maneuver has rarely been challenged in wartime since World War II, and then with only modest effects. This era, which now stretches over nearly seventy years, may make it more difficult for the U.S. military to adapt to the “new normal” in which existing and prospective enemies have PGMs and, in some cases, the associated battle networks and long-range strike systems that form what the Russians termed “reconnaissance-strike complexes.”<sup>2</sup>

Further complicating matters is the fact that the maritime competition has long since moved beyond purely a contest of ships and submarines. Since the early days of World War II, land-based aircraft have played a major role in the maritime balance, followed by missiles of ever-greater range, speed, and lethality.<sup>3</sup> In recent years, military capabilities in space

---

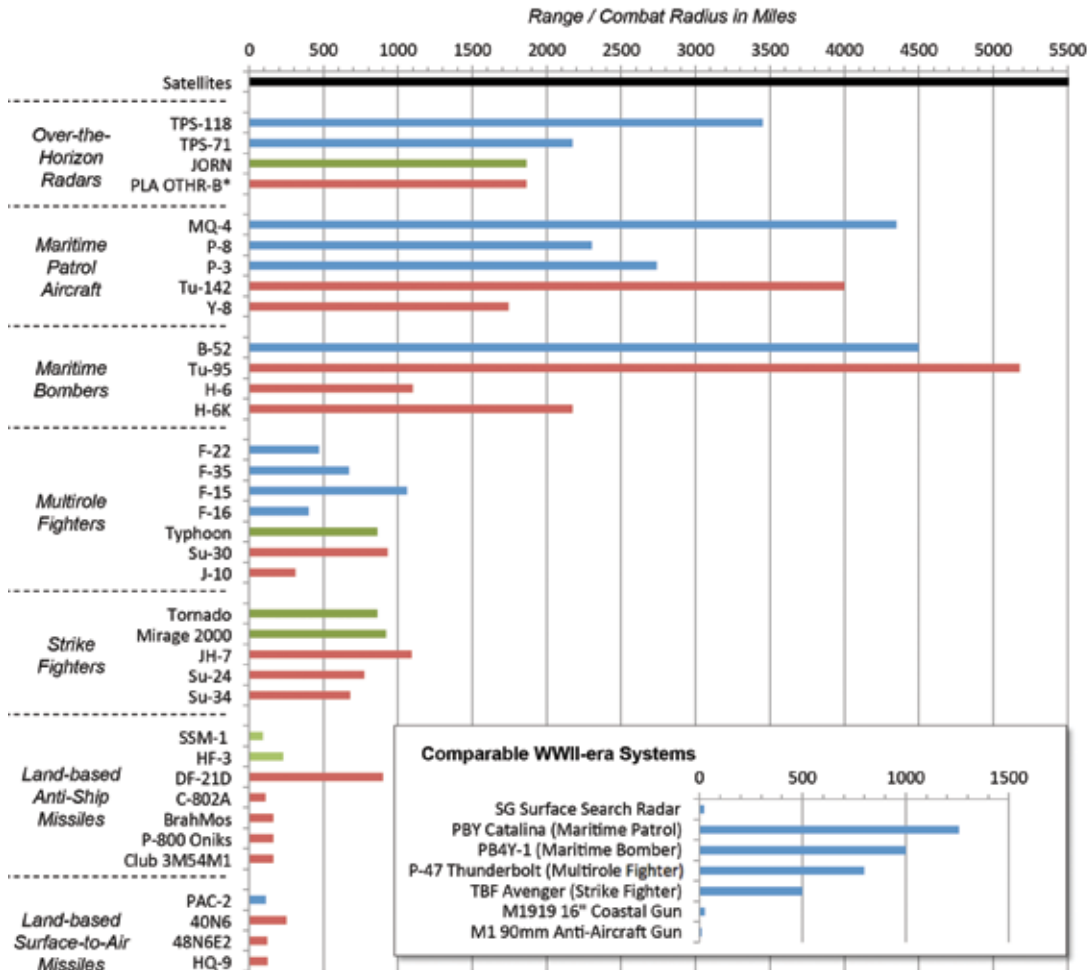
1 This essay is drawn from Andrew F. Krepinevich, *Maritime Warfare in a Mature Precision-Strike Regime* (Washington, DC: Center for Strategic and Budgetary Assessments, 2014).

2 For a discussion of “reconnaissance-strike complexes,” see Mary C. FitzGerald, “The Impact of New Technologies on Soviet Military Thought,” in Roy Allison, ed., *Radical Reform in Soviet Defence Policy: Selected Papers from the Fourth World Congress for Soviet and East European Studies* (New York: St. Martin’s Press, 1992). See also Marshal N. V. Ogarkov, “The Defense of Socialism: Experience of History and the Present Day,” *Красная звезда* [Red Star], May 9, 1984; translated by the Foreign Broadcast Information Service, *Daily Report: Soviet Union*, III, No. 091, Annex No. 054, May 9, 1984, p. R19.

3 See Barry D. Watts, *Six Decades of Guided Munitions and Battle Networks: Progress and Prospects* (Washington, DC: Center for Strategic and Budgetary Assessments, 2007).

and cyberspace have become major factors in determining the balance, further complicating efforts to assess the competition. Thus while naval forces, strictly speaking, are those that operate on or below the surface of the water, the maritime *competition* is influenced by forces operating in all domains.

### COMBAT RADIUS AND RANGE OF MODERN LAND-BASED SYSTEMS



Moreover, maritime geography itself has undergone a marked transformation since the last time U.S. maritime power was seriously challenged in war. This stems from the expanding undersea economic infrastructure. A state's economic assets at sea were once thought of primarily as cargo-bearing ships. Today, undersea continental shelves in many places host a complex energy extraction and transport infrastructure that is increasingly accessible, even to non-state entities. Add to this a thickening web of undersea telecommunications cables. Aside from the challenge of defending this undersea infrastructure, there are concerns that some states with expansive views of what constitutes their exclusive economic zone (EEZ) could also

affect the competition in ways that would limit freedom of maneuver in the maritime domain, including a maritime power's ability to map the undersea and maneuver in neutral states' EEZs in wartime.

As has been the case for millennia, maritime access will likely remain contested most strongly in littoral regions. Similar to the Royal Navy's experience when it encountered torpedo boats and torpedoes, mines, and submarines—the first modern anti-access/area-denial (A2/AD)<sup>4</sup> defenses—in the late nineteenth and early twentieth centuries, today's U.S. surface fleet may find it prohibitively costly to operate in the littoral regions against adversaries in a mature maritime precision-strike regime. And since modern scouting and strike systems can operate over much greater distances than those of a century ago, a robust maritime A2/AD defensive network could extend out hundreds of miles from the shore, intersecting with a rival's similar network to create a no man's land or "no-go zone" for warships. This would affect a wide range of maritime missions, to include sea control and denial, strike, presence, commerce raiding and defense, and blockade and counterblockade.

While it is easy to make the case for a mature maritime precision-strike regime differing from today's maritime environment, actually spelling out those differences poses many problems. The first concerns the broad development of military capabilities beyond those assumed in this assessment—that is, the diffusion of precision-guided munitions and development of extended-range scouting forces linked to strike forces through battle networks. Recent promising advances in directed energy (DE) could greatly enhance communications along with air and missile defenses. New generations of nuclear weapons could enable their use while creating far less destruction than those associated with Cold War "Armageddon" arsenals. Hypersonic missiles, should they prove practicable and affordable in substantial numbers, could greatly reduce engagement times. Cyber weapons may prove capable of fracturing battle networks and corrupting information provided by scouting forces. Advances in artificial intelligence could enable robotic systems to conduct complex operations independent of human control. In brief, the broad advance of military capabilities greatly increases the uncertainty entailed in describing the salient characteristics of a mature maritime precision-strike regime.

Furthermore, it has been roughly seventy years since two major maritime powers fought each other. In that time the advances in maritime capabilities have been dramatic. Yet the data on the relative value of these new capabilities are meager, culled from minor conflicts that may stimulate as many false conclusions as useful insights.

The challenge is further compounded in that the more advances there are in military capabilities, the wider the range of paths competitors might pursue in exploiting their potential within a mature maritime precision-strike regime. While some light might be shed on this matter by examining a competitor's geographic position, strategic culture, stated geopolitical objectives,

---

4 For the purposes of this paper, anti-access (A2) capabilities are defined as those associated with denying access to major fixed-point locations, especially large forward bases, while area-denial (AD) capabilities are those that threaten mobile targets over an area of operations, principally maritime and air forces, to include those beyond the littorals.

economic and technical resources, and ability to mobilize them for military purposes, at best it reduces uncertainty at the margins. As several prospective key competitors—India, Iran, and Japan, in particular—have yet to move aggressively toward fielding the forces that would characterize a mature maritime precision-strike regime, it seems ill-advised to predict what path they might pursue, let alone the ultimate outcome.

There also is the matter of operational concepts. Competitors may choose a certain path in fielding new capabilities (and blending them in with existing capabilities), but this does not necessarily tell us how competitors will employ those capabilities in war.

While these barriers to predicting the character of a mature maritime precision-strike regime are formidable, they are not an excuse for failing to try. An informed assessment of such a regime that takes these conditions into account can serve two useful purposes. First, it can reduce the level of uncertainty, though modestly, as to what will characterize the competition. Second, an assessment can provide an informed point of departure—a “Mature Maritime Precision-Strike Regime 1.0”—at the outset of what must be an ongoing, persistent, iterative process to refine and enhance our understanding of this emerging competitive environment.

## Characteristics of the Emerging Maritime Competition

Absent a major break in the arc of history, there is no uncertainty about at least one aspect of a mature maritime precision-strike regime: it will certainly emerge in time. What might characterize the competition in a mature maritime precision-strike regime? Through an examination of Mediterranean operations and Kamikazes in World War II, the Cold War Mediterranean “no-go zone,” the Falklands War, the U.S. Navy’s Outer Air Battle concept, and anti-ship mines in the First Gulf War, several key characteristics stand out.

First, the seas, especially for the United States, will become more contested than they have been at any time since the Cold War. The gradual expansion of what we today call A2/AD zones that began over a century ago will continue, following the recent period of aberration. This A2/AD expansion has been facilitated by major advances in military capabilities since World War II, such as satellites; sensors; long-range intelligence, surveillance, and reconnaissance (ISR) strike platforms; and precision-guided missiles and munitions. As A2/AD zones expand, they will progressively “shrink” the world’s oceans to what we might call “Mediterranean Size.”

## GROWING NAVAL STRIKE RANGE

Period	Range
Age of Sail	Less than half a mile
Dreadnought Era	8-10 miles
Aviation Regime	300-plus miles
Missile Age	7,000-plus miles

In this environment, attempting to operate surface warships and merchant ships in the enemy's littoral regions, at least early in a conflict, will likely be prohibitively costly for even the most formidable maritime power. Even beyond the littoral, the growth of extended-range scouting and precision-strike forces may find competitors creating a "no man's land" for surface ships. In such a wartime environment, a surface fleet may spend most of its time operating outside the enemy's A2/AD maritime "bastions,"<sup>5</sup> and perhaps beyond the no man's land as well, conducting periodic short-duration dashes inside the enemy's A2/AD perimeter to launch strikes and execute other missions. The fleet's ability to conduct these operations would be greatly influenced by the range and stealth of its strike systems; its counter command, control, communications, computer, intelligence, surveillance, and reconnaissance (counter-C4ISR) capabilities; and its survivability.

Thus, although today aircraft carriers possess the U.S. fleet's greatest combat potential, unless they can project that potential over much greater ranges than is currently possible, they will run a high risk of detection and damage or destruction in a mature maritime precision-strike regime. The emergence of the aircraft carrier as the fleet's capital ship stemmed from its ability to conduct effective strikes at ranges far greater than could the other ships in the order of battle. The advent of the missile age, particularly the rise of precision-guided missiles, however, has significantly altered—if not reversed—the situation: *some missiles—such as the Chinese DF-21 anti-ship ballistic missile (ASBM)—outrange the aircraft on today's American carriers.*

While surface warships may have the option of not steaming in harm's way, transport ships that provide badly needed supplies may not. Indeed, with the range of scouting<sup>6</sup> and strike systems (including nuclear-powered submarines) having increased so dramatically, commerce protection may prove difficult or even impractical in a mature maritime precision-strike regime. If so, a competitor's level of economic self-sufficiency could represent a

5 A bastion can be generally defined as a maritime region where an enemy can operate in wartime with a high degree of freedom, and where friendly maritime forces operate at great peril.

6 As used here, the term "scouting" is defined by Wayne Hughes as follows: "Scouting is information gathered by any and all means—reconnaissance, surveillance, cryptanalysis, or any other type of what some call information warfare. But the scouting process is not complete until the information is delivered to the tactical commander." Wayne P. Hughes, Jr., "Naval Tactics and Their Influence on Strategy," *Naval War College Review*, January-February 1986, p. 8.

major advantage, especially in an extended conflict. Those competitors who are relatively self-sufficient and geographically advantaged may be incentivized to posture themselves for protracted war, and be content to keep their seaborne commerce outside an enemy's effective scouting and strike ranges. Those who are not highly self-sufficient may be compelled to posture for a short campaign, undertake a major (and costly) program to stockpile strategic materials, or both.

In this fight, as in much of the overall struggle for maritime supremacy, winning the "hider-finder" or scouting competition will prove crucial to establishing a maritime balance sufficiently favorable for a competitor to accomplish key missions at and from the sea. Winning or at least dominating this competition will almost certainly be essential for maritime forces to strike mobile targets effectively and avoid wasting strikes on low-value fixed targets. The ability to win the scouting competition by reading the enemy's codes through cryptanalysis, jamming of communications links, or deleting or corrupting an enemy's scouting data through cyber operations could prove decisive. When scouting forces are mutually degraded, mobile targets may need to be engaged quickly, especially at extended range where scouting forces are likely to be minimal. This may put a premium on arming the scouting elements; engaging with missiles, given that missiles—particularly ballistic missiles—can travel substantially faster than any aircraft; and amplifying submarines that can use their stealth to position themselves close to a target and employ its missiles to strike quickly.

While precision offers accuracy independent of range, it does not offer range independent of cost. Thus only maritime powers of the first rank are likely to possess significant numbers of extended-range scouting and strike systems to threaten mobile targets, as well as the battle networks to enable the effective coordination of their activities. Hence, initial operations between two first-class maritime powers will likely center on seizing control of the maritime no man's land that is contested primarily by extended-range scouting and strike forces. If this can be accomplished, the victor will enjoy greater freedom of maneuver at sea while being able to bring more of his scouting and strike forces to bear for the purpose of defeating the opponent's A2/AD forces and reducing his littoral bastion.

Toward these ends, a major challenge for competitors will be to determine when the enemy's scouting force has been defeated or depleted. Accurate battle damage assessment (BDA) will be critical; however, it will also likely prove challenging, especially in the case of cyber and electronic attack where physical evidence is lacking. If a competitor has high confidence in his BDA against the enemy's scouting element, he can move forces that might otherwise be highly vulnerable into the no man's land, or even the enemy's A2/AD maritime bastions. Given the importance of effective scouting in a mature maritime precision-strike regime, however, friendly forces must anticipate that the enemy may feign a loss of his scouting ability, particularly in the cyber and electromagnetic domains, in an attempt to draw friendly forces into an ambush.



As increasing the range of precision strike forces cannot be achieved independent of cost, these forces will likely be in relatively short supply and limited to only the most advanced maritime powers. This suggests there may be a need to rethink the relative value of surface warships' staying power, including not only active air and missile defenses, but also armor and damage control. Put another way, measures such as armor and damage control may drive up significantly the number of scarce extended-range strike assets required to achieve a mission kill or to sink a ship.

Due to the increasing vulnerability of surface vessels, the undersea domain is almost certain to play an increasingly important role in a mature maritime precision-strike regime. Submarines (especially nuclear-powered submarines) are likely to be one of the few naval assets (in addition to extended-range missiles and long-range stealthy carrier aircraft) capable of operating at acceptable risk in the maritime no man's land and penetrating the enemy's A2/AD bastion. To maximize their effectiveness and limit their vulnerability, submarines may evolve into "mother ships," carrying unmanned underwater vehicles (UUVs), mines, towed payload modules, and special operations forces (SOF), along with their traditional complement of torpedoes and missiles—creating an undersea "combined arms" force capable of conducting a range of missions, albeit on a relatively modest scale. Additionally, since the last clash between major maritime powers in World War II, an undersea economic infrastructure has emerged centered primarily on energy extraction and communications cables. This infrastructure will likely prove an attractive target in future wars. To the extent multiple competitors are involved in such a war, a major challenge for a competitor attempting to defend his infrastructure may be *accurately identifying the source of an attack*.

In addition to submarines, advanced sea mines will likely play an important role in a mature maritime precision strike regime. Moreover, over time it seems increasingly likely that the distinction between "smart" mines and UUVs will blur, rendering mines even more formidable. Yet the cost of even the most advanced mines will likely be only a small fraction of that for a modern warship. This suggests that mines will become an important part of a maritime competitor's A2/AD littoral defense force, particularly if they can be emplaced in deeper waters.

Despite the many uncertainties regarding the competition, if history is any guide, it will involve many of the weapon systems and other military capabilities that are either in the competitors' armed forces today or in their current procurement programs. This is due in part to the reluctance competitors exhibit to scrapping expensive existing capital stock, such as major surface warships, submarines, aircraft, and satellites whose service life spans decades, but whose value may be depreciating at a rapid rate. The problem may be compounded for some traditional major maritime powers, the United States in particular, that appear to be entering a protracted period of increasing fiscal constraints, in part owing to a dramatic rise in personnel costs, an increasingly dysfunctional weapons acquisition system, and the rapid growth in social welfare entitlements. Ironically, those maritime powers with the most maritime capital stock—the United States especially—may have the least flexibility in terms

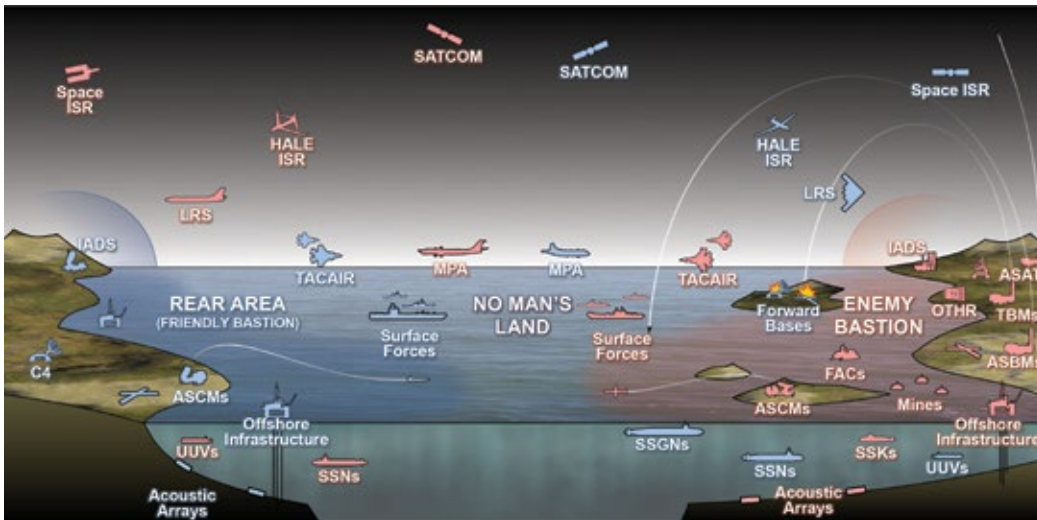
of fielding new capabilities. This may be mitigated, however, to the extent that a maritime platform is designed with an open architecture that enables enhanced or alternate sensors, electronics, weapons, and other payloads to be upgraded quickly.

That said, history suggests that even a modest shift in the composition of maritime capital stock, when combined with appropriate operational concepts, can make an enormous difference in the overall balance. This was demonstrated by Germany’s small submarine force at the outbreak of World War I and the handful of carriers possessed by the U.S. and Imperial Japanese navies at the beginning of World War II in the Pacific. Hence, an important factor in determining the future maritime balance will be the ability of the competing military institutions to innovate, or transform (i.e., innovate on a scale sufficient to exploit a military revolution), with advantage accruing to those competitors that identify the best methods (i.e., operational concepts) for employing existing and emerging capabilities to their advantage. Thus the ability to identify, test (through analysis, gaming, simulation, and exercises), and refine these concepts will likely be crucial to maintaining or enhancing a competitor’s position.

### Restoring Maritime Freedom of Maneuver

There are several operational concepts that have merit in advancing thinking beyond the environment assumed here—that is, one in which the spread of precision-guided weaponry has reached its mature stage along with corresponding scouting forces (such as unmanned aerial vehicles and satellites) and battle networks.

#### MARITIME ZONES



A key part of the competition will involve restoring maritime freedom of maneuver by reducing an enemy's long-range A2/AD capabilities and seizing control of the maritime no man's land. How might this be accomplished? Options include operational concepts centered on:

- Winning the "Scouting Campaign." This can be accomplished in part by introducing attractive false targets, making real targets less detectable (such as through stealth and curtailing electronic emissions), degrading enemy communications, and injecting false information into the enemy's battle network. If this can be accomplished it will greatly limit an enemy's ability to engage mobile targets.
- Depleting the Enemy's Long-Range Strike Systems. Given their cost, these systems will likely be a relatively small part of the enemy's strike force. As is the case with enemy scouting systems, depleting his long-range strike forces can enable friendly naval forces to operate relatively freely in no man's land and to operate more aggressively against the enemy's maritime bastion.
- Engaging in Peripheral Campaigns. For example, should friendly forces physically seize key areas outside the immediate area of competition, such as sources of vital resources for the enemy, it may compel the enemy to contest friendly forces for control and subsequently over-extend their military resources (especially their extended-range scouting and strike systems), while enabling friendly forces to concentrate the greater portion of their forces at the key point of decision.

In brief, U.S. planners will likely confront an increasingly dynamic environment in which they must address both how the emergence of a mature maritime precision-strike regime will affect the U.S. military's ability to conduct maritime missions *and* what countermoves the United States could undertake to offset potential new enemy advantages. The objective of these countermoves should be to improve the U.S. competitive position and include those actions that could shape the competition's path in ways favorable to U.S. interests.

Where do we go from here in understanding the emerging maritime competition? If history is any guide, success will require persistent effort over time. This essay is only a modest first step in what will likely be a long and fitful path toward the mature maritime precision-strike regime. Ideally, it will advance the debate within the professional military and strategic studies community regarding the regime's characteristics. The debate can be further enriched by considering how some of the key variables likely to exert a strong influence on the maritime competition—such as directed energy, electronic warfare, advanced-design nuclear weapons, cyber munitions, and competitor paths—could significantly shape and influence the regime and the U.S. competitive position. Priority should be given to identifying how the United States would like to see such a competition evolve over time, as well as how they could influence competitors to pursue competitive paths less threatening to its interests. This effort has historically been facilitated by first developing operational concepts that enable maritime forces to address challenges and exploit opportunities that might emerge in the new regime. Since the competitive environment is dynamic, and since analysis of the operational concepts

should provide additional insights into their strengths and weaknesses, these concepts must be regularly refined. This can be accomplished through well-designed war games, simulations, and maritime exercises.

The process described here need not be expensive; indeed, the savings realized from such an effort are potentially substantial. Accurately gauging the characteristics of a mature maritime precision-strike regime could help the U.S. military avoid investing in capabilities ill-suited to meet future challenges, thereby allowing resources to be allocated to areas that provide the United States with a distinct and enduring competitive advantage. Although the benefits of embarking on such an effort are clear, it will occur only if senior leaders—particularly senior civilian policymakers and U.S. Navy leaders—take up the challenge and find a way to institutionalize the process described here.



## ABOUT THE CENTER FOR STRATEGIC AND BUDGETARY ASSESSMENTS (CSBA)

The Center for Strategic and Budgetary Assessments (CSBA) is an independent, nonpartisan policy research institute established to promote innovative thinking and debate about national security strategy and investment options. CSBA's analysis focuses on key questions related to existing and emerging threats to U.S. national security, and its goal is to enable policymakers to make informed decisions on matters of strategy, security policy, and resource allocation.

## ABOUT THE AUTHOR

**Dr. Andrew F. Krepinevich, Jr.** is President of the Center for Strategic and Budgetary Assessments. He assumed this position in 1993, following a 21-year career in the U.S. Army. Dr. Krepinevich has served in the Department of Defense's Office of Net Assessment, and on the personal staff of three secretaries of defense. He has also served as a member of the National Defense Panel, the Defense Science Board Task Force on Joint Experimentation, the Joint Forces Command Advisory Board, Defense Secretary Robert M. Gates' Policy Board, and the Army Special Operations Command's Advisory Board. He currently serves on the Chief of Naval Operations' (CNO's) Advisory Board. A graduate of West Point, Dr. Krepinevich holds an M.P.A. and Ph.D. from Harvard University.



# CSBA

Center for Strategic and Budgetary Assessments

1667 K Street, NW, Suite 900

Washington, DC 20006

Tel. 202-331-7990 • Fax 202-331-8019

[www.csbaonline.org](http://www.csbaonline.org)