



# **Transforming the Battle Fleet:**

## **Steering a Course Through Uncharted Waters**

**Robert O. Work  
Center for Strategic and Budgetary  
Assessments**

**October 18, 2004**

## A Fleet in Decline?

- **“I think 360 is the magic number. At 300 ships, you turn into a pumpkin, and we’re (still) going down.**
  - Representative Randy “Duke” Cunningham, R-Escondido, CA
- **“The battle force—the navy’s fleet of front-line aircraft carriers, cruisers, destroyers, amphibious ships and selected support vessels—now numbers 296 ships...the smallest size since before World War I.”**
  - San Diego Union Tribune, October 2003
- **“At least during the Clinton years the US was shrinking a fleet that really was oversized for the post-communist world. But having right-sized the fleet, budget planners are now inventing new excuses to continue the Navy’s contraction.”**
  - Loren Thompson, Lexington Institute
- **“We’ve cut too deep. We need more ships.”**
  - Representative Duncan Hunter, R-El Cajon, CA  
Chairman, HASC

## Maybe Not

- **Implicit in all of the foregoing quotes is an important assumption: that the number of ships in the “Total Ship Battle Force” is the most important measure of US battle force capabilities.**
- **However, focusing solely on the number of ships in the “TSBF” can be misleading.**
  - Counting the number of ships in the TSBF is an arcane science; counting rules often change from period to period
  - US has 95% of the world’s militarily useful sealift, which underwrites its global power projection capability; yet sealift ships do not count in the TSBF
- **Moreover, the habit of comparing the contemporary US battle fleet with past US battle fleets is highly suspect. Comparing US battle force numbers in different time periods fails to account for:**
  - The role of the Navy in contemporary National Security Policy
  - The fleet’s relative capabilities vis-à-vis likely competitors
  - The impact that new technology and weapons have on comparative ship capabilities

# The Size of the Navy Reflects Contemporary National Security Policy

- **Continental Era: 1775-1889**
  - US focuses on securing the continent and the Republic
  - Throughout the period, the US Navy remains a relative lightweight among a large number of world naval powers
  - Between the end of the Revolutionary War and 1812, Britain seized 917 American ships; more than 1,500 more were seized by France, Naples, the Barbary States, Spain and the Netherlands
  - At the time of the War of 1812, the US Navy has 17 seaworthy ships with 447 guns and 5,000 officers and men; the Royal Navy has 1,048 ships, 27,800 guns and 151,500 men
  - In 1883, the US Navy ranks twelfth among world naval powers
- **First Expeditionary Era: 1890-1946**
  - As an emerging world power, the US increasingly focuses its attention overseas and starts to mount large “out of area” expeditions
  - US Navy is considered the “forward line of defense;” Mahan’s vision of a sea control Navy structured around a concentrated fleet battle line sparks a remarkable fleet expansion
  - By 1907, the US fleet is ranked number 2 behind Great Britain
  - During the Interwar Period, the US Navy is tied with the Royal Navy for number one
  - By 1945, the US Navy is the largest naval power in the world in terms of number of ships, tonnage, and manpower

# National Security Policy Drives the Size of the Navy

- **Garrison Era: 1947-1989**
  - As the leader of a global coalition against communism, the US maintains large land warfighting garrisons overseas for the first time in its history
  - Maintaining forward “naval garrisons” along the periphery of the Eurasian land mass drives Navy operational patterns; the Navy keeps “combat credible” naval forces forward in two or three theater “hubs”
  - While the number of ships in the fleet declines sharply and fluctuates widely after the World War II, the US remains the dominant world naval power throughout the era
  - In the 1970s and 1980s, the Soviet Navy mounts a credible global naval challenge; the Navy responds by building a “600-ship” battle fleet
- **Second Expeditionary Era: 1990-**
  - The US becomes the sole remaining superpower, and a military “hyper-power”
  - Forces gradually withdrawn from overseas; joint expeditionary operations become the norm
  - Joint power projection across global distances is constantly stressed: increased emphasis on strategic mobility; access agreements; forward operating bases and locations; and rapid response
  - No global peer or naval challenger emerges; the fleet gradually declines to approximately 300 ships
  - Global War on Terrorism is declared in 2001

## Comparing US Battle Force Numbers From Different Eras Doesn't Reflect the Navy's Relative Position Among Contemporary Naval Powers

- **By 1907, although the overall size of the fleet was below 300 ships, the US Navy boasted the second largest battle fleet in the world, behind that of Great Britain.**
- **Although the fleet climbed to 774 ships during World War I, the British Royal Navy still retained the number one fleet ranking.**
- **The US battle force declined during the Interwar period, from a World War I high of 774 ships to a low of 308 ships in 1931, and climbed back up to 790 ships on 7 December 1941. Throughout this period, however, the Navy remained first or second among world naval powers.**
  - The Washington Naval Treaty of 1922 and subsequent treaties created for a 5-5-3 ratio in certain ship categories between Great Britain, America, and Japan.
- **The 600-ship US Navy confidently faced a Soviet Navy that on paper possessed three times the number of submarines, over 50 more principal combatants, and four times the total number of warships in their naval order of battle.**
  - The Soviet's apparent great numerical advantage was largely offset by allied submarines and combatants

## Comparing US Battle Force Numbers From Different Eras Also Doesn't Reflect the Impact of New Technology and Weapons on Battle Force Capabilities

- “It’s ludicrous to compare today’s Navy with the ships of World War II.”
  - Norman Polmar, editor, *Ships and Aircraft of the US Fleet*
- Indeed, it’s hard to compare today’s warships with those that sailed even 15 years ago:

	Displacement	Missiles	Helicopters
CGN 38	11,400 tons (fl)	84	0
CG 52	9,466 tons (fl)	130	2
DDG 37	5,800 tons (fl)	64	0
DDG 79	9,217 tons (fl)	96	2
DD 963	8,280 tons (fl)	69	2
DD(X)	14,000 tons (fl)	80	2

- **Worldwide trend: navies are operating fewer, more capable ships**
  - 41 SSBNs replaced by 18 SSBNs
  - Today’s 73 surface combatants have the nearly the same total magazine capacity as the 104 combatants in the 1989 “600 ship Navy”

## **So, Despite its Small Size in Comparison to Past US Fleets, the Current Fleet Enjoys an Overwhelming Margin of Superiority Over Contemporary Naval Powers (and Past US Navies)**

- **“...the US Navy remains by a vast gap the world’s most powerful, and...has been steadily increasing its margin of power over any possible protagonist—or even groups of protagonists...(T)he Navy’s fleet is essentially unchallengeable, and its aircraft inventory is far larger than that of any foreign nation’s air forces, land- or sea-based. From the standpoint of military technology, there is simply no other nation with the same naval capabilities, and it appears that no challenger will be likely to appear for two to three decades in the future.”**
  - A. D. Baker III, editor, *Combat Fleets of the World*
- **“No one is going to challenge us at sea for the next 20 years.”**
  - Norman Polmar, editor, *Ships and Aircraft of the US Fleet*
- **“The 600-ship Navy of the 1980s cannot compare with the combat capabilities of the present Fleet.”**
  - Vice Admiral Dennis McGinn, February, 2001

## In Striving to Maintain Our Current Margin of Naval Superiority, We Need to Understand the Five Broad Forces Impelling Naval Transformation

- **The evolving nature of guided weapons warfare.**
  - Guided weapons warfare, now 60 years old, is important at the operational and tactical levels of war in almost every operating domain
  - Guided weapons have spurred a broad diffusion of strike power among Navy ships
- **The increasing costs of the All Volunteer Force.**
  - Personnel costs are the most expensive component of a ship's life cycle cost
- **The increasing power of sensors and information technologies.**
  - Networking networks, shared awareness, and collaborative planning
- **The shifting fleet doctrinal emphasis from sea control to “guaranteeing delivery of joint goods and services ashore” in support of joint multi-dimensional campaigns.**
  - The Navy now concerns itself most with “assuring access” in close-in littoral waters
- **The increasing costs of submarines, carriers, surface combatants.**

# These Forces Are Spurring a Transition to a Fourth Battle Force Era

- **Frigate/Cruiser Era.**
  - Mission: *Guerre de course*
  - Emphasis on small number of powerful, modern warships
  - Dispersed squadrons overseas
- **Battleship Era.**
  - Mission: Sea control
  - Fleet battle line of 16-20 Dreadnought-class battleships
  - Concentrated fleet, capable of operations in either ocean
- **Carrier and SSN Era.**
  - Mission: Sea control and offensive ASW
  - Maintaining “combat credible forces forward”
  - Rotational fleet operating pattern
- **Distributed, Networked Battle Fleet Era.**
  - Mission: supporting joint power projection operations in and from littoral waters

## As its Name Implies, Distributed Networked Battle Fleet Era Design Criteria Will Be Different Than Past *Platform*-Based Eras

- ***Get connected:*** create battle networks consisting of overlapping sensor, command and control, and engagement grids linked by numerous webs of man-to-machine and machine-to-machine interfaces.
- ***Get modular:*** emphasize modular payloads, open system architectures, and modular “combined arms” task groups to assemble **Naval Battle Networks**—themselves a component of **Joint Battle Networks** — appropriate for the threat and access conditions.
- ***Get off-board:*** Rely on off-board systems to expand the sensing and engagement envelopes around each individual node in the network, and to extend the sensor volume and engagement range of the total battle network.
- ***Get unmanned:*** Reduce crew size and pursue unmanned systems in the air, on the surface, and under the sea.
- ***Get fast:*** high battle network “speed of command”, networked force acceleration (velocity/time), and exploit speed of platforms to gain informational, temporal, and positional advantages over an enemy,

## How Do These New Battle Fleet Design Criteria Translate into Required Ship Numbers?

- **Seems clear that in this new emerging Battle Fleet era, simply counting the number of ships in the TSBF is no longer the most accurate measure of fleet capabilities.**
  - What is the equivalent ship count for modular, multi-purpose, single mission ships like the LCS that emphasize off-board systems?
  - What is the equivalent ship count for a single mine warfare ship employing 3-5 unmanned minesweeping drones?
  - What is the equivalent submarine count for a single SSGN employing 154 (21-inch) Mission-reconfigurable UUVs?
- **We need to start thinking in terms of measuring the effectiveness of the emerging **Total Force Battle Network**, itself a component of the **Total Joint Battle Network**.**
  - Measuring the aggregate combat power of a distributed networked battle fleet is easier said than done. **What are the proper measures of merit?**
  - Have to factor in joint contributions
- **At some point, however, fleet capabilities will need to be expressed in numbers and types of platforms**
  - We need to be very careful in comparing these numbers with past US fleets; the comparisons will likely be quite misleading

## Complicating Things is the High Degree of Uncertainty That Accompanies Inter-Era Battle Fleet Shifts

- **Frigate to Battleship Era. In a 20-year span:**
  - The Navy built 9 pre-*Dreadnought* and 6 *Dreadnought* battleship classes before getting the best design blend of armor, speed, firepower, and endurance (the *Nevada*-class)
- **Battleship to Carrier Era. In a 20-year span:**
  - 8 carrier prototypes built; extensive war gaming, analysis, fleet problems
  - Even so, during World War II, every combatant in the battle fleet performed a different role than the one for which it was designed (except mine sweepers)
- **The shift from the Carrier Era to the Distributed, Networked Battle Fleet Era will be characterized by even higher degrees of uncertainty:**
  - Lack of experience in viewing battle fleet as a battle network rather than just a aggregation of ships
  - There are no pacing naval threats to guide the development of the TFBN
  - With gradual reduction of worldwide naval threats, the Navy is now forced to measure fleet combat power against maritime anti-access/area denial threats, many of which will be **land-based**
- **Capabilities-based planning and experimentation will be key.**



# Unfortunately, To This Point, CBP Lacks the Firm Analytical Foundation of the Previous, Threat-Based PPBS

## Challenges

Irregular    Traditional    Catastrophic    Disruptive

**Dissuade**

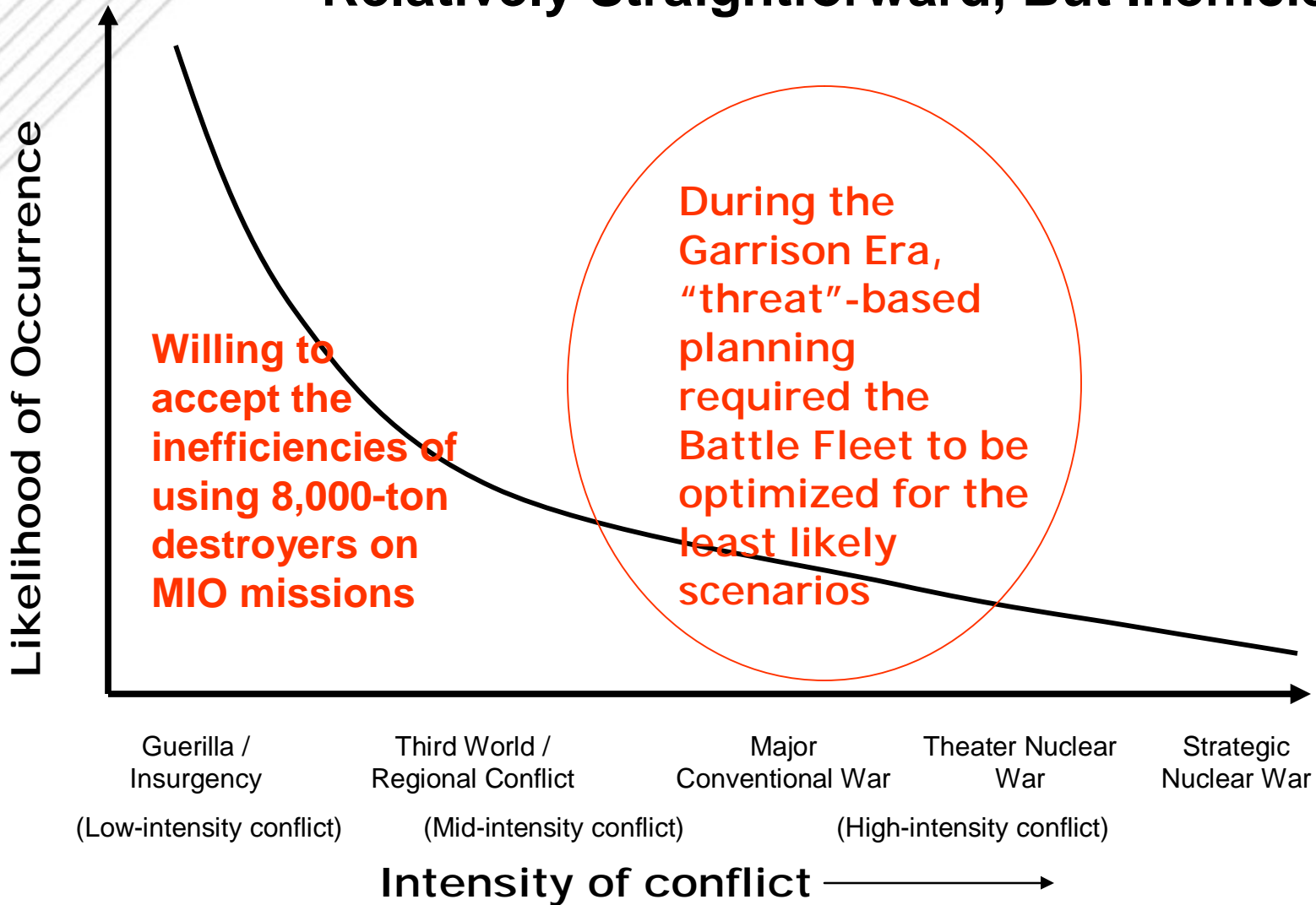
**Still a ways to go before the new CBP planning process is fully developed.**

**Deter**

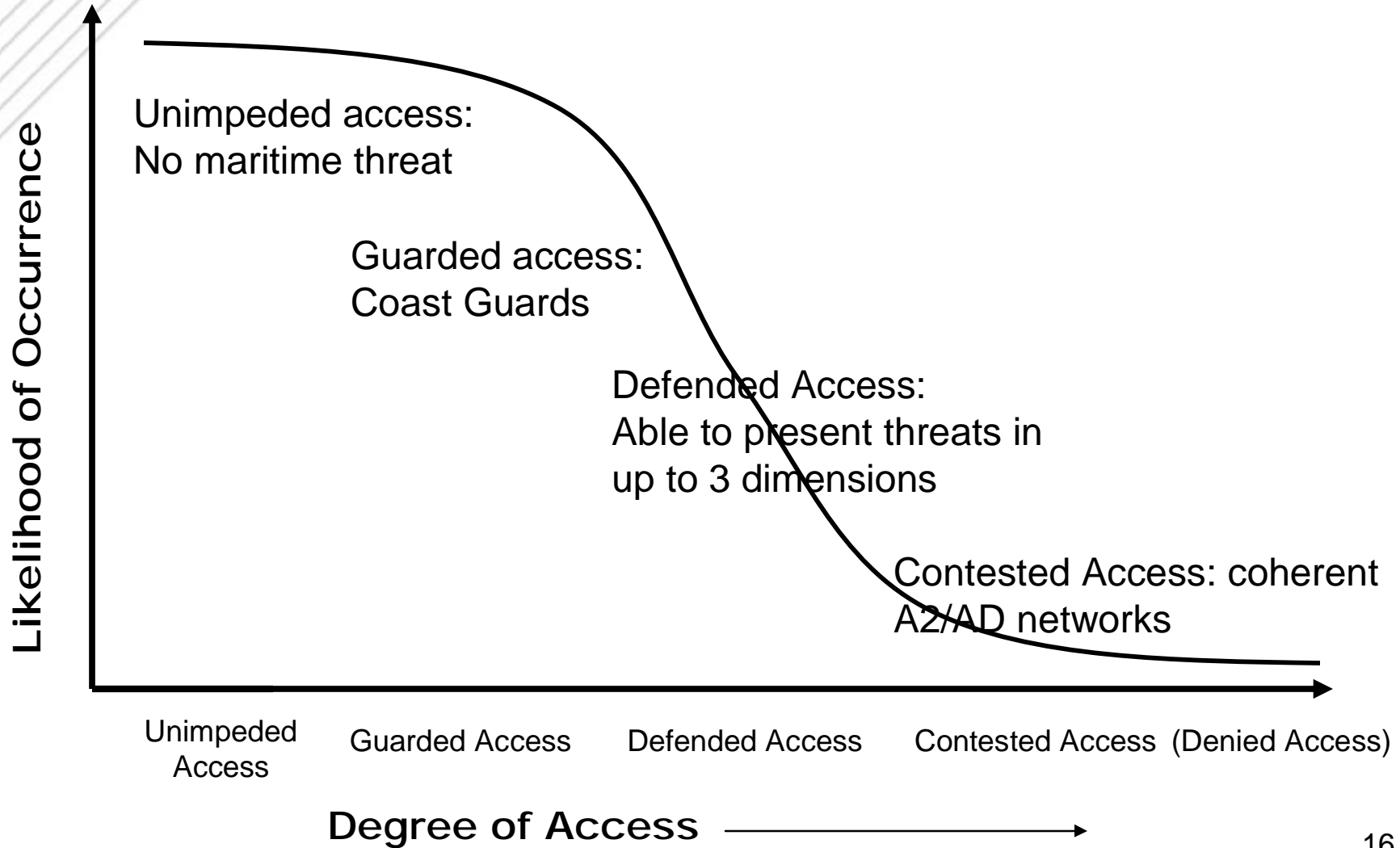
**In the meantime, we need to continue developing the new 21<sup>st</sup> century Naval Operational Architecture.**

**Defeat**

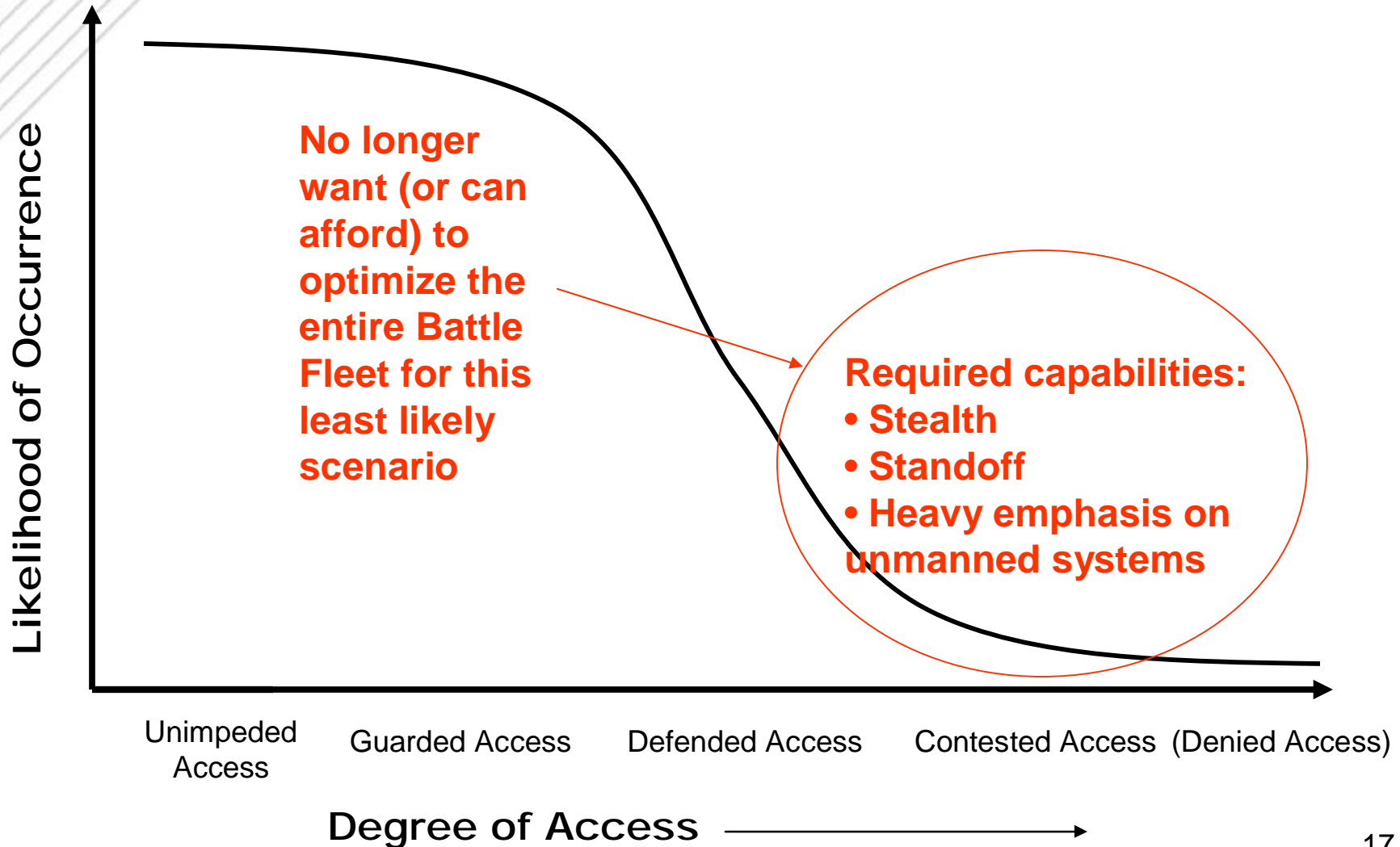
# Threat-Based Planning, the Basis of Planning During the “Sea Control Century,” is Relatively Straightforward, But Inefficient



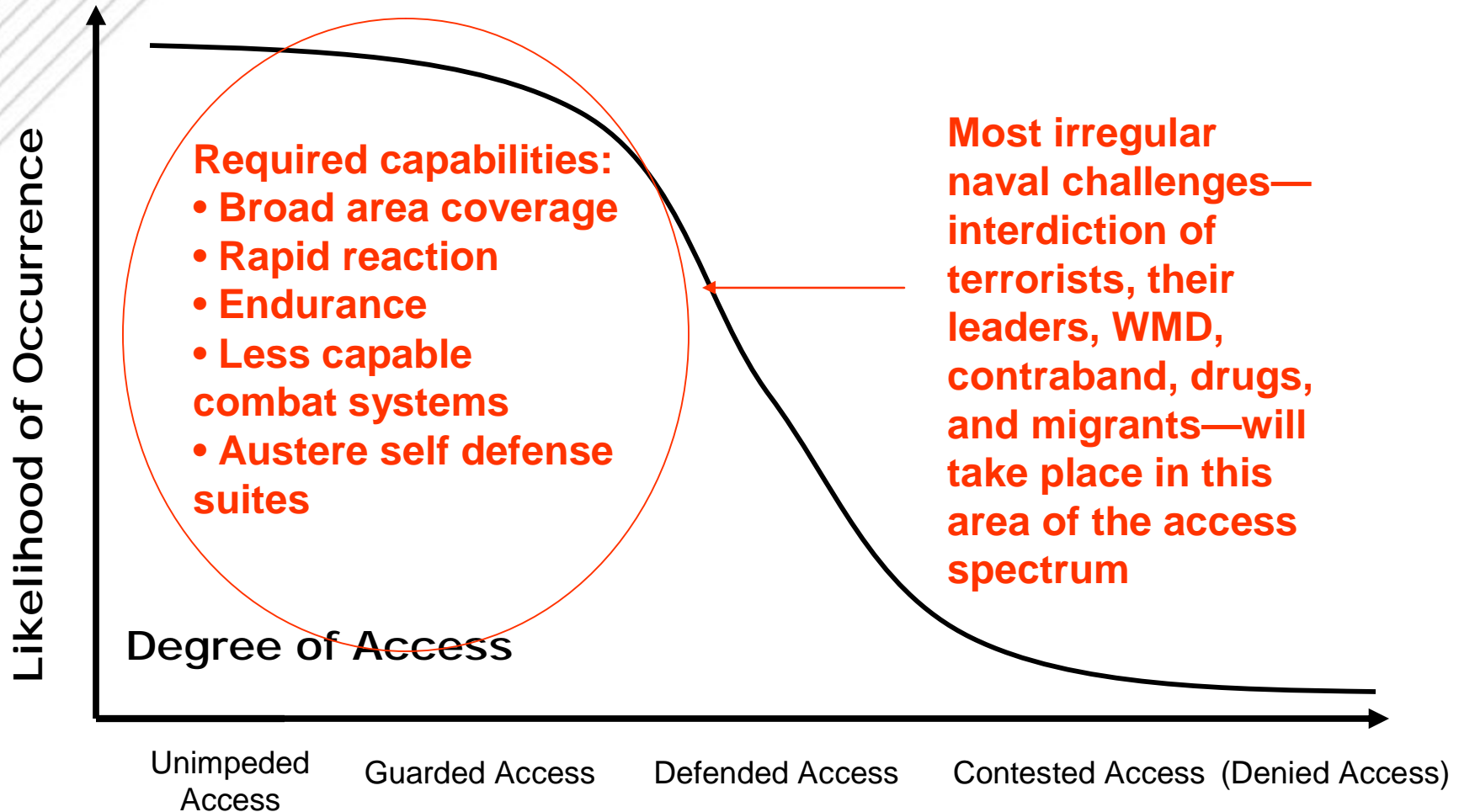
# For the Capabilities-Based 21<sup>st</sup> Century “Assured Access Navy,” the Degree of Access Becomes a Proxy For Intensity of Conflict



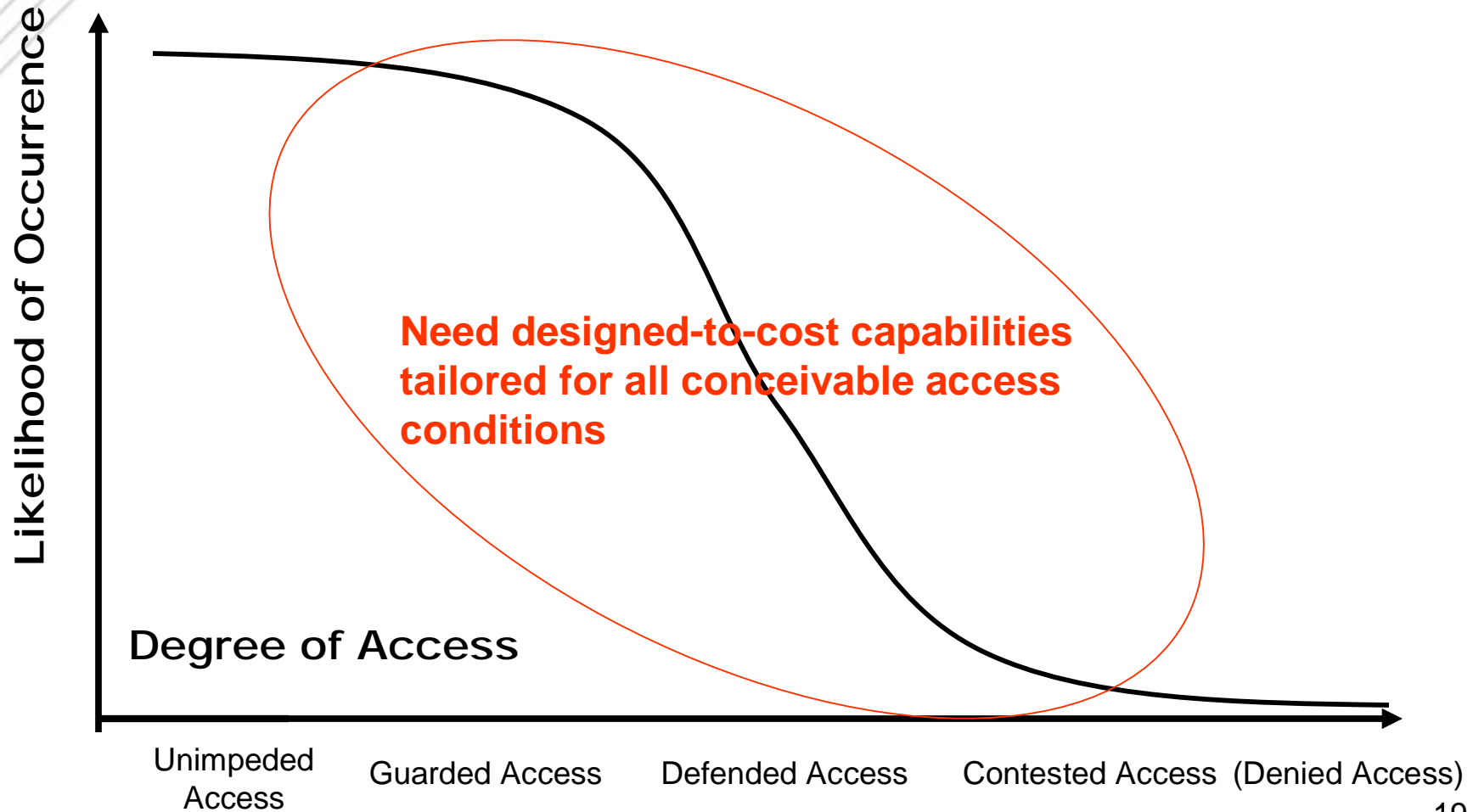
# Capabilities Required For Contested Access Should Not Yet Drive the Design of the 21<sup>st</sup> Century “Assured Access Navy”



## Near-term Focus: Improve on Fleet Capabilities in Unimpeded and Guarded Access Scenarios



# The Distributed Networked Battle Force Era Will Thus Likely See a Much More Heterogeneous Fleet Operational Architecture Than That Seen During the Carrier Era



## Conceptually, This Evolving Naval Operational Architecture Must Be a Cost-Effective Blend of Four Capabilities-based Components

- **Dissuasion/Strategic Deterrence Fleet:**
  - Powerful fleet-in-being to dissuade would be adversaries from mounting a *open-ocean* naval challenge
  - Survivable sea-based nuclear deterrent
  - A robust naval shipbuilding infrastructure
  - Adequately funded naval R&D infrastructure to hedge against disruptive challenges
- **Global Patrol/GWOT/Homeland Security Fleet:**
  - Focused on confronting irregular and catastrophic challenges in unimpeded and guarded access scenarios
  - Includes the Coast Guard Deepwater Fleet
  - Will be augmented by allied navies
- **Sea-based Power Projection/Regional Deterrence Fleet:**
  - Focused on traditional challenges under unimpeded, guarded, and defended access scenarios
- **Contested Access Fleet:**
  - Focused on overcoming A2/AD networks

## The General Requirements for These Four Conceptual Component Fleets Differ

- **Dissuasion/Strategic Deterrence Fleet**
  - Powerful fleet-in-being of SSNs and SSBNs
- **Global Patrol/GWOT/Homeland Security Fleet**
  - Large numbers of cheap, lightly manned combatants utilizing off-board systems
  - Persistent strike, SOF, and light maneuver support platforms
  - SSGNs
- **Sea-based Power Projection/Regional Deterrence Fleet**
  - High-volume strike capabilities
  - Capable all-around defensive capabilities
  - Heavy maneuver support capabilities
  - Persistent logistics capabilities
- **Contested Access Fleet**
  - Stealthy platforms; unmanned systems
  - Standoff systems

**There is obvious some overlap among these fleets  
What is the best blend of platforms?  
What is the required number and types of crewed ships?**

# Preliminary Observation: The Dissuasion and Power Projection Fleets Appear to Have Excess Capacity

- **Submarines**
  - 14 SSBNs can carry 336 missiles capable of carrying 2,688 warheads
  - In 1990, 96 US nuclear powered attack submarines confronted 267 Soviet SSGNs, SSNs, SSGs, and SSs, for a force ratio of 1:2.8 submarines
  - The planned force of 55 SSNs and 4 SSGNs confront approximately 70 Chinese and Iranian SSNs, SSGs, and SSs, for a force ratio of 1: 1.2
- **Carriers:**
  - A 1989 CAW could strike 162 targets a day; by 2001, a CAW could hit 693 per day; by 2010, the number should exceed 1,000.
  - In 2001, a 2-carrier CSG could strike over four times the number of aimpoints per day than could a 1989 2-carrier CVBF
  - Maximum theoretical daily strike capacity for the 15-carrier fleet in 1989 was 2,430 aimpoints; maximum theoretical strike capacity for the 11-carrier fleet in 2010 will be 11,880 aimpoints
- **Surface combatants**
  - The cumulative missile magazine capacity of the 1989 surface combatant fleet (104 combatants) was 7,133 (13+ inch diameter) missiles
  - The planned force of 22 CG-52s, 62 DDG-51s and 24 DD-21s (108 combatants) would carry among them 10,888 comparative missiles—an increase of over 50%

# Five Things to Do

- **One: Stop fretting so much about declining TSBF numbers.**
  - Until we understand how to best measure the capability of the TFBN, we won't know the best mix of numbers and platforms required in the future fleet
    - Whatever we do, however, we should resist using past US fleet sizes as a comparative metric; this fleet is simply incomparable to those of the past
  - Can't forget USCG (national fleet), joint, and allied contributions
  - Understand that even though our fleet is declining in size, we still are in an envious position:
    - "...thanks to the delivery of the carrier *Ronald Reagan* (CVN 76), four *Arleigh Burke* destroyers, a 60,000-ton (LMSR), and a research ship, the United States Navy not only received delivery of more warship tonnage during 2003 than any other country, but that total tonnage probably exceeded that of all other countries combined. Further, no other country, and no conceivable combination of potential antagonist countries, has a naval construction program equal to that of the US Navy." A. D. Baker III

## Two

- **Focus on creating the best mix of battle network components possible within reasonable budget forecasts.**
  - Given the rapidly escalating costs of current ships, we need to accept that future budgets will likely not allow a 375-ship Navy as currently planned or counted
  - That does not necessarily mean that we cannot afford to build a fleet that is as large, or larger, than 375 ships
  - We need to maintain a strong industrial base; perhaps we should change the mix of the total tonnage constructed, emphasizing larger numbers of cheaper vessels
  - We should also review and change the way we count ships in this new era
    - Include all mine warfare ships (+10)
    - Include small patrol combatants (+13)
    - Count ships that directly contribute to joint power projection goals (e.g., 10-30-30)
      - Prepo ships (+36)
      - Surge sealift ships (+19)

## Three

- **Continue fleet battle experiments to determine the best way to employ a smaller, more powerful fleet organized into naval battle networks.**
  - “Ultimately, hardware may not be the issue it once was. (Admiral ) Clark repeatedly has urged new concepts such as the Fleet Response Plan and Sea Swap *to be developed to change the way the forces are used, rather than simply requiring more ships, aircraft or people*” (emphasis added).  
*Inside the Navy*
  - The reorganization of the fleet into 37 smaller, modular task groups allows the assembly of naval battle networks scaled to the task at hand, and tailored for access conditions
  - Sea Swap experiments seeks to provide equal presence with fewer ships
  - Battle Network surge operations promise equal available deployable combat power with a smaller TSBF
  - Experiments with unmanned systems will inform the development of heterogeneous networks composed of both crewed and uncrewed platforms

## Four

- **Continually scrub assumptions about desired battle network capabilities and associated platforms.**
  - How many submarines are needed to maintain an acceptable margin of undersea superiority?
  - Do we really need to maintain 14 SSBNs, or can we create a second 4-boat SSGN squadron?
  - Is the LCS better conceived of first as a Global Patrol/GWOT/ Homeland Security Fleet asset or a contested access platform?
  - What is the effect of dropping the number of carriers to 11 and postponing the construction of the next carrier until all distributed naval aviation options are considered?
  - How many “high-end” MPF(F) ships can we afford? For what missions?

## Five

- **Accept that naval program fluctuations reflect a period of high uncertainty.**
  - The analytical underpinnings of the Carrier Era no longer apply; the Navy is determining the analytical foundation for the emerging Distributed, Networked Fleet Battle Era through experiment, trial, and error.
  - Moreover, this inter-era shift is occurring in the midst of an enduring, global, “hot” war. Juggling competing costs will be especially difficult.
  - That said, the Navy must be more forthcoming and careful in explaining its program shifts from year to year.
  - Should we return to a modified Battleship Era fleet posture to help plot our course through these uncertain waters?
    - Maintain the majority of the fleet in home waters and conduct more and larger battle network experiments
    - Emphasize surge demonstrations rather than high levels of forward presence (e.g., Summer Pulse '04)
    - Maintain a Global Patrol/GWOT/rapid reaction force forward



**Questions?**

**[work@csbaonline.org](mailto:work@csbaonline.org)**