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CDR Mark M. Huber, USN

Paper Advisor: Milan Vego

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**The objective of chokepoint control is of overriding importance for nations that wish to project power to distant areas. It is wrongfully assumed by many naval professionals that blue-water navies will in all circumstances prevail over weaker coastal navies. However, chokepoint transits represent an operational situation where a relatively weak navy may defeat a powerful blue-water navy. This is possible because the geography of chokepoints transforms the nature of space-force and time-force relationships in a way that does not favor blue-water navies. A closer study of these relationships reveals how chokepoints elevate the combat potential of small, weak navies. Ultimately, this analysis shows what blue-water navies must do to mitigate the risks associated with chokepoint transit.**

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# CHOKEPOINT CONTROL:
# OPERATIONAL CHALLENGES FOR BLUE-WATER NAVIES

by

Mark M. Huber

Commander, U.S. Navy

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.

Signature: _____

15 May 2003

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Milan Vego
Professor of Operations

## Preface

The Bible story of David and Goliath usefully illustrates that even the most intimidating and formidable enemy can be defeated by a weaker opponent. David's adept use of a simple weapon at the right time and place earned him a stunning and unexpected victory. The enduring lesson of this Bible story should not be lost to powerful military forces of today. A relatively weak but determined adversary, skillfully employing force at the right time and the right place, may prevail against a much stronger foe.

Therefore, prudent military planners must anticipate those situations that place a powerful force at risk. Chokepoint passage represents an operational situation where the significant power of a blue-water navy is extremely vulnerable—even against a relatively weak coastal force. It is important to understand why this is so if today's blue-water navy is to avoid becoming the Goliath of tomorrow.

## Introduction

> On the Mahanian high seas, blue water naval strategy and tactics are effectively played out on a gameboard with no significant geographic or hydrographic features other than limitless water and a bottom stretching almost to infinity . . . The land plays no direct role in whatever takes place. There are as a rule no neutrals or bystanders to worry about. Most large navies think of themselves as blue water forces, defining their roles in Mahanian terms. This is naval war.
>
> Charles W. Koburger., *Narrow Seas, Small Navies, and Fat Merchantmen*[1]

Not all naval action is played out on the high seas. Historically, most naval warfare has occurred in close proximity to land. Even so, many naval professionals believe that a large, powerful, blue-water navy will in all circumstances prevail over small, relatively weak coastal navies in littoral areas. "Blue-water fleets like the U.S. Navy and the Royal Navy have traditionally seen littoral warfare as something they could do with one hand behind their back—because they are good at blue-water warfare. They have viewed littoral operations as simple and easy."[2] However logical this view is to some, it is false. It is false primarily because it presumes the factor of force alone determines which side will be the victor, dismissing the essential factors of space and time as irrelevant. Space and time—and the relationships they form with the factor of force—may transform the combat potential of belligerents in a way that makes predicting an operational outcome a much more dubious enterprise. In the case of chokepoints at sea, geography plays a key role in shaping the factors of space and time in a way that does not favor blue-water navies.

The objective of chokepoint control is one of overriding importance for nations that wish to project power to distant areas. There are hundreds of chokepoints on the world's oceans, many which define preferred routes for merchant ships and naval forces (see Appendices). Chokepoints help define the lines of operation and lines of communication for a transiting

force. If a blue-water navy fails in its objective of chokepoint control, it may fail to achieve other more important operational objectives by default, with strategic repercussions for the nation it represents. Therefore, it is vital to understand the challenges of chokepoint control.

Understanding these challenges first requires knowledge of chokepoint characteristics. Chokepoints are manifestly different from open ocean areas, but it is less obvious why this matters to a powerful blue-water navy. A study of chokepoint characteristics will not only show why this matters, it will also help reveal what warfare capabilities pose the most serious threat to chokepoint control. This same examination of chokepoint characteristics will yield other insights by enabling a critical assessment of space-force and space-time relationships. A review of these relationships will demonstrate why the objective of chokepoint control can be achieved by a weak adversary. Ultimately this analysis will show what a blue-water navy must do to mitigate the risks of transiting chokepoints.

**Chokepoint Spatial Characteristics**

Space-force and space-time relationships are the building blocks with which one crafts an understanding of the challenges associated with safely navigating chokepoints. An obligatory starting point is to define what a chokepoint is and describe its spatial characteristics. While it is difficult to produce an ironclad definition of a chokepoint, the exercise of trying to do so illustrates some useful points and distinctions.

A chokepoint is a special kind of littoral area between two bodies of water that has a small narrow passage which is impossible or very difficult to circumnavigate or avoid. This definition is not wholly satisfactory because it does not identify at what degree of difficulty a narrow sea or strait becomes a chokepoint. For example, it is far more onerous to arrive in the Indian Ocean by circumnavigating the Strait of Gibraltar via the Cape of Good Hope than

it is to avoid the Strait of Messina by passing south of Sicily. Because it can be circumnavigated to the south, the Strait of Messina is not necessarily a chokepoint. But it *is* a chokepoint for the ship captain who has no *choice* but to pass through it. This ship captain may have insufficient fuel or time to circumnavigate the strait, in which case he has no other alternative. If the matter of choice determines whether a narrow sea or strait is a chokepoint, then chokepoints are not defined strictly in terms of space. The proposed definition also suffers from not being all-inclusive; canals at Suez and Panama are undoubtedly chokepoints, but certainly the canals themselves do not constitute littorals or narrow seas. Perhaps like art or pornography, one must rely on good judgment and common sense to designate a narrow sea or strait a chokepoint. Even without a perfect definition, some common spatial attributes of chokepoints at sea can nonetheless easily be identified.

The first of these spatial attributes is a narrow waterway (see Table A). However obvious this may be, one can draw a number of significant deductions. The waterway may be small enough to limit a surface vessel's maneuverability. An excellent example of this is the Phillips Channel in the Singapore Strait, which is only 1.5 nautical miles in width.[4] In addition, a narrow waterway will increase the density of shipping traffic, seriously complicating the mobility of a blue-water navy's large ships. Last, a narrow waterway can present a number of navigational hazards such as small islands or oil platforms.

It is worth noting that while the width of a narrow sea or strait helps determine whether it is a chokepoint, chokepoint length is highly variable, and is not useful for the purpose of defining chokepoints in terms of space. The Mozambique Channel is over 1,000 nautical miles long. The highly used Strait of Malacca is 520 nautical miles in length. At the other extreme, the Strait of Tiran is a mere three nautical miles long.[5] As a common characteristic,

chokepoint width can be categorized as narrow, while length cannot be generalized in the same manner.

| Chokepoint | Length (nautical miles) | Minimum Width (nautical miles) | Minimum Depth (feet) |
|---|---|---|---|
| Bab el-Mandeb (Western channel) | 41 | 9 | 150 |
| Bab el-Mandeb (Eastern channel) | n/a | 2 | 90 |
| Bosporus | 17 | 0.4 | 110 |
| Dardanelles | 35 | 0.5 | 160 |
| Hormuz, Strait of | 22 | 21 | 160 |
| Lombok Strait | 25 | 11 | 1000 |
| Malacca, Strait of | 520 | 8 | 70 |
| Messina, Strait of | 17 | 2 | 160 |
| Panama Canal | 44 | n/a | 40 |
| Sicily, Strait of | 25 | 54 | 160 |
| Singapore Strait | 43 | 2 | 70 |
| Suez Canal | 88 | n/a | 50 |

Table A—Dimensions of Selected Chokepoints[6]

Another obvious but very significant attribute of chokepoints is the presence of land on two sides. The close proximity of land to a chokepoint waterway has a great bearing on the difficulty of safe transit. As a chokepoint becomes narrower, the significance of the land on either side increases. An extreme example of this is the southern portion of the Suez Canal, which is a mere 1,000 feet in width from shore to shore.[7] Naturally resulting from the fact that a chokepoint is bounded by land on two sides, shallow water is one more common characteristic shared by chokepoints. Sometimes a chokepoint has shallow water only where it is bounded by land; at other times a chokepoint may be shallow throughout. The main channel in the Strait of Gibraltar is over 1,100 feet in depth, but shallow water on each side reduces the useful channel to less than eight nautical miles at its most narrow point in the

west. At the other end of the spectrum, depth rarely exceeds 120 feet in the southern portion of the Strait of Malacca.[8]

It is worth noting that these spatial attributes only address two of the three mediums that constitute chokepoints at sea. The surface of the water and the undersea portion of chokepoints provide the medium on which and through which ships and submarines respectively travel. The space above chokepoints is another matter entirely. The airspace above chokepoints may or may not be restricted in the same fashion as the chokepoint itself.

To summarize, chokepoints cannot be defined strictly in terms of space. Nonetheless, once a narrow sea or strait has logically been identified as a chokepoint, certain common spatial attributes can be recognized. A chokepoint is best described as a special kind of littoral area between two bodies of water that has a narrow passage which is impossible or very difficult to circumnavigate or avoid. Narrow waterways, the presence of land, and shallow water are common to all chokepoints. The small size of chokepoint waterways and the presence of navigational hazards reduce ship maneuverability. Shallow waters may exist only on both sides of a chokepoint, or they may be present throughout. Shallow water further complicates ship maneuverability. While chokepoints always have a narrow waterway, their lengths are highly variable.

**Chokepoint Threats**

Blue-water navies must be prepared to counter specific warfare capabilities when confronting relatively weak military forces in chokepoint areas. In these situations, mines, coastal batteries (both artillery and missile), missile boats and quiet submarines (both diesel-electric and air independent propulsion) are the weapons of choice for coastal navies. The nature of the coastal threat to blue-water navies has remained remarkably constant over time.

Sir James Cable, author of *Gunboat Diplomacy*, harkens back to 1919: "By then, mines, torpedoes, submarines, coastal artillery and even aircraft were already hampering the operation of warships in coastal waters."[9] Coastal navies rely upon these types of weapons for a variety of reasons. These weapons are relatively inexpensive, much more affordable than some of the warfare capabilities and platforms a blue-water navy will bring to a fight. Training personnel to employ these systems is also less demanding. But most importantly, these weapons are well-suited for use against blue-water navies in the confined space of littoral areas, particularly chokepoints.

Chokepoints are an excellent area in which to conduct mine warfare. Narrow chokepoint waterways put less demand on mine-laying resources, perhaps even enabling the placement of multiple barriers. A minefield in a narrow waterway can slow the advance of a transiting force or, better yet, channel that force into a specific part of a chokepoint where it is more susceptible to ambush by other forces.

Chokepoint space enables the use of all three types of mines: bottom, moored, and drifting.[10] Bottom influence mines, unsuitable for use in deep waters, are compatible for use in the shallow portions of chokepoints. Moored mines may be used in the deep channel portion of a chokepoint and can be effective against both ships and submarines. The swift currents that are often found in chokepoint waters would appear to make drifting mines less effective. However, these currents may be a useful advantage; if the speed and direction of a current is known, a coastal navy could safely lay mines in one area with confidence that they will ultimately drift to another area where a blue-water navy may encounter them. Because drifting mines are more likely to be detected, their discovery may be a powerful deterrent to a blue-water navy even if they do not detonate against a ship.

Chokepoint space also enables mine warfare deception. A determined adversary could, by whatever means, sink a vessel in a chokepoint and attribute its loss to a minefield, creating a clever ruse with great potential to slow or stop the movement of a transiting force toward or through a chokepoint area. A deception of this kind is more likely to yield positive results for an adversary in the confined waters of a chokepoint than it would in larger sea areas. For all these reasons it is accurate to assert that chokepoints are an operational enabler for mine warfare.

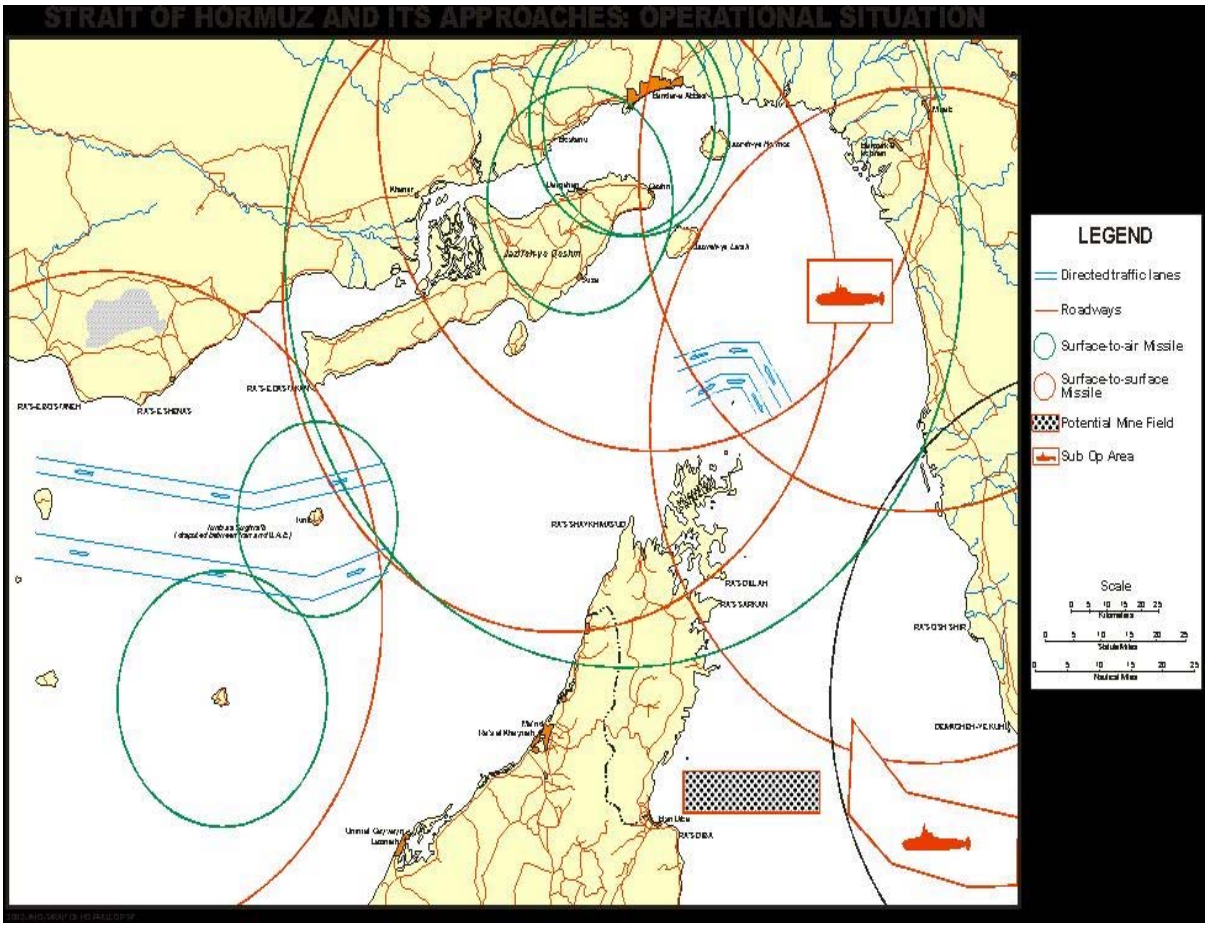
Chokepoint space also enhances the operational utility of missile boats and quiet submarines, vessels that have limited ranges. The burden of patrolling large areas is minimized in chokepoints, where overall dimensions are relatively small. As chokepoint space decreases, patrol distances become smaller and on-station time is increased. Worse yet, the extended range of many anti-ship missiles is more than enough to provide complete coverage of many chokepoint areas. Chokepoint space—often cluttered with shipping traffic, islands, and navigational hazards—offers sanctuary for small craft that wish to remain undetected. The advanced capabilities of small craft and the advantages that littoral areas like chokepoints confer to these vessels have not gone unnoticed by smaller navies. A former Israeli Navy commander notes:

> In the past few years, there has been growing recognition of the role of a "small" warship designed specifically for littoral warfare. Equipped with a fully capable, multipurpose combat suite, and operating in conjunction with other types of naval platforms, a small ship can be an excellent littoral combatant. It can blend into the crowded area with relative ease, and larger numbers enable coverage of wide areas and flexible reaction to changing scenarios.[11]

Chokepoints boost the combat potential of small craft. Leaders of blue-water navies must understand that countering the operational challenge of the small craft threat in chokepoints is significantly more difficult than in the open ocean.

Chokepoints confer even more advantages to quiet submarines. By virtue of their small size, quiet submarines can operate in shallow waters that may be inaccessible to the large nuclear submarines of blue-water navies. The degradation of acoustic detection effectiveness in the shallow water of chokepoints is a daunting challenge for even the finest anti-submarine warfare experts that blue-water navies can offer: "The submarine threat in the littorals cannot be underestimated. Shallow waters, complex thermal layers, shipwrecks, and nonlinear coastlines render the job of passive sonars and antisubmarine warfare platforms harder."[12] Because of the smaller dimensions of chokepoints, quiet submarines may operate for extended periods of time without exposing snorkeling equipment to re-charge batteries, making detection even more challenging. The most advanced quiet submarines, using air independent propulsion, would not have to surface at all to re-charge batteries. In 1998 the U.S. Chief of Naval Operations, Admiral Jay Johnson, acknowledged the seriousness of this threat: "Of greatest concern today is the proliferation of advanced submarine technology to countries that might try to restrict our access to international waters."[13] A single submarine, submerged and undetected in the confined waters near a chokepoint, represents a profound operational challenge to any blue-water navy. Chokepoints impart great leverage to a coastal navy that possesses one or more quiet submarines.

The responsibility of protecting chokepoints against transiting forces does not belong exclusively to coastal navies. The presence of land on both sides provides an opportunity for land forces to contribute to sea-denial efforts (see Map 1). The leaders of many foreign navies consider the integration of coastal batteries vital to littoral defense and expect other military services to play a significant role in the defense of coastal waterways. Admiral Silva of the Brazilian Navy is one example of a foreign naval officer who appreciates the relevance




Map 1

of land-based weapons systems to operational maritime objectives: "The Army may be employed in coast defense using long-range artillery systems to defend sensitive points, especially those important to maritime power . . ."[14] Numerous anti-ship missile and artillery systems have sufficient range to provide shore-to-shore coverage of many chokepoint waterways. The small dimensions of chokepoint passages may give transiting blue-water navies little or no reaction time when weapons are launched. And long chokepoints permit the deployment of multiple batteries. Coastal batteries represent yet another particularly effective warfare capability for the adversary who wishes to contest the chokepoint passage of a blue-water navy.

Mines, missile boats, quiet submarines and coastal batteries constitute the most serious threat to blue-water navies in chokepoints. These systems are attractive to coastal navies for many reasons. A Turkish admiral alludes to the limited resources at the disposal of small navies: "The size of a navy is a parameter. For a coastal state with a relatively small navy, the prime mission probably will be defensive-exploiting minefields, guided-missile patrol boats, and mobile surface-to-surface missile capabilities to establish sea control."[15] These systems are also attractive because they are more effective in littoral areas, the very area a coastal navy will operate. In one way or more the quality of these warfare systems are all enhanced in the relatively small space of chokepoints. Ultimately, it requires fewer of these assets to dispute chokepoint passage. Chokepoints boost the operational impact of each of these warfare capabilities, to the considerable disadvantage of a transiting blue-water navy.

**Space-Force Relationships**

Space-force relationships in chokepoints create many additional problems for a transiting force, even a strong blue-water navy. Chokepoints, by restricting physical space, enable weak military forces to mass effects in a way that could not be done against a strong force that has the freedom to maneuver in a large space. This is particularly true if a weak force possesses land adjacent to the checkpoint in question. Possession of land on one or both sides of a chokepoint creates a *joint force opportunity* by multiplying the *types of force* a weak military can apply against a strong one. Naval strategist MilanVego explains:

> The range of threats to the survivability of large surface combatants and submarines is greater in a typical narrow sea than on the open ocean because the weaker opponent can use land-based aircraft, small and fast surface combatants or conventional submarines, mines and even coastal anti-ship cruise missiles to contest control of a stronger navy.[16]

If this is true in a narrow sea, its effects are amplified in a chokepoint. Concurrently, chokepoints in proximity to land are *force multipliers* by allowing an adversary to increase its force density—the overall amount of force in a given space. This idea of a chokepoint serving as both a joint force opportunity and a powerful force multiplier for a relatively weak force deserves further attention.

Broadly speaking, joint force opportunity is one of the greatest advantages conferred to a weak force by a chokepoint. The Strait of Hormuz and the Iranian military provide an excellent illustration of the point. The Strait of Hormuz allows the Iranians to apply all types of force—i.e. land, sea, and air forces—within the same small space, even simultaneously if they can effect the necessary coordination. An attempt to intercept an opposing force at a great distance from the Gulf might only permit the use of long-range aircraft and more capable naval vessels such as Iran's largest surface combatants or perhaps, in the future, its Kilo class submarines. On the other hand, by waiting for the transiting force to arrive in the Strait of Hormuz, the Iranians can instantaneously bring more types of force to bear in a smaller space. Coastal anti-ship missiles, mines, and perhaps a great number of short-range aircraft and surface vessels can supplement the efforts of long-range aircraft and larger naval combatants. The point to be remembered here is that the chokepoint multiplies the *types of force* at the disposal of the weak adversary, in this case creating an excellent opportunity to conduct joint operations. The fact that the overall *number* of aircraft and naval vessels also significantly increases shows how chokepoints can serve as force multipliers.

It is important to note that while the ability to conduct joint operations increases for a coastal force, the opportunity for a transiting blue-water navy to conduct joint warfare does not necessarily rise in equal measure. In fact, it can even be reduced. First and foremost, the

chokepoint may be outside the range of land-based aircraft that would otherwise provide the very necessary protective air umbrella for the transiting surface ships or submarines. Even if air forces are within range, the air bases from which they would fly may belong to other sovereign states, states that may not permit their bases to be used for this purpose. Second, if hostilities have not yet been declared, territorial airspace around the chokepoint may be an issue; international airspace over or near a chokepoint may be insufficient to conduct effective flight operations. Worse yet, a blue-water navy with one or more aircraft carriers may be restricted in its ability to conduct fixed-wing flight operations. In many chokepoints, the spatial dimensions may reduce a carrier's ability to maneuver into the wind to launch and recover aircraft. Even if the dimensions of a strait do not rule out flight operations, high density surface traffic may still prevent a carrier from safely maneuvering to launch and recover fixed-wing aircraft, or even keep smaller vessels from doing the same with embarked helicopters. In short, chokepoints may create joint force opportunities for a weak adversary while at the same time limiting a transiting blue-water navy's ability to conduct joint operations.

The Strait of Hormuz scenario also illustrated the second advantage gained by an adversary who possesses land near or at a chokepoint: the multiplication in the *number of forces* available. When a weak navy possesses land near or at a chokepoint, it can—due to shorter lines of operation—commit far greater numbers against a transiting force than it could if it instead chose to conduct an attack at a distant location in the open ocean. There is an associated problem that goes hand-in-hand with this for the transiting force; as a weak navy's lines of operation are shortened, the number of directions from which it may attack

increases commensurately, thus complicating the operational and tactical challenges for the transiting force.

Space-force dynamics create other opportunities for a weak force. For example, it is possible to exercise sea-denial in a chokepoint even without a navy. It may take no more than coastal defense forces in the form of anti-ship missiles or artillery to impede or defeat a chokepoint transit. There is historical precedent for exercising sea-denial in a chokepoint this way: Over 100,000 German and Italian troops and much of their equipment were evacuated from Sicily across the Strait of Messina in August of 1943 under the protection of coastal guns, even though the allies otherwise possessed command of the air and sea.[17] An air force can also be a single instrument for exercising sea denial to a transiting force. In fact, eliminating or reducing an air threat is a prerequisite for a surface force to even attempt a chokepoint transit. Vego agrees: "The air threat alone severely restricts, or can even preclude, the use of major surface combatants such as cruisers and destroyers in a typical narrow sea, unless they operate under a strong air cover . . ."[18] Thus, even without a naval force, there is more than one way to challenge the passage of a blue-water navy through chokepoints.

Narrow waterways also make the challenge of surveillance simpler for a weak force. Some waterways are so small they can be monitored with shore-based visual observation posts. When that is not possible, shore-based radar or small craft can monitor even large chokepoints with relative ease. Indigenous civilian craft such as small fishing vessels provide a great opportunity to conduct clandestine surveillance of a chokepoint. This last example is an excellent demonstration of how chokepoints can act as a force multiplier even for an adversary who does not possess land at or near a chokepoint.

High-density shipping traffic, small islands, and oil platforms—all characteristic of narrow waterways—provide additional advantages for a weak navy. Inlets around small islands can provide hiding places for small craft. If hostilities have not yet been declared, then territorial waters around small islands can provide sanctuary. Oil platforms and third-party shipping provide static and mobile masking opportunities respectively.

In summary, chokepoint space-force dynamics create many advantages for a weak adversary to use against a transiting force; indeed, chokepoints significantly elevate the combat potential of a weak adversary. That combat potential is especially boosted in the form of *joint force opportunity* if the adversary possesses some of the land area that defines the chokepoint. Chokepoints may act as *force multipliers* whether or not the adversary possesses nearby land. The value of air forces, mines, coastal artillery, and small craft are all raised in chokepoints.

**Space-Time Relationships**

There are two important types of space-time relationships that pertain to chokepoints. They can be distinguished by labeling the first as *local*, and the second as *distant*. Both types have an important bearing on the successful movement of a blue-water navy to a given area.

Local space-time dynamics are those relating to the immediate area of a chokepoint. Just as chokepoints share certain common spatial characteristics, they also share some common local space-time attributes, varying only in degree depending upon the specific dimensions of each unique chokepoint. The most important of these is the essentially transient nature of chokepoint control. Chokepoint control does not need to be permanent for either the transiting force or the adversary to accomplish its respective task. A transiting force attempts to exert sea control in a chokepoint, at a minimum, during the entire time of its passage. On

the other hand, the adversary conducts sea denial hoping to thwart the transiting force at any one moment in time. The transiting force bears the greater temporal burden—it must exercise sea control during the entire period of its transit in order to succeed. The adversary need only deny a portion of the chokepoint at one moment in time to the transiting force in order to stymie its safe passage. The longer the distance that must be traveled to pass through a chokepoint, the longer the transiting force must exercise sea control. Similarly, the longer the distance, the greater the overall opportunity an adversary has to ruin the transit attempt. The transiting force faces the greater challenge, especially if it must repeatedly transit the same chokepoint. A blue-water navy would likely find itself in this position in order to sustain a deployed force.

Another important local element is timing. By waiting to attack a transiting force until it is in the most vulnerable space of a chokepoint, an adversary improves its odds of success by making it more difficult for the transiting force to recognize or defeat the attack. On the other hand, a transiting force should never initiate hostilities during a chokepoint transit. It is better to do this before or after chokepoint passage, at a time when the transiting force is well clear of the chokepoint and its many disadvantages. If the transiting force attempts to defeat an adversary in advance of its chokepoint passage and initiates hostilities, it risks failure if it does not sufficiently damage the enemy's sea denial forces. But if the transiting force does not conduct a preemptive attack, it surrenders the initiative to the enemy. As far as timing is concerned, a transiting force is stuck on the horns of a dilemma while the adversary is always in a more favorable position.

As far as the *distant* space-time dynamic is concerned, the focus here is on the distance between the chokepoint and the ultimate area of operations. An enterprising adversary can

leverage this distance to great advantage; the effect becomes more pronounced as the distance between the chokepoint and the ultimate area of operations increases—even more so if there are multiple distant chokepoints. By thwarting a transit at a distant chokepoint rather than one more near, an adversary effectively establishes a distant blockade on the advancing force. The following example illustrates the point.

A blue-water navy surface action group has two possible routes to get to the Persian Gulf from the Atlantic Ocean. The group can transit the Strait of Gibraltar, the Suez Canal, the Bab el Mandeb, and finally the Strait of Hormuz; or instead, it can avoid the first three chokepoints by going around the Cape of Good Hope before finally transiting the Strait of Hormuz. The latter route is approximately 3,300 nautical miles longer, nearly seven days longer in transit time at a 20 knot average speed of advance. Each of the first three chokepoints represents an opportunity to slow or check the group's ultimate advance to the Persian Gulf. An enterprising adversary has the option of attacking it at one or all of these chokepoints.

A level-headed critic may object to this scenario on two grounds, the first being that even if an adversary could block the surface group at the first three chokepoints, the group could simply circumnavigate Africa to get to the Persian Gulf. However, other operational or strategic objectives may demand a much more expeditious arrival of the surface group. There may be political, military, or economic costs associated with a less timely arrival. Choosing to move the surface group around southern Africa as a result of a real or perceived chokepoint threat may actually satisfy an adversary's objective. A second complaint is to recognize that stopping the group at one or more chokepoints along the route requires extraordinary military reach, the kind which few weak adversaries possess. This is

simultaneously an understandable but dangerous objection. It assumes that cooperation cannot or will not happen between states, or between a state and a terrorist organization. Many important chokepoints are at or in near proximity to Arab and Muslim nations. It is not difficult to imagine a scenario where a Persian Gulf state cooperates with another state or terrorist organization to attack a blue-water navy by proxy. A determined and clever adversary who has an appreciation for space-time dynamics in chokepoints could attempt a distant blockade to delay or deny the arrival of a blue-water navy.

Just as the dynamics between space and force create opportunities for an adversary, the relationship between time and space in chokepoints favors an adversary as well. Both *local* and *distant* space-time relationships grant many possible advantages to a weak coastal navy, potentially to the great detriment of a transiting force, even a strong blue-water navy.

**Conclusion**

It is wrong to assume that a powerful blue-water navy that can prevail on the open ocean will always defeat a weaker force in any body of water. The objective of chokepoint control is one case of littoral warfare where a blue-water force could be defeated by a much weaker adversary. The nature of chokepoint space provides many important advantages to a weak coastal navy. In some cases even a state without a navy could deny chokepoint passage to a blue-water navy.

Naval engagements and battles often happen in close proximity to land. In the future, as in the past, blue-water navies will have to pass through chokepoints in order to apply decisive force. A powerful navy that fails to achieve chokepoint control may put more important operational and strategic objectives in jeopardy.

The world is covered with hundreds of chokepoints; a few dozen of these possess great strategic importance. A chokepoint is a special kind of littoral area between two bodies of water that has a narrow waterway which is impossible or very difficult to circumnavigate or avoid. Narrow waterways, the presence of land on two sides, and shallow water characterize chokepoint space. Chokepoint lengths are extremely variable.

Mines, coastal batteries, missile boats and quiet diesel-electric and air independent propulsion submarines are the most effective weapons systems weak military forces can use to assert sea-denial against transiting ships and submarines. These capabilities pose the biggest threat to blue-water navies. The combat potential of these warfare capabilities is boosted by the dimensions and characteristics of chokepoint space.

Chokepoint space-force and space-time relationships confer profound advantages to weak coastal navies. Chokepoints create joint force opportunities by multiplying the types of force a weak military can bring to bear against a blue-water navy. While the ability to conduct joint operations is increased for a defending adversary, a transiting force may find its own ability to conduct joint operations diminished. Chokepoints also act as force multipliers for a weak defender, primarily because chokepoints reduce lines of operations as well as the distances which must be patrolled for surveillance purposes.

Chokepoint control does not need to be permanent for either side, but the time that a blue-water navy must exercise sea control will always be greater than the time required for a weak coastal navy to defeat this effort. The decision of when to conduct an attack for the purposes of gaining chokepoint control is much more problematic for a transiting force. Finally, the distance between chokepoints and operational areas provides an opportunity to conduct a distant blockade against an inbound blue-water navy.

For all these reasons, safe passage through a chokepoint cannot be taken for granted—even by the most powerful naval force. A weak coastal navy that is aware of the space and time advantages granted by chokepoints may successfully leverage these against a much stronger force and defeat it. The objective of chokepoint control demands detailed operational planning and preparation by blue-water navies

**Recommendations**

While the difficulties of safely transiting through chokepoints may be daunting even for the most powerful naval force, there are a number of ways to mitigate the dangers. Proper operational planning is paramount.

Operations in advance of chokepoint transit can be particularly effective. Whenever possible, pre-emptive strikes should be made to reduce or eliminate chokepoint threats. Attacking missile boats and submarines while they are still tied to their piers is preferable, eliminating the difficult task of finding and sinking them after they are underway and possibly hiding in chokepoint areas. All vessels capable of laying mines should likewise be targeted while still in port. This is far easier than clearing a minefield later on—a task that can take considerable effort and precious time. If these vessels are underway, every effort must be made to destroy them before a chokepoint transit is tried. Likewise, all known coastal batteries should be destroyed in advance.

Of course, pre-emptive strikes may not be possible, especially if hostilities have not commenced. When that option is unavailable to operational commanders, establishing air superiority over chokepoints prior to and during transit is imperative. Detection and surveillance of enemy units, attack detection, and counter-targeting are all important

functions that serve to protect transiting forces. Without air superiority, the large surface vessels of blue-water navies are exceptionally vulnerable to attack in chokepoint waterways.

Operational commanders must plan to counter mine warfare on short notice. Many blue-water navies are not well-prepared to detect and sweep mines. Mine countermeasure ships and aircraft, if not part of the transiting force, may take many days to arrive on station—and more time to eliminate the mine threat. If a naval force must cease operational movement to wait for the arrival of mine-clearing units, other operational and strategic objectives could be lost.

Finally, as is the case with many other operational objectives, the ability to control chokepoints is at risk if blue-water navies do not train to win and keep control of chokepoint areas. Chokepoint transits must be routinely incorporated into at-sea training exercises. Because chokepoint transits will likely involve large operational efforts that require coordinated joint planning and execution, other services should be scripted into training events. Whenever possible, joint force should be used to facilitate safe chokepoint passage.

NOTES

[1] Koburger, Charles W., *Narrow Seas, Small Navies, and Fat Merchantmen*, (New York: Praeger, 1990), pp. 139-140.

[2] Joergensen, Tim Sloth, Commander, Royal Dutch Navy, "U.S. Navy Operations in Littoral Waters: 2000 and Beyond," *Naval War College Review*, 2 (Spring 1998), p. 20.

[3] Vego, Milan, *Naval Strategy and Operations in Narrow Seas*, (Portland, OR: Frank Cass, 2nd edition, 2003), p. 7.

[4] "World Oil Transit Chokepoints." *EIA Country Analysis Briefs*. November 2002. http://www.eia.doe.gov/emeu/cabs/choke.html [10 April 2003]

[5] Mangone, Gerard J., *Concise Marine Almanac*, (New York: Van Nostrand Reinhold Company, 1986), p. 20.

[6] Ibid, pp. 19-20

[7] Center for Naval Analyses, *Challenges in Strategic Waters: Suez Canal, Bab El Mandeb, Strait of Hormuz*, (Alexandria, VA: January 1994), p. 21.

[8] Couper, Alastair, *Atlas of the Oceans*, (New York: Van Nostrand Reinhold Company, 1983), p. 155.

[9] Cable, James, *Gunboat Diplomacy, 1919-1991*, 3rd edition. (London: Macmillan, 1984), p. 209.

[10] The NRC Committee on the Sixth Symposium on Tactical Oceanography, *Oceanography and Mine Warfare*, (Washington, D.C. National Academy Press, 2000), p. 13.

[11] Doron, Opher, Captain, and Eshel, David, Colonel, "The Israelis Know Littoral Warfare," *Proceedings*, (March, 2003), p. 67.

[12] Audrand, Stephen C., "Blue Water Power," *Proceedings*, (September, 2001), p. 43.

[13] Prina, L Edgar, "Vision and Roadmap," *Sea Power*, (September, 1998), p. 36.

[14] Anonymous, "The Commanders Respond," *Proceedings*, (March, 1997), p. 33.

[15] Ibid, p. 30.

[16] Vego, *Naval Strategy and Operations in Narrow Seas*, p. xvi.

[17] Ibid, p. 123.

[18] Ibid, p 26.

[19] Couper, *Atlas of the Oceans*, pp. 150-157

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