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STRATEGIC EMPLOYMENT OF THE NAVY; PAST, PRESENT AND FUTURE

An address delivered by
Vice Admiral Donald B. Beary, U.S.N.
at the National War College
16 February, 1950

General Bull and Officers of the National War College, I consider it a distinct honor to be invited to address such a highly selected group of officers. I must admit, however, that I was somewhat confounded when I received the suggested topic for my remarks, which was "Strategic Employment of the Navy; Past, Present and Future". We have in our library many thousands of volumes covering the subject and to think that I could summarize them in a fifty minute talk is somewhat overcoming. However, I will try to give some of the most important points, generally confining my remarks to World Wars I and II and future employment of the Navy.

The basic fundamental mission of the Navy in the past and it will continue to be so in the future is to gain and maintain control of the sea lanes vital to our war effort and to deny to the enemy the sea lanes vital to him.

By April 6, 1917, when we entered World War I, the British Navy had contained, though not destroyed, the German surface Navy, and our contribution to this containment was the sending of the 6th Battleship Division to augment the British fleet. Our principal effort was expended in combating the enemy submarines. You all know the outcome. As far as the Navy was concerned, the war was between surface and sub-surface craft. Shipborne air did not enter into it.

Vice Admiral Beary is President of the Naval War College.

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During the period from the end of the war until 1933 we witnessed the rapid disintegration of our navy through armament limitation agreements and drastic curtailment of funds. Ship construction practically ceased; research and development were seriously curtailed and non-existent in that most important development which, though hampered by limited funds, made progress, and in March 1922 we had our first aircraft carrier, the converted collier, **LANGLEY**.

The period from 1933 to 1941, when we suddenly found ourselves in a war on two fronts, witnessed the slow but gradual build-up of our navy, including destroyers, cruisers, battleships and carriers. The tempo increased with the rapid deterioration of the world international situation until the Japs bombed Pearl Harbor, when the sky was the limit.

Though the Navy suffered terrific losses at Pearl Harbor, we were lucky in one respect and that was that not one of the seven aircraft carriers in commission was damaged. We had been knocked to our knees but were not out.

Our basic military strategy as approved by the President was that initially our major military effort would be made in the European theater, while holding or defensive operations were conducted in the Pacific. We had lost control of the seas. Our Navy had been so seriously crippled and was so definitely inferior in power to the Jap Navy that there was no other answer. Therefore, until the Navy could accomplish its mission of regaining and maintaining the control of the sea lanes essential to the conduct of the war we had to assume a defensive position.

As in World War I by the time we entered the war the British Fleet had contained the German surface Navy, which required an all out effort on its part; therefore the Japanese Navy

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became our sole responsibility and we were not in a position to meet it head on. The best we could do was to conduct a few raids, hit and run operations.

However, the extremely rapid advance of the Japs southward through New Guinea and the Solomon Islands, which vitally threatened our line of communications with Australia, forced us to do something drastic to stop them.

This something was the Battle of the Coral Seas on the 7th of May, 1942, followed by the Battle of Midway on June 4th, 1942. We sustained losses in these two battles but the enemy was so severely punished that her great superiority was reduced almost to equality with us. Our strength was growing rapidly. New construction and trained personnel to man our ships and planes were being produced at a rate the enemy could not equal. We were on our way to gaining control of the seas.

On August 7, 1942, we landed on Guadalcanal and, though the fighting was bitter and we took heavy losses, we stuck. The southward movement of the Japs was stopped, and we were now in a position to start the long drive to Tokyo.

The grand strategy for this campaign consisted of two major efforts: 1st, a drive northward under command of General MacArthur, through New Guinea to the Philippines; and 2nd, a drive westward under Admiral Nimitz to Okinawa. After these preliminary objectives were seized and consolidated they were to be the jumping off places for the final assault on Japan. Fortunately, after we had seized them the Japanese sued for peace on August 15, 1945, and the final step, the invasion of Japan, was not necessary.

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The above plan of campaign required the use of amphibious operations on a scale never attempted before. The prerequisite for success of these operations was control of the vital sea lanes, including control of the air over them. It required the accomplishment of something which many people said could not be done and that was that ship-based air power could not successfully combat and neutralize shore-based air power. The Navy did it.

So much for the first part of the Navy's mission, that is, the gaining of control of the sea lanes vital to our efforts. How about the second part, that is, denying to the enemy the sea lanes vital to him?

From December 7, 1941, until the end of the war our submarines did an outstanding job and accounted for the major effort in this regard assisted by occasional air and surface raids. With our seizure of the Philippines and Okinawa the long essential life line of the Japanese to Malaya and Indonesia was cut and the Japanese had lost the war through inability to support her military forces and feed her people.

They started the war with about 7,000,000 tons of merchant shipping. They captured and built about 3,000,000 tons during the war, which gave them a total of about 10,000,000 tons. At war's end they had only about 1,500,000 tons left and only 750,000 tons of this was operable. There were only about 500,000 barrels of fuel oil left in all Japan, so you can readily see how effectively we had cut their vital sea lanes. As a matter of comparison our fast carrier task force used as much as 140,000 barrels of fuel oil per day. In other words, the Japanese had only three days supply of oil left on VJ day based on our consumption rate.

This forcibly demonstrates that a nation's sea power is composed not only of her combatant ship strength but of equal im-

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portance is her merchant shipping. This fact is frequently disregarded.

So much for our naval strategy during World War II in the Pacific. Turning to the Atlantic, as I have said before, the British had contained, though not destroyed, the German surface Navy by the time we entered the war. The fight in that theatre was against their submarines. It was a tough battle and at one time was almost lost, but with the great improvement in detection devices, the tremendous increase in the numbers of escort vessels, the introduction of "Hunter-Killer" tactics and more effective use of land-based air, we, the British and ourselves, were able to successfully combat the German submarines and maintain control of the seas.

The lesson we have learned from two world wars is that the submarine is a most important threat to our control of the seas, and that the introduction of faster under-water speeds and ability to run submerged for long periods of time have greatly increased the difficulties of successfully combating them. In my opinion it is the most important problem that confronts the Navy. It is one which must be solved and will require all the brains, talent and money we can get to solve it. I will refer to this later.

So much for the strategy and mission of the Navy during the past two great wars. What about the future employment of our Navy?

There is a vociferous, fanatical group of people in this country, who unfortunately receive more attention than their cause deserves, who say that air power has sunk the Navy and ships that sail on the surface of the seas. This is not true and all history refutes it. Some of these same fanatics say, "We don't care anything about history; we make it." I cannot believe that any sound,

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logical, sane, educated person would make such a statement or believe such a thing.

All progress that man has made in whatever form of science, engineering, art, living, government, etc., is a direct result of past trials and errors and successes. Naval science is no exception. The wise man learns and profits from the past and applies his knowledge to the present and the future.

The end of World War II brought about a situation in naval affairs that had its most recent parallel during the Napoleonic Wars. At that time Napoleon had organized the States of Western Europe into a continental alliance that was opposed by a single dominant sea power—Great Britain. After the defeat of the Combined Fleet at Trafalgar, Europe faced a long period during which the naval strength of the continental powers could be employed only in the “*guerre de course*”—war upon commerce. The “*guerre de course*” is the classic weapon of the weaker sea power, but it will not win wars. After Trafalgar, England bottled up what was left of the French Fleet in its home ports by means of blockade, and her sea power was opposed only by such scattered forces as were able to skirt the blockade and prey on British merchant shipping. Thus, absolute sea power, in a manner of speaking, was opposed to absolute land power. But the dominant sea power was without the physical means to settle the issue on the continent; she lacked the resources in men and material necessary to prosecute land warfare on a large scale. And her continental adversary could not bring to bear against her its vast resources in land strength so long as it lacked sea power.

Thereafter, Great Britain recognized it as her cardinal policy to prevent the rise on the continent of a single dominant power that might some day utilize the far greater resources of Europe to outbuild her at sea. Britain steadfastly pursued this policy

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right up until World War II, employing the weight of her influence and the pressure of her sea power to intervene in Europe and so preserve the balance of power on the Continent.

Today, the cycle has reached full turn. A single continental power has arisen in Europe that threatens to exclude the Western democracies from the Eurasian Continent. That power is opposed by a complex of States that rim the Atlantic Ocean. The backbone of that complex is the sea power of Great Britain and the United States, upon which all the rest depends. Except for its submarine arm—of which more later—the naval strength of the continental power is not great enough to make a serious bid for command of the seas.

This state of affairs has created in the minds of many persons a dangerous misconception—some of whom, indeed, may be responsible for the formulation of our national strategy. That misconception is that sea power cannot be fully effective unless it is opposed by sea power, weapon for weapon. The belief is widely held that if the Soviets do not have capital ships, then we do not need them; if they lack the striking power of carrier air, then this weapon has no place in our arsenal; and that it is sufficient simply to counter our opponent where he can strike us at sea, namely, by defeating his submarine fleet.

I assure you, gentlemen, nothing could be farther from the truth.

As I have said before, the Mission of the Navy in war can be reduced to a very plain statement: *to make safe for our use the sea lanes we need and to deny to the enemy the sea lanes he must use to fight the war against us.* Out of this simple Mission grows a multitude of tasks that require the use of many weapons. It will be my purpose here to state those tasks to you and to demonstrate

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how the Navy can—and, I trust, will—carry out those tasks if another war is forced upon us.

It is helpful, I think, when reviewing our overall strategic situation, to hold in mind a polar projection of the northern hemisphere centered somewhere near Moscow. The European peninsula is adjacent on the north, west, and south to waters of the Atlantic, or waters tributary to it. To the southward of the Eurasian land mass, the Persian Gulf knifes in from the Indian Ocean to a point within a thousand air miles of Soviet industrial centers in the Caucasus and on the Caspian Sea. To the east, Siberia and China front the Pacific Ocean. Wherever the coasts of Europe and Asia meet the sea, Soviet power stops and ours begins. Thanks to Anglo-American sea-air power, the broad surface of the seas is denied to the enemy and is open to our use so long as we are able to defend our shipping from the enemy's submarines and his land-based air.

At the present time, as you well know, we hold important strategic positions around the Eurasian continent from which our military strength could be projected against the Soviet Union. At the outset of any war, we shall hold an important lodgment in Western Europe. Whether we can successfully maintain a foothold on the continent of Europe against the full weight of Soviet land power must, of course, be determined by the event. We believe that we *can* do so; and we are making heavy investments in the Atlantic Pact nations to make that expectation a reality. Outside the continental limits of Europe and Asia, we are established in the British Isles, in other islands of the Atlantic, in north and east Africa, and at scattered points along the fringes of central and southeast Asia. We face the Soviets in eastern Asia and in the Japanese Islands and Okinawa.

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Thus, the entire Eurasian land mass is ringed by a series of positions from which heavy blows could be directed anywhere against objectives on the Continent. In this situation there is demonstrated the classic weakness of a strong land power opposed by a sea power having limited land strength. The land power cannot invade the territory of its opponent since it cannot transport its ground forces overseas. Although it may strike its enemy through the air, and indeed deal him fearsome blows, it cannot make their final by the ultimate invasion of his homeland. When ranged against a strong sea power, the land power can gain at the most only a stalemate. With this it must be content, since the oceans remain an effective barrier against the movement of troops in great force.

Not so, the sea power. The flexibility of action that is afforded by control of the seas permits the sea power to deliver its main thrust—or a series of thrusts—from any direction. The enemy cannot be strong everywhere, and he cannot know for certain from whence the blow may fall. By the economy of the limited force that is available to it, the power that commands the sea can direct that force so as to obtain its maximum effect.

These principles apply whether the force used be strictly carrier strikes on coastal objectives, long-range strategic air attacks from peripheral bases, or amphibious invasion. Although the continental power retains the advantage of interior lines, they may prove of little value if its forces are over-extended and cannot be transported in time to meet the threatened attack.

It would seem, therefore, that our basic strategy, in the case of a war against the Soviets, would be to preserve the sort of a condition I have just described. If we are ultimately to intervene with ground troops on the continent of Europe—and it appears inevitable that we would have to do so—then such an interven-

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tion should be made only after the enemy has been seriously weakened by blows delivered with sea and air weapons from peripheral bases.

It would be unwise to the point of folly, however, to assume that such a strategy is not apparent to our opponent or that he will not do everything in his power to nullify it, if and when he decides upon war. Having recognized that strategic air attacks may be carried out from advanced Allied positions against his industry and communications, it may well be that the enemy's first move in the event of war will be to capture or neutralize these positions.

This, he has the capability of doing. True enough, the Soviets could neither hold nor support overseas positions in the face of the pressure we could ultimately bring against their communications, but, for a time, an initial move of this sort might have desirable effects. Such an opening move could conceivably take the form of an atomic blitz against Britain, coupled with airborne and air-supported attacks on Iceland and our North African positions. In such a case, the effect of any planned retaliatory blow would be seriously reduced. We would be forced to rely on North American bases and such advanced bases as we might continue to hold for the support of an initial strategic bomber offensive. Thereafter, we would be faced with a long, uphill pull to re-establish our forces at locations close enough to enemy targets to make the employment of our air power both effective and profitable.

It will be clearly apparent to you that the support and retention of overseas bases will depend upon the ability of the fleet to keep open the lines of communications with those bases. The enemy will have at his disposal two primary weapons to prevent our doing so. One of these is the submarine; the other is land-based

air, where it can be brought within range of the sea routes our ships must use.

As to the submarine, it is gratifying to observe the attention that is now being given to that problem and to note the agreement so widely reached that we must make a major effort toward its solution. Although I am unable to say to you that any final solution is as yet in sight, the means of detection and the weapons for use against the submarine are well in advance of those available at the end of the last war.

There is a tendency, I fear, on the part of the public—and some members of the military—to over-emphasize the potentialities of the submarine and to overlook some basic disadvantages attendant on its use as a primary weapon in the war at sea.

The submarine is, fundamentally, a weapon of the “*guerre de course*”. Commerce raiding has held a fascination for weaker naval powers throughout the history of naval warfare because of its cheapness. But it has never decided the issue in a major war. The British tried it themselves in the Anglo-Dutch War, when Charles II sought to gain a cheap victory over the Dutch and their French allies by preying on their commerce. This war ended, however, with a fleet of Dutch ships in the mouth of the Thames. During the war of the Spanish succession, the French devoted all their efforts at sea to the raiding of British commerce. Although the British lost hundreds of ships, their trade increased nevertheless, and French shipping all but disappeared from the seas. Mahan roundly condemned commerce raiding as a poor substitute for fleet action. His studious disciples, the Germans, placed primary reliance upon it as a means of naval warfare in both World Wars.

Today, we have not yet found completely satisfactory methods of combating the most advanced types of submarines. But it

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is by no means clear that the Soviets will be able to employ them effectively against the opposition that even now we are able to offer.

The task of the submarines has been greatly complicated by new developments. As you know, the Germans found it necessary to give their submarine crews long and intensive training periods in the Baltic in order to fit them for warfare against our convoys in the Atlantic. The shortening of their training periods, enforced upon the Germans during the latter stages of the war, was a great source of apprehension to Admiral Doenitz. The submarine that we shall combat in the next war will require of its crews even greater technical proficiency than was attained by our recent enemies in the last. Whether or not they are capable of attaining this skill only time will tell. We should not discount it too much.

So far, we have developed no acceptable substitute for the convoy nor for the "hunter-killer" tactics so effectively employed toward the end of the last war. We have, however, improved both our weapons and our techniques in the prosecution of these methods of anti-submarine defense. And other methods now under research and development give even greater promise of a final answer to the submarine problem.

But convoy and passive protection of shipping alone is not enough. In the first instance, it surrenders to the enemy the initiative and leaves him free to devise new methods of attack when old ones have failed. In the second, it forces upon us the need to provide shipping with greater and greater protection as enemy offensive measures become more effective. And, finally, it permits the enemy to increase the size of his concentrations against us, since passive defense has no effect on his ability to build more submarines.

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Therefore, as a corollary to convoy and "hunter-killer" cover, we must take up the offensive against enemy submarines before they leave their ports. We have numerous means of doing this. Many of them lie within the sphere of strategic bombing—particularly those that embrace attacks on building and assembly yards. But as the finished product nears the sea—when the fitting out and training stage commences—then, it may be within the power of the fleet to intervene.

We shall seek to prevent the enemy from testing his boats and training his crews in sea areas that are adjacent to the oceans. We shall mine his harbors and their exits, both by aerial and submarine laid mines. And we shall attack him from the air while his undersea craft are still in their pens. All of these are measures that not only may require the mobility and striking power of shipborne air, but are measures also to which it is especially adapted. It would, of course, be a mistaken and uneconomical use of sea-air power to carry out an offensive of this nature where enemy training areas, harbors, and bases are within the effective cover of land-based air. But in regions inaccessible to land-based aircraft capable of precision attack missions of this kind, aircraft from carriers may well be the only weapon that can do the job.

As to the enemy's land-based air, we can expect it will be employed against our merchantmen much the same as it was in the last war. The Germans used long-range reconnaissance aircraft to locate convoys at sea. When a convoy was found, the position would be relayed by radio to submarines best disposed to attack. Thus, it would seem that some form of aerial reconnaissance will be necessary if Soviet submarines are to be employed advantageously. This means we shall have to screen our convoys against being scouted by the enemy's land-based air. It will not be an easy job to do. Limited, close-in screening can be carried out from escort

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carriers, but, in view of the enemy's ability to install radar in his scouting aircraft, it is highly doubtful if we will be able to conceal the location of our convoys.

An obvious alternative would be to destroy the enemy's reconnaissance aircraft at its coastal bases. In some instances, it should be possible to do this by land-based air strikes, provided there are friendly fields within range. Elsewhere, fast carrier task force strikes will be the only means of getting at these aircraft. On the whole, the maintenance of absolute control of the air above convoy routes will be a difficult task to accomplish because of the inordinate effort required to screen shipping against long-range reconnaissance aircraft. It should be possible, however, to defend merchant convoys against direct attack by land-based planes by the provision of escort carriers in waters where danger of enemy air attack exists. In the narrow seas, within close range of enemy air bases, heavy covering forces consisting of carriers and gunfire ships will doubtless be required to fight the convoys through. Our experience in the Mediterranean during the last war indicates, however, that merchant convoys can be moved in the presence of strong land-based air, provided carrier-borne aircraft is supplied in adequate strength.

This leads us to a consideration of the carrier task force as the primary weapon of naval warfare. As you know, the fleet actions of Midway and the Coral Sea marked the beginning of a new era in naval warfare and confirmed the aircraft carrier as the real capital ship of the future. It is the most powerful offensive weapon we have. The big-gun ship has now assumed primarily the status of a surface escort for the carrier, although it has other uses. As the war in the Pacific progressed, the striking power of carrier aircraft against objectives other than enemy fleets was forcibly demonstrated. Indeed, so effective did carriers prove in securing

local control of the air at heavily defended land targets that surface operations until then conceived as impracticable were confidently planned and successfully carried out.

The aircraft carrier derives its value from a number of tactical qualities, but it possesses one feature that transcends all the others: It is a mobile base that can be brought close enough to enemy targets to launch aircraft with their optimum fighting capabilities unimpaired. Of course, the fact that carriers may be concentrated, and thus multiply their effectiveness; that they may be employed with surprise; that they may cruise for long periods in distant waters; and that they have great flexibility as to the targets against which they may be employed; all these, too, are important. But the ability to operate aircraft at short ranges—which the carrier imparts—is the unique feature that is unmatched in any other weapon of aerial warfare. The carrier sends up an aircraft with a minimum fuel load compared to that of land planes that must be launched from more distant bases. Hence, it can devote a greater portion of its carrying capacity to offensive and defensive weapons, and it can be employed with greater frequency since it has a shorter distance to fly. These advantages combine to increase the striking power of carrier aircraft, not directly with the decrease in range to the target, but more on the order of a geometrical proportion with the decrease in range.

All of these tactical features add up to provide for Allied sea-air power a strategic advantage that cannot be offset by its opponent. By means of air-sea task forces employed in adequate strength, we should be able to overwhelm the enemy at any point within reach of our carrier-borne aircraft. It is this ability that has in the past permitted us to paralyze enemy defenses at the end of a long overseas movement of amphibious forces. It is this ability which, I trust, will in the future permit the support

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and retention of overseas positions we may need to drive the war home to the enemy.

I think we may accept it as a sound military principle that when one component of the nation's armed force has been assigned a specific task, it should be free to investigate the nature of that task against the background of its own peculiar talents and experience. Only by this means will it be able competently to determine how best to do the job it has been given.

Now, the Navy has been allocated those tasks that require the use of weapons peculiar to sea-air power. Nobody disputes that. These tasks do not involve the direct participation of any other service. One of them is to employ the striking power of carrier-based air against certain enemy targets that can be reached from the sea. Accordingly, the Navy has put its best brains and its most experienced officers to work on the problem of how most effectively to employ carrier-based air against the opposition we may expect in the future. This is a technical problem that requires solution by persons who are by training and experience intimately acquainted with all the factors involved. I think you will agree that such knowledge and experience can best be obtained from within the Navy itself.

Briefly stated, it has been the result of the Navy's investigation of this problem that we cannot expect to overcome determined opposition at all enemy targets that are vulnerable to sea-air attack unless we employ the most advanced types of aircraft that are available to us. We are aware of developments in Soviet aviation and along other lines of anti-aircraft defense. There can be no doubt these measures would have a high degree of effectiveness against the aircraft for which our present carriers were built.

But we, too, have made corresponding advances in the art of aircraft design and construction. We can build planes today that we believe will out-perform anything the Soviets will have in the foreseeable future. These are the planes we will need if we are successfully to exploit the unique weapon of sea-air power.

Unfortunately, we cannot adapt our present-day carriers—which, as you know, were designed under conditions of the last war—to the new high-performance aircraft without sacrificing some of their most valuable performance qualities. The Navy should be free to build the carriers it needs to carry and operate the planes necessary for it to carry out its mission.

We must, I feel, remain keenly alert to changing tactical and technological conditions that dictate changes in strategic concepts. Hardly a month passed during the last war but what some naval development, however minor, contributed its small influence to large revisions in our strategic thinking.

One of the most significant of these developments was the operation of carrier task forces relatively independent of forward bases. In past wars, the radius of action of naval forces was determined by the availability of bases—or at least of coaling stations—in advanced areas where the fleet sought to operate. Bases have traditionally been one of the essential components since fleets acquired freedom of mobility with the advent of steam. The sea power of Great Britain was magnified and reinforced by her numerous naval stations in all the oceans of the world. These bases made it possible for Britain to extend the range of her fleets; and they, in turn, depended on the Fleet for security and protection against overseas attack. Until World War II, it was accepted as axiomatic by naval strategists that no nation could aspire to control of sea areas far distant from the homeland unless she had access to bases in waters where the fleet was to be employed.

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Today, that is changed. In World War II, we were faced with a situation in the Pacific that threatened severely to limit the striking power of the naval weapon. We lacked bases in waters where we had to carry the fight to the enemy. So we made our bases mobile, and we took them where we pleased. As a result, our fleets are today virtually independent of overseas bases. The flexibility of the sea-air weapon has been multiplied, and for limited periods we are able to bring to bear the full striking power of the Fleet in waters wherever ships can sail.

The strategic implications of this naval development I am sure are not lost on you. What we are now able to do is to bring to bear the full strength of our sea-air power where and when we wish and to maintain the pressure for prolonged periods of time.

Of course, advanced bases still are of great value. They serve two main purposes. First, we need locations in forward areas where we can send ships for repair of battle damage that would otherwise require a long trip to shipyards in the rear, and we need them also to patch up heavily damaged ships so that the voyage home may be made in safety. Secondly, we need advanced ports where stores and ammunition can be transferred from incoming cargo ships to the specially constructed logistics ships that work in the fleet. But neither of these functions requires an establishment on shore. The facilities needed for the operation of an advanced base, including major ship repair, may be entirely waterborne. Thus, any protected anchorage favorably situated with respect to the zone of combat may be placed into use as a floating base just as soon as the specialized logistics ships can be brought forward.

Now, before closing, I want to touch briefly on the atomic bomb and what it means to the future of naval warfare. I think it is safe to say that nuclear fission has had an impact on existing theories of warfare more severe than any other new weapon in his-

tory. It has radically disturbed our pre-conceived notions involving the disposition of forces and the principles of concentration and mass. Paradoxically enough, we, who first developed the bomb, have suffered most by the upsets it has produced in the technique of warfare.

Our military experience in World War II was gained at enormous cost. In the field of naval warfare, we battled our way slowly and painfully from Pearl Harbor to Okinawa, meanwhile gaining a "know-how" in the use of naval weapons that is unmatched by any nation in the world. But at the very end of the war a new, more powerful weapon appeared that now threatens to undo much of what we have learned.

The influence atomic weapons will have on maritime strategy, however, is not yet clearly defined. For the present, we must adjust ourselves to this situation just as we have in the past, when new means of attack have seemed to render obsolete ships and weapons then in use. Naval history is replete with instances where some new weapon has threatened to make the ship no longer an effective instrument for controlling the seas. When the explosive shell supplanted a solid shot for use against the wooden man-of-war, pessimistic observers were convinced great ships could never stand up against this terrible new weapon. But shortly afterward, the ironclad ship made its appearance; and sea control continued to be exercised, as usual, by the Power having the largest fleet of heavy ships. When the Whitehead torpedo was introduced, it seemed evident the death of the capital ship was at hand. So convinced were the French of this fact that they temporarily gave up the building of large ships in favor of small torpedo boats, each able to launch a lethal attack upon a battleship. But it turned out that these small craft could reach their targets only under favorable conditions of sea and weather, and

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that they were highly vulnerable to the defensive fire of their ponderous opponents. Moreover, improvements in underwater protection tended to redress the balance in favor of the ship. With the advent of the airplane, it appeared certain to most advocates of air power that large ships would become easy prey to aircraft able to launch against them bombs weighing five hundred or a thousand pounds. Instead, the present day capital ship—with its powerful anti-aircraft weapons, under radar control and firing influence-fuzed shells augmented by its own air coverage—has become an extremely tough target, even to large flights of aircraft.

And so it goes. I think the lesson to be learned here was best expressed by Mahan when he cautioned against being too quick in discarding the old as well as too slow in adopting the new.

We know, of course, that a single atomic bomb will destroy a single ship. But we know also that fighting ships underway and suitably dispersed will suffer but slightly from an atomic explosion, except by direct hit. This would seem to make the use of atomic bombs against mobile forces extremely doubtful.

On the other hand, heavy concentration of ships in ports or amphibious operations might offer suitable and worthwhile targets. The present answer seems to be greater dispersion and control of the air over the vital areas. It is not beyond reason that we shall in the future evolve a defense against the atomic bomb that will prove effective.

Now as to push button warfare, including rockets, jet propelled bombs, guided missiles, etc., fortunately, the solution of that problem seems very remote. At best they probably will never be precision weapons and whether or not they will be used against mobile naval forces is problematical. As you know, counter measures

are being devised but have not yet been overly successful. It is a problem which is of vital importance to all the armed services.

In conclusion, gentlemen, if there is one single thought I should like to leave with you, it is this: Command of the sea is vital to us in war. I think that summarizes all I have had to say. Unless we have command of the sea, our war-making force must remain based within our continental borders. Without it, we cannot support our allies, and we shall be left to face the enemy alone.

It is the job of the Navy to provide that command. The Navy by itself cannot win a war. But the Navy alone can create conditions without which victory cannot be possible. Those conditions are these: *to make safe for our use the sea lanes we need and to deny to the enemy the sea lanes he must use to fight the war against us.*