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## U.S. Naval Policy

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# U.S. NAVAL POLICY

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A lecture delivered  
at the Naval War College

by

Dr. Arthur C. Herrington  
on 18 March 1969

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It is a privilege and a real pleasure to be able to speak to you this morning, but it is with some trepidation and, frankly, with misgivings that I have chosen to discuss U.S. Naval Policy at the War College. There are two reasons, however, that have impelled me to tempt your patience and, perhaps, your good will.

First, I believe that we have reached a time where an explicit U.S. naval policy needs development and articulation. The lessons of Vietnam, the change of administration, mounting domestic demands for scarce resources, and, above all, the spiraling costs of naval construction and operations all argue cogently for review of our naval forces, how they support national policy objectives throughout the world, and what options we face in the future.

Second, I can think of no better place to address the subject of naval policy. Let there be no mistake—U.S. naval policy will, in the end, be developed not in OSD nor in the Bureau of the Budget nor in Congress nor even in the White House—it will be developed in the U.S. Navy. There will be many ideas which will originate outside the Navy. There will be many conditions imposed upon the Navy. But it will be within the U.S. Navy that the major debate must ensue, and it must be, finally, the Navy's own acceptance of a U.S. naval policy that will make it workable and valid.

As many of you know so well, the staff officer, whether he is attached to a fleet command, the Joint Staff, or OSD, has little time to contemplate major alternatives in U.S. national policy goals

and naval force planning. The immediate pressures and daily concerns simply take too much time. Here, perhaps, at the War College you have the opportunity to spend the time, to do the research, to calculate, to debate. It is with this in mind that I have chosen today's topic. And please let me say that we in OSD will look to you for your ideas, your opinions, your scholarship, and your support. At best, we may be able to stimulate, to advise, and to comment. In the end, the work will be yours.

**The Elements of Debate.** If, as I have proposed, U.S. naval policy needs articulation and debate, it is reasonable to ask what key factors must be included in that debate to make it useful to policymakers. Rather than dwell on everything that should be included in a discussion of naval policy, I should like to discuss two key items that are often omitted. The first is the clear delineation of major alternatives, and the second is cost.

How often have you read an article or staff paper that argues one side of a question or presents only one option? Or a paper that is directed to supporting a prior position without noting what the counterarguments are likely to be? It is my contention that papers of this type do not help solve the problems they address. The decisionmaker will obviously consider them one-sided and therefore suspect. At best, there may be better options than the one presented which have been overlooked because the author did not discipline himself to examine explicitly the range of possibilities. If I had to choose one source of difficulty in naval force planning, I should say, without a doubt, that failure to examine options is by far the greatest.

There are many reasons for our failure to examine alternatives. Some are imagined procedural constraints; we assume, for example, in examining the

use of sea-based tactical air that land-based air is someone else's responsibility and concern. The result is that we may omit the most important factor in the analysis. As another example, we look at the relative merits of nuclear and conventional ships and calculate the rate at which they can transit an ocean, without looking at what forward deployments of naval forces we propose for the future.

This kind of failure most often occurs when we assume the problem is one for "higher authority." For example, should an analysis of our needs for ASW forces in the North Atlantic assume a given level of shipping support to NATO, no matter how well that level has been determined? I think the answer is no; first, because it is necessary to prove that the NATO shipping requirement is the dominant factor in ASW and, then, if it is, that there are not other ways to solve the combined ASW-shipping problem (such as prepositioned stocks in Europe).

I have used these examples in part to illustrate that if there is to be a discussion of U.S. naval policy, then that discussion must consider the use of other military forces as well, both as competitors and complements. I will return to this point again a bit later on.

The second important item is the problem of costs. I do not emphasize costs because of any particular interest in immediate budget problems or any feeling about the overall level of military expenditures. I do so because cost is the only common denominator we have to compare some military forces with others or with nonmilitary Government programs. A dollar sign is really an indicator of people, material, and critical skills. In this country there is only so much of each, and, although we can slowly increase the amount of any, we are generally in the position of "robbing Peter to pay Paul." Our problem is we always know Paul, but we seldom meet Peter. Once in a while there is an

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exception, and we address the resources themselves—it is hard to get shipworkers in Boston because of the large urban redevelopment program—hut, generally, we are forced to use the catchall, generic dollar sign for comparison.

Similarly, the U.S. economy has real constraints and limits. Limitations on military budgets and expenditures are not the arbitrary decision of the President or Congress—they are imposed quite severely by the economy. There are only so many goods and services to go around, and we can only increase the total slowly. If we try too much “robbing of Peter” the growth may stop, or, if we try to stimulate the growth too much we find that instead of real, productive growth we get only inflation.

Let me place some numbers behind these assertions. In the last Fiscal Year (FY 68) total Federal outlays were \$179 billion, of which \$81 billion was for defense, another \$80 billion was for programs that were essentially uncontrollable by the President (social security payments, interests on the debt, veterans payments, farm price supports, etcetera); the remaining \$18 billion was split over other controllable Government programs including NASA, foreign aid, housing, commerce and transportation, education, and the like. As you can see, the flexibility that the President has to make major changes within the \$179 billion total is extremely limited. At the same time, the receipts for FY 68 were only \$154 billion; we ran a deficit of \$25 billion which was met in part by expansion of the money supply. This resulted in heavy inflationary pressures, which necessitated increased interest rates and finally the surtax. If defense expenditures remain about the same in FY 69 (\$81 billion) and if the surtax is approved and there is expansion in the real output of the economy, the FY 69 problem should be less severe. However, I think you can see that the options for further expansion

of defense programs are limited. The goods and services summarized by the dollar figures are simply limited. Yet the implementation of the Joint Strategic Objective Plan (JSOP) in these years would have required \$100 to \$120 billion for defense alone.

Each year you, here, develop a JSOP. I can assure you that, if we could, we would buy the “reasonably achievable” forces in the JSOP, but the hard fact is that we cannot without giving up something else. In the end, the President and Congress are faced with a dilemma. I suggest that advice which offers only one unachievable alternative is not the best advice you can produce. If, in your opinion, national policy objectives are too broad to be met within reasonable national budgets, then it seems to me that you should so state. Or if you feel they might be funded by reduction of other federal expenditures, then you should examine this possibility. Furthermore, your advice on what national policies might be implemented within various budget levels is certainly of interest. In fact, the National Security Council has recently directed a multi-agency review of this particular problem.

There is a lesson hidden in the economic restrictions on defense. It is that if we are to protect the national interest as best we are able, then we must be *efficient* in the forces we buy. Any time forces cost more than is necessary to do a job, then we may be forced to give up other policy commitments because of our inefficiency. If we overbuy on strategic nuclear capability, then we may have to give up, for example, potential nonnuclear commitments in some area. I am not suggesting that this is a real alternative. I am only using it as an example of the competition for resources between different national objectives.

In this regard, let me deal with one argument I am sure you have heard before. In one form it goes: “You must

buy system X—we can't afford to compromise on defense." The answer is that, in fact, we always have compromised on national defense, even in wartime, and we always will. I like to think of defense like accident insurance—more is always better, but you are always forced to choose between more insurance and more something else. One cannot argue for more defense without proposing what else one would give up.

Before turning in detail to U.S. naval policy, I might indicate a recent and glaring example of what I mean about the lack of treatment of alternatives and costs. I am sure many of you have read the recent prize essay in the *Naval Institute Proceedings* entitled "The Encircling Sea." In it the author, who is an economist, notes the broad changes in the world since World War II, the fragmentation of the Communist empire, and the need for national policy to adapt to these changing conditions. He also notes we should be efficient: "National strategy must achieve its objectives with the least possible expenditure of resources." In the conclusion of his article, however, he recommends that we have:

A national commitment to the maintenance of a sea-air team capable of dealing with any threat to U.S. territories or communications with allies . . .

An integrated system of off-shore bases encircling the Eurasian landmass. . . .

Selected base sites [all?] should be protected by adequate garrison forces and . . . should possess ABMs and tactical nuclear weapons. . . .

Land and sea forces, capable of deployment to any threatened sector or for possible intervention on the continent at the option of the United States, . . .

And, as well, Polaris and sea-based ABM.

I can read these words to mean that we should buy and deploy a complete sea-based force prepared to engage the Soviets on their own soil. Yet, nowhere does the author suggest what the budgetary implications of such a strategy might be, whether we even have the resources to implement it, or whether this is the way to achieve what he supposes to be our national policy objectives "with the least possible expenditure of resources." What happened to foreign aid, the Army, Air Force, and, incidentally, our allies, who might be concerned? I would suggest it might be very hard to develop an explicit naval policy from such a rationale, and it would be even more difficult to convince anyone to buy it.

**Past Naval Policy.** If polemics about encircling the Soviets are not a reasonable means of developing naval policy, then what is? To find an answer I think it is perhaps of interest to look back at what U.S. naval policy has been in the past. The first point that has probably struck many of you already is that although the term "naval policy" was typically used to describe the concepts of sizing and deploying naval forces prior to World War II, it has been used sparingly, if at all, since that time.

From the laying of the *Dreadnought* in 1905 up to World War II, the United States, England, Germany, and Japan had remarkably accurate strategic concepts of the use of naval forces. The fundamental purpose of High Seas Fleets was to defend the extended lines of communication of empire and to attack those of the enemy. The military corollary was the calculated opposition of the battle fleets to produce the ultimate test. Before the advent of the aircraft as an offensive weapon, the broad strategy of both sides was known,

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and, in retrospect, the outcome of fleet engagements was reasonably predictable. The result, prior to World War I and again immediately thereafter, was an arms race to match fleets that has perhaps found its nearest counterpart in the United States-Soviet competition for strategic nuclear weaponry during the last two decades. It is also interesting to note that the military balance that obtained and the mounting costs of new generations of *Dreadnoughts* had two significant results. The first result was a pervasive caution about risking the fleets, a caution that constrained both naval strategy and tactics in World War I. Admiral Jellicoe was described by so acute an observer as Winston Churchill as "the one man who could have lost the war in one afternoon." The second result was that the continued commitment of immense resources to fleets whose ultimate use placed the Nation itself at risk was halted in 1921 by the Washington Treaty. This treaty, although perhaps satisfactory to none of the signatories, provided a needed time for reconsideration.

During the decades leading to World War II, the U.S. naval standard—parity with the British in capital ships yet "second to none"—appeared sufficient to support U.S. policies in the Pacific. Our naval policy was content to depend primarily on the British for containment of potential enemies in Europe. The "Rainbow" plans for the use of naval forces in the Far East were generally accurate in strategic concept and a reasonable reflection of what later occurred.

If U.S. naval policy in this era was accurate in grand strategy, it was equally in error in choice of weapon systems. It is interesting to note that in spite of their experience in World War I, the German Navy entered World War II basically unprepared for offensive submarine warfare. Yet, in spite of the mounting German submarine campaign in 1941, the United States entered

World War II similarly unprepared against Japan. And, above all, U.S. naval policy remained centered on the battleship. A quote from another prize essay is illustrative. It was by Rear Adm. J.K. Taussig and appeared in the 1939 *Naval Institute Proceedings*:

The battleships, it is conceded, form the nucleus of that major force which is organized primarily to fight battles. . . . such cruisers, destroyers, and aircraft best suited for operating in battle with these battleships, and in such numbers as may be available for making a well balanced fighting force, and for giving close security while cruising, should be assigned to the organization of which battleships are the nucleus.

Unfortunately, what was conceded in this country was not conceded in Japan. They had viewed the alternatives—we had not.

The end of World War II, world realignment, and the advent of nuclear weapons not only brought an end to the strategic concepts of the 1920's and 1930's but also spelled an end to the basis for naval policies that had lasted for over half a century. The U.S. Navy was left without its classic *raison d'être*—there was no other surface fleet to engage. In addition, the very existence of the Navy was threatened in many minds by the immense lethality of nuclear weaponry and the long range of the new strategic aircraft. The Navy itself found new justification in strategic nuclear warfare. It is interesting to note now that the first "supercarrier" was proposed to accommodate a very large four-engine turboprop aircraft. The large aircraft was required to carry the very large nuclear weapons of the time. In spite of the use of carriers in Korea, the emphasis on nuclear retaliation in naval force planning was prevalent until advent of the strategic missiles—Polaris and Minuteman—in the early 1960's.

**Naval Policy Today.** I would now like to make a contention that you may find, at best, unsatisfactory. It is, simply stated, that since World War II this country has not had a clear and consistent naval policy nor does it have one today. It is for this reason the term "naval policy" itself has dropped from our lexicon. The Navy has felt pressed. At times it has even felt that its existence was threatened. And it has felt unable, in the shifting sands of changing technology and national commitments, to find a firm foundation for the long-term planning that building a navy requires. Let me give you a few examples of what has occurred.

There is the problem of the 6th Fleet. U.S. naval forces were introduced into the Mediterranean in 1946 by the Secretary of the Navy, James Forrestal; by the end of 1946, after Cabinet-level review, it was announced that U.S. naval forces would be permanently stationed in the Mediterranean. Soviet troops had refused to withdraw from northern Iran, there was Communist-backed insurgency in Greece, and the Soviets were threatening Turkey over border area disputes. By 1948 the newly named 6th Task Fleet included two full-time attack carriers to support its peacekeeping role in the area. Two years later the first nuclear weapon was introduced, and through the 1950's the 6th Fleet's role became increasingly that of a nuclear deterrent with strikes aimed at the Soviet homeland. Today, with the passing of the primary strategic nuclear role to sea- and land-based missiles, and with the introduction of land-based tactical air on NATO's southern flank, the primary role of the 6th Fleet has apparently shifted again to that of a peacekeeping force. Throughout this time, force planning for the Mediterranean has been for two attack carriers on station with at least three more in the United States to support this forward deployment, plus the associated protection and support. Apparently the

6th Fleet's size has been independent of its primary mission.

What appears to be true of the 6th Fleet has also been true of our attack carrier force levels as a whole. Faced with the new world of 1946, the Navy had to make hard recommendations on the size of the postwar fleet. Not surprisingly, perhaps, in 1947 the recommended level of attack carriers, the Navy's new capital ships, was 15. This was the maximum number of U.S. battleships that had been imposed by the Washington Treaty of 1921 and was the exact number in the Navy from 1921 until our entry into World War II, 20 years later.

The Navy's 15-carrier force objective came under increasing attack in the late 1940's. With the proposed introduction of the new supercarriers, actual force levels fell as low as 11 at the outbreak of the Korean war in 1950. Korea brought a resurgence of carrier air, but, again, by early 1956 attack carrier objectives and force levels had stabilized at 15. Today we still plan a 15-CVA force for the future. Yet over this 25-year period we have seen a polarization of the world into Communist and non-Communist camps and, lately, an increasing fragmentation of both; the development of the Marshall Plan, NATO, the conversion of our enemy in the Pacific, Japan, to an ally and the conversion of our old ally, China, to an enemy; a doubling of the size of the attack carrier; nuclear propulsion; jet aircraft; and nuclear weapons! In truth, 15 attack carriers (or 15 capital ships in the U.S. Navy, if you will) appears to be close to an "eternal verity" in U.S. military planning.

Do not let me leave you, however, with the impression that what has been true of attack carriers has not been true of other forces as well. For example, in the early 1950's our attack submarine force objectives and levels stabilized at approximately 105 firstline submarines, all diesel, and primarily concerned with

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surface shipping. Since then we have seen the introduction of the nuclear submarine and, in the early 1960's, the concept that the primary role of the submarine force is antisubmarine warfare (ASW). Throughout that period we have maintained, give or take one or two, 105 firstline submarines. Furthermore, no less an authority than the CNO himself has recently stated to Congress: "I consider the ultimate force level should be about 100 to 110 SSNs. Navy analyses have consistently defined our requirements for attack submarines within this range."

It is interesting to compare this statement with one made to Congress by Admiral Carney in 1947, 21 years earlier: "The matter of undersea warfare is more clearly defined. It is so clearly defined that we feel justified in beginning a submarine replacement program. I think . . . we probably level off at a designed submarine strength of possibly 100 ships, plus or minus."

It also so happens that the U.S. Navy had exactly 100 submarines in 1940\*

Finally, there exists an often repeated contention that the basic requirement for the Navy is for "control of the seas." There is a fleeting satisfaction that perhaps there exists, indeed, a concept or rationale for naval power providing continuity with an earlier era and even constant force levels. Unfortunately, however, I think you will find that "control of the seas" does not provide either a sufficient or even a necessary basis for naval force planning.

Let me confine my discussion, for the moment, to nonnuclear forces and weapons. For example, "control of the seas" can today certainly be affected by land-based aircraft. Such control can be affected at least to the extent that there are likely to be areas of the world where

neither we nor the Soviets would care to venture with naval forces. There are two basic problems. First, there is the question of the complementary nature of naval and nonnaval forces which I mentioned earlier—what mix should the nation choose, given that we indeed wish to maintain "control of the seas" in some part of the world. Second, and perhaps more important, is to what areas of the world and with what intensity and simultaneity must the doctrine of "control of the seas" extend? At what cost and to implement what national objectives in the area? As an extreme example, are the White and Black Seas included? Furthermore, if I consider the use of nuclear weapons, do the areas I wish to "control" change?

From the above arguments I would suggest that if the United States has a naval policy today at all, it is one of maintaining constant force levels and adapting these forces to the exigencies of the day.

**Challenge and Change.** It is possible to raise at this point the following objection: Why should not our naval force levels remain constant in a changing world? If the U.S. Navy has been a reasonable tool of U.S. policy over the 20 plus years since World War II, have not the fixed force levels been effective? Granted we may have had some minor inefficiencies, but then you cannot change the size and composition of a Navy overnight.

I think the objection is reasonable, but I believe I may be able to convince you that we are now entering an era when it will be extremely difficult to plan as we have in the past. First, we are now coming to the end of our World War II ships; for the past two decades we have replaced or modernized most of our carriers, cruisers, frigates, and first-line destroyers. We have been gradually replacing old submarines with SSN's. But the hulk of our ships are still of WW II vintage: half of the submarines, the

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\*I am indebted to D.P. Wilson of the Center for Naval Analyses for his discussions of carrier levels and for references to the composition of the U.S. Navy in 1940.



FRAM destroyers, the CVS's, and the support and repair fleet. At the same time, the costs of the ships we now propose as replacements have skyrocketed. Let me give you some examples.

1. The *Kennedy* cost \$350 million. The *Nimitz* is budgeted at \$550 million, and it could run as high as twice the *Kennedy*. Aircraft are worse. The F-4 cost about \$3.5 million; in production, in today's dollars, the F-14 will probably cost over \$10 million.

2. Two years ago a *Sturgeon* SSN cost \$80 million. The first 688 in this year's budget will cost over three times that amount, and follow ships will be a minimum of twice the *Sturgeon* cost.

3. The DDG-2 is not a bad ship at 4,500 tons. The DX, a replacement destroyer—not even a modern missile ship—will be about 6,500 tons and will cost in mass production over \$60 million. Yet it will carry the same ASW weapons as the DDG-2. A modern "G" ship would cost perhaps \$80 million. If the "G" ship is nuclear, the cost will be close to one-quarter of a billion dollars. It does not seem probable that we will replace all our current 275 destroyers with ships costing \$60 to \$80 million each, not to mention nuclear power, even if we had the facilities and labor in this country to do so.

4. A tender or repair ship now costs about \$100 million. We have over 20 that are approaching 25 years of age.

Let us contrast to these estimates what we have spent in recent years. Over the past 10 years we have spent on the order of \$2 billion per year on shipbuilding. Our current yards could handle perhaps 50 percent more than this, but skilled labor will probably be unavailable. For the last 2 years, only about \$1 billion per year has been appropriated by Congress. Furthermore, my cost estimates on ships are probably low. The Navy has recently indicated that they now estimate FY 69 and prior

year ships now under construction will cost much more than originally estimated. This overrun is close to the *total* new obligational authority provided by Congress for all shipbuilding in FY 69.

It is possible to estimate the costs of simply maintaining the force levels we currently have by replacing ships as they near out with their counterparts that we now have on the drawing board. Over the next 10 years such a program could cost \$4 billion per year, not including probable increases in ship costs for new technology and weapons. To buy additional forces would cost even more. In short, even if the funds were available, it is doubtful that we have the shipbuilding resources in this country to meet such a program or that we can develop them in that time. Nor will the costs be limited to procurement. No matter how we may wish to the contrary, more expensive ships will cost proportionately more to maintain and operate.

In summary, the cost of burgeoning weapons technology has finally overtaken us. We have been able to maintain essentially constant inventories of ships by riding on our WW II assets, but now, 25 years later, we are entering a different world—one that will necessarily call for a new look at the role, size, characteristics, and composition of the U.S. Navy. More than ever before we need a coherent policy relating U.S. naval force planning to specific U.S. interests throughout the world.

Let me now make another assertion for you to consider. Rather than in control of the seas, our fundamental national interests abroad lie with other nations and peoples. The extent to which we need control of the access to these nations—the seas if you will—lies in how deeply we are committed to them and what fraction of our national wealth we are willing to commit to their protection.

The broad implication of this statement is that potential requirements for naval forces might be inferred by

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looking at selected areas in the world, estimating what naval forces would be needed to carry out what missions in these areas, determining what other military and nonmilitary options were available, and, finally, estimating the costs for the various options. In theory, at least, a total naval policy could result from a careful examination of a limited number of areas.

Let me suggest how this could be done. For example, we might consider the Atlantic as comprising, in naval terms at least, the 6th Fleet in the Mediterranean, the area north of Iceland, our shipping routes to Europe, and contingency operations in the Caribbean and to the south. Other subdivisions are certainly possible and might be more productive. I have only chosen this set because I want to take one area, the Norwegian Sea, and focus on it as an example.

Hypothetically, one might ask whether we should attempt to provide naval forces, including amphibious assault, to counter a possible Soviet invasion of Finmark, that area of northern Norway that abuts the Soviet Union. To do so means that we would have to operate a minimum of two attack carriers and perhaps more, amphibious shipping, and support forces near Soviet submarine bases in the Kola Gulf. And we would have to do this far forward of most of our own land-based air support. For such an operation to have any chance of success, these naval forces might have to have far more intensive ASW protection than we normally provide. In addition, they would be facing an extreme Soviet air threat.

Let me focus on the carriers for a moment. There are two options. First, we could attempt to protect them for this type of operation and buy the necessary additional air defense and ASW. The second option is not to count on carriers for this role and to set carrier force levels and the extent of their

protection for other missions. When the amphibious and logistics forces and their protection are also included, comparison of these two alternatives provides an estimate of the cost to the United States to protect Finmark with naval forces. Let me assume, for the moment, this cost to be an arbitrary \$10 billion over the next 10 years. A number of questions then arise: Are there other options to meet the same objective at the same or lower costs, such as strengthening indigenous Norwegian forces? If not, would we be better off spending the same amount in defending the central region in NATO rather than the northern flank? Again, if not, is Finmark, in the end, worth spending \$10 billion to defend? Some of the answers may be clear—others will undoubtedly be debatable—but I think you can see that it may be possible, through the type of process I have outlined in this hypothetical example, to develop a tight tie between national interests and naval force planning. It is that tie which is the essence of naval policy.

I have no illusions about the size and complexity of the task I have proposed. One cannot attempt to size the U.S. Atlantic Fleet, for example, without a careful examination of a number of geographic areas and a number of options that are far outside the scope of naval operations themselves. Furthermore, it is necessary to consider all the major options available at once. The arguments about Finmark are not meaningful unless there are alternative bases for estimating other NATO operations, the 6th Fleet, etcetera.

But I would suggest to you that the task is by no means insurmountable. In addition to the areas in the Atlantic I have mentioned, I would suggest as examples for your consideration the following possible areas for examination: the Sea of Japan and off Korea, the East China Sea (with and without a U.S. presence in the Ryukus), the South

China Sea, Southeast Asia (this is our third war there in roughly the last half century), the Bay of Bengal, and the East Coast of Africa. There is now no U.S. military presence in the two latter areas. What would its cost be, and what other options may we have in these areas at similar expenditures?

In conclusion, I should like to return to a statement I made earlier. No matter what work is done in OSD or elsewhere, U.S. naval policy must, in the end, be developed and accepted by the U.S. Navy. Regardless of the stability in force size in the last quarter century, in the coming years the size and composition of our naval forces are likely to change through economic pressures, if for no other reason. If the Navy is to remain a flexible and responsive implement of national policy, you gentlemen must guide that change. You will need to develop the tools and techniques, the new naval policy. I hope you will accept

my suggestions today as a limited contribution to assist you in that endeavor.

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### BIOGRAPHIC SUMMARY



Dr. Arthur C. Herrington holds B.S. and Sc.D. degrees from the Massachusetts Institute of Technology in Chemical Engineering. His experience includes developmental work in the chemical and nuclear fields. Immediately prior to joining the Department of Defense, he was a Lecturer at M.I.T. in Political Science and, concurrently, a staff member of the MITRE Corporation involved in problems of nuclear detection and strategic command and control.

Dr. Herrington has been the Director of the Nuclear Weapons Division and is currently Director of Naval Forces, Office of the Assistant Secretary of Defense (Systems Analysis).

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Naval tactics are based upon conditions the chief cause of which, namely the arms, may change; which in turn causes necessarily a change in the construction of ships, in the manner of handling them, and so finally in the disposition and handling of fleets.

*Sébastien-François Bigot de Morogues:  
Tactique Navale, 1763*