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In April 1989 the press reported that the U.S. Navy would be retiring three types of tactical nuclear weapons: the underwater-to-underwater Subroc and the nuclear versions of the Asroc antisubmarine rocket and the Terrier surface-to-air missile. This leaves submarine-launched ballistic missiles, the nuclear variant of the Tomahawk cruise missile, and some air-dropped bombs as the only nuclear weapons in the Navy's arsenal.

This unilateral and somewhat surprising move was taken by the U.S. Navy, an organization not generally known for its altruism, because of a conviction that while advantages would be gained, overall U.S. security would not be reduced. Removing these weapons from the inventory saves money, reduces a heavy administrative burden in a number of commands, and reduces the possibility of nuclear use. So, for a variety of reasons that have nothing to do with why the weapons were acquired in the first place, their removal will be welcomed. In order to understand the significance of this decision and the prospects for other nuclear arms control measures in the maritime arena, however, it is necessary first to consider the strategy that undergirds the use—or the threatened use—of sea-based nuclear weapons.

Maritime Strategy

As an independent subject, maritime strategy makes no sense. Those who either espouse or criticize maritime strategies divorced from overall national strategies are merely tilting at straw men. How naval forces contribute to

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the overall objectives of the state in peace and war—not how they can defeat the enemy fleet, and least of all how they can attain victory on their own—should be the central focus of maritime strategy.

Sea areas have had, and still have, little intrinsic value. Naval strategists understand that the purpose of navies is to influence and affect what happens on the land, in terms of either political activity in peacetime or combat action in war. This helps explain the high interest of large navies in land-attack missions.

In time of war the navy has two purposes with respect to ground forces: it can help or it can hinder ground force activity. Navies cannot seize and hold territory. That requires ground forces. Navies can influence the course and even the outcome of a war, but it is difficult—and perhaps impossible—to suggest a historical case where maritime actions on their own were truly decisive.

Most important, and most frequently overlooked by the critics, is the fact that the role of the navy cannot be evaluated in the absence of context. The relationship of maritime actions to national strategies depends on whether naval actions are central, peripheral, or irrelevant to what is happening elsewhere in the war. This depends on national priorities and a very rich menu of geostrategic considerations, central to which is geography. In the U.S.-Soviet relationship, the asymmetries of geography are extremely important.

From the foregoing, and from the study of maritime strategy, the following observations emerge.[1]

- There are enduring differences between the operational objectives of conflict at sea and conflict on land.
- The general principles of war, lessons of strategy, and manner of combat should not be carried over uncritically from land warfare to sea warfare.
- The offensive is the stronger form of war at sea, and technology is more important to sea warfare than it is to land warfare.
- Political and physical geography provide more "friction" in war on land than in war at sea.
- Sea power and land power have great difficulty reaching each other to secure a military grip for the purpose of forcing a decision.
- States tend to overestimate the efficacy of their traditional military instrument of excellence, whether it is sea, land, or air power.
- No state in history has been equally competent in the conduct of sea warfare and land warfare.
- The United States is a continental-sized maritime power, but it is *not* a "natural" sea power; the Soviet Union is a multi-continental-sized land power, and it *is* a natural land power.

These assertions underscore the point that for purposes of analysis, sea power and its exercise must always be concretely linked to a historical and

geopolitical context. In the absence of such context, the role of tactical nuclear weapons in the arsenals of the navies of the world cannot be understood. To assist in such understanding, first a brief description of these weapons will be undertaken, and then the article will conclude by relating the weapons back to their appropriate strategic setting.

Tactical Nuclear Weapons

The United States Navy possessed until recently the following tactical nuclear weapons: three antisubmarine weapons (Subroc, Asroc, and an air-launched depth bomb); one anti-air weapon (Terrier); air-to-surface and land-attack weapons (gravity bombs of various designations); and the Tomahawk land-attack cruise missile. Now, Subroc and the nuclear variants of Terrier and Asroc have all been removed from the inventory.

Soviet nuclear weapons at sea include five antisubmarine weapons (nuclear-tipped torpedoes, a submarine-launched ballistic rocket, a submarine-launched weapon similar to the Asroc, a submarine-launched ASW rocket, and an air-delivered nuclear depth bomb); three surface-to-air missiles; six antiship cruise missiles; two land-attack cruise missiles; and five air-to-surface missiles (for which the United States has no counterpart). All in all, one can count 21 separate Soviet systems.

Before the recent retirements by the United States, the U.S. and Soviet arsenals accounted for 96 percent of the world's naval tactical nuclear weapons.[2] The other nuclear weapon states shared the remainder. The United Kingdom's naval nuclear arsenal consists mostly of depth bombs (no missiles or torpedoes) for antisubmarine warfare, and other bombs for antiship or land-attack tasks (in the latter case delivered by either naval Sea Harriers or RAF Buccaneers). France has anti-surface and land-attack weapons delivered by Super Etendard aircraft, and the People's Republic of China has, as far as is known, only land-based aircraft with a potential tactical nuclear capability. While confidence might be high that no other country carries nuclear weapons in its ships or maritime aircraft, the ability to count nuclear weapons in the inventories of any country is not particularly good—especially with the possibility of technologies such as insertable nuclear components.

Although the Soviet Union has many more systems than the United States has, analysts contend that the overall numerical disparities in tactical nuclear inventories are not as great as they once thought. It is sobering to note, however, that in the Intermediate Nuclear Forces (INF) Treaty verification discussion the American secretary of state wrote that "in addition to the approximately 440 SS-20 missiles now deployed, there may be as many as 200-400 (or more) such missiles in the Soviet Union's inventory."[3] So large a degree of uncertainty emphasizes the difficulty in counting small, mobile nuclear weapons, and suggests that the problem would be more difficult with

respect to even smaller, globally deployed, more mobile naval nuclear weapons.

Maritime Strategies and Tactical Nuclear Warfare

The relationship between tactical nuclear warfare and maritime strategies depends fundamentally on the context of possible use. In the absence of a war between the United States and the Soviet Union, times of crisis tend to capture analytical interest. In that regard, the Incidents at Sea Treaty has now existed between the United States and the Soviet Union for seventeen years, and it has become part of the maritime culture of both navies. There are officers in command of ships in both navies today who have never operated under any other regime. The Incidents at Sea Treaty has proven satisfactory to both parties, and it clearly would tend to dampen unanticipated activities in a crisis.

Moreover, there is a growing understanding that escalation is in the interest of neither side. When the stakes are less than national survival, there is little incentive for either party to go to war with the other. In this regard, Geoffrey Till has written that "a confrontation at sea is less sensitive, and less prone to accidental escalation, than a confrontation on land. For these reasons, the use of naval forces is usually regarded as less dangerous and more controllable than that of their equivalents in other services."[4] Insofar as this is true, the question of crisis stability—that is, the incentive to strike first in a crisis—has been blown out of proportion for a long time. Such a temptation seems inconceivable in the real world, contrasted to academic, mechanistic interactions between fictional countries "A" and "B". It is difficult even to imagine a crisis in which there will not be options open to decision makers that are greatly more attractive than striking first with nuclear weapons.

If, however, there is a ground war in progress, before the possibility of tactical nuclear use at sea can be assessed one needs to know the following:

- How did the war start, and what are the expectations for ending it?
- Who is winning?
- What losses have been taken?
- Have nuclear weapons been used elsewhere?

Although these critical questions require specific contexts in order to rationalize tactical nuclear use, some generalizations can nevertheless be suggested. First of all, war between nuclear-capable coalitions will be *nuclear* and *global*, whether or not nuclear weapons have actually been launched. War planners on both sides must expect that aircraft carriers, other ships and aircraft with nuclear weapons on board, and nuclear depots on the ground will be attacked (but not necessarily with nuclear weapons). In this sense the war will be nuclear because nuclear weapons will be involved, even if they have not been detonated. A coalition war will be global in scope because

both the United States and the Soviet Union and their allies are world, not regional, powers. World powers cannot fight in one geographic area and share tea in another. Moreover, strategic logic and history would argue that it will be to the advantage of one side or the other to take the conflict to a geographic location favorable to it.

Second, control of sea areas or use of the seas cannot at present be the objective of war. Grand strategic objectives are on the land. Navies help or hinder land forces. The prospect of a war isolated to the sea is nonsensical. For what conceivable objective would either side fight such a war?

Third, wars do not begin at sea; they grow from political causes in the seats of power on the land. Likewise, *nuclear* wars do not begin at sea. In the absence of nuclear use on the ground, where it really matters, there will be a surfeit of reasons not to use nuclear weapons at sea. Those who believe that the United States and the Soviet Union could fight a nuclear war at sea and then confine the use of nuclear weapons to that area are completely at a loss to explain why either side would initiate such a war. It is not in the interest of either the United States or the Soviet Union to do so, especially if nuclear weapons have not been used ashore. If the Soviet pledge of "no first use" has any operational meaning, it must be in this context.

Fourth, ships are not uniquely vulnerable. Nuclear weapons would massacre troops in the field and raze land bases, but ships are very difficult to target because they are mobile. It is especially difficult to target all important ships of a large force simultaneously. The special problem for ships and for navies with nuclear weapons is, therefore, not their inherent vulnerability. It is that there are few of them relative to the number of weapons that can be delivered against them. Over time fleets suffer attrition, and fleets cannot be rebuilt easily or quickly. This is the special problem of navies, and especially of capital ships, with respect to nuclear weapons.

Fifth, short-range tactical nuclear weapons are not for the purpose of deterrence. An attack by Soviet Backfire aircraft on a U.S. ship, for example, is not deterred by threatening to destroy the Backfires with nuclear weapons. The *tactics* of employing the Backfire force against surface ships might be altered by threatening to use short-range nuclear weapons against it, but such attacks will not be so deterred.

Sixth, deterrence *is* the function of land-attack nuclear weapons. The presence of such weapons in ships contributes to dissuading an adversary from nuclear attacks ashore and afloat. For the first purpose, if nuclear weapons have not been used in the battle ashore, the deterrent effect would be to prevent any such use. Naval nuclear land-attack weapons, especially in the absence of the ground-launched cruise missiles or Pershing II ballistic missiles now banned by the Intermediate Nuclear Forces Treaty, can thus be viewed as a trump card against nuclear first use by the enemy—one, moreover, that the latter would find difficult to preempt.

Nuclear weapons in ships can also help deter nuclear attacks against the ships themselves, especially if nuclear weapons have not been employed in the land battle. The deterrent effect arises from the presence of the nuclear land-attack capability in the force that might be targeted. In order to be effective, the deterrent threat must be explicit. Accordingly, the United States maintains that nuclear warfare cannot be confined to sea areas of conflict, and that nuclear attacks on ships will be responded to by attacks against the land.

Two important principles should be clear to the Soviet planner. In the first place, if a U.S. aircraft carrier, for example, were to be attacked with nuclear weapons, he must anticipate that U.S. naval forces will retaliate with land-attack nuclear weapons. The absence of a retaliatory response would indicate that the United States was willing to permit its ships to be struck with impunity.

On the other hand, if there are no land-attack nuclear weapons in the maritime force, the Soviet planner can disregard the possibility of a nuclear attack from that force. Moreover, he is free to prepare and mount a nuclear attack with no concern about a *preemptive* nuclear attack from the opposing force. A U.S. nuclear response would have to rely on the use of long-range strategic nuclear systems. In such a situation, the Soviets might convince themselves that the United States would not take such a large escalatory step in committing its central strategic systems. Thus, the absence of land-attack nuclear weapons *in the attacked force* undermines the deterrent to attacking it; whereas the presence of such weapons has a positive deterrent effect against attacking those ships.

Conclusions

These, then, are the conclusions of an optimistic strategist:

- Any use of nuclear weapons must be considered in the context of the overall geostrategic situation. Wars do not originate at sea. Thus, inadvertent nuclear war at sea is among the most unlikely cases because it requires irrational actions.
- Ships are not uniquely vulnerable to nuclear weapons. They are attractive targets, however, and it is important to seek to deter nuclear attacks on them.
- Short-range nuclear weapons are not for the purpose of deterrence. Moreover, their military value has declined with the age of the current systems and with the increased accuracy of modern weapon systems.
- As recently as 1983 a knowledgeable analyst foresaw the following additional weapons for the U.S. nuclear inventory: a new nuclear warhead for the Terrier, a new nuclear antisubmarine stand-off weapon, a nuclear warhead for the Phoenix air-to-air missile, a new nuclear outer air battle

missile, a new nuclear torpedo, a nuclear warhead for the Harpoon surface-to-surface missile, and a nuclear projectile for naval guns.[5] Instead of *any* of those, the United States has phased out three tactical nuclear weapon systems, and there are no immediate plans for their replacement. These unilateral reductions have been carried out on a time line far shorter than Mr. Gorbachev's announced reductions of Soviet conventional forces in Europe. Yet, where is the clamor for the East to make comparable concessions? Will the Soviet navy follow this example?

- The fact that there are now many fewer sea-based nuclear weapons on the U.S. side:
  - Should remove proportionately whatever concerns there might be about accidental or unauthorized use;
  - Might also bring greater pressures to impose physical controls—so called "use control devices"—on the remaining nuclear weapons. There are two primary reasons why that is so. First, there are fewer nuclear weapons afloat, so the total cost of providing such devices is lower; and second, the remaining weapons are primarily intended for long-range use against shore targets as opposed to short-range weapons for use in local tactical scenarios.
- These unilateral reductions by the United States will not affect deterrence. Nuclear Tomahawk missiles and sea-based nuclear bombs will remain, which should be welcomed, since they reduce the temptation for the Soviets to strike ships with their nuclear weapons. If all tactical nuclear weapons were removed from the U.S. naval arsenal, and if then nuclear weapons should be used on the land, there is nothing to constrain their use at sea. If nuclear weapons have *not* been used on land, the inhibitions on using them at sea would be weakened greatly by the absence of nuclear retaliatory capability.

Notes

1. For an extended discussion of these greatly abbreviated one-liners, see Colin S. Gray and Roger W. Barnett, eds., *Seapower and Strategy* (Annapolis, Md.: Naval Institute Press, 1989).
2. A recent unofficial tally appears in "Nuclear Notebook," *Bulletin of the Atomic Scientists*, September, 1989, p. 48.
3. Letter from Secretary Shultz to Senator Helms in *The INF Treaty: Markups and Hearing*, United States Senate, 100th Cong., 2d sess., (Washington: U.S. Government Printing Office, 1989) Part 6, p. 286.
4. *Modern Seapower: An Introduction*, Volume 1, (London: Brassey's Defence Publishers, 1987) p. 169.
5. William M. Arkin, "Nuclear Weapons At Sea," *Bulletin of the Atomic Scientists*, October 1983, pp. 6-7.