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The Evolution of Naval Power to the Year 2010

Donald C. F. Daniel

I HAVE BEEN ASKED TO SPEAK about the evolution of naval power and, particularly, to identify the characteristics of an effective naval force out to the year 2010. My attempt to do so is divided into three parts. After some necessary preliminaries, I offer seven propositions that deal with the future of naval power, broadly considered, and with alternatives for the development and use of naval forces. I conclude by drawing implications for a nation such as France.

I begin with certain fundamental definitions. *Naval power* is that element of military power associated with forces—ships, submarines, aircraft, naval infantry, free-standing mines—that operate primarily on, under, over, or from the sea. Many regard submarines carrying land-attack, nuclear-tipped ballistic missiles as belonging principally in the category of strategic nuclear forces and only incidentally in that of naval forces. For the purposes of this discussion, I regard them as in the naval grouping, just as ships would be that contributed to a nation's strategic air or missile defense.

A different kind of definitional issue arises with "2010." It is my experience in simulations and research that it can be misleading to designate a specific point

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Dr. Daniel was invited and spoke as an academic, not in any official capacity. The views expressed are his own and are not necessarily those of the United States government.

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in time around which to cluster predictions. Hence, by 2010 I mean a broad period—extending from the present at least ten years—in which presently identifiable trends will probably remain evident and those incipient today will have become manifest. Many of those trends will actualize themselves gradually, not in any specific year.

Let me now briefly set out a few caveats. The first is that trying to predict world political, economic, scientific-technical, and naval developments much further than about ten years ahead should inspire more humility than confidence. 2010 is as far in the future as the middle 1970s are in the past. How many predicted then that the Cold War, the Warsaw Pact, and the USSR would wither away, that the UN would experience something of a renaissance, that there might indeed be some measure of peace in the Middle East, that defense budgets of most primary and secondary powers would be cut very significantly, or that the priorities of many major navies would focus far more toward operations in the littorals or near-shore waters than in the open ocean?

It is fortunate, then, that scientific-technical and naval hardware developments are fairly easy to predict. Many platforms and weapons in service, being designed, or under construction today should still be in service in 2010. Nevertheless, we are left with the problem of assessing just how effective those systems will be in light of conditions then. As one author put it, the details of what a military *should* look like twenty years hence cannot be specified today, “for one simple reason. No one knows what they are. It is impossible to design this force now.”¹

A particularly complicating factor is that we may be on the verge of a military-technological revolution such as occurred with the introduction of firearms, artillery, and the internal combustion engine.² As will be discussed, the technological bases for such a revolution reside in actual and prospective advances in computers, communication systems, and networks.³

A second caveat is that there is no single right answer to the question of what the characteristics of an effective naval force should be in 2010. A reason is that there is no one ideal navy, no single model, that can suit the needs and expectations of the great, major, medium, and minor powers that exist today or will tomorrow. All states expect, or at least would want, their navies to help deter and defend against encroachment or attack upon their territories and maritime economic zones. A smaller group of states, however, aspire to regional or global prestige, and they might expect their navies to operate farther out. Some of their navies may be satisfied with simply showing the flag; others with even higher ambitions would aim to protect civilian shipping or to participate in internationally sanctioned but essentially nonviolent operations, such as embargo enforcement. The most enterprising states may feel it necessary for their navies to be ready to undertake sizeable and far-distant offensive operations. In short, different circumstances dictate different measurements of effectiveness.

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A third caveat is that for nearly all navies effectiveness is not an all-or-nothing matter; where a fleet stands in the scale of effectiveness is not necessarily a measure of its power. For example, a nation with modest foreign policy goals may possess a navy that is relatively weak but fulfills its assigned roles perfectly. Conversely, a state's aspirations can be so ambitious that even a powerful fleet is inadequate to the tasks before it.

Keeping these postulates in mind, let us now turn to seven propositions that encapsulate the evolution of naval power broadly considered and are factors in decision making about naval forces.

- Navies will retain their comparative advantages.
- For many states the relative utility of naval forces will increase.
- Fleets will generally decrease in size, but, because of increases in quality, some will grow more powerful, not less.
- The most powerful will be those that incorporate technological advances in their operations and doctrines while guarding against both traditional vulnerabilities and new ones.
- Even for relatively wealthy states, sorting out the quantity-versus-quality dilemma will become increasingly difficult.
- The more economically constrained a state, the more likely it is to adopt one or more of the following solutions, some of which are very risky: settling for less, seeking synergy through interservice jointness and international cooperation, and relying on "short cuts."
- Most states will probably remain reluctant, or grow even more so, to put their naval forces at risk unless fairly confident that their units can survive if a foe strikes first.

Let us consider each of these seriatim. First, *navies will retain their comparative advantages*. Each of a nation's military services has its particular advantages, and those associated with navies will not change appreciably over the foreseeable future. They will cause navies to remain the forces of choice for guarding against encroachments in coastal waters and, sometimes in conjunction with air forces, for providing the homeland's forward defense from seaborne attack. With the development and installation of advanced shipborne radars, one can even foresee naval forces participating in the strategic defense of a nation against ballistic missile attack. In addition, submarines carrying nuclear-tipped ballistic missiles will presumably remain the most invulnerable and most accepted means to deter strategic nuclear attack; there is absolutely no indication that this fact will change in the foreseeable future.⁴

Navies offer additional advantages to nations that can afford ships capable of sustained operations beyond coastal waters. First, ships possess a legally

guaranteed right to transit the oceans. On arrival, they can maintain a presence as evidence of their nation's interest in the area, and they can hover in or near the territorial sea of a friendly state to reassure it while accommodating concerns about having foreign forces ashore. Conversely, by standing off the territorial boundary of a potentially unfriendly state, navies can symbolize their governments' resolve or, as in the case of the Haiti embargo, the resolve of the international community. As a related matter, they can rely on afloat logistics if necessary, rather than bases ashore. They can protect their own merchant shipping and also that of other states, as occurred during the so-called "tanker war" of 1987–1988. Finally, in an era when democratic governments are highly sensitive to their military personnel becoming casualties or prisoners, it is a matter of record that shipboard personnel fare better than those on land. This factor was one of the advantages that accrued to the United States, for example, in basing its quick-reaction force for Somalia on ships operating off the coast.

For many states, *the relative utility of naval forces will probably increase*. It seems inevitable that the oceans will become more important to the well-being of peoples and nations. With that increased importance will come greater appreciation for the value of naval forces. The world's population exceeds 5 billion, with a present net increase of 90 million a year. Pressures on food, energy, and mineral resources will inexorably cause people to turn to their two-hundred-mile exclusive economic zones, and beyond, to acquire and transport resources. Tension—as seen in the "Cod War" between Britain and Iceland and in the Spratly Islands dispute—will be a by-product.

Somewhat ironically, one writer, Derek Boothby, sees this prospect as, so to speak, the better of two evils. "If we are fortunate, future conflicts will not grow from tensions among developed countries. There are more and more reasons to believe that they will be increasingly resources-based. In the maritime domain, there will be disputes over fishing rights, access to the sea, artificial borders, and access to sea lines of communications for oil and other commodities."⁵ When we consider as well state concerns "to control pollution, piracy, drug smuggling and refugee flows," we should not be surprised to learn that "many coastal states which did not need warships or coast guard vessels before are now acquiring them" in order to protect their maritime interests.⁶ Another analyst, Vice Admiral Guy Labou erie, French Navy, Retired, adds a broad geopolitical dimension to this issue. "The property of no one, yet belonging to all, the oceans remain the foundation of strategic mobility, human and material—complemented in this regard by space. . . . The oceans and space will be the means by which power will be repositioned and transported to counterbalance economic and cultural forces. In the worst case, this power will be in the form of military forces to contain uncontrollable violence. . . ."⁷

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If Boothby and Labou erie are right, then we can certainly expect naval power to grow in significance relative to ground power and very possibly to air power as well. Indeed, the trends to which the two authors refer may occasion greater emphasis on linking air and naval power and on bringing air power to sea.

Even in the face of the factors just mentioned, *most naval fleets will generally decrease in size*, but, because of increases in quality, *some will grow more powerful, not less*. As noted above, some states that never had navies or coast guards to speak of are now acquiring them. So too are Asian nations with high rates of economic growth, as well as states that are either militant, regionally ambitious, or both. Quantitative decreases, however, seem the rule. The greatest reductions in naval forces today are taking place in those countries that had shaped them to contend with the possibility of a major Nato-Warsaw Pact conflict. These reductions, however, are being driven by more than just perception of a decreased threat. These nations and others also face severe pressure on national budgets to meet social needs, coupled with the increased costs of military personnel, hardware, and operations.

These cost increases are a product of the rising sophistication of weapons, platforms, and especially of the surveillance, target acquisition, command, and other support systems intended to magnify the effectiveness of weapons and platforms. The upshot is that as militaries in general and navies in particular drop in numbers, some should remain no less powerful and no less effective than they are today.

The most powerful will be those that *incorporate technological advances into their operations and doctrines* while guarding against traditional and new vulnerabilities. The coming together of numerous and various technological potentials heralds a revolution in warfare, if these developments are properly incorporated. New composite materials and novel designs can significantly reduce the detectability of ships, aircraft, and engines. Conversely, improvements in "sensor technology matched with improved computational capabilities and deployments in space, offer the prospect of a truly transparent battlefield" vis- -vis a foe who has not sufficiently reduced the detectability of his own forces.⁸ Micro-miniaturization, compact power supplies, and satellite navigation and positioning systems can make "smart" weapons even smarter and longer-ranged. Advances in computers, individual communications systems, and decision aids, and the organizing of command, control, communications, surveillance, and intelligence nodes into networks will vastly increase the speed at which commanders send, receive, assimilate, digest, and act upon data. As illustrated in the Gulf war, a strategy built around smart weapons and sophisticated electronic countermeasures can render an enemy incapable of timely action, if one targets his command centers

directly with precision weapons and destroys, deceives, or jams his vulnerable sensor and communications systems.

One implication is that he who can capitalize on new developments will fight far more intelligently, and thus far more effectively, than he who does not or cannot. Doing so, however, probably means either taking the initiative or being ready to respond immediately, on a hair trigger, to an adversary's moves, for he who delivers the first telling blow has a decisive advantage. That prospect may change with improvements in defensive systems, but in the foreseeable future defensive systems will generally have a much harder time of it than offensive ones.

History suggests, furthermore, that technological revolutions are a mixed blessing, since the incorporation of military advances is a game two or more can play. He who holds the upper hand at one point must eventually confront the same threats he had originally posed to others. Addressing today's situation, two well informed and thoughtful naval officers have pointed out that "the technological revolution, especially in information management, is presenting . . . opportunities—for friend and foe alike. . . . The advent of the modern computer work station, the ongoing development of a global, commercial communications infrastructure, and the proliferation of smart weapons—all of which can be bought off the shelf—can combine to make a weak foe strong in very short time. These developments . . . could provide a significant advantage to small, wealthy regimes and disadvantages to Western militaries—unless our acquisition of systems encompasses commercial innovation."⁹ They go on to point out that many of the high-technology systems used by the coalition in the Gulf war "were several generations behind available commercial technology—and were, in fact, vulnerable."¹⁰ In other words, had Saddam Hussein acted against them, the war would not have been so easily won. Indeed, it seems generally accepted that a "more sophisticated opponent would not only have been better equipped to withstand the ECM [electronic countermeasures] onslaught, but would also have posed a significant ECM threat to coalition forces."¹¹

Though the naval authors cited above imply that keeping up with the latest in commercially available systems is a solution to the vulnerability problem, anything commercially available can presumably be purchased and used by one's enemies as well. Other writers argue that modern integrated combat entities such as naval battle groups can be indeed highly vulnerable to disruption by virtue of the very complexities that undergird their power and utility. As they see it, "the United States and its NATO allies have a tendency to adopt weapons systems of increasing technical complexity, and to embed them in ever larger and more integrated doctrines that allocate resources via complex command-and-control links. The elaborate system that results can be both frail and

non-adaptive."¹² Because high-quality systems are usually very costly, these authors also caution against so emphasizing technical excellence as to be unable to buy enough forces and supporting means to ensure "robustness and resilience against errors, surprises, and clever, if technologically unsophisticated, counter-measures."¹³

The last point is particularly apt when one considers that the naval platforms of nearly all nations remain vulnerable today to weapons and systems developed years ago. What happened in recent wars or campaigns should be highly relevant for most navies far into the future. For example, the entire Argentine surface fleet was kept in port because of the threat posed by one Royal Navy nuclear

“. . . [There] is no one ideal navy, no single model, that can suit the needs and expectations of the great, major, medium, and minor powers that exist today or will tomorrow.”

submarine. Similarly, the Royal Navy's success seems something of a close-run affair when one considers the effort the British expended to counter one ineffective Argentine diesel submarine, and also the surface ships they lost to air-launched cruise missiles—losses that might have been far more consequential if command or landing ships had been struck. The U.S. Navy has had its own share of mishaps. USS *Samuel B. Roberts* (FFG 58) and *Stark* (FFG 31) suffered severe mine and air-launched cruise missile damage during the “tanker war.” During the Gulf war, the sowing of mines had both significant tactical and strategic impact; USS *Princeton* (a billion-dollar cruiser, CG 59) and USS *Tripoli* (LPH 10) had to be pulled out of the action, and an amphibious landing was postponed (in fact, it never took place) because of mines.

Even for the more wealthy states, *the quantity-versus-quality dilemma will become more difficult*. Deciding how best to spend allocated military budgets will probably become more challenging rather than less, because the cost of high performance will increasingly limit the numbers that can be bought. This tradeoff is a particular problem for naval forces, whose ships, submarines, and sea-based aircraft are generally more capital-intensive than are the main elements—artillery, tanks, ground-based aircraft—of the other military components. Naval platforms are generally so costly that most nations traditionally make do with fewer rather than more, and they settle for good enough rather than better.

On the other hand, advanced computers and communications, so central to the potential revolution in military affairs, are rapidly *declining* in cost. Indeed that very decline has helped fuel the trend toward smarter weapons supported by elaborate networks for training, upkeep, tactical and doctrinal development,

intelligence, command, navigation, computation, and high-speed decision making. "If current trends continue, even the deployment of a relatively small fighting force will require major portions of an immense support system to be mobilized and deployed as well."¹⁴ There seems to be no compelling reason to believe that the situation will change between now and 2010. Hence, the qualitative pressure on budgets should continue indefinitely, even if the revolution in military affairs takes place with commercially available computers and communications.

The more *economically constrained a state is*, the more it will probably adopt one or a combination of *three solutions, some of which are quite risky*. The first solution is simple and has already been mentioned: to settle for less. In effect, it means cutting back on what one expects of one's navy by assigning it only modest missions, such as peacetime patrol of the economic zone or a "defensive defense" of one's territory in case of attack. For nations that nevertheless demand more of their fleet, settling for less may mean accepting a high probability of failure should the fleet be challenged.

A second solution is to seek synergy through interservice jointness and international cooperation. In several states, budgetary pressures are pushing military establishments toward jointness in order to reduce redundancy and, conversely, increase efficiency. A related trend is evident at the international level, as different navies revisit the possible benefits of not only cooperating in training and operations but also of specializing functions. Cooperative training may be easier for navies than for the other services, especially ground forces, because of the inherent mobility of ships and their freedom to operate at sea with minimum disruption to the lives of people ashore. If operational cooperation is to become a truly significant possibility, however, greater equipment interoperability will be required, especially in command and control systems and in the sharing and utilization of information. Because changes in such systems are now occurring rapidly but are being incorporated in various ways by different militaries, the possibility arises that effective cooperation will become more difficult to achieve rather than less. Hence it is important that another trend now evident be reinforced—that of international cooperation in research and construction programs. Again, the capital-intensive nature of maritime platforms makes this latter possibility especially attractive for fleets, but the record of cooperation (e.g., the Nato frigate and the European fighter aircraft) does not make for optimism. Disagreements sometimes arise on cost-sharing formulae and the division of labor with respect to production.

A third solution is to rely on "short cuts," i.e., outflank the quality-quantity dilemma by adopting weapons or doctrines that can cause stronger potential enemies to be wary of confrontation. Nuclear weapons—or the "poor man's"

substitute, chemical or biological agents—are prime candidates. The likelihood of minimal collateral damage may make the idea of first use in the ocean environment attractive, but it is also true that the mobility of naval forces and the effect of winds and waves—a factor especially relevant to limiting the persistence of chemical and biological weapons—vitiates some of that appeal. Of probably greater practical consequence on a day-to-day basis is the linking of relatively cheap offensive tactical systems with a warfighting doctrine that puts a premium on firing the first telling shot or taking other belligerent actions before the adversary can respond. The Soviet navy took this course, for instance, with the adoption of the cruise missile as its principal anti-surface ship weapon; the Iraqis did it in deploying naval mines before the Desert Storm campaign; and Iran may be doing the same today with its purchase of diesel submarines.

There are shortcomings with each of these solutions. The difficulty in settling for less is obvious. The problem with jointness is the abdication of some degree of independence in the purchase of systems, the training of personnel, and the use and command of one's own forces. For its part, international cooperation is often fragile and subject to whims of domestic politics, economic downturns, and, in some cases, fundamental distrust between partners. In addition, differences in cultures, languages, and ways of doing business, as well as interoperability problems, make the goal of effective and sustained cooperation one that may take many years to bring about. It certainly cannot be done overnight.

It can be even riskier to build military capability around offensive weapons or around a preemptive doctrine. Those options can limit flexibility and force one to act prematurely for fear that the other side, unwilling to be the victim of attack, might deliberately act first instead or become so hypersensitive that it "responds" mistakenly. It must be reiterated, however, that the whole thrust of technological trends in warfare is driving, and will drive, militaries toward offensive doctrines, toward trying to get in the first effective, and probably decisive, blow. In addition, tight budgets will ensure that this course remains an attractive option.

Accordingly, most states will probably remain or grow even *more reluctant to put naval forces at risk* unless they have some confidence that they can survive if a foe strikes first. Not only are naval forces capital-intensive, they are slow to build; also, as naval power becomes more and more a matter of "internetting" complex systems, all the more time will be needed to train sailors to technical and doctrinal proficiency. As a result, it stands to reason that nations will not lightly risk such valuable assets, not only in the face of a stronger opponent but also against a weaker foe who could do disproportionate damage with a "cheap shot." A navy's self-confidence will thus very much depend on its ability to preempt or survive an enemy's initiation of combat. Doing so will mean

spending money on sophisticated intelligence and warning apparatus, high-speed communications and decision aids, and expertly trained personnel, as well as on anti-air, antisubmarine, antimissile, and antimine systems and on passive measures such as stealth materials, hardened communications, double hulls, and the like.

France today is a major power, a prime example of a nation whose fleet is vital to regional security. Whether alone or in conjunction with its European partners, France and its navy should remain influential through 2010 and beyond. The question arises, for France and nations of equivalent stature: what kind of navy will be effective? Admiral Pierre Lacoste, French Navy, has written that "four principal criteria demand consideration in judging the effectiveness of a wartime navy for a power like France: a balanced fleet, a sophisticated navy, a priority upon offensive arms, and highly competent personnel."¹⁵ These are criteria to which a major regional maritime power would do well to subscribe, be it today or 2010. If the French or other navies are to operate with confidence, however, they must give priority as well to defensive measures and the advanced intelligence, communications, and other support systems associated with them.

The problem, of course, is whether a state such as France can satisfactorily resolve the quality-quantity dilemma. It will be very difficult even for as wealthy a country as the United States, and even more so for smaller states. Countries such as France will increasingly be forced either to settle for less or seek alternatives. One hopes that these will be found in interservice and international cooperation and not in expedients that may rebound against all concerned. France, for its part, has an advantage in that Europe is developing its own defense identity; it would seem that ultimately the best answer for such a country is to work with others.¹⁶ We may hope that among the nations with whom regional powers choose to work will be the United States, which will itself have to work with others if it is to resolve its own quality-quantity dilemma.

Notes

1. Paul Bracken, "The Military After Next," *The Washington Quarterly*, Autumn 1993, p. 170.
2. Dan Gouré, "Is There a Military-Technical Revolution in America's Future?" *The Washington Quarterly*, Autumn 1993, p. 177.
3. Bracken, p. 162.
4. See Donald C.F. Daniel, "ASW and Superpower Strategic Stability—Three Years On," *Marineblad*, no. 4, 1990, pp. 146–54.
5. Derek Boothby, "Sailing under New Colors," U.S. Naval Institute *Proceedings*, July 1992, p. 48.
6. *Ibid.*, p. 50.
7. Guy Labouérie, "The Oceans and Geopolitics: A World United," *Naval War College Review*, Autumn 1993, p. 109.
8. Gouré, p. 180.
9. A. K. Cebrowski (Rear Admiral, USN) and Michael Loescher (Commander, USN), "The New Warfare: SEW," U.S. Naval Institute *Proceedings*, February 1993, p. 93. See also Michel Klen, "La nouvelle bataille de renseignement" [The new information battle], *Defense Nationale*, June 1993, pp. 47–58.
10. Cebrowski and Loescher, p. 93.

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11. International Institute for Strategic Studies, "Some Military Lessons of the War," *Strategic Survey 1990-1991* (London: Brassey's for IISS, 1991), p. 98.

12. *Ibid.*, and Gene I. Rochlin and Chris Demchak, "The Gulf War: Technological and Organizational Implications," *Survival*, May/June 1991, p. 265.

13. Rochlin and Demchak, p. 270.

14. *Ibid.*, p. 268.

15. Pierre Lacoste (Admiral, FN), *Stratégies navales du présent* (J.C. Lattes, 1985), p. 327. In the original: ". . . quatre critères principaux se dégagent à la réflexion pour juger de l'efficacité d'une marine de guerre pour une puissance comme la France: une flotte équilibrée, une marine de haute guerre, priorité aux armes offensives, un personnel hautement compétent."

16. Alain Coatanea (Admiral, FN), "La marine aujourd'hui et demain" [The navy today and tomorrow], *Defense Nationale*, May 1993, pp. 9-21.

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If I knew of something that could serve my nation but would ruin another, I would not propose it to my prince, for I am first a man and only then a Frenchman.

Baron de Montesquieu
Pensées et Fragments inédits, 1899

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