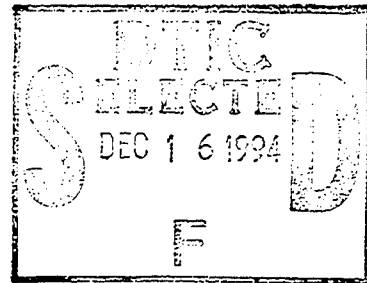


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**The Evolution of Naval Power  
to the Year 2010**

**Donald C.F. Daniel, Ph.D.**

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THE EVOLUTION OF NAVAL POWER TO THE YEAR 2010

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## THE EVOLUTION OF NAVAL POWER TO THE YEAR 2010

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 paper is divided into three parts. After setting out some necessary preliminaries, I offer seven propositions that deal with the future of naval power broadly considered and with decision alternatives about the development and use of naval forces. I conclude by drawing implications of what has been presented for a nation such as France.

### Preliminaries

I must begin by making a required disclaimer. I then set down a few obvious definitions—this to insure that we all agree as to what we are talking about—as well as three caveats which, while also obvious, must nevertheless be kept in mind.

*Disclaimer.* It must be stressed that the views I am expressing are my own and should not necessarily be interpreted as those of any agency of the United States Government. I am a government academic and not an official.

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

A different kind of definitional issue is what is meant by the term "2010." It is my experience in simulations and in research that designating a specific point in time around which to cluster predictions can be misleading. Hence, by "2010" I mean a broad period—extending out at least ten years or more—in which presently-identifiable trends will probably become or remain evident. Many of those trends will actualize themselves gradually rather than in any specific year.

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*Caveats.* 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 farther than about ten years ahead inspires more humility than confidence. 2010 is 17 years away. 1976 is 17 years ago. 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 may be indeed some 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 waters than in the open ocean?

It is fortunate for our purposes that scientific-technical and naval hardware developments are probably the easiest to predict. Many platforms and weapons in service today as well those in design or construction should still be in service in 2010. Nevertheless, we are still left with the problem of assessing just how effective those naval systems will be in light of the 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."<sup>1</sup>

A complicating factor is that we may be on the verge of a military-technological revolution such as occurred with the introduction of guns and cannons or the mechanization of warfare through the incorporation of the internal combustion engine.<sup>2</sup> As will be discussed below, the technological bases for such a revolution reside in the actual and presumed advances in computers and communication systems and networks.<sup>3</sup>

A second caveat is that there is no one 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 one model, that can suit the needs and expectations of the great, major, medium, and minor powers which exist today or will exist 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

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1 Paul Bracken, "The Military After Next," *The Washington Quarterly*, 16 (Autumn 1993), p. 170.

2 See Dan Goure, "Is there a Military-Technical Revolution in America's Future?" *The Washington Quarterly*, 16 (Autumn 1993), p. 177.

3 Bracken, *op. cit.* at note 1, p. 162.

economic zones. A smaller group of states aspiring to regional or global prestige might expect their navies to operate farther. Some of these might be satisfied with simply showing the flag; others with higher ambitions would aim to protect civilian shipping or to participate in internationally-sanctioned essentially non-violent operations such as embargo enforcement. The most ambitious may feel it necessary to be ready to undertake significant and far-distant offensive operations. In short, different circumstances dictate different measurements of effectiveness.

A third caveat is that, for nearly all navies, effectiveness is not an all-or-nothing quality and where any navy stands in the hierarchy of effectiveness is not necessarily a measure of its naval power. That is: navies are only more or less effective, and where each finds itself on that spectrum is largely—but by no means wholly—a function of affordability and national foreign policy aspirations. Nations with modest foreign policy aspirations can possess relatively weak but effective navies. Conversely a nation's aspirations can be so ambitious as to insure that even a powerful navy seems relatively ineffective when measured against them.

Keeping the above preliminaries in mind, let us now turn to a number of propositions which summarize trends in the evolution of naval power broadly considered and in decision-making about naval forces.

#### Trend Propositions

There are seven propositions to consider:

1. Navies will retain their comparative advantages.
2. For many states the relative utility of naval forces will increase.
3. Naval fleets will generally decrease in size but because of increases in quality some will grow more powerful, not less.
4. The most powerful will be those which incorporate advances in technology into their operations and doctrines while guarding against both traditional and new vulnerabilities.
5. Even for relatively wealthy states, sorting through the quantity vs. quality dilemma will become increasingly difficult.
6. The more economically-constrained a state is, the more it will probably adopt one or a combination of the following solutions, some of which are highly risky: settling for less, seeking synergy through inter-service jointness and international cooperation, and

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relying on "short-cuts."

7. Most states will probably remain or grow even more reluctant to put their naval forces at risk unless they are relatively confident that their naval units can survive a foe's intent to strike first.

Let us consider each of these seriatim.

*Navies will retain their comparative advantages.* There are comparative advantages associated with each of a nation's military services, and those associated with navies will not change appreciably over the foreseeable future. They will remain the principal forces of choice to guard against encroachments in offshore coastal waters and, sometimes in conjunction with air forces, provide the forward defense of the homeland from seaward attack. With the development and shipborne emplacement of advanced radars, one can even foresee naval forces participating in strategic defense of a nation against ballistic missile attack. In addition, submarines carrying nuclear-tipped ballistic missiles should remain the most invulnerable and best accepted means to deter a strategic nuclear attack. There is absolutely no indication that that fact will change in the foreseeable future.<sup>4</sup>

Navies offer additional advantages to nations that can afford ships capable of sustained operations beyond coastal waters:

- ships possess a legally-guaranteed right to transit the oceans;
- they can maintain a presence in a general area as evidence of the flag nation's interest there;
- they can hover off the territorial sea of a friendly state to help reassure it while remaining sensitive to its concerns not to have foreign forces ashore;
- conversely, by hovering off the territorial sea of a potentially unfriendly state, they can symbolize the flag state's resolve or, as in the case of the Haiti embargo, the resolve of the international community;
- they can provide protection to their own merchant shipping and to that of other states as occurred during the "Tanker War" in 1987-88;
- they can often rely on afloat basing if necessary;
- and, in an era when democratic governments are highly sensitive to their military personnel becoming casualties or prisoners, the

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<sup>4</sup> See Donald C.F. Daniel, "ASW and Superpower Strategic Stability Three Years On," *Marineblad*, No. 4, 1990, pp. 146-154.

record is that ship-based personnel fare better than those based on land. This was one of the advantages, for example, of the United States' 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 an increased appreciation for the value of naval forces. The world's population exceeds five 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 200 mile exclusive economic zones and beyond for acquiring and transporting those resources, and, as seen in the Cod War between Britain and Iceland or in the Spratley Islands dispute, tensions will be a by-product of that trend. Somewhat ironically, one writer, Derek Boothby, saw this as the better of two evils, so to speak:

If we are fortunate, he said, future conflicts will not grow from tensions among developed countries. There are more and more reasons to believe that they will be increasingly resource-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.<sup>5</sup>

When we consider as well state concerns "to control pollution, piracy, drug smuggling and refugee flows," we should not be surprised to learn that "[m]any coastal states which did not need warships or coast guard vessels before are now acquiring them" in order to protect their maritime interests.<sup>6</sup>

Another writer, Vice Admiral Guy Labouerie, 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,

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<sup>5</sup> Derek Boothby, "Sailing Under New Colors," *United States Naval Institute Proceedings*, 118 (July 1992), p. 48.

<sup>6</sup> *Ibid.*, p. 50.

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this power will be in the form of military forces to contain uncontrollable violence. . . .<sup>7</sup>

If Boothby and Labouerie 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 they reference may occasion greater emphasis to link air and naval power and to bring air power to sea.

*Even in the face of the above, most naval fleets will generally decrease in size but because of increases in quality some will grow more powerful not less.* The quantitative decreases are quite evident today though there are exceptions. As noted above, some states which never had navies or coast guards to speak of are now acquiring them. So too are some Asian nations experiencing high rates of economic growth as well as states which are either militant, regionally-ambitious, or both.

The greatest reductions in naval forces today are taking place in those countries which had sized their forces to contend with the possibility of a major NATO and Warsaw Pact conflict. Their reductions, however, are being driven by more than just decreased threat perception. They and others are also being driven by severe pressure on national budgets to handle social needs coupled with the increased costs of military personnel, hardware, and operations.

These cost increases are a function of another important trend: that of the rising sophistication of weapons, platforms, and especially of associated surveillance, target acquisition, command, control, communication, and other support systems which magnify the effectiveness of weapons and platforms. More on this below; suffice to say now that better quality will help insure that, as militaries in general and navies in particular reduce in number, some should remain no less powerful and no less effective.

*The most powerful will be those which incorporate technological advances into their operations and doctrines while guarding against traditional and new vulnerabilities.* The coming together of numerous and differing technological potentials heralds a revolution in warfare if these developments are properly incorporated. Employing new composite materials and novel designs can result in

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<sup>7</sup> Vice Admiral Guy Labouerie, "The Oceans and Geopolitics: A World United," *Naval War College Review*, XLVI (Autumn 1993), p. 109.

significant reductions in the detectability of one's own 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" against a foe who has not acted sufficiently to reduce the detectability of his own forces.<sup>8</sup> Micro-miniaturization, compact power supplies, and satellite navigation and positioning systems can make "smart" weapons even smarter and longer-ranged. Advances in computers, in individual communications systems, in decision aids, and in the netting of command, control, communications, surveillance and intelligence nodes 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. This is done by targeting his command centers directly with precision weapons and by destroying, deceiving, blanking out, or jamming his vulnerable sensor and communications systems.

One implication of the above is that he who can take advantage of new developments will fight far more intelligently, and thus far more effectively, than he who does or can not. But taking advantage probably means either taking the initiative or, in a hair trigger sense, being ready to respond immediately to the other's initiation, for he who gets in the first telling blow will have a decisive advantage. That latter prospect may change with improvements in defensive systems, but in the foreseeable future, defensive systems will generally have much harder time of it than offensive systems.

History has shown, furthermore, that technological revolutions in the past were 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 in time eventually finds himself subjected to 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. Throughout the militarized world, the advent of the modern computer work station, the ongoing development of a global,

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<sup>8</sup> Goure, *op. cit.* in note 2, p. 180.

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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.<sup>9</sup>

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.”<sup>10</sup> In other words, had 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.”<sup>11</sup>

The naval authors cited above imply that keeping up with the latest in commercially available systems is a solution to the vulnerability problem, but whatever is commercially available presumably could be purchased and used by one's enemies as well. Other writers argue that modern integrated combat systems such as naval battle groups can be indeed highly vulnerable to disruption by virtue of the complexities which 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.<sup>12</sup>

Because high quality systems are usually very costly, the authors also caution against so emphasizing technical excellence that it limits being able to buy enough forces and support systems to insure

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9 Rear Admiral A. K. Cebrowski and Commander Michael Loescher, “The New Warfare: SEW,” *United States Naval Institute Proceedings*, 119 (February 1993), p. 93. See also Michel Klen, “La nouvelle bataille de renseignement,” *Defense Nationale*, June 1993, pp. 47-58.

10 Cebrowski and Loescher, *op. cit.* in note 9, p. 93.

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.*, Gene I. Rochlin and Chris Demchak, “The Gulf War: Technological and Organizational Implications,” *Survival*, XXIII (May/June 1991), p. 265.

“robustness and resilience against errors, surprises, and clever, if technologically unsophisticated, countermeasures.”<sup>13</sup>

Their last point is particularly apt when one considers that the naval platforms of nearly all nations remain very vulnerable today to weapons and systems developed years ago. What happened in recent wars or campaigns should remain 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 submarine. Similarly, the Royal Navy's success seemed something of a close run affair when one considers the effort it expended to counter one ineffective Argentine diesel submarine and the surface ships it lost to air-launched cruise missiles—losses which might have been far more consequential if command and landing ships had been struck. The US Navy has had its own share of mishaps. *Samuel B. Roberts* and *Stark* suffered severe mine and air-launched cruise missile damage during the so-called “Tanker War.” During the Gulf War the sowing of mines had both significant tactical and strategic impact. *Princeton* (a billion dollar ship) and *Tripoli* had to be pulled out of the action, and an amphibious landing postponed (to the point that it never took place) because of mines.

*Even for the more wealthy states, sorting through the quantity vs. quality dilemma will become more difficult.* Deciding how best to spend limited naval budgets should become more difficult rather than less because the cost of quality will increasingly limit the numbers which can be bought. This is particularly a problem for naval forces whose ships, submarines, and sea-based airplanes are generally more capital-intensive than are the main elements—artillery pieces, 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 settle for good enough rather than better.

Advanced computers and communications, so central to the potential revolution in military affairs, are also rapidly declining in costs. Indeed those very declines have helped fuel the trend toward relying on smarter weapons supported by elaborate networks for training, upkeep, tactical and doctrinal development, intelligence, command, control, communications, navigation, computation, and high speed decision-making. “If current trends continue, even the

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<sup>13</sup> *Ibid.*, p. 270.

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deployment of a relatively small fighting force will require major portions of an immense support system to be mobilized and deployed as well."<sup>14</sup> This author knows of no compelling reason to argue that the situation will change between now and 2010. Hence, the qualitative pressure on budgets should continue indefinitely even if one builds one's revolution in military affairs on 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 highly risky.* The first solution is simple: settle for less. In effect, it means cutting back on what is expected of the navy either by assigning it only modest missions such as peacetime patrolling of one's economic zone or a close-to-home defensive defense of one's territory in case of attack. For nations which nevertheless aspire to more ambitious roles for their navy, it may mean accepting a high probability of failure should that navy be challenged.

A second solution is to seek synergy through inter-service jointness and international cooperation. In several states budgetary pressures are pushing military establishments toward inter-service jointness in order to reduce redundancy and conversely increase efficiency. A related trend is evident at the international level as different navies re-investigate the possible benefits not only of cooperative training and operations but also of a specialization of functions. Cooperative training may be easier for navies to do than it is for the other services, especially ground forces, because of the inherent mobility of ships and their freedom to operate on the seas with minimum disruption to the lives of peoples ashore. For operational cooperation to become a truly significant possibility, however, will require greater equipment interoperability, 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 not being incorporated uniformly by 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 on research and construction programs. Again, the capital-intensive nature of naval platforms makes this last possibility especially attractive for navies, but the past record of cooperation

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<sup>14</sup> *Ibid.*, p. 268.

relative to 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 as to production.

A third solution is to rely on "short-cuts," i.e., to outflank the quality-quantity dilemma by adopting weapons or doctrines which can cause stronger potential enemies to be wary of confrontation. Nuclear weapons or the poor man's substitute, i.e., chemical or biological agents, are prime candidates. The prospects for minimal collateral damage in the ocean environment may make the threat of first use especially attractive, but it is also true that the mobility of naval forces and the impact of winds and waves—relevant especially to limiting the persistence of chemical and biological weapons—vitiates some of that attractiveness.

Of probably greater practical consequence on a day-to-day basis is the linking of relatively cheap, tactically offensive systems with a warfighting doctrine that puts a premium on firing the first telling shot or initiating other belligerent activities before a potential enemy can respond. The Soviet Navy did this, for instance, with the adoption of the cruise missile as its principal anti-surface ship weapon. The Iraqis did it with the deployment of naval mines prior to the initiation of the Desert Storm campaign, and Iran may be doing this today with its purchase of diesel submarines.

There are shortfalls to each of these solutions. The shortfall of settling for less is obvious. The shortfall of jointness is the abdication of some independence in the purchase of systems, the training of personnel, and in the use and command of own forces. The shortfall of international cooperation is that it is often fragile and subject to whims of internal 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 which may take many years to bring about. It certainly cannot be done overnight.

It can be even riskier to build one's military capability around offensive weapons or around a doctrine which puts a premium on initiating action. It can limit flexibility and force one to act prematurely for fear that the other side, which itself fears being the victim of attack, might act first instead or might adopt a hair trigger posture that can lead it mistakenly to "respond" because of misleading indicators or faulty warning. It must be reiterated, however, that the

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whole thrust of the technological trends in warfare drives militaries towards offensive doctrines, towards trying to get in the first effective blow since that blow can be decisive. In addition tight budgets will insure that it remains an attractive option.

*In light of the above, most states will probably remain or grow even more reluctant to put naval forces at risk unless they are relatively confident that their naval units can survive a foe's intent to strike first.* Not only are naval forces capital-intensive, they are also slow to build, and as naval power becomes more and more a function of the internetting of complex systems, it will take that much more time to train sailors who are technically and doctrinally proficient. As a result it stands to reason that nations will not easily risk such valuable assets. They will be highly reluctant to do so not only when they face a stronger opponent, but also when they confront a weaker foe who retains a capability to score big with a "cheap shot." A navy's self-confidence will thus very much depend on its ability to pre-empt or survive an enemy's initiation of combat. This will mean spending money on sophisticated intelligence and warning apparatus, high-speed communication and decision aids, and expertly-trained personnel—though all these factors did not prevent the shooting down of the Iranian Airbus—as well as on anti-air, anti-submarine, anti-missile, anti-mine systems and passive measures such as stealth materials, hardened communications, ships with double hulls and the like.

### Implications

France today is a major power and whether alone or in conjunction with its European partners it should remain an influential power through the beginning of the next century. Since navies should retain their comparative advantages and since the relative utility of the French Navy should increase, the question arises as to what kind of a navy it should have if it is to have an effective navy. In his book, *Strategies navales du present*, Admiral Pierre Lacoste has written that

quatre criteres principaux se degagent a la reflexion pour juger de l'efficacite d'une marine de guerre pour une puissance come la France: une flotte equilibre, une marine de haute guerre, priorite aux armes offensive, un personnel hautement competent.<sup>15</sup>

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<sup>15</sup> Admiral Pierre Lacosta, *Strategies navales du present*, (JC Lattes, 1985), p. 327.

To my mind, these are criteria which a country such as France ought to subscribe to, be it today or 2010. If the French Navy is to operate with confidence, however, it must also, as stated above, give priority to defensive measures as well as associated advanced intelligence, communication and other support systems.

The problem, of course, is: Can a state such as France satisfactorily sort through the quality-quantity dilemma? To my mind, this should be very difficult even for a wealthy country such as the United States and thus even more difficult for smaller states such as France. Countries like it will more and more be forced either to settle for less or seek alternatives. Hopefully, these will be found in inter-service and international cooperation and not in risky "short cuts" which may rebound against all concerned. France has the advantage that Europe is developing its own defense identity, and it seems that the ultimate best answer for a country such as France is to work with others.<sup>16</sup>

Speaking as an American, I fervently hope that working with others will include working with the Americans and that closer naval cooperation among the Europeans—with France surely as a nation in the lead—will not be at the expense of close US and French naval interaction. After all, the US will also have to work with others if it is to resolve its own quality-quantity dilemma.

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<sup>16</sup> Admiral Alain Coatanea, "La marine aujourd'hui et demain," *Defense Nationale*, Mai 1993, pp. 9-21.