SEEKING BALANCE

Force Projection, Confidence Building, and the Republic of Singapore Navy

Swee Lean Collin Koh

Despite the widespread proliferation of studies on the major navies in Asia, first and foremost that of China, writings on the small navies of Asia—Southeast Asia in particular—have been few and far between. The slant toward those major navies is warranted by their influence on the regional naval balance of power. However, it scarcely does justice to the small navies of Southeast Asia, a region of huge maritime geostrategic importance with potential security ramifications for wider Asian and global maritime security. Southeast Asia is also the scene of an interesting and serious buildup of sophisticated naval capabilities.

This article therefore attempts to redress, at least partially, the dearth of interest in the small navies in Southeast Asia, using the Republic of Singapore Navy (RSN) as a case study. Though a small navy no doubt, the RSN has been one of the most prolific in its accumulation of high-tech capabilities, which in some respects have matched or even surpassed those of some of its counterparts. Even more interesting, in view of the disproportionate size of Singapore's maritime domain, is how the RSN grew from a small-craft navy to one capable of force projection beyond its immediate littorals within thirty years or so. These factors made a comprehensive study of the RSN pertinent and valuable to the field of regional naval studies. While much of the limited pool of work that has been done on the RSN revolves around capabilities, this article adopts a holistic perspective,

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embracing the evolution of its overall posture, Singapore's naval policies, and the navy's force structure and operations. It argues that the RSN has consistently maintained a confidence-building force posture, a posture evident in the increase in both its force-projection capabilities and the scope of its operations. First, this article examines the maritime geostrategic context within which Singapore is situated; this sets the stage for an analysis of the country's naval thinking and policy orientation. The RSN force structure is then discussed, followed by its operations.

THE MARITIME GEOSTRATEGIC CONTEXT OF SINGAPORE

Singapore lies within a unique maritime geostrategic setting, one with a double-edged character in terms of the country's security. On the one hand, its geographical location along the confluence of vital Asian sea lines of communications (SLOCs) in the Straits of Malacca and Singapore makes the country a strategically ideal hub for international seaborne trade and commerce.[1] This factor contributes to no small degree to Singapore's socioeconomic prosperity up to this very day. On the other hand, however, this geostrategic location poses a conundrum for the country's maritime security.

First, as a small island state, Singapore lacks strategic depth for effective defense against determined external aggression; one recalls how quickly the imperial Japanese forces overwhelmed the island state's defenses in February 1942. Also, being surrounded by the sea, the country is heavily dependent on secure access to the SLOCs through which international commerce flows. Their disruption, whether by state or nonstate actors, could bring Singapore's economy to a virtual standstill, with disastrous socioeconomic consequences. Further, and related to SLOC security, Singapore's close proximity to its neighbors presents problems with regard to spillovers of maritime security threats of several kinds. Transnational crimes at sea, including pirate attacks and sea robberies, are an increasing concern not just in Malaysian and Indonesian waters but also in Singapore's. The country's proximity also to potential regional flash points—such as the Indonesian-Malaysian dispute over the Ambalat block and its oil and natural-gas reserves in the Sulawesi (or Celebes) Sea and, more notoriously, the multilateral dispute in the South China Sea—presents yet another dimension of risk to Singapore's maritime security.

History too plays an important role in Singapore's complex geostrategic context. The country does not exercise authority over broad swaths of seas as its neighbors do. Theoretically, Singapore has only 150 kilometers of coastline and three nautical miles of territorial waters, though the Ministry of Foreign Affairs has since 1980 claimed twelve nautical miles of territorial waters and an exclusive economic zone (EEZ), a claim that it repeated after winning sovereignty in

May 2008 over Pedra Branca, a rocky outcrop contested with Malaysia in the easternmost outlet of the Straits of Johor into the South China Sea.[2]

Ultimately, whether Singapore can exercise its maritime claims is highly dependent on Indonesia and Malaysia, with whom the island city-state has had historically complex relations. With Malaysia, Singapore occasionally had squabbles over customs, immigration, and quarantine issues; water supply; and Pedra Branca. These three sources of animosity are left over from the breakaway of Singapore from the Federation of Malaysia. For its part, Indonesia in the 1960s, under President Sukarno's regime, carried out acts of aggression against its Southeast Asian neighbors. While the most intense combat of this *konfrontasi,* as it was known, occurred in Borneo, Singapore was not spared, being victimized by Indonesian terror attacks. As a result of all this, despite warming of relations, to this day Singapore is subjected at times to rhetorical assaults by Malaysian and Indonesian political leaders over such issues as airspace infringement and perceived lack of sensitivity on the part of Singapore's leaders. This attitude dates to the 1960s and 1970s, when the island state was widely regarded as a carbon copy of Israel within the Muslim seas, an image reinforced by what was seen as a "do or die," unilateralist attitude of Singapore's policy makers, especially in defense matters.[3]

Geostrategic context thus dictates the manner in which Singapore perceives its security, and in turn, the maritime dimension dominates Singapore's security planning. Two key aspects of Singapore's maritime security arise from the country's geostrategic context: seaward defense against external maritime aggression and the safeguarding of sea lines of communications. These factors are pivotal for Singapore's continued survival and prosperity. Until the turn of the twenty-first century, seaward defense and SLOC security in the immediate Southeast Asian littorals could be regarded as the sole raison d'être of the Republic of Singapore Navy. This remains largely true (though the threat of a major war has subsided), but with the end of the Cold War and the terrorist attacks of 2001, a new dimension has been added—that newly emergent threats far away may have ramifications for national security.[4]

The Singapore Armed Forces (SAF) have a long history of participating in international security operations, such as dispatching military observers to United Nations peacekeeping duties abroad. But the RSN itself did not, until the beginning of the present century, venture far beyond the region in such missions. Today, however, in support of Singapore's foreign policy of fulfilling its obligations as a responsible citizen of the international community, the RSN serves as a viable, flexible instrument of diplomacy and widens the scope of SAF participation in international security operations.[5] To be sure, such commitments are calibrated and selective, highly sensitive to the security priorities of and constraints

on Singapore's defense planners. For instance, the RSN's involvements in the northern Arabian Gulf in 2003 and Gulf of Aden in 2009 reflected the major ramifications for Singapore's security of those faraway regions. Accordingly, this new dimension of Singapore's maritime security should not be exaggerated; in 2010, then–defense minister Teo Chee Hean remarked that the SAF's preoccupation remains with national defense and security.[6]

In sum, then, while Singapore's maritime security perceptions have broadened beyond the immediate Southeast Asian and even the Pacific Rim, its security focus remains primarily local. This posture is reflected in the evolution of the RSN's force structure and operations, as later discussion will show. However, it is first necessary to explore the impact of Singapore's maritime geostrategic context on its naval concepts.

SINGAPORE'S NAVAL THINKING AND POLICY

Geostrategic circumstances define a set of priorities for Singapore's defense planning, not the least with respect to overall force posture. No official document released by the Singapore government outlines how the country perceives its maritime security circumstances, how its force structure is to evolve, and how operations are to further the aims of policy. The RSN itself has released important material for public viewing, such as a yearbook in 2007, in print, e-book format, and online, and an official website.[7] The quality and depth of information offered by these sources are far from what can be found in the elaborate maritime policy documents released by the Australian, Indian, and U.S. governments. Nonetheless, they are not simply public relations exercises; together with press releases and interviews with naval planners, they offer a glimpse into this tiny force and serve to promote confidence. Fortunately, analysts interested in the RSN may also rely on the announced overall policy of the Ministry of Defence, inferring from it the navy's priorities and policies. This approach is justified by the fact that the RSN traditionally works within the SAF triservice doctrine (army, air force, and navy) and accordingly adheres closely to the general policy.

According to the only defense white paper published by the government to date, in 2000, two *D*s are the cornerstones of Singapore's defense policy—deterrence and diplomacy.[8] These are the twin pillars of RSN policies.[9] However, underlying them is a set of priorities implied by the country's maritime geostrategic context; these priorities are, from the most to least important, SLOC protection, seaward defense, and international security.[10] Within these three maritime security priorities operates an interplay of deterrence and diplomacy. SLOC security is deemed to be the topmost priority in recent years due to the increased salience of peacetime nonstate threats to maritime security. The Straits of Malacca and

Singapore represent the primary area of responsibility, as far as SLOC protection is concerned. In the South China Sea, other than such nonstate issues as piracy and sea robbery, the threat to SLOCs is posed by militarized actions of claimants in the Spratly Islands dispute. Seaward defense is ranked second, though in the early years of Singapore's independence it was probably most important, because since the end of the Cold War the threat of outright interstate military aggression has been reduced. Nonetheless, the Iraqi invasion of Kuwait in 1990 left a deep imprint in the minds of Singapore's defense planners, exposing this nation's geostrategic vulnerabilities.[11] Therefore the defense of the sovereign and territorial integrity of Singapore remains a vital task for the armed forces, and the only option for the SAF, in turn, is a forward posture, manifested as seaward defense, beyond Singapore's immediate waters, by the RSN. International security missions, though a facet of the RSN's operational scope, are the lowest priority of the three, for reasons discussed earlier.

From these maritime security priorities and from organizational history of Singapore's armed forces and navy a set of policies for the RSN has emerged. Prior to the end of the Cold War, seaward defense and SLOC protection were primary missions for the RSN, but until the 1980s the SAF had been mainly concerned with strengthening the army and building up air defenses. The RSN was the funding "stepchild," which limited its procurements and operations. The RSN's approach to seaward defense back then was sea denial; its ability to extend SLOC protection beyond the Strait of Singapore was greatly constrained by the forces it had.

After the Cold War, with the arrival of new capabilities and a shift of orientation toward maritime defense and naval modernization, all underpinned by Singapore's economic growth, the RSN's capabilities were expanded. It could now reach out beyond the Strait of Singapore and make the whole Straits of Malacca and Singapore (SOMS) zone a primary area of responsibility. In particular, the introduction of longer-range naval platforms—missile corvettes—in the early 1990s gave the RSN the ability for the first time to extend its presence into the Strait of Malacca to the west and, to the east, the South China Sea. In fact, by that time Singapore's defense planners envisaged forward defense out to a thousand miles from the country's shores, effectively putting both the SOMS and South China Sea within the RSN's area of responsibility.[12] Also at the beginning of the 1990s, the RSN expanded its doctrine from sea denial in local waters to limited, defensive sea control, a role that required platforms of greater operational range and endurance.

What this development meant for the RSN was a need for force-projection assets to sustain its coverage of the SOMS and the South China Sea at least, and

with surplus capacity to allow for international security operations in distant, extraregional waters, such as the Gulf of Aden.

However, deterrence through force structure cannot be sufficient for the needs of RSN policy, with its limited capabilities and Singapore's geographical proximity to its neighbors' waters. It is inevitable that some maritime security threats will have to be addressed collectively in order to be effective, rather than going it alone. Diplomacy thus forms a facet of the RSN's naval policy, and is also a reflection of both the manner in which Singapore generally conducts its foreign policy and the broader ambit of the SAF's efforts. Singapore's dependence as a small state on rules-based international mechanisms is understandable, especially against potential predation by more powerful, larger countries. Port visits and naval exchanges aside, RSN diplomacy concerns primarily cooperative measures undertaken with regional and global partners against common maritime security problems. Operations undertaken by the RSN over time reflect these trends, first from the immediate Southeast Asian littoral out to the wider Pacific Rim, and as capabilities allow, progressively beyond East Asian waters.

This twin-pillared RSN policy (deterrence and diplomacy), however, is dependent on two critical factors. First of all, having a strong economy to sustain the RSN is as important as having a strong navy to safeguard Singapore's maritime-derived wealth. Fortunately, Singapore's defense spending is prudent, commensurate with economic growth, allowing the RSN to modernize and acquire the needed force-projection capabilities to exercise sea control over the SOMS and the South China Sea. The second important factor is demography. With Singapore's birthrate declining, the SAF faces a perennial problem in manning, and will continue to in the near- and long-term future.[13] In order to sustain the RSN policy, especially its deterrence pillar, it becomes imperative for the RSN to take full advantage of technology to enhance the level of automation within its operational elements so as to maximize combat capabilities. Force constraints wrought by manpower shortfalls make the need for cooperative activity all the more urgent, for even with technological multipliers the lack of manpower will prevent expansion of the RSN to a force capable of coping with an increasingly complex array of maritime security issues.

In sum, the RSN's twin-pillared policy can be best viewed through the lens of a navy attempting to evolve into a balanced, high-tech force through maximization of its manpower and material resources on hand, closely connected to cooperation with regional and global partners.

EVOLUTION OF THE RSN FORCE STRUCTURE

It can be observed in the foregoing that the RSN force structure has evolved over time toward balanced capabilities, primarily to allow its execution of missions in

three dimensions—air, surface, and subsurface. A fourth dimension, cyber-space, is also reflected in its recent quest for network-centric capabilities.[14] This evolution has been incremental, shaped by expediency (with respect to man-power limitations) and economic growth.

Up to the end of the 1980s, the RSN force structure was that of a typical coastal-defense navy, restricted primarily to its local maritime environs, in this case the Strait of Singapore. The inventory it possessed then was suited to such roles—small patrol and missile craft, backed by land-based airpower. The sea-denial mission was fulfilled by a squadron of West German–built TNC-45 missile craft, known in RSN service as "missile gunboats" of the *Sea Wolf* class, armed with Israeli Gabriel Mark 1 antiship missiles (ASMs). These small strike craft were adequate as fast, if short-range, interceptors, suitable for rapid "hit-and-run" attacks against a hostile naval force in the Strait of Singapore; their small size allowed them to blend well with the coastal terrain, especially when slugging it out against larger and stronger forces. However, aside from up to eighteen inshore and coastal patrol craft—all gun-armed only, meant for gen-eral patrol and surveillance in the strait—they were about all the RSN could muster for sea denial.

The RSN then was far from a balanced force, with serious deficiencies. It had no submarines or antisubmarine warfare (ASW) capabilities to speak of and was weak in antiair warfare (AAW), having no surface-to-air missiles but merely guns, and in mine countermeasures, having only two vintage minesweepers, obsolete against advanced naval mines. Its force-projection capability was scanty, only a handful of World War II–era, American-built tank landing ships (LSTs). Its mari-time aerial-surveillance capacity was only fair (Shorts Skyvan short-takeoff-and-landing turboprop aircraft equipped with a short-range radar, backed by four E-2C Hawkeye airborne early warning aircraft mainly designed for air defense and maritime surveillance). In short, the 1980s-era RSN, adequate for policing the narrow Strait of Singapore, was only marginally capable of sea-denial missions and incapable of sea control. It could not project seaward defense out to the Strait of Malacca. Beyond that, to the Pacific Rim, it was capable only of port visits to friendly ports (by the LSTs, which alone could make such voyages).

All this was to change, beginning in the 1990s, when the RSN force structure underwent significant, albeit incremental, enhancements, to bolster its sea-denial capabilities and allow limited force projection into the Strait of Malacca.

The most significant addition of the early 1990s was six missile corvettes based on the West German MGB-62, known by the RSN as the *Victory* class. These craft, with greater endurance than the *Sea Wolf* missile gunboats, pro-vided the RSN a combat platform truly capable of projecting naval presence in the Strait of Malacca and the South China Sea. Second, it also provided the

navy's first basic ASW capability, thus enabling the RSN to tout itself as three-dimensional for the first time. However, this new war-fighting capacity was still far from balanced. Though the corvettes greatly enhanced the RSN's surface striking power with their ninety-kilometer-range RGM-84 Harpoon antiship missiles (which outranged the twenty-kilometer Gabriel Mark 1 and later were retrofitted aboard the *Sea Wolf*s), the RSN remained deficient in AAW. Only after 1991 was there apparent haste to retrofit all frontline RSN combat ships with the French Mistral SIMBAD short-range surface-to-air missile; the corvettes themselves were later fitted with the more capable, vertical-launch Israeli Barak-1 antimissile system.[15] The other, somewhat less prominent, addition was a quartet of Swedish-built mine-countermeasures vessels, significant in light of the vulnerability of shipping through the straits to naval mining. No significant improvements were made to the sealift force, though one ex-British landing ship was acquired.

By the mid-1990s, maritime aerial surveillance was improved with Fokker-50 maritime patrol aircraft, which came with full mission suites for surface and subsurface search and targeting; these five aircraft extended not just the RSN's "eyes" but its "sword" as well, with their reported armament of air-launched AGM-84 Harpoon ASMs.[16] At the turn of the 1990s, the eighteen old patrol craft were withdrawn from service and replaced by a dozen much larger, better equipped, locally built *Fearless*-class patrol vessels, six of which were equipped for ASW, like the corvettes. All this was accompanied in the second half of the 1990s by the introduction of submarines—probably the most significant addition to the RSN. Five ex-Swedish *Sjöormen*-class diesel-electric submarines (SSKs) entered the RSN.

With the addition of this undersea component, a nascent, balanced RSN capability was in place by the end of the twentieth century. The Republic of Singapore Navy of 1999 remained primarily a sea-denial force, capable of only limited force projection, but one that was deemed able to cover the Straits of Malacca and Singapore and the South China Sea at least to some extent.

The RSN force structure probably experienced its "golden era" at the beginning of the twenty-first century, with four significant additions. First of all, six *Formidable*-class stealth guided-missile frigates based on the French *La Fayette* entered service. They are important because with them for the first time, a true blue-water combat capability was introduced into the RSN. While they are, like the *Victory* corvettes, capable of three-dimensional warfare, their capabilities far exceed the latters'. A true antiair capability is arguably one of the key features of the *Formidable* class; their Aster antimissile system, when tied to its long-range Herakles phased-array multifunction radar, extended the fleet's AAW coverage, which was now incorporated (as noted below) into the national air-defense

umbrella.[17] Each frigate has a more capable antisubmarine suite than that of the corvettes and can embark an American-built S-70B Seahawk helicopter, which is designed for standoff ASW and other roles, such as over-the-horizon targeting for Harpoon antiship missiles.

The second significant addition at the turn of the present century was a group of four locally built *Endurance*-class landing platform docks (LPDs)—rated officially as LSTs—whose capabilities far exceed those of the vintage LSTs and thereby, for the first time, greatly enhance the RSN's strategic sealift.[18] The third was the augmentation of the submarine force with two, more-capable ex-Swedish *Västergötland* SSKs, known in the RSN as the *Archer* class. They came equipped with air-independent propulsion (AIP), which allows the boats to stay submerged longer without snorkeling to recharge batteries. Finally, the RSN now incorporated for the first time a full-fledged unmanned combat capability, in the form of Israeli Protector-type unmanned surface vessels, which the RSN first used operationally in the northern Arabian Gulf in 2003. It was reported at the time that the RSN was keen on expanding its unmanned capabilities in all three dimensions, a natural course in view of its quest for increased automation.[19] Beyond these acquisitions, in December 2010 Singapore was reported to be interested in replacing its Fokker-50s with surplus U.S. Navy P-3C Orions, a much more capable aircraft.[20] There were also midlife upgrades for the corvettes and mine-countermeasures vessels.

In sum, the Republic of Singapore Navy has now evolved into a truly balanced force, with adequate capabilities in surface strike, AAW, ASW, mine countermeasures, undersea warfare, maritime aerial surveillance, and strategic sealift. The RSN has progressed from a "sea denial–plus" navy to become—in a limited, defensive way—a sea-control force. It is capable of projecting presence not only into the SOMS and the South China Sea for substantial periods but also beyond, into extraregional waters, albeit with limitations. The RSN has also elevated itself into the cyberspace dimension, by becoming an integral part of the SAF's network-centric warfare architecture known as the Integrated Knowledge, Command, and Control (IKC2) umbrella. The stealth frigates, in particular, reportedly serve as key IKC2 nodes in support of the RSN and its sister armed services at sea.[21]

Some observations can be made with regard to the evolution of the RSN force structure, particularly with respect to its impact on regional naval-arms dynamics. First, much was made about the RSN breakthrough in submarine capabilities in the form of AIP and an apparent expansion of its submarine fleet. In fact, however, there are only two *Archer* (ex-*Västergötland*) SSKs, which now supplement but later will replace some of the aging *Challenger* (ex-*Sjöormen*) boats. The inclusion of AIP was only logical for a small navy, extending undersea

endurance, thus maximizing the patrol duration of each boat. Nonetheless, AIP can be rightly deemed as destabilizing in that it allows the *Archer* SSKs to carry out covert intelligence-gathering missions in regional waters—already a source of consternation for some neighboring countries. For instance, remarks made in 2000 by Abdurrahman Wahid, then president of Indonesia, singled out Singapore's newly acquired submarine capability.[22] Still, the RSN may eventually be left with only these two AIP-equipped SSKs, if no new boats are acquired. In view of routine maintenance needs, probably only one *Archer* will be operational at any given time. In effect, the RSN may find itself with a "fleet-in-being" submarine force akin to that of the Indonesian navy.

The second observation pertains to the RSN's acquisition of a significant sealift capability, in the LPDs. However, the RSN was not the first to introduce a large amphibious assault landing ship; in fact, the Malaysians were the first, with the procurement of *Sri Inderapura,* a former American *Newport*-class LST.[23] In any case, the RSN's LPDs amply demonstrated their utility for humanitarian and disaster relief operations off Aceh. Thus, acquiring such warships is not necessarily attributable to a quest for offensive amphibious-assault capabilities. Most of the other capabilities that exist in the RSN force structure are no stranger to most other Southeast Asian navies, which could have acquired more of them themselves had not the Asian financial crisis in 1997–98 disrupted their modernization programs.

Finally, important trends are evident in RSN force-structure development. First, it has taken a gradualist path, incrementally addressing capability gaps with respect to multidimensional naval operations. Second, it has adopted a moderated approach to force structure enhancement—apparently deliberately, to judge by remarks made by the former Chief of Navy, Rear Admiral Chew Men Leong, in 2009.[24] That is, the RSN has eschewed as destabilizing several naval weapons associated with sustained, high-persistence, long-range force projection—aircraft carriers with organic strike aviation, nuclear-powered submarines, underway logistics support vessels, land-attack cruise missiles (LACMs), and supersonic antiship missiles.[25] Their absence may testify to a desire by Singapore's naval planners not to intensify regional naval arms competition, though there have been opportunities to do otherwise.[26] For example, back in 2001 it was reported in the press that the RSN had once considered acquiring a fleet replenishment ship but abandoned the project due to cost.[27] Since then, despite economic growth and increased defense appropriations, this project has not been revived. Also, the stealth frigates were designed with modularity in mind, with weight and space reserved for installation of new combat systems if necessary. However, there are as yet no plans to install LACMs. Even the RSN's submarines, naturally the best platform for such standoff land-attack capabilities, are not known to be armed with such

weapons, not even with ASMs. This is interesting in view of the apparent inclination toward LACMs in the wider Asian littoral, such as in the Australian, Indian, and South Korean navies.

Thus, the RSN's definition of "balanced capabilities" is likely a cautiously calibrated one, dictating a judicious approach to force structure that not only maximizes combat capability commensurate with economic growth but probably also attempts to avoid escalation of regional naval arms competition. In that connection, there seems to have been incorporated into the navy's force structure over time a confidence-building element—in effect, a kind of unilateral naval arms control.

ENDURING TRENDS IN THE RSN'S OPERATIONS

The RSN's diplomacy pillar is reflective of the general foreign policy adopted by Singapore since its inception. Being a small, relatively weak state, Singapore places a premium on rules-based mechanisms for interstate interactions, and accordingly the RSN's activities are designed to promote and sustain an open, inclusive rules-based regional architecture. In recent years, as highlighted above, the RSN has broadened beyond the immediate Southeast Asian and Pacific Rim region into international security operations.[28] The diplomacy pillar is designed to complement that of deterrence in two ways. First, as a small navy, the RSN is unable to deal alone with a complex range of maritime security issues; they will have to be dealt with through cooperation with foreign counterparts, especially in the Southeast Asian littorals. Second, Singapore being a small island state with maritime geostrategic vulnerabilities, reliance on international mechanisms serves to safeguard national security interests against predation by larger, more powerful countries. For instance, Singapore has always been a strong proponent of the United Nations Convention on the Law of the Sea as the central guiding mechanism for maritime activity. The RSN's operations are reflective of both these considerations, manifested in the range of maritime confidence-building measures and cooperative measures in which it engages.

Maritime Confidence-Building Measures

Maritime confidence-building measures—information exchanges, communication and observer arrangements—do not constrain naval force structure, combat readiness, or modernization, yet they help mitigate sources of misperception and so reduce the likelihood of inadvertent conflict at sea.[29] The RSN currently pursues information exchanges and communication measures. "Information exchanges" formalize and regularize open sharing of naval information, whereas "communication arrangements" involve reciprocal port visits, officer exchanges, and dialogue.[30]

An important multilateral information exchange measure in which the RSN has actively participated is the Western Pacific Naval Symposium (WPNS). The navy even hosted the second WPNS mine-countermeasures seminar, involving eighteen foreign navies, in 2000. The RSN uses the Codes for Unalerted Encounters at Sea, under the WPNS rubric.[31] Bilateral maritime confidence-building measures are also particularly crucial within the Southeast Asian littoral. Examples are the information-sharing initiatives between Singapore and Indonesia, for instance, Project SURPIC (that is, Surface Picture), by which the two navies have monitored the SOMS and regularly exchanged information since 2005.[32] Traditionally, the RSN's communication measures have been port visits to regional countries, though larger, oceangoing warships have extended them to more distant areas. Perhaps often overlooked in this connection has been the RSN's consistent effort to enhance transparency, such as its official website for public access.[33] Additionally, Singapore has been submitting regular reports to the United Nations Register of Conventional Arms since 1993.[34]

Maritime Cooperative Measures

Most of the RSN's activities in the area of international collaboration are oriented toward "maritime cooperative measures" as such, which demonstrate the ability of neighboring countries to work together to resolve common maritime security problems, thus deterring potential adversaries, in this case, and assuring extra-regional countries that seaborne trade will not face direct threats. Such measures also have a confidence-building element, through reduction of tension in otherwise politically contentious matters of maritime security concern. Maritime cooperative measures comprise naval exercises, search and rescue, and actions against illegal maritime activities, including marine pollution and piracy.[35]

The RSN has emphasized bilateral ties with regional navies, and as a result, long-standing maritime cooperative measures exist with its Southeast Asian counterparts. Traditional maritime cooperative measures first emerged, such as bilateral naval training exercises, which over time have expanded in scope. For instance, the Indonesia-Singapore Exercise EAGLE began with at-sea communications, basic maneuvers, and gunnery training but now includes ASW and mine countermeasures. Coordinated patrols constitute another area of maritime cooperative measures in which the RSN engages with its neighbors, such as bilateral coordinated patrols with Indonesia in the Singapore Strait, an arrangement that has led to a significant reduction of sea robberies since its implementation in 1992.[36] As for "softer" initiatives, the RSN cooperated with the Indonesian navy in OPERASI SURYA BHASKARA JAYA, a naval, socio-civic activity aimed at community development in underdeveloped Indonesian provinces. Such long-term bilateral naval cooperation facilitated post-tsunami operations

in Aceh. Besides maritime cooperative measures with Southeast Asian counter-parts, the RSN pursues long-standing bilateral cooperative measures with the U.S. Navy, like the annual CARAT (Cooperative Afloat and Readiness Training) exercises, conducted since 1995. In all, compared to a mere six foreign exercises in the early 1980s, the RSN had participated in more than forty by 2008.[37]

The RSN is also increasingly active in wider, regional, multilateral maritime cooperative measures. Long a faithful participant in multilateral naval exercises under the Five Power Defence Arrangements, it has also in the recent decade participated in even larger multilateral training initiatives, such as the WPNS-linked Rim of the Pacific (RIMPAC) and PACIFIC REACH exercises. These maritime cooperative measures go beyond training, especially since the 9/11 terror attacks. Since 2001, for example, the RSN has participated in the U.S.-initiated Southeast Asia Cooperation against Terrorism and the multilateral Malacca Straits Security Initiative.[38] As the RSN has acquired platforms more capable of force projection "out of area," it has begun joining such international security operations as the postwar reconstruction of Iraq and the multinational Coalition Task Force 151 in the Gulf of Aden.

As the figure shows, the RSN's participation in maritime cooperative measures has increased over the decades as its capabilities have grown, likely for several reasons. First, systemic changes in the global security environment have spurred the RSN to embark on cooperative attempts to address maritime security problems having transnational implications. Second, newly acquired capacities have increased the RSN's confidence in its ability to expand its international profile. Third, it is not inconceivable that the RSN has intensified its maritime cooperative measure participation as a conscious effort to build confidence in the region, as it embarks on its capability buildup, in line with the twin-pillared policy of deterrence and diplomacy.

Naval Activities in Politically Sensitive Areas
One indicator of whether a navy is being employed offensively is how it acts in politically sensitive areas—maritime zones where sovereignty is contentious. Given its maritime geographical constraints, Singapore is obliged to place much stress on maritime boundary-delimitation arrangements with its larger neighbors. The sovereignty dispute over Pedra Branca serves as an illuminating example of Singapore's diplomatic behavior and naval activity.

Since the end of colonial rule, Singapore's maritime forces patrolled waters surrounding that rocky outcrop without Malaysian opposition until 1979, when Kuala Lumpur officially laid claim to it. The Singapore government responded in two notable ways: it emphasized dispute resolution without the use of force, and it continued to conduct routine patrols. Though Malaysian maritime forces

RSN CUMULATIVE MARITIME COOPERATIVE ACTIVITIES
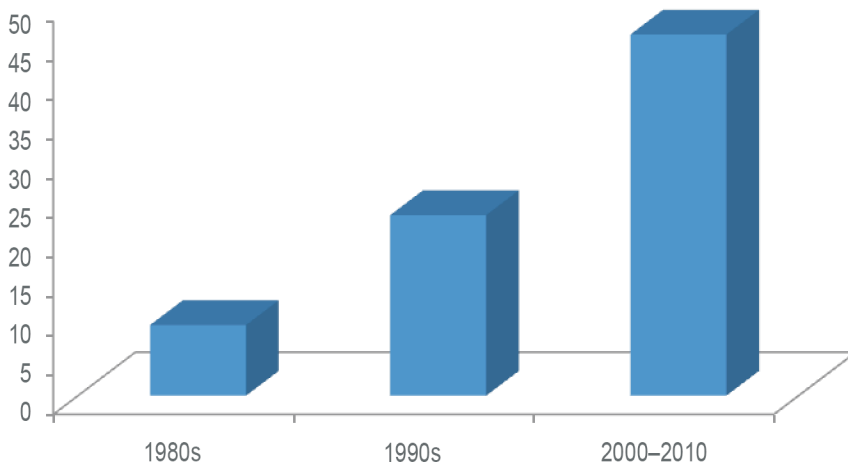
Compiled by the author from various open sources, media and official. Figures as of 2010.

also patrolled near Pedra Branca and despite the absence of bilateral mechanisms for prevention of naval standoffs, there were no shooting incidents. There were at-sea encounters, but none escalated out of proportion. In April 1992, RSN patrol craft warned off a Malaysian Fisheries Department vessel that it alleged had encroached into Pedra Branca waters, but this incident involved no use of armed force and the RSN acted in accordance with international law.[39] In December 2002, the RSN and Police Coast Guard (PCG) patrol craft reportedly escorted away a Malaysian Marine Police patrol boat without incident, again in ways consistent with international law.[40] The restraint displayed by both countries' forces may have facilitated the eventual amicable political-legal settlement by the International Court of Justice in May 2008.

The RSN may in the future delegate regular patrols to the PCG, which has acquired longer-endurance patrol assets, such as the new Dutch-built *Shark*-class coastal patrol craft. Such moves may give these patrols a law-enforcement posture, as opposed to the overtly militaristic, war-fighting impression that regular naval forces employed for this purpose inevitably convey.[41]

In the decades since the inception of the Republic of Singapore Navy, continuities and changes in its policies, force structure, and operations have been apparent. The RSN's twin-pillared policies of deterrence and diplomacy can be seen as inseparable and complementary in nature, reflecting the navy's purpose of not merely deterring and defending against maritime security threats but building

confidence as well. A quest for a balanced force capable of a broad range of roles to uphold Singapore's maritime interests in the immediate waters, and later, more ambitiously, in the broader Pacific Rim and beyond, can be observed. Although its force structure displays an inclination toward force-projection capabilities, the nature and pace of its evolution have been judicious, moderated, and incremental. It also corresponds with the scope of RSN operations undertaken in conjunction first with its neighboring counterparts and then with regional and global naval partners. A holistic analysis of its policies, force structure, and operations also shows that the RSN's overall force posture has consistently been one of building confidence among Singapore's neighbors. For the foreseeable future, as it adapts to evolving geostrategic conditions and maritime interests, the Republic of Singapore is most likely to sustain this judicious approach, balancing force structure and its operations to maintain a confidence-building naval posture.

NOTES

1. Singapore's port container traffic is one important indicator of the country's strategic position as a maritime hub. In 1995, this traffic was measured at 10.8 million twenty-foot equivalent units (TEUs), which rose to seventeen million by 2000, to 24.1 million by 2005, and 30.9 million TEUs by 2008. Data compiled from the United Nations Conference on Trade and Development, *Review of Maritime Transport, 2006, Report by the UNCTAD Secretariat* (Geneva: United Nations, 2006).

2. "MFA Spokesman's Comments on an Exclusive Economic Zone around Pedra Branca," *Ministry of Foreign Affairs, Republic of Singapore,* 25 July 2008, app.mfa.gov.sg/.

3. For instance, Jakarta was particularly concerned and unhappy about Singapore's granting of naval and air force facilities access rights to the American military, the U.S. Navy especially; "Jakarta Ruffled over Singapore-US Navy Deal," Reuters, 6 January 1992. More recently, the Malaysian government accused Singapore's air force of thousands of airspace infringements since 2008; "2,508 Violations of M'sian Air Space by S'pore Jets since 2008, Dewan Told," *Bernama Daily Malaysian News,* 20 June 2011.

4. The new security environment Singapore has faced, especially since 2001, is characterized

by the emergence of nontraditional threats. Robert Karniol, "Teo Chee Hean: Singapore's Minister for Defence," *Jane's Defence Weekly,* 19 November 2003.

5. Rear Adm. Lui Tuck Yew has remarked that the RSN is an instrument of national security policy and can contribute actively in nonwar missions such as peacekeeping and disaster relief. Lee Siew Hua, "Navy Ready to Play Bigger Non-war Role," *Straits Times,* 7 July 2000.

6. "S'pore Committed to Playing Its Part in International Security Operations," *Channel NewsAsia,* 30 September 2010.

7. Republic of Singapore Navy, *Onwards and Upwards—Celebrating 40 Years of the Navy* (Singapore: SNP International, 2007), available at www.mindef.gov.sg/content/imindef /resources/e-books/ebklist/_jcr_content /imindefPars/0023/file.res/Onwards %26Upwards_2007.pdf. (The RSN yearbook for 2007—the complete web address appears in the online version of this article.)

8. Ministry of Defence, *Defending Singapore in the 21st Century* (Singapore: January 2000), p. 12.

9. In 1997, the former Chief of Navy stated that the RSN had adopted a double-pronged approach consistent with the defense policy of

deterrence and diplomacy—that is, to develop its own defensive capabilities while at the same time seeking "security in numbers" through maritime security cooperation. "In Pursuit of Excellence: An Interview with the Chief of Navy, Rear Admiral Richard Lim," *Naval Forces* 18, no. 2, special issue (1997), p. 4.

10. During an interview in 2009, then–Chief of Navy Chew Men Leong remarked that the navy's key mission—to ensure the security of Singapore's SLOCs and seaward defense so as to safeguard the country's sovereignty—remained unchanged. IMDEX Asia Focus, "The Republic of Singapore Navy: Interview with Rear Adm. Chew Men Leong, Chief of the RSN," *Military Technology* 5 (2009), p. 27.

11. In August 1990, following the Iraqi invasion of Kuwait, then–first deputy prime minister Goh Chok Tong remarked that "there is a lesson in the Iraqi invasion of Kuwait for us," apparently mirror-imaging Singapore's geostrategic vulnerability as a small state relative to its surrounding larger neighbors. Jose Katigbak, "Singapore Says It Must Be Strong to Avoid Fate of Kuwait," Reuters, 28 August 1990.

12. "The Shrimp with Teeth: Defence Policy Aims at Forward Force Projection," *Economist,* 12 January 1991.

13. The total fertility rate in Singapore, measured in number of children born per woman, was 1.70 in 1985–90; it declined to 1.58 in 1995–2000 and farther to 1.25 in 2005–10. Data compiled from United Nations, *World Population Prospects: The 2010 Revision* (New York: Dept. of Economic and Social Affairs, Population Division, 2011).

14. "Three-dimensionality" has been a long-standing goal of the RSN in its capacity-building endeavor. See, for instance, remarks by then–first deputy prime minister Goh in August 1990: "Be Prepared Always for Unexpected Threats" (speech at the commissioning of missile corvettes at Brani Naval Base, 18 August 1990), pp. 3–4, available at *Singapore National Heritage Board,* stars.nhb.gov.sg/.

15. During the Persian Gulf War, British Sea Lynx helicopters sank numerous Iraqi navy patrol and missile craft with ease, thus demonstrating once again that small combat craft without effective AAW capability are vulnerable to standoff aerial and missile attacks. See "New Missiles to 'Boost Gun Boats'' Chances of Survival," *Straits Times,* 19 June 1994.

16. This was not publicly acknowledged prior to 2000. David Boey, "Spotter Planes Pack a Lethal Punch Too," *Straits Times,* 3 November 2004.

17. *Formidable* is armed with four eight-cell Sylver vertical-launch systems (VLSs) that fire the Aster missile. The thirty-kilometer Aster-15, which has a fifteen-kilometer antimissile range (not significantly more than the Barak-1's), is the publicized variant carried by the frigates. However, two of the four VLS modules belong to the A50 variant, designed to house the hundred-kilometer Aster-30, which is not confirmed to have been fitted on board the frigates, though the potential remains; *Jane's Fighting Ships,* jfs.janes.com/. The publicized secondary role of the frigates is to augment Singapore's air-defense umbrella, though Rear Adm. Ronnie Tay, then Chief of Navy, dismissed in 2004 the idea that the RSN was seeking an Aegis-type shipboard air-warfare system; see Robert Karniol, "Country Briefing: Singapore —Master Plan," *Jane's Defence Weekly,* 11 February 2004, and David Boey, "3 New 'Stealth' Warships to Help Boost Air Defence," *Straits Times,* 5 February 2008.

18. See Laura Chua, "Singapore's Endurance Class LST," *Naval Forces* 20, no. 2 (1999), pp. 26–29.

19. ST Marine designed the Venus unmanned surface vessel, capable of a variety of missions. The RSN is also keen on acquiring unmanned aerial vehicles (UAVs) like the Boeing Scan Eagle, which was tested aboard the LPD, and has reportedly contracted for the design of a low-altitude, long-endurance UAV. "Singapore Interested in Endurance UAV System," *Forecast International Press Releases,* 8 June 2001.

20. "Singapore Interested in Ex–US Navy P-3s," *Flight Global,* 15 December 2010.

21. Teh Joo Lin and David Boey, "First of 6 Stealth Frigates Enters Service," *Straits Times,* 5 May 2007.

22. "Update 1: Wahid Warns Singapore Submarines Not to Stray," Reuters, 26 April 2000.

23. At 8,450 tons full load, *Sri Inderapura* does not differ much from *Endurance*. It could carry four hundred troops and three landing craft in its stern well dock, while *Endurance* carries 350 troops and four landing craft. The only clear superiority of the latter is helicopter capacity, having full hangar facilities for two medium-sized helicopters, while the Malaysian vessel has only platform facilities, for just one. *Sri Inderapura* was deactivated following a fire in 2009 that put it out of service completely.

24. Chew remarked that "the SAF will continue to build up capabilities as required to ensure strong and robust defence to make sure we send a deterrence message to would-be aggressors and ensure peace and prosperity for Singapore within the region. We do what is required; we do it with great care. Put simply, I don't think our capabilities are going to lead to an arms race. We build what's required for our own defence and our deterrence message is clear." "The Essence of 3G in the Navy: Total Awareness," *Straits Times,* 20 February 2009.

25. Weapons that can be deemed destabilizing have some or all of these characteristics—that they decrease warning time, give one country "breakthrough" capabilities, lead to a broadening of target sets, permit no effective countermeasures, give one side better information concerning another's military preparations, and create hostility. David Mussington and John Sislin, "Defining Destabilizing Arms Acquisitions," *Jane's Intelligence Review* 17, no. 2 (February 1995), pp. 88–90.

26. In fact, the force-projection capabilities acquired by the RSN somewhat belonged to the category of defensive sea control, which, according to Mearsheimer, emphasizes attack submarines, land-based patrol aircraft, and escort ships for barrier defense and convoying duties. Offensive sea-control missions, in contrast, are fulfilled by aircraft carriers, nuclear-powered submarines, and LACMs. See John J. Mearsheimer, "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe," in *Naval Strategy and National Security,* ed. Steve E. Miller and Stephen Van Evera (Princeton, N.J.: Princeton Univ. Press, 1988), pp. 56–57.

27. "Singapore Naval Programs Could Face Problems," *Defense Daily International,* 18 May 2001. Even more notable was that ST Marine in recent years unveiled a roll-on, roll-off/passenger–type, multipurpose support ship targeted for export. Among the roles envisaged for this interesting vessel is underway fleet replenishment, implying that ST Marine possesses the capability to build such a ship for the RSN in the near future if the program is ever revived. "Singapore Launched Fleet Support Vessel," *Kuala Lumpur Security Review,* 8 June 2009, available at www.klsreview.com/.

28. See "Speech by Mr Teo Chee Hean, Minister for Defence, at Statesmen's Forum Organised by Centre for Strategic and International Studies" (remarks, "Asia's Evolving Security Architecture and the Role of the US" conference, Ministry of Defence, Republic of Singapore, 18 January 2008), available at www.mindef.gov.sg/.

29. Duk-Ki Kim, *Naval Strategy in Northeast Asia: Geo-strategic Goals, Policies and Prospects* (London: Frank Cass, 2000), p. 194.

30. Ibid., pp. 195–98.

31. The Codes for Unalerted Encounters at Sea, devised under the ambit of the WPNS for at-sea naval commanders of different participating states operating in close proximity to each other, are essentially methods to make intentions clear to the other party, so as to prevent close encounters at sea from turning into potentially ugly incidents.

32. David Boey, "Singapore, Indonesia Share Sea Security Info," *Straits Times,* 28 May 2005. In August 2010, SURPIC II, which builds on the success of SURPIC I, was launched; Serena Lim, "Initial Launch of SURPIC II," *Ministry of Defence Singapore,* www.mindef.gov.sg/.

33. The RSN website is *Ministry of Defence Singapore: Navy—beyond Horizons,* www.mindef.gov.sg/imindef/mindef_websites/atozlistings/navy/home.html.

34. See United Nations General Assembly, Sixty-Fifth Session, First Committee, *Transparency in Armaments: Reporting to the United Nations Register of Conventional Arms* (New York: Office for Disarmament Affairs), p. 8, available at www.un.org/.

35. Kim, *Naval Strategy in Northeast Asia,* p. 198.

36. In the same year, the two navies established direct communications. Dominic Nathan,

"Direct Links for S'pore, Indonesian Navies," *Straits Times,* 25 June 1992.

37. These exercises have grown not only in numbers but in scope and complexity. "Interview: Rear-Admiral Chew Men Leong, Chief of Navy, Republic of Singapore Navy," *Jane's Navy International,* 23 May 2009.

38. The initiative comprises both surface and aerial patrols. Among its primary aims are providing a collective effort among Southeast Asian littoral states and precluding extra-regional intervention in the Strait of Malacca.

39. According to Singapore's Maritime Port Authority, the Malaysian vessel *KP Landok* first entered Pedra Branca waters on 21 April at 11 AM and moored to a buoy five hundred meters from the islet. The Port Authority pointed out that while foreign fishermen, including Malaysians, are allowed to fish around Pedra Branca, foreign government vessels, unless in innocent passage, must obtain permission to enter Singaporean territorial waters. *KP Landok* was deemed not to be in innocent passage and was instructed by the coastal patrol craft RSS *Swift Cavalier* to leave, at 5 PM. *KP Landok* complied and departed, after circling Pedra Branca once, but returned at 11:20 AM the following day and positioned itself within two kilometers of the islet. At 1 PM, the coastal patrol craft RSS *Swift Knight* asked *KP Landok* to leave; the latter refused to comply until 4:30. The Malaysian account was that up to six RSN patrol craft confronted *KP Landok* and that one of them issued a warning through a loud-hailer, just eight hundred meters from Horsburgh Lighthouse. See "S'pore Protests to KL over Two Intrusions," *Straits Times,* 25 April 1992; and "Johor Councilor Raps S'pore for Chasing Away Malaysian Boat," *Straits Times,* 25 April 1992.

40. According to the *Malay Mail,* an unknown RSN vessel chased a Malaysian Marine Police boat, *PA41,* on routine patrol, about four nautical miles from Pedra Branca. *PA41* relented and left under RSN and PCG escort. The *Straits Times* account, however, was that the Malaysian craft was actually ferrying journalists to the site. See "Even Our Marine Police Shooed Away," *Malay Mail,* 26 December 2002; and "Singapore Refutes 'Wild' KL Allegations," *Straits Times,* 27 December 2002.

41. Sujin Thomas, "'Sharks' to Patrol S'pore Waters," *Straits Times,* 17 July 2009. To assign a warship equipped for high-intensity war fighting to fisheries/EEZ patrol not only wastes capabilities but may create a militaristic impression when none is needed and give observers a misleading impression of force disproportionate to what is required. See Harold J. Kearsley, *Maritime Power and the Twenty-First Century* (Aldershot, U.K.: Dartmouth, 1992), p. 46.