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The Israeli Navy

Efraim Inbar

On 13 April 1988 the Israeli cabinet approved the modernization program proposed by the general staff of the Israel Defense Force Navy (IDFN).¹ The proposed program included the acquisition of four 1300-ton missile corvettes of the new Saar 5 type and three 1200-ton Dolphin-class submarines. The estimated cost for this ten-year project was \$1.5 billion. The government, however, limited procurement to three Saar 5s and two new submarines.² This rather controversial decision was reached after eight years of deliberations in the defense establishment. Although opponents of the program continued their efforts to prevent its realization, in February 1989 the Israeli Ministry of Defense finally signed a contract with the U.S. Ingalls Company for the building of the Saar 5s.

This article traces the development of the Israeli navy and reviews its role in Israeli strategic thinking. Two periods can be discerned in Israel's naval history. The first period began with the navy's establishment in 1948 and ended in 1965 when the Israel Defense Force (IDF) general staff decided to procure missile fast boats (MFBs), a rather revolutionary idea at that time. The second period ended in 1988 with the adoption of the modernization program, which argued for larger ships as the mainstay of the Israeli naval force.

The Navy's Role

The Israeli navy has always been the smallest branch of the Israeli defense force, and it has traditionally been allotted a low priority. Its main task has been to help defend the Israeli coast. The navy was assigned this limited role despite the fact that Israel has no continental outlet, and all of its ties to the world—commercial and otherwise—are dependent on sea and air routes. It is noteworthy that the justifications for two of the Arab-Israeli wars, the 1956 Sinai Campaign and the 1967 Six Day War, included the issue of freedom of navigation in the Strait of Tiran. Moreover, in 1973 the Egyptian navy

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imposed a naval blockade on Israeli shipping at Bab el Mandeb—the entrance to the Red Sea from the Indian Ocean. Israel attempted to alleviate this situation by acquiring a relatively large merchant marine to ensure that ships did not refuse to call on Israeli ports for political reasons or during times of Arab-Israeli tension.³ No corresponding emphasis, however, was placed on naval power. Israel considered Arab ground and air forces to be the primary threat. As a result, the Israeli high command expected that the decisive battles would take place in the air and on the ground. The Arab navies have never been perceived as a menace to Israel's basic security. According to Israeli military doctrine, the threats posed by Arab naval power, such as attacks on coastal targets, limited landing operations, or naval support for land operations, could be successfully countered by air superiority. It was also assumed that Arab-Israeli wars would be too brief for an Arab naval blockade to succeed.⁴ Therefore, relatively few resources were allocated for the enhancement of Israeli naval power.

The Israeli navy has always disputed this narrow definition of its military role. Such struggles are, of course, not only doctrinal, but also bureaucratic. Interestingly, it was not until December 1972 that the navy's headquarters moved from Haifa to Tel Aviv, where the IDF headquarters is situated. This was correctly viewed by the senior officers in the service as a significant date.⁵ The navy probably decided to convert some of its independence into greater influence within the military establishment. This move also reflected the expansion, in terms of duties, personnel and bases of operations, that the navy underwent after the 1967 war. Israel's coast quadrupled as a result of the 1967 conquest of the Sinai peninsula, and two new naval bases, in Ashdod and Sharm El Sheikh, were constructed. In addition, the navy gradually acquired the new missile fast boats, adding to its prestige in the interservice competition.

This prestige grew considerably after the October War of 1973, during which the navy unequivocally demonstrated its superiority over the Arab navies in the first naval missile battle in history. Furthermore, it was not involved in the failures of the Israeli ground and air forces during the war's initial stages. Its image was impeccable. The relatively successful closure of the Israeli coast to terrorist attempts from the sea, as well as the navy's role in the amphibious landing in Lebanon in 1982, further contributed to the morale of the service and its claim for resources. Again, the navy's achievements were contrasted to the more mixed record of the army, and its image as a successful branch no doubt facilitated the approval of its modernization program.

The First Period (1948-1965)

During the Independence War, Israel's naval "forces," consisting of a few motorboats, faced only the Egyptian navy since the other Arab countries

involved had no war vessels.⁶ Already displaying an offensive-minded character, Israel's navy attacked Tyre in Lebanon (July 1948) to deter Lebanon from any further involvement in the conflict, and its commando unit succeeded in sinking the Egyptian flagship *Emir Farouk* and damaging the minesweeper *Emira Fauzia* not far from the coast of Gaza (October 1948).

After the war, Israel began looking for warships and purchased three used frigates from Canada. This was typical of Israel's weapon-acquisition pattern at that time. The Israelis then had difficulties in purchasing modern arms, so they settled for the phased-out weapons of Western forces. To a certain extent the regional arms race was regulated by the Western powers. Following the May 1950 Tripartite Declaration, the United States, France and Great Britain coordinated their supply of weapons to the Middle East countries in an attempt to prevent dangerous imbalances in the military arsenals in that region, and to foster some stability. Indeed, Great Britain sold, first to Egypt and then in 1955 to Israel, identical World War II-vintage Z-type destroyers. Great Britain also provided training for the crews, which included advanced schooling for Israeli naval officers.

In October 1956, during the Sinai Campaign, these Israeli destroyers engaged a somewhat smaller Egyptian destroyer, *Ibrahim el Awal*, in the aftermath of the unexpected bombardment of Haifa. With assistance from the French navy and the Israeli air force, the Egyptian ship was forced to surrender and was added to the modest Israeli naval inventory. This engagement was the exception to the rule, for in 1956 the Israeli navy was under orders not to initiate attacks in the Mediterranean, but to concentrate on supporting the ground task force moving along the coast of the Gulf of Eilat to take the Strait of Tiran.⁷ The Israelis during this conflict were satisfied to leave the job of tying down the Egyptian navy to the Anglo-French fleet.⁸

In September 1958 the Israeli government accepted a recommendation from its navy to purchase two type-S submarines from England despite the objection of Chief of Staff Chaim Laskov, who opposed this procurement plan on financial grounds. The first submarine, the *Tanin*, arrived at its home port of Haifa in December 1959, and the second submarine, the *Rahav*, arrived in March 1960. The chief purpose of the submarine force was to sink enemy ships, but it was also given reconnaissance and landing commando duties.

The primary strategic objective of the navy in the 1950s, as defined by its commander, Shmuel Tankus (1954-1960), was to become "a balanced service."⁹ It endeavored to develop limited capabilities in several areas of naval warfare by dividing its resources for the purchase of destroyers, frigates, torpedo boats, submarines and landing craft. Quite simply, the Israeli navy sought to emulate the navies of larger powers, but on a smaller scale.

The gradual process of professionalization and the acquisition of new, but not modern, equipment in the 1950s led to a search for platforms and weapons suitable for the particular conditions of operation and the specific tasks of

the Israeli navy. This was, of course, the typical development of all IDF branches. After the initial scramble for weapons of all sorts and kinds, the emergence of the Franco-Israeli alliance served to provide Israel with a reliable source of weapons, and the IDF became more selective about the weapons they purchased, seeking equipment better tailored for their particular needs. The navy gradually realized that large naval platforms like frigates and destroyers were too expensive, required a lot of manpower, and possessed doubtful military utility for Israel¹⁰— an idea supported since the mid-1950s by naval officers who were attracted to the idea of using smaller platforms.¹¹ This new thinking in the Israeli navy was encouraged by its new commander, Yochai Ben Nun (1960-1966), thereby setting the stage for a new period in the navy's history.

The Second Period (1965-1988)

The beginning of the second period was marked by the 1965 IDF general headquarters' decision to adopt the navy's 1963 plan to purchase missile fast boats and to arm them with Israeli-made Gabriel missiles—at that time still in the development stage.¹² As Yitzhak Rabin (then chief of staff) admitted, the decision was not an easy one.¹³ Interestingly, even when the IDF general staff finally authorized the acquisition of twelve vessels equipped with Gabriel missiles and three new submarines (type T), it still stressed that the navy's mission to defend Israel's coast was in cooperation with the air force.¹⁴ The IDF headquarters had little understanding of naval needs and was not inclined to divert scarce funds to a service considered to be of secondary importance. Indeed, in October 1966, when the IDF was faced with budgetary cuts, it was suggested that the number of missile boats to be acquired be reduced by half. The navy fought this proposal tooth and nail and expressed willingness to accept cuts in other areas in order to keep the original vessel procurement program intact.¹⁵ It is doubtful whether the demands of the navy would have been met had forthcoming events not demonstrated the importance of the new missile boats.

In the early 1960s the Soviets, by then the main weapon supplier to Egypt and Syria, sold those countries missile fast boats of the Ossa and Komar type, armed with Styx missiles. This was a definite qualitative change in the naval balance between Israel and its Arab foes. The Israelis harbored no illusions about the chances their larger war vessels would have in gaining the upper hand in an encounter with the missile-armed Ossas and Komars. This external stimulus was probably the most important factor contributing to the transition to the second period.

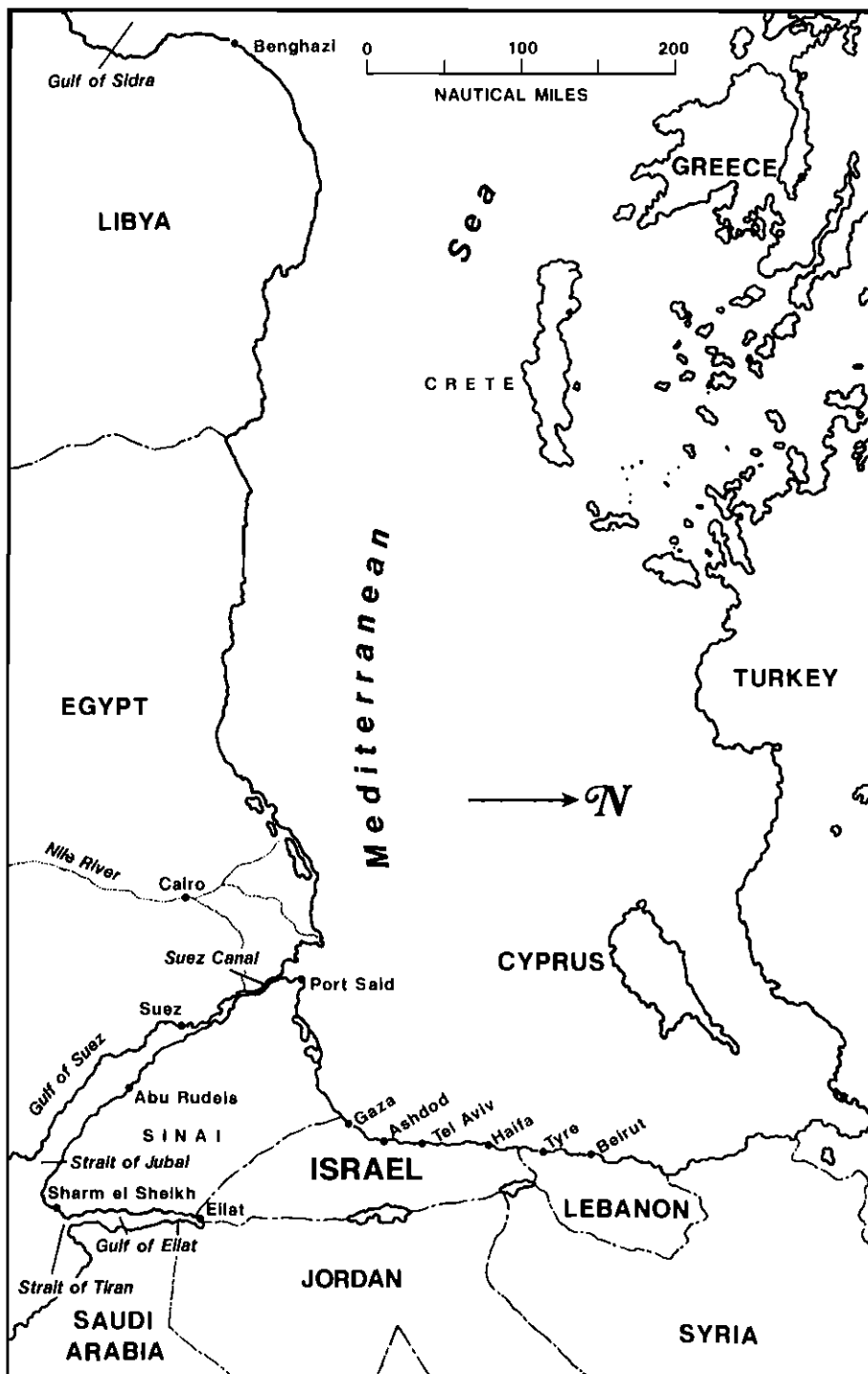
The Soviet missile boat had no equivalent in the Western arsenal because the concept behind its design and doctrine was new. Israel had to rely, therefore, on its own ingenuity to provide an answer to this new threat. The

navy looked for a fast and small vessel, one that would be inexpensive to purchase and maintain, that would present a small target at sea, and that would have combat advantage over any enemy unit it was likely to meet on a one-to-one basis. The most suitable design for such a platform was found in the German navy's Jaguar. The adapted design for the Israeli navy's fast missile boats, the Saar 2s, called for a 220-ton vessel capable of 40 knots. It was eventually decided, for political reasons, to build these vessels in Cherbourg, France. The core weapon system for these boats was to be the Gabriel SSM.¹⁶ The missile was intended to engage the larger platforms, while the complementary gun systems on the deck were designed for hitting smaller vessels. Indeed, a contributing factor to the 1965 decision was the early Israeli interest in missile technology. Taking into consideration that the first successful firing tests of the Gabriel missile from a missile boat did not take place until April 1969, the 1965 decision was a rather risky venture.

The 1967 Six Day War thus found the navy in a transition period and quite unprepared for a naval duel with its Arab rivals. Nevertheless, the navy initiated several raids on enemy ports, primarily with its commando units. In contrast to the great successes of the IDF on the ground, the navy could not boast of similar achievements; its activity was not very impressive. In one instance, as a result of what the Israelis claimed to be faulty identification, an American intelligence-gathering ship—the *Liberty*—was attacked in international waters, not far from the northern Sinai shores.¹⁷ Fortunately for Israel, Egypt and Syria chose not to capitalize on their naval superiority during this war. However, just four months after the war (21 October 1967), this superiority was alarmingly demonstrated when Egyptian Komars sank the Israeli destroyer *Eilat* with Styx missiles. This event, which cost many lives, strengthened the Israeli navy's advocacy for its new concept of missile fast boats. It also sent a disturbing signal to navies throughout the world concerning the vulnerability of large fighting platforms.¹⁸

In January 1968, the mysterious disappearance in the eastern Mediterranean of one of the T-class submarines had a similar impact on Israeli thinking about underwater boats.¹⁹ As a result, the decision was made to replace the big oceangoing submarines with smaller ones of more limited range, operated by smaller crews, and affording less chance of discovery. Reconnaissance and sinking enemy warships were the chief purposes for the newly sought submarines. The navy succeeded, before 1973, in securing funds to restructure its submarine force. The West German 206-type (renamed Gal), to be built in Britain, was the navy's choice. The older submarines, with their many maintenance problems, were gradually phased out of service, even before the first Gal was commissioned in 1976.

The first missile fast boat of the Saar 2-type arrived in December 1967, two months after the *Eilat* was sunk. Another five ships departed Cherbourg in 1968. Following the Israeli raid on the Beirut airport in December 1968,



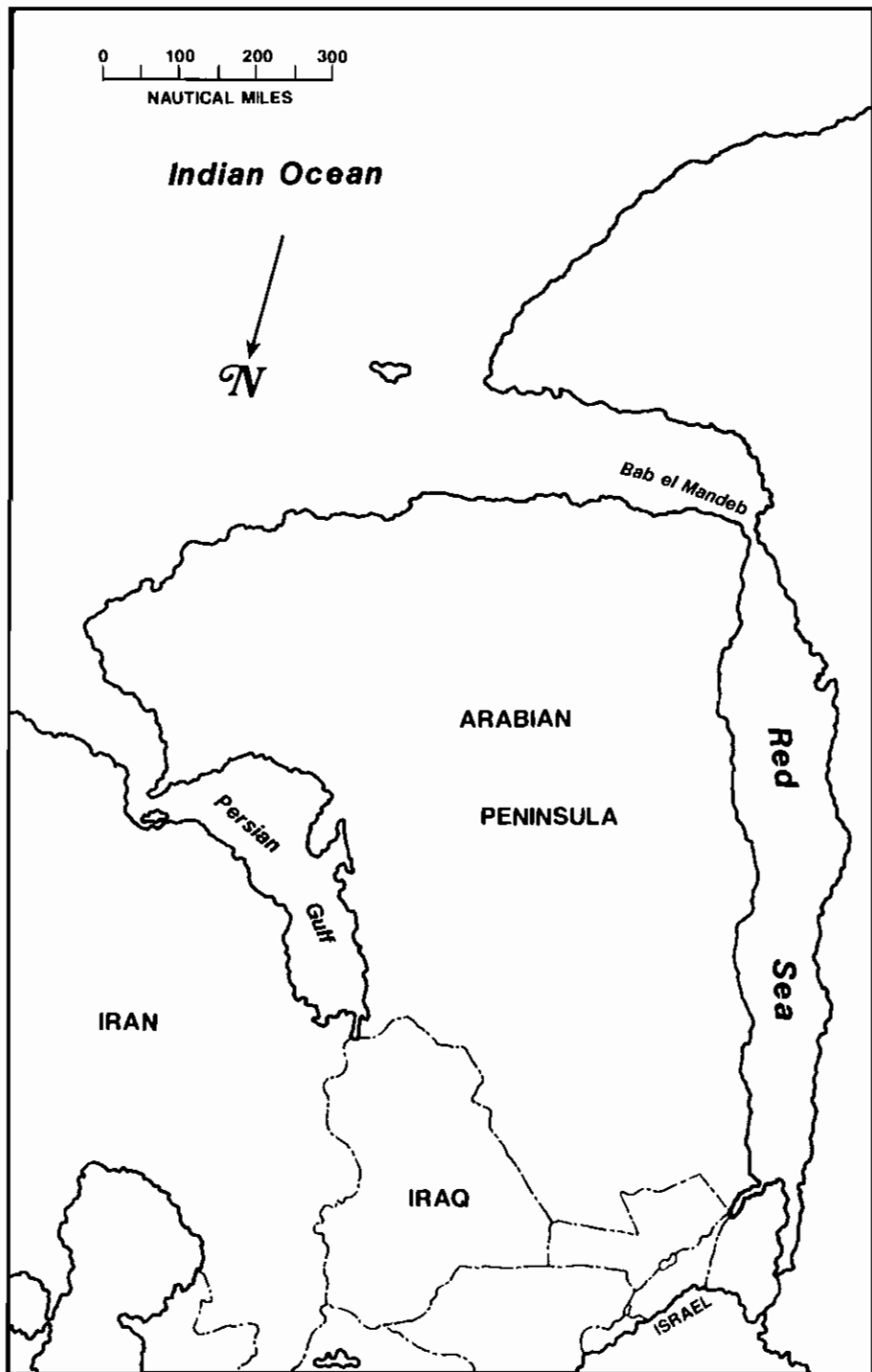
de Gaulle widened the arms embargo, which had been imposed on Israel in 1967, to include the remaining ships at Cherbourg. But on Christmas Eve 1969 the remaining six boats left France, circumventing (semi-legally) the embargo. Thus, delivery of the twelve missile fast boats was complete, four years after the navy's decision to procure them.

In the aftermath of the 1967 war the Israeli navy encountered fewer difficulties in procuring funds for expansion since the coast under Israeli control had quadrupled following the conquest of the Sinai peninsula. The navy's presence in the Red Sea required more vessels, and because of the rougher seas in that theater, there was also a need for larger ships. A new (and ambitious) mission given to the navy, together with the Israeli air force, was the defense of the sea lanes from Bab el Mandeb to Eilat in order to protect Israeli shipping and to ensure the continuous flow of oil from Iran. In 1968, Moshe Dayan, the defense minister, approved the navy's recommendation to procure six enlarged Saar boats (with seaborne refueling capability) to be based in the Red Sea.²⁰ The navy could also expect emergency logistical support from the Ethiopian shore since relations between Addis Ababa and Jerusalem had grown closer in the 1960s.²¹ The government rejected, however, another navy requirement that was supported by the general staff: building a fleet of landing craft to be based at Sharm el Sheikh. This decision was later regarded in naval quarters as a grave blunder when the Israelis encountered difficulties crossing the Suez Canal in 1973.²² The government was still ground-oriented and not inclined, either by doctrine or budget, to approve large amphibious operations.

Construction of the new 450-ton vessels, capable of 32 knots, was entrusted to the Israel shipyards in Haifa. The new class of missile fast boats was named Reshef (Saar 4). The decision to build them in Israel was part of a larger policy designed to increase indigenous production of primary weapon systems. The 1967 French arms embargo reinforced previous Israeli experience of facing political barriers in arms acquisition and led to the decision to build Reshef ships, Kfir air fighters, and Merkava tanks in Israel. Achieving self-reliance has always been an important goal of Israel's national strategy.

The first Reshef was commissioned in February 1973 and the second in August of that year. The ships were made ready for the journey around Africa to the Red Sea, their intended theater of deployment, but at the onset of the 1973 October War they were deployed to the Mediterranean.²³

In this war the navy's doctrine, emphasizing the use of missile fast boats, was put to the test. The Saar flotilla gradually developed its combat doctrine. Significant and gratifying was the realization that the Gabriel missile could also be useful against small vessels.²⁴ As a result, Arab missile boats were added to the list of targets, which had initially included only the big platforms such as frigates or destroyers. Because the 20-km range of the Gabriel missile was shorter than the 50-km range of the Styx, the Israelis were forced to look



for missile countermeasures (primarily chaff) to protect their faster boats until they could close range to launch the Gabriels. This method succeeded in preventing 50 enemy Styxs from scoring any hits, while about half of the 15 Arab ships sunk were from Gabriel hits (the rest were from gunfire or frogmen). Although the naval balance quantitatively favored the Arabs, and despite the fact that Israel was without submarine capability at that time, the Israeli navy demonstrated a qualitative edge. By building its own naval equipment and weaponry, Israel had acquired a better understanding of technology and tactics.

The Israeli navy's confrontation with its Egyptian and Syrian counterparts in 1973 presented a watershed in naval history: the first missile exchange at sea. The navy paralyzed the Arabs in the Mediterranean, and its naval supremacy was particularly demonstrated by its many attacks on Syrian coastal targets. Just as important was the presence of the Reshefs, which prevented the Egyptians from interfering with Israeli shipping, a success which was crucial to resupplying the hard-pressed IDF and ensuring free movement of merchant shipping to all destinations.²⁵ The 1973 war lasted longer than Israel had expected. This strengthened the navy's argument that Israel, mostly dependent upon seaborne foreign trade, was in no position to neglect its naval arsenal. It would have been catastrophic for Israel had the Arabs succeeded in closing Israeli ports in 1973, along with their successes elsewhere.

Israel's naval deficiency was apparent in the Red Sea, where the Egyptian navy successfully blockaded Bab el Mandeb against Israeli shipping. It is uncertain whether the six Reshefs destined for Israeli service there would have made a difference.²⁶ Since the Israeli air force was busy on the Egyptian and Syrian fronts, it would have been unable to negate the clear numerical advantage of the Egyptian navy. An additional factor that could have hindered the Israeli navy's operations in this theater was the break in relations between Israel and Ethiopia that occurred during this war. Furthermore, the Egyptians mined the Strait of Jubal in the Gulf of Suez to prevent Abu Rudeis oil from being shipped to Eilat, underscoring Israel's inability to minesweep. Israel had delayed acquiring this capability because it believed that future conflicts would be brief. Establishing a naval force to secure the sea routes to Israel in the Mediterranean and the Red Sea seemed too costly a project.

After the 1973 war the Israeli navy, along with the other services, underwent considerable growth.²⁷ First, the Reshef program was completed. Next, the three British-built Gal submarines of the West German 206-type (specifically adapted for Israel's needs) were commissioned in 1976-77. (In contrast to the procurement programs of other IDF branches in the mid 1970s, these two programs had been approved before the 1973 war.) The navy also upgraded its equipment. Significant acquisitions included the U.S.-supplied Harpoon SSM (with a range of 110 kms) in 1978 and a more advanced Gabriel,

with a longer range of 36 kms. Israeli defense industries started producing advanced electronic and optical military equipment, and the IDF, including its navy, became well equipped with some of the latest state-of-the-art products.²⁸

In the late 1970s, the navy, in cooperation with the air force, established a naval air reconnaissance unit using a coastal patrol and naval support version of the Israeli aircraft industry's 1124 Westwind. Determined to have independent air support, in 1980 the navy commissioned the first missile fast boat of the *Alya* (Saar 4.5) type. These 488-ton vessels were built in Israel and carry a helicopter. Like the Westwinds, these helicopters are assigned to the navy and have reconnaissance and antisubmarine missions. The Israeli air force provides pilots and maintenance (at the navy's expense). This modest naval air activity has not been challenged by the air force because the air force continues to be entrusted with the task of countering Arab air threats to the navy. Because of the short distances within the Arab-Israeli arena, neighboring air forces constitute a constant threat to the navy; and the mid-air refueling capability of more distant Arab countries, such as Libya, increases the threat.

As part of its post-1973 expansion program, the navy became interested in hydrofoils. In 1980 the first hydrofoil of the *Flagstaff*-type (91.5 tons and a speed of 52 knots), acquired from Grumman, was put into service. A second was later built in Israeli shipyards.²⁹ Despite the appealing possibility of indigenous production, plans to build eight additional hydrofoils to replace the aging Saars were cancelled in favor of the current modernization program.

The *Dabur*-class patrol craft, already in service in 1973, had been built in Israel under American license, and many more were built after the war. This reflected the navy's preoccupation with antiterrorist activities in the late 1970s and the 1980s.³⁰ As the IDF gradually succeeded in preventing infiltration through Israel's land borders, particularly in the north, the Palestinians attempted to attack Israeli targets by landing from the sea. In the late 1970s they scored several successes, which led the navy to increase its efforts to close Israel's coast to terrorist attacks. Although the 1979 peace treaty with Egypt (stipulating the return of the Sinai peninsula) reduced the length of Israel's coast to its pre-1967 dimension, this Palestinian terrorist threat from the sea maintained the navy's requirements for patrol craft at a high level. Palestinian organizations attempted to land terrorists directly from the north (Lebanon) with small boats or from other directions with "mother ships" carrying smaller boats better able to infiltrate Israeli defenses.

The counterterrorist measures led the Israeli navy to operate further away from Israel's waters. Ships were checked in the open sea, and blockades were occasionally imposed on Lebanese harbors to prevent shipping of arms and personnel. The Israeli navy also attacked Palestinian targets in Lebanon, including small boats and naval training facilities.

This increased range of Israeli naval activity resulted from a general IDF objective: following the 1973 October War, the IDF as a whole was interested in improving its capability to operate further away from Israel. This capability was well demonstrated by the 1976 Entebbe raid, the 1981 air attack on the Iraqi nuclear reactor, and the 1986 air strike on PLO targets in Tunisia. The navy was similarly interested in such long-range power projection. First, it wanted to be able to deal successfully with a situation such as the 1973 Bab el Mandeb blockade. Second, its interest was stimulated by an increased threat perception—the improved capabilities of the Saudi, Libyan and even Algerian navies were a matter of concern.³¹ Third, Zeev Almog, the new commander of the navy (1979-1985), advocated a navy capable of sailing far away from its home ports for considerable periods of time. Such thinking was central to the plans for procuring larger ships—missile corvettes—for the Israeli navy.

The Missile Corvette—A New Period?

Zeev Almog decided to cancel the plan to procure additional hydrofoils and advocated the building of missile corvettes (Saar-5s) to gradually replace the earlier missile fast boats. The 1300-ton missile corvette was to be endowed with several features: operational and logistical capability to be at sea for three to four weeks; both surface and ASW capability; and less reliance on shore-based air support. These features called for a larger boat than the Saar 4, and one with an integrated helicopter. The Saar 5 proponents also pointed out that a larger vessel was needed to accommodate new technologies.

This proposal for a significantly larger platform than the 450-ton Reshef or the 488-ton Alya was a clear departure from the small boat concept. Indeed, in the navy, as well as in the rest of the defense establishment, there was widespread opposition to this change.³² Its critics argued that large and therefore expensive vessels would result in the building of less fighting units; that adopting a previously unused platform design would raise many uncertainties concerning the future operational capabilities of such a vessel; that the defense of Israel's coast in the relatively calm Eastern Mediterranean waters did not require big ships; that the proximity of the naval theater reduced the need for air power, thereby eliminating the need for a shipboard helicopter; and that a larger vessel would be an easier target. Finally, it was argued that submarines were less vulnerable and could effectively perform some of the assignments proposed for the Saar 5. (Indeed, the submarine component of the modernization program advocated by Almog aroused less opposition.) Citing the high price and risks involved in the Saar 5 program, its critics recommended instead incremental changes based on the present Saar flotilla. This conservative approach did not accept the larger definition of naval duties advanced by Almog. In the assumption that the decisive battles

of a future war would be in the air and on the ground, the protection of Israel's sea lanes and the negation of challenges from navies of more distant countries were considered to be beyond the means of a small state like Israel.

Nevertheless, the navy's modernization program was finally approved. Almog's six years in office as the service commander, his perseverance, and his ability to choose his successor (Abraham Ben Shushan, a supporter of the Saar 5 concept) were important factors in the final determination. Other factors were the support of the United States for the Saar 5 program (which is to be contracted primarily with American companies) and the cancellation of the Levi plane project in August 1987 (which freed money for other uses, including the navy's modernization.)

It remains to be seen whether the Israeli navy was correct in its reading the future battle map. Unfortunately, such a test can occur only in war.

Notes

1. *Yediot Achronot*, 14 April 1988, p. 1.
2. *Maariv*, 18 April 1988, p. 1.
3. During war, the merchant fleet coordinates its activity with the navy.
4. For the possibility of imposing a naval blockade of the southern and western approaches to Israel see Steven J. Rosen, *Military Geography and the Military Balance in the Arab Israeli Conflict*, Jerusalem Papers on Peace Problems No. 21 (Jerusalem: The Leonard Davis Institute for International Relations, The Hebrew University, 1977), pp. 36-45.
5. See Commodore Eli, "The Gabriel Ships," *Maarachot* (Hebrew), December 1984, p. 32.
6. For an account of Israel's naval activity during the Independence war see Netanel Lorch, *The Edge of the Sword* (Jerusalem: Massada, 1968), pp. 271-277, 371-372, 440-442.
7. Moshe Dayan, *Diary of the Sinai Campaign* (New York: Schocken, 1967), p. 66. A number of small torpedo boats had been transported by land to Eilat.
8. Dayan, p. 66.
9. See Hirsch Goodman and Shlomo Mann, *The Navy* (Hebrew) (Tel Aviv: Revivim, 1982), p. 67.
10. Michael Handel, *Israel's Political-Military Doctrine* (Cambridge: Harvard University Occasional Papers, July 1973), p. 30.
11. See Shlomo Erel, "The British Torpedoed a Deal with the Italians to Renew the Navy," *Maariv*, 13 November 1987. Erel served as the navy commander (1966-1968).
12. Yitzhak Rabin, *Memoirs* (Hebrew) (Tel Aviv: Maariv Library, 1979), p. 125.
13. Rabin, p. 125.
14. Eli Rahav, "Missile Boat Warfare," *IDF Journal*, Fall 1986, p. 38. This article appeared also in U.S. Naval Institute *Proceedings*, March 1986.
15. Goodman and Mann, p. 83.
16. For the thinking behind the Israeli fast missile boats and the implementation of this program see Rahav, "Missile Boat Warfare"; Reuben Ben Porath, "The Israeli Navy," *Proceedings*, September, 1971. The description of the military equipment is taken from the *Middle East Military Balance*, Jaffee Center for Strategic Studies, Tel Aviv University.
17. This incident, in which the Israeli Air Force also participated, ended with 34 casualties and 75 injured on the American side. The United States did not dispute the Israeli version. Israel apologized and paid reparations to the families of the deceased and to those wounded. For a short analysis of this incident see Lieutenant Commander Joseph F. Bouchard, "Accidents and Crises: *Panay*, *Liberty*, and *Stark*," *Naval War College Review*, Autumn 1988, pp. 90-92, 96-97.
18. Porath, p. 36.
19. Goodman and Mann, p. 113.
20. Rahav, p. 39.
21. For the naval significance of this relationship see Avner Yaniv, *Deterrence Without the Bomb. The Politics of Israeli Strategy* (Lexington, Mass.: Lexington Books, 1987), p. 96; see also Mordechai Abir, *Sham al-Sheikh*—

Bab al-Mandeb: The Strategic Balance and Israel's Southern Approaches, Jerusalem Papers on Peace Problems No. 5 (Jerusalem: The Leonard Davis Institute for International Relations, The Hebrew University, March 1974), pp. 18-19.

22. Zeev Almog, "Israel's Naval Theater," *IDF Journal*, Spring 1986, p. 24. Almog served as the navy's commander (1979-1985).

23. During the long journey around Africa the Reshefs were resupplied and refueled en route by an accompanying Israeli merchant ship. South African ports were also called on.

24. Rahav, p. 41.

25. For the IDFN activity during the 1973 war see Rahav, pp. 41-43.

26. Almog, p. 24.

27. See Efraim Inbar, "Israeli Strategic Thinking After 1973," *Journal of Strategic Studies*, March 1983, pp. 42-44.

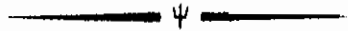
28. For a review of the Israeli naval C³I products see Shimon Engel, "The Way Ahead—C³ in Naval Warfare," *IDF Journal*, Fall 1986, pp. 25-28.

29. "The Israel Navy's New Hydrofoil," *IDF Journal*, Fall 1985, p. 72.

30. For the coastal defense duties of the Dabur, as well as its ASW and offensive capacity see Colonel Moshe, "Coastal Defense Against the Infiltration of Small Vessels," *Maarachot*, July 1982.

31. Almog, p. 26.

32. For some of the bureaucratic struggles around the Saar 5 see Immanuel Rosen, "The Navy's Lavi," *Maariv*, 18 December 1987. For a doctrinal criticism see Ariel Levite and Gideon Raz, *Naval Forces*, January 1988; and Shlomo Erel, "Yes to Submarines, No to Saar 5," *Haaetz*, 30 March 1988.



"Keeping communications open on a given line means either drawing or driving the enemy off it. If not strong enough to drive him off, then diversion must be attempted, by threatening his interests elsewhere and in as many quarters as may be, seeking to mislead him continually by all the wiles known to warfare."

Naval Strategy

A. T. Mahan (1911)

Little, Brown (1918), p. 235