Israel's Military Performance in Lebanon, June 1982

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The Israeli invasion of Lebanon in June 1982 has brought about many changes. Not the least of these has been the radical change in the PLO's military position. Using massive forces in an all-out conventional assault, the IDF appears to have been more successful than before in disrupting PLO military activity. Previously, the IDF had been unable to make a radical alteration of the PLO's capabilities, both political and military, despite successes on the ground. The combined resort to major forces and to an ambitious plan with Beirut as its final objective, in 1982, brought about very different results from those of previous smaller invasions.

Before analyzing the planning and implementation of the 1982 invasion, the background of Israeli military strategy against the PLO should be examined. Three basic factors have always affected the Israeli-Palestinian military confrontation: the physical dispersal of the Palestinian population, Israel's huge military and technological lead, and the political and topographical nature of the surrounding Arab states. In the first case, the PLO has always had to cope with the problem of recruiting from its basic constituency despite dispersal and subjection to the political and

security control of the host countries. This has meant difficulties in mobilizing large numbers, maintaining large reserves, and getting them to the front quickly. In retrospect, this factor helps to explain why the PLO has always concentrated its physical presence and main military activities on one front or base (Jordan or Lebanon) at a time, at the expense of developing action on the other fronts (including the occupied territories).

Israel's military and technological advantage over the lightly-equipped and scattered Palestinian forces is very clear. Moreover, Israeli security action against the PLO has benefitted from centralized, coordinated counter-intelligence work against PLO cells under occupation, and from combined air, ground, and sea support for action against PLO combat units. Technology has been used extensively: defensively in order to set up electronic fences or to increase the protection of armor and men from attack, and offensively in order to pinpoint PLO locations and attack them with precision. An added element of growing importance in Israel's lead has been the expansion of the Israeli defense industry. Israel now produces much of its own needs of military software and hardware, and its export markets absorb over one billion dollars worth of arms a year. It designs its own military equipment, and has the opportunity to outstrip some of its arms suppliers technologically.[1] The equipment Israel designs and produces, in addition to production under license, is tailored to its own security and military needs. The range goes from electronic fences and sensors using a variety of optical, electrical, infra-red, and radar modes, through assault rifles (the Galil), special patrol cars (the Ramta), artillery rockets of various calibers (some are guided), cluster bombs and "smart" air-to-surface bombs (the Tal-1 and the Luz-1), and tanks (the Merkava), to advanced air-to-air missiles (the Shafrir and Python-3), anti-ship missiles (the Gabriel), point defense surface-to-air missiles (the Barak), naval missile boats and patrol craft (the Reshef, the Aliyah, and the Dibbour), fighter aircraft (the Kfir), and a wide range of communications, surveillance, and reconnaissance equipment, including radars and remotely piloted vehicles (RPVs).

The policies of the Arab states surrounding Israel have an obvious influence on the freedom of the PLO to carry out armed action against Israel, which requires cross-border action and administrative, training,

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[1] If there is any truth to claims that Israel has developed and used infra-red or laser-guided anti-tank homing sub-munitions against Syrian armors, then it has overtaken the US defense industry in this respect.

logistic, and basing facilities. This freedom varied by time and place. In Jordan, the PLO enjoyed the required range of facilities from 1968 until 1970-1971. In Syria, the PLO has enjoyed continuous basing rights since 1965, but with almost no cross-border action. In Lebanon, the PLO staged some military actions before it gained open access to the refugee camps in autumn 1969. The one country in which the PLO did not maintain significant military facilities was Egypt, although a Palestine Liberation Army (PLA) brigade fought with the Egyptian army in 1967 and 1973.

Even when the PLO enjoyed or wrested some freedom of military action, the terrain in which it operated presented distinct disadvantages. On the Egyptian front, the Suez Canal separated the opposing armies until 1973, while the Sinai Peninsula posed a second major barrier. The East Bank of the Jordan offered little protection or concealment, nor did the bare hills of the Golan Heights. The one area which favored the PLO at all was South Lebanon with its hills, vegetation, and denser population. Yet the terrain offered to Israel the advantages of better reconnaissance, more effective air action, increased effectiveness of helicopters, use of direct-fire guns over longer ranges, better tracking of infiltrating PLO fighters, and easier support of ground units. There was, however, a disadvantage to Israel, since it was limited to specific approach axes for major ground force movements across its borders.[2] This encourages reliance on air portability,[3] but Israel has managed without the shift from ground to airborne forces.

Israeli Military Action Against the PLO, 1969-81

After the June 1967 war, the PLO undertook a massive effort to train men on the East Bank of Jordan and send them back into the occupied West Bank in order both to set up networks among the civilian population and to establish guerrilla bands and bases (to become liberated areas eventually).[4] The Israeli response initially was to send patrols to track down and confront

[2]Anthony Cordesman, *Jordanian Arms and the Middle East Balance* (Washington, D.C.: Middle East Institute, 1983), p. 49.

[3]Richard Simpkin, *Antitank: An Airmechanized Response to Armoured Threats in the '90s* (London: Brassey's, 1982), p. 24. The suitability of Middle East terrain to helicopter operations is also mentioned in Lt. Gen. John Tolson, *Air Mobility 1961-71* (Washington, D.C.: Dept. of the Army, 1973), p. 253.

[4]Edward Luttwak and Dan Horowitz, *The Israeli Army* (London: Allen Lane, 1975), p. 304.

infiltrations.[5] This method caused many Israeli casualties, including officers, and would have failed had it not been for two other factors. First, concentrated efforts to uncover the PLO networks and intimidate the civilian population—through mass arrests, demolition of houses, curfews, and other collective punishments—succeeded in dismantling the hasty, poorly conceived efforts of the PLO. Second, an anti-infiltration barrier was set up along the Jordan (and later along the Lebanese border) which consisted of minefields, fences, surveillance devices, mobile patrols, and watchtowers. The result was to isolate the local population from the PLO fighters, after uncovering and imprisoning the local networks which could have carried on the fight, and to reduce Israeli casualties from 30 a month in 1969 to five a month in the second half of 1970.[6]
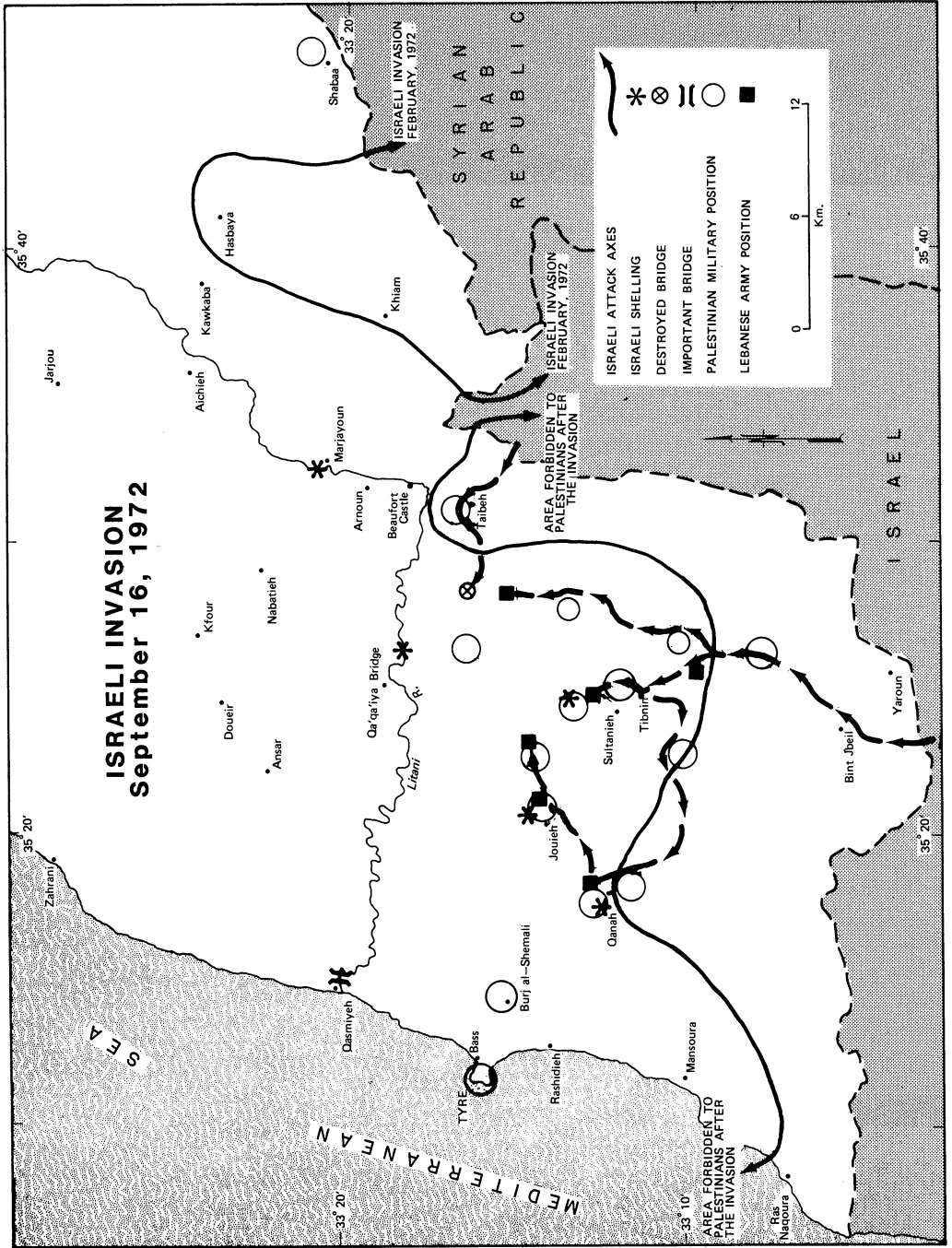
In the second phase of the confrontation, starting in late 1969, the PLO resorted to cross-border shelling as its main form of attack, from the Jordanian and, to a lesser degree the Lebanese, borders. In the next three years Israeli responses varied. One was counter-shelling. This form of response was graduated, with strikes against PLO bases, Jordanian army artillery positions, and towns such as Irbid, in response to attacks against Israeli military posts, cross-border shelling, and attacks against Israeli settlements respectively.[7] Another response was the increase in "special" operations carried out by heliborne troops against PLO bases. This method was used in Jordan and Lebanon, and consisted of landing one or two platoons of paratroops near a base. They would then approach on foot and attack with automatic fire, propelled grenades, and 52mm mortars before withdrawing by helicopter again. This form of response, along with selective air strikes, was designed more to keep the initiative, maintain pressure on the PLO, and keep it off balance, than to inflict major casualties. Another form of "special" operations was the assassination, by hit squads or letter bombs, of PLO leaders.

One form of response used in this phase was major incursions by mechanized columns into Jordanian and Lebanese territory. The first main instance of this form took place on March 21, 1968 when an Israeli force, totalling some 15,000 men and 150 tanks, attacked the refugee town of Karameh. At least 100 PLO fighters were killed, but so were 30 to 40

[5]Col. T.N. Dupuy, *Elusive Victory* (London: MacDonald and Jane's, 1978), p. 350, and Luttwak, *op. cit.*, p. 308.

[6]Luttwak, *op. cit.*, p. 308.

[7]*Ibid.*, pp. 309-310.

ISRAELI INVASION
September 16, 1972

SYRIAN ARAB REPUBLIC

ISRAEL

MEDITERRANEAN SEA

Shabaa

ISRAELI INVASION FEBRUARY, 1972

ISRAELI INVASION FEBRUARY, 1972

Hasbaya

Khiam

Kawkaba

Aichieh

Jariou

Mariayoun

AREA FORBIDDEN TO PALESTINIANS AFTER THE INVASION

Arnoun

Beaufort Castle

Taibeh

Kfour

Nabatieh

Doueir

Ansar

Qa'qa'iya Bridge

Litani R.

Sultanieh

Tibnin

Jouieh

Bint Jbeil

Yaroun

Zahrani

Qasmiyeh

TYRE

Bass

Burj al-Shemali

Rashidieh

Qanah

Mansoura

AREA FORBIDDEN TO PALESTINIANS AFTER THE INVASION

Ras Naqoura

35° 40'

35° 40'

35° 20'

35° 20'

33° 20'

33° 20'

33° 10'

Legend

* ISRAELI ATTACK AXES
⊗ ISRAELI SHELLING
)(DESTROYED BRIDGE
○ IMPORTANT BRIDGE
PALESTINIAN MILITARY POSITION
■ LEBANESE ARMY POSITION

0   6   12
Km.

Israelis, with the added loss of 20 tanks, 15 armored vehicles and one aircraft.[8] In the 1970-73 period, however, such missions were directed against South Lebanon, increasingly as a substitute for commando or air raids. The three main instances took place on May 12, 1970 and in February 1972 in the Arqoub (Fatehland) region, and on September 16-17, 1972 in the "middle" region of Bint Jbeil. In each case, results were mixed. Few PLO men were killed and most of their bases were soon reestablished. In these battles Israeli forces supported by artillery and aircraft took relatively quick control of their objectives as the PLO units withdrew after offering token resistance within small groups.[9]

The relative calm which fell on the Lebanese-Israeli border after the October 1973 war lasted until March 1978 (excluding confrontations between the PLO and the forces of Major Saad Haddad, a Lebanese militia controlled and equipped by Israel). An Israeli invasion of South Lebanon took place on March 13, 1978. This time, Israeli tactics were very different from those employed in the past against Arab or PLO forces. The main differences lay in the greater use of infantry and in the slower rate of advance. In the central zone, stretching from Taibeh through Bint Jbeil to the coast, Israeli infantry backed up by armor assaulted PLO positions after isolating and surrounding them in the dark. When some positions held out, the ground forces withdrew and then renewed the assault after further softening of their targets by artillery and air strikes. This method led both to heavy Israeli casualties and to an extremely slow pace of movement. Only on the fifth day of the invasion did Israeli armored units break out of their zone of operations (only five miles deep), and rush headlong toward the coast in their classic style. No effort was made to block the retreat of PLO units toward Tyre or across the Litani river, nor was Tyre itself assaulted. The reasons for this approach were probably related to the effort to learn from the mistakes of the 1973 war when unaccompanied armor fared poorly against enemy infantry armed with basic anti-tank weapons, and from the improved PLO fighting capabilities demonstrated with success against Haddad's armor.

With the loss of direct contact between PLO and Israeli forces due to the presence of both the Haddad militia and the forces of the United Nations Interim Force in Lebanon (UNIFIL) as a buffer, clashes took on a

[8]Dupuy, *op. cit.*, p. 354.

[9]Interestingly, Luttwak and Horowitz in 1974 had already suggested establishing a border strip in South Lebanon to push PLO guns out of range, *op. cit.*, p. 312.

ISRAELI INVASION
March 13, 1978

new shape from the signing of the Camp David Accords to the July 1981 cease-fire. Israeli action took two main forms: continuous artillery shelling of the Nabatieh and Tyre regions, coupled with frequent air raids against the coastal strip, with the main purpose of causing a mass population exodus and straining local Lebanese-Palestinian relations; and pinprick raids against specific PLO targets. The second form consisted of attacks by units advancing on foot or carried by helicopters or boats. In the Nabatieh region, platoon to battalion-sized attacks were carried out by Israeli units that infiltrated through the gap in the UNIFIL deployment (around the Khardali bridge over the Litani river in the valley between Beaufort castle and Marjayoun). Some of the targets were key PLO positions in Aichieh, Arab Salim, and Arnoun-Beaufort. Further east there was only one such raid (near Kawkaba) although there was frequent shelling, some of which was targetted against Lebanese army positions. West of Nabatieh, there were heliborne raids against PLO bases such as Kfour, Zifta, and Mseileh, while the coastal zone had the lion's share of Israeli action: almost every suitable beach or promontory witnessed landings of naval commandos who then moved further inland to attack PLO bases, or set up roadblocks to ambush PLO vehicles. The result of all this activity was to keep the PLO on the defensive, to cause it to deploy more of its forces along the coast or to exhaust them in patrol duties.

In July 1981, a serious Israeli miscalculation started a massive bombing campaign against Palestinian and Lebanese military and civilian targets. In this war there was no movement of ground forces, and Israel found itself locked in a bombing and shelling battle of attrition with a PLO that simply refused to stop firing first. The miscalculation was demonstrated both by the backlash of international opinion against Israel for bombing Beirut, and by the inability of the IDF to control the military confrontation. The cease-fire that came into effect was due to political and strategic consider-ations rather than any military parity however temporary and localized. The IDF had been unable to inflict significant human or material losses on the PLO, while the Israeli settlements in the North witnessed significant damage and the exodus of 40,000 people. Furthermore, the PLO interpretation of the cease-fire as applying only to the Lebanese-Israeli border was generally accepted, and allowed the PLO to carry out attacks inside the occupied territories while keeping South Lebanon calm. This situation, combined with growing PLO strength and the failure of all previous Israeli methods to bring about a PLO political withdrawal, resulted in a radical reappraisal of Israeli military policy against the PLO

and the elaboration of the plan for the 1982 invasion.

1982: The Progress of the Israeli Invasion

In planning the 1982 invasion, the Israeli military command had to solve a problem of all previous Israeli military action: successes on the ground had failed to change the PLO's basic military position, let alone influence its political stance. A basic cause of this inability was the political factors and limitations that restricted the scope of Israeli military action. Another, related cause was that the struggle against the PLO was fundamentally a political one, not military. The political and strategic aim of the 1982 invasion was, therefore, the destruction of the PLO and its elimination as a principal actor in the Middle East conflict. The military command had to come up with a plan that could achieve this aim. It had ample time to elaborate its plan; former Chief of Staff Rafael Eytan has said that eight months were put into it, while former Defense Minister Ariel Sharon has asserted that he spent three years formulating one. The IDF therefore enjoyed a unique advantage in its ability to develop the overall plan and specific ones tailored for each locality or axis, as well as prepare every unit and weapon system for the specific tasks allotted to it.[10] In the event, a massive force reaching 120,000 men, 1,600 tanks, 1,600 APCs, and 600 guns was fielded.

The Israeli military command had ample time to study past experiences in fighting the PLO or other Arab forces (particularly the Syrian), and could adapt its tactics accordingly.[11] In March 1978, the IDF moved slowly at first, using dismounted infantry backed by tanks in most sectors (the tanks advanced on their own in the eastern sector but 22 hit mines and the penetration was minimal). The PLO forces held out against Israeli infantry, but had less effect on the fast-moving armored columns that broke through on the fifth day. In 1981, the paralysis of ground units meant that PLO artillery could remain inside the combat zone, and interdiction shelling could not deprive PLO units of logistic support or of mobility.

[10] Anthony Cordesman, "The Sixth Arab-Israeli Conflict: Military Lessons for American Defense Planning," *Armed Forces Journal International* (Washington, D.C.), August 1982, p. 29. He says "they had seven years to learn how to attack a hopelessly inferior enemy, and eight months to refine their attack and contingency planning."

[11] Hirsh Goodman, "Nine Years' Homework," *Jerusalem Post*, July 4-10, 1982, p. 11. The article discusses some of the lessons.

Among the factors in the Israeli reevaluation and strategic planning were the results of the "reconnaissance in force" or "by fire" that the IDF had carried out in the 1979-81 period in the shape of numerous pinprick raids against PLO positions. On the one hand, the IDF tested the responses and abilities of individual PLO units, and the level of sectoral leadership measured in the speed and coordination of its response.[12] Weaknesses in PLO defenses, tactics, and deployments were thus explored. On the other hand, specific landing zones were reconnoitered or prepared (by causing the PLO to evacuate particular positions); significantly, every single point on the coast or in the interior that witnessed an Israeli raid during the three-year period later witnessed a heliborne or seaborne landing during the 1982 invasion.

It is evident that Beirut was a target of the IDF from the outset.[13] There may well have been any number of contingency plans to deal with unexpected developments or delays at the strategic or tactical levels—the advance into the Beqaa Valley and the axis of approach to Beirut were two instances—but they probably all retained Beirut as the basic objective. A review of the course of operations will explain the overall and sectoral plans used, as well as the tactics and military rationale. (See map pp. 36-37)

On June 4, 1982, Israeli aircraft struck at Beirut and several targets further south. The next day there were 48 strikes against a large number of targets in the Hasbaya and Nabatieh regions, and within a 25-mile corridor stretching from Tyre to Naameh, south of Beirut. Significantly, there were also strikes against positions in the central, mountainous Chouf area, and an attack by helicopter gunships against Damour.[14] At 11 a.m. on June 6, Israeli armor crossed the Lebanese border at Ras Naqoura. This was the western prong of the Israeli attack, and it moved up the coastal road toward Rashidieh refugee camp and Tyre. Elements of this force branched out and moved within the UNIFIL zone in order to approach Tyre from the east. Simultaneously, Israeli troops were landed by helicopter at Burj Shemali refugee camp overlooking Tyre, and others were landed by sea at Rashidieh and just north of Tyre. There were initial

[12]Cordesman, "The Sixth Arab-Israeli Conflict," p. 29. He adds that Israel had the advantage that it could "fight predictable enemies who have limited tactical options in a fixed terrain."

[13]One public admission on July 9, 1982, was by Deputy Prime Minister David Levy. Report of the International Commission to enquire into reported violations of International Law by Israel during its invasion of the Lebanon, *Israel in Lebanon* (London: Ithaca Press, 1983), p. 143.

[14]This is a tactic developed by the US Army in Vietnam, for reconnaissance "by force and fire." Lt. Gen. Tolson, *op. cit.*, pp. 139-41.

setbacks for the IDF at Rashidieh and the Burj Shemali-Bass-Tyre complex, but the regrouping of the attacking forces and the arrival of fresh forces allowed the assault to be renewed.

In the central zone, the IDF pushed from Taibeh through Qantara in the UNIFIL zone, to reach the Qaʻqaʻiya bridge over the Litani river. Having forced itself across the bridge against light resistance, this force split into three branches: one assaulted Beaufort castle, another surrounded Nabatieh, and the third headed for the coast via Doueir and Zifta. Simultaneously, heliborne troops were landed at Beaufort and at the PLO's makeshift airstrip at Ansar. Further east, the third prong advanced from Mount Hermon in the Golan Heights to attack Hasbaya and move northwards. Little progress was made here on the first day, especially as one part of the force that attempted to cross the Khardali bridge was prevented from doing so by the UNIFIL unit guarding it. During the first day, there were naval landings at Qasmiyeh, Saksakieh and the major Zahrani crossroads, and late at night Israeli armor landed at the mouth of the Awali river just north of Sidon. By midnight, Israeli forces were stretched out along sections of the coastal road, and in the Nabatieh region. Tyre and the refugee camps around it and Nabatieh were isolated, but Sidon and Hasbaya were still not cut off although under attack. Air bombing or naval shelling was already being directed at targets in advance of the ground units, such as Magdousheh (east of Sidon), Damour, and Mashgarah (at the southern end of the Beqaa).

On the second day of the land invasion, the IDF consolidated its advance and pushed toward new goals. In the west, Rashidieh fell and the pockets of resistance in Tyre and Burj Shemali were isolated. Further north along the coast, Sidon was cut off as IDF units converged on it from three sides: from Zahrani and Ghazieh to the south, from Magdousheh in the east, and from Abra and Awali to the northeast and north. In the central sector, Nabatieh and Beaufort fell, and the IDF pushed north in two prongs: towards Sidon via Serba and Jbaa, and towards Jezzine via Arab Salim, Aichieh, and Jarjou'. In the east, Hasbaya fell, but the IDF made little headway as it had reached the line of Syrian deployment. During the second day Israeli troops were landed at Jieh and Saadiyat south of Damour, while aircraft bombed South Beirut, Naameh, Khaldeh, and Damour.
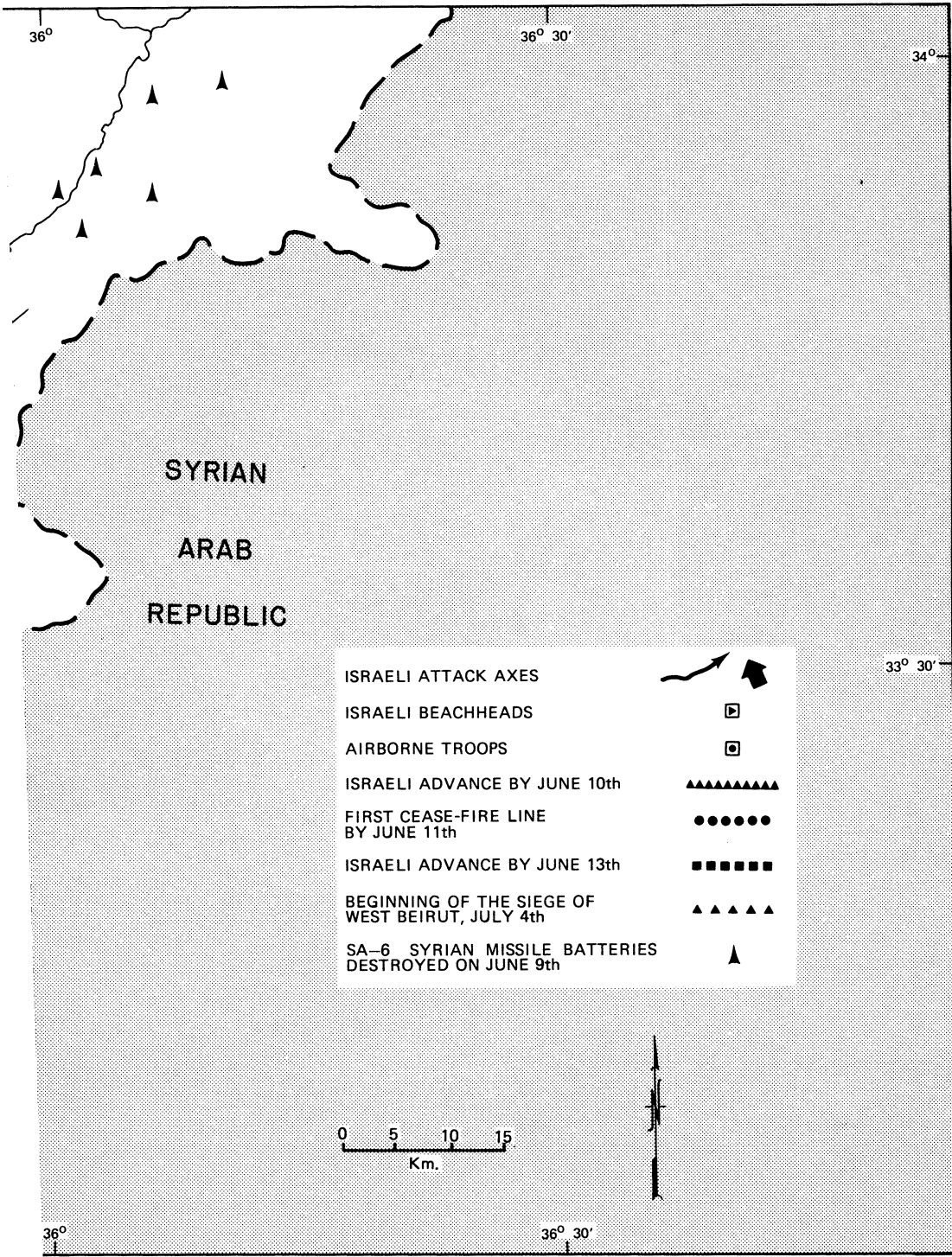
The third day, June 8, saw the critical Israeli breakthrough in the central sector. While the IDF consolidated its control of the coast and closed in on Sidon and Damour, Israeli armor overwhelmed the Syrian

forces in the Chouf to reach Beiteddine, Barouk, and Ain Zhalta. This achievement was essential to the security of the coastal advance as it provided depth, alternative approaches to Damour, Khaldeh, and Beirut, and removed the threat of Syrian outflanking from the Chouf mountains.

The next phase of the battle started on June 9, after the first major clashes between Syrian and Israeli forces the preceding day. In the west, the town of Damour was taken (although its heights were not), and the IDF advanced through Naameh to Doha, south of Khaldeh, against steadily increasing resistance. In the east, tank and air battles broke out between the Israeli and Syrian forces, during which the Syrian SA-6 batteries were destroyed. For two days, despite the massive strength of the Israeli forces, there was no significant change in the battle lines. Khaldeh held out despite repeated attempts to land commandos and armor by sea. In the mountains, the IDF was stopped at Qabr Chamoun. It was only on June 11 that Israeli armor managed to penetrate Syrian defenses in the area of Rachaya al-Wadi and the Qar'oun Lake. A spirited Syrian counter-attack near Rachaya, and stiff resistance around Sohmor, caused the IDF to divert its axis of advance to the western bank of the Litani river and the lake. With the assistance of heliborne units landed near Rachaya, Kafr Quoq, and Yanta, and of armored units descending into the Beqaa valley near 'Amiq below Barouk which were also supported by a heliborne landing, the IDF managed to push the Syrians back by up to 12 miles to a line running through 'Amiq, Kamed El-Loz, Jib Jinnine, and Yanta.

After the Syrian-Israeli ceasefire on June 11, the next phase in the Israeli advance was the encirclement of Beirut. The IDF landed troops by helicopter at Baisour and advanced toward Baabda and June 12. Only then were the Israeli units able to bypass Khaldeh and attack it from the east. Once the IDF had reached and taken Baabda, Hadeth, and Shuweifat, Khaldeh lost its military utility and was evacuated by the PLO on June 14. The final phase of the battle (before the siege of Beirut became institutionalized) came with the Israeli attack launched on June 22 to take Bhamdoun and distance the Syrian forces from Beirut. After bitter fighting involving armor and heliborne troops, the town fell on June 24, followed by a Syrian-PLO withdrawal from the Aley area on June 25 and 26.

It is obvious from the chronology so far that the overall plan of the IDF was to reach Beirut as quickly as possible, occupying the Lebanon mountain range simultaneously in order to provide defense against Syrian counter-attack. There is still some controversy as to whether part of the

SEA

BEIRUT

34°

35° 30'

Ouzai

Baabda

ZAHLEH

Khaldeh

SYRIAN
ZONE

Aley

Bhamdoun

Ain
Zhalta

Naameh

Damour

Baissour

Saadiyat

Beiteddine

Barouk

Amiq

Jieh

Baaqline

Litani R.

Awali R.

Jib
Jinnine

Kamed el–Loz

SIDON

Mieh Mieh

Magdousheh

Jezzine

Mashgarah

Sohmor

Kafr Qoug

Yant

Jbaa

Rachaya
al-Wadi

Zahrani

33° 30'

Jarjou

Sarba

Mt.
HERMON
+

Saksakieh

Sarafand

Zahrani R.

Arab
Salim

Kawkaba

Aichieh

SYRIAN
ZONE

Zifta

Ansar

Doueir

Nabatieh

Hasbaya

Qa'qa'iya
Bridge

Arnoun

Marjayoun

Shabaa

Qasmiyeh

Litani R.

Khiam

UNIFIL

MEDITERRANEAN

Mashgarah

Bur al-Shemali

Beaufort Castle

TYRE

Qantara

Rashidieh

Taibeh

HADDAD

UNIFIL

Qanah

Tibnin

HADDAD

Ras
Naqoura

Bint Jbeil

ISRAEL

35° 30'

36°

36° 30'

34°

SYRIAN

ARAB

REPUBLIC

33° 30'

ISRAELI ATTACK AXES

ISRAELI BEACHHEADS

AIRBORNE TROOPS

ISRAELI ADVANCE BY JUNE 10th

FIRST CEASE-FIRE LINE
BY JUNE 11th

ISRAELI ADVANCE BY JUNE 13th

BEGINNING OF THE SIEGE OF
WEST BEIRUT, JULY 4th

SA–6   SYRIAN MISSILE BATTERIES
DESTROYED ON JUNE 9th

0   5   10   15
Km.

36°

36° 30'

original Israeli plan was to provoke a fight with the Syrians, but declarations by senior Israeli officers indicate that it was.[15] The general plan involved two stages (assuming that the confrontation with the Syrians was part of the original plan): the first, in which coastal and central Lebanon would be penetrated in two axes, with heliborne and seaborne troops leap-frogging ahead of ground units in order to isolate, confuse, and trap PLO forces; and the second, in which the Syrian forces in the Beqaa, Chouf, and Beirut-Damascus highway regions would be destroyed. The one sticking point was that contact with the Syrian forces in the Chouf or southern end of the Beqaa might trigger a battle too early. The Israeli advance was held back in the east, therefore, but the impelling necessity of a quick advance in the Chouf opened the Syrian-Israeli battle on June 8. One source suggests that the arrival of Syrian reinforcements in the Jezzine area turned the peaceful withdrawal of the Syrian forces already there into an unscheduled battle with the IDF.[16]

In all stages of the overall plan, the IDF was to take full advantage of its massive technological and qualitative superiority, aided by an equally massive numerical superiority to be achieved both strategically and tactically. The full range of electronic and weapon systems were to be employed and tested, providing the IDF with added "force multiplication." Expansion in the role of heliborne, seaborne, and mechanized forces since 1973, and the improved performance of artillery and the air force in interdiction and close support missions, allowed the IDF to isolate and attack many more enemy targets within a more varied and complex battle plan than would have been possible with the classic tank-aircraft duo used until 1973. The role of the air force in destroying the Syrian surface-to-air missiles (SAMs) and then providing close support against Syrian armor also indicated closer coordination than in previous years.

A closer look at the battles in each sector reveals more about Israeli planning and tactics. In the west, Israeli armor soon ran into trouble in the Tyre region and suffered some loss due to the absence of adequate infantry support. Air and artillery support was also insufficient due to the intermeshing of the combatant forces. Only after regrouping and attacking with dismounted infantry and after more preliminary shelling and

[15]Brig. Amir Drori, for one, made this assertion in an interview with the Haaretz Weekly Supplement on June 3, 1983. Translated in Dar El-Jaleel Report No. 718, Amman, July 2, 1983 (in Arabic).

[16]Antoine Al-Ghusayn, "Israeli Invasions and Palestinian Presence in Lebanon," Halliyat (Panorama of Events), Beirut, No. 26, footnote 23 on p. 45 (in Arabic).

bombing, did the IDF make headway. The IDF did not allow built-up areas to slow the advance. It was necessary to clear the coastal road in order to provide adequate support for the combat units further north,[17] but until then the advancing units took every route around any islands of resistance. This happened in Nabatieh, and later in Sidon and Damour. In order to speed up the advance and completely cut off the PLO forces, Israeli troops were landed by sea at Qasmiyeh, Saksakieh, and Zahrani while ground units earmarked for the task raced toward the coast from the Nabatieh junction.

The Sidon battle displayed Israeli use of all these tactics. The first IDF units to reach the city were landed by sea to the north, and then moved south to link up with heliborne troops landed at the city's northern entrance. Another part of this force moved into the hills in conjunction with a heliborne landing, occupying the PLO positions that were meant to prevent just such a landing, and then occupying Abra overlooking Sidon. The seaborne forces which were landed at Zahrani (after two attempts) moved north on Sidon and stopped at its southern entrance, with some units moving round it to occupy Magdousheh overlooking it. On June 7, the heliborne landings in the hills east of Sidon, at Mieh Mieh, Hilalieh, and Kfar Falous helped to complete the encirclement as ground units coming through Nabatieh reached the Sidon area via three axes. In the Sidon battle Israeli armor received massive artillery and air support, as well as that of mechanized and regular infantry. The armor's task was facilitated, furthermore, by a combination of factors: the tardy response of the PLO sectoral command and units to the landings, the inadequate concentration and deployment of PLO units and anti-tank weapons outside Sidon, the rapid isolation and demoralization of PLO defenses due to the numerous landings in the hills, the quick destruction or neutralization of PLO artillery, and the collapse of the internal defenses of the city due to the disappearance of the PLO regional command. Israeli armor did not have to advance against organized, stubborn resistance properly armed and carefully deployed. It could, instead, ride roughshod over the scattered groups that put up some individual resistance, and enter Sidon and carve it up into convenient chunks with relative impunity.

The battles for Jieh-Saadiyat and Damour were smaller, repeat performances. Aircraft bombed and naval vessels shelled these towns

[17]Testimony by IDF personnel shows the importance in Israeli plans of holding the main road in order to continue to Beirut. *Israel in Lebanon, op. cit.*, p. 75.

during the first two days of the land invasion, and naval landings were then effected while ground units moved up from around Sidon. The Jieh-Saadiyat area was weakly defended, but Damour necessitated another naval landing to the north at Naameh and a heliborne landing in the hills to the east. Once Damour had fallen, Israeli armor again had to take alternative routes through the mountains in order to outflank the stubborn resistance at Khaldeh, where Israeli use of the same combination of tactics was unsuccessful. The first seaborne force which landed at Khaldeh on June 9 was forced to retreat to Doha, after which numerous attempts to land more troops or advance up the coastal road after intensive air and artillery fire failed. Full use was made of the fire support offered by aircraft, artillery, and the navy, as well as the tank guns and helicopter gunships. Combined columns of tanks and mechanized infantry then advanced, only to be repulsed by heavy anti-tank fire. The same Israeli tactics were also used unsuccessfully later in the battle for Beirut. During and after the battle for Khaldeh, the IDF attempted to land forces at Ouzai (at the southern entrance to Beirut) under the cover of heavy air, sea, and ground fire support. The aim was to ignore Khaldeh and cut across the airport and Beirut's southern suburbs and refugee camps. Had this method succeeded, ground units descending from the mountains would have met up with the landed forces and pushed together into West Beirut along three axes: the seashore toward Ras Beirut and Mazraa; the road going to the Cité Sportive and Mazraa, and the airport road toward the race course. These lines would have isolated the seafront from the PLO headquarters in Fakhani and Sabra-Shatila, and the latter from Burj al-Barajneh and Shiah. Occupation of the East-West Mazraa axis would have separated the whole of West Beirut from the main PLO concentrations.

The penetration of the Chouf was a relatively straightforward affair, as the PLO had no presence there and the Syrian forces were caught in the open during their withdrawal. The serious Syrian-Israeli fighting took place in the Beqaa valley where main units of both sides clashed. Israeli tactics were to advance in armored columns with major reliance on tanks. Once the Syrian SAMs had been destroyed, Israeli aircraft provided close support for the ground units. There were major battles nonetheless, and Israeli columns were ambushed by Syrian commandos deployed in advance of Syrian armor. At Ain Zhalta, the IDF was badly mauled and had to withdraw before renewing the attack with the support of mechanized and dismounted infantry. Tank-to-tank battles also took

place near Lake Qar'oun, where superior Israeli tank gun range and air and helicopter support decided the issue. Yet it was not an easy task for Israeli armor, as the Syrian counter-attack near Rachaya al-Wadi showed, in which an IDF armored battalion lost many tanks to Syrian armor. Furthermore, Syrian helicopters attacked Israeli armor with some success, using anti-tank guided missiles.

Tactical Aspects of the Invasion

A. Planning.   The Israeli military command had devoted much time to determining the size and strength of PLO-Syrian forces in Lebanon, and so to identify the most suitable methods and axes for advance. Reconnaissance and intelligence showed up the weak points and the armament and effectiveness of individual units. Once the major objective of taking Beirut and defeating the Syrian forces had been defined, the IDF command calculated the time and force needed to achieve the dual aim of a rapid advance and destruction of enemy units.

It is difficult to tell what alternative contingency plans were prepared at the strategic level. In other words, had the ground forces been held up at, say, Sidon, or had the Chouf remained in Syrian hands, would the IDF command have chosen speed over secure lines? Would the alternative have been to reroute the main communications line for the advance on Beirut through the Chouf mountains if Sidon had not fallen for one or more weeks, or to hold a long thin coastal strip under the Syrian guns if the Chouf had not fallen? If these two alternatives were too risky, would the whole scale of priorities have been changed so that pushing back the Syrian army in the Beqaa and Chouf came first? In the latter case, the Israeli military position would have resembled the Syrian one in the 1976 fighting in Lebanon when Syrian units in Jezzine, Barouk, and Sofar pushed westwards against the PLO-leftist coalition based in the coastal and Chouf zones. Israeli appreciation of Syrian military strength might have led to such a move against Syrian positions first, with inevitable negative consequences—through allowing the PLO more time to appreciate the sit-·ation and redeploy—for the second phase against the PLO area.

Planning for each sector or battle involved determining the size and nature of the units to be used against the identified targets: fortified positions such as Beaufort; built-up areas such as Tyre and Sidon; PLO armor, artillery, or infantry positions; and Syrian armor, infantry, or

anti-aircraft positions. The plan of attack involved three aspects: the approach axis and timing of the attack; the arrival, deployment, and movement of attacking units (by land, sea, or air); and the weapon systems used. The first aspect was related to the importance and strength of the target, and to its relevance to the overall plan. The second aspect was related to the best means for overcoming the obstacle with a minimum of Israeli losses and maximum use of available resources. The third aspect was related to the choice of weapon systems and munitions suitable for the target assigned, keeping in mind that in each case there was a range of appropriate choices (for example, ordinary iron bombs could be used just as effectively against a SAM launcher as guided bombs or missiles, if they could actually be delivered).[18]

The question is inevitably raised whether the IDF was, in fact, too lavish in its allocations of men, munitions, and material or in its recourse to combined operations involving seaborne and heliborne troops on such a wide scale.[19] Several critics feel that the growing Israeli reliance on technology and mass has weakened tactical innovativeness and the quality of individual soldiers.[20] Moreover, despite the use of simpler munitions when there was no need for more sophisticated ones, and despite the increased accuracy of Israeli weapons, which allowed greater economy in ammunition expenditure,[21] the IDF has come to rely on its massed firepower to pave the way for movement by ground units.[22] One indisputable advantage of large-scale use of firepower, special or

[18]Here technical and technological intelligence about Arab weapons systems played a major role. One observer warns that this formed a large part of the Israeli Air Force's stunning successes. See Martin Van Creveld, "The War: A Questioning Look," *Jerusalem Post*, December 12-18, 1982, p. 12.

[19]The IDF said that there were 15,000 PLO men in the whole of Lebanon, of whom only 6,000 were in the South (although there were in fact probably far fewer full-time fighters in the South). "Operation Peace for Galilee," *IDF Spokesman*, June 21, 1982, p. 26.

[20]Creveld, *op. cit.*, p. 12, says that "the tendency of the IDF to concentrate on technological solutions at the expense of tactical originality . . . led to a relative decline in the quality of its performance." Luttwak and Horowitz, *op. cit.*, p. 370, say that the cost of mechanization has been a loss of tactical inventiveness. Cordesman, *Jordanian Arms and the Middle East Balance*, *op. cit.*, p. 83, also notes "an over-reliance on technology and mass. Many Israelis feel that 'saturating' the battlefield with high cost and high technology weapons like artillery is slowing down Israeli forces, making their tactics too rigid. . . ."

[21]Goodman, *op. cit.*, p. 11, says that the artillery expenditure in 1982 was only three times that in March 1978.

[22]Goodman, *op. cit.*, p. 11, and *Israel in Lebanon*, *op. cit.*, p. 71, make this point. In 1967 and 1973, armored columns relied far less on such tactics.

combined operations, and guided weapons, was to achieve such a degree of surprise and dislocation within PLO units and commands that they did not grasp or counter Israeli military objectives before they were actually taken or surrounded.[23] One member of the PLO military council admitted that it was only on the fourth day of the invasion that he realized that Beirut was the target.[24]

Finally, it is obvious that there were both contingency plans and a large degree of flexibility within the original ones, on the Israeli side. The IDF units operating in the Tyre, Nabatieh, and Jezzine regions fanned out and approached their objectives via several routes. This was partly in response to battlefield needs which dictated that some units be diverted from the Qasmiyeh-Zahrani sector to move back south to Tyre, and others from the Nabatieh or Jezzine sectors to join the battle for Sidon. Some of this branching out and linking up was in the original plans, but additional units were diverted from sector to sector according to need. The advance northwards into the Beqaa valley, on the west bank of the Litani river and down from the Barouk mountain, was another deviation from the original plan, as was the approach to Beirut through the mountains. Originally, Beirut was to have been assaulted from the south while the Beirut-Damascus highway was to be cut higher up by the units advancing through the Chouf.

B. Combined Operations. The IDF made full use of combined operations in most phases and sectors of the war. The most obvious forms were naval and helicopter landings. In some cases, the landings took place simultaneously with movement of ground forces, backed by artillery and aircraft. The Tyre and Awali operations witnessed use of both seaborne and heliborne troops, with armor and mechanized infantry being landed by sea, while ground units arrived to box in the defenders. At Beaufort Castle, armor and dismounted infantry joined with heliborne troops and close support aircraft to storm the castle. In other instances, heliborne or seaborne forces landed ahead of ground units, and held out on their own

[23]The role of surprise and deception in also confusing the Egyptian command for the first 24 hours in the 1967 war is pointed out in Richard Betts, *Surprise Attack* (Washington, D.C.: Brookings, 1982), p. 65.

[24]Mamdouh Nawfal in an interview in *Shu'un Filastiniya*, no. 135, p. 29 (in Arabic). Another member asserts that the Council had not really expected the Israeli attack to reach Beirut itself. See Abdul-Rahim Mallouh, in an interview in *Al-Hurriya*, June 5, 1983, p. 29 (in Arabic). Some Western sources were clearer on possible Israeli plans: one realistic scenario was published in *Strategy Week*, Vol. 8, No. 15 (April 19-25, 1982), p. 2.

or moved forward in anticipation of landed armored vehicles: these were probably armored cars or APCs, as Israeli tanks are too heavy to be heli-transported. Generally speaking, Israeli combined operations displayed a marked improvement over past performance, although they ran into trouble when faced by determined resistance as occurred in Khaldeh. In 1967 and the Karameh battle in 1968, helicopters landed paratroopers behind enemy lines, but not in the teeth of local organized resistance nor in point coordination with armor and infantry.

Possibly the main weaknesses in Israeli combined operation were in the uncertainty about the role of mechanized infantry and in aircraft close support.[25] There is still much dispute within the IDF about the role of mechanized as opposed to "regular" infantry, and in most battles which required infantry action (whether planned or in response to setbacks such as in Khaldeh and Ain Zhalta), it was action by dismounted infantry, not charging APCs or IFVs, that helped the tanks against enemy infantry and anti-tank weapons. In fact, the M-113 APC proved to have low survivability in such an environment[26] (PLO anti-aircraft guns of 14.5 to 20 or 23mm caliber were effective against its armor), and General Israel Tal for one has emphasized that infantry, not APCs, are needed for the attack.[27]

One other drawback of heliborne or seaborne operations was that there were not enough landing craft or troop-carrying helicopters to carry out more landings without the risk of leaving some landed units without supply or support. The IDF used its available means fully, but major weaknesses emerged. The tank landing craft could land a total of one battalion in one go. If a mixed tank-mechanized infantry force were landed instead of an all-tank force, it would be too weak to beat off a determined counter-attack before a second wave was brought in. An all-tank force would have an even more difficult time against infantry with anti-tank weapons, especially in the terrain of South Lebanon. In practice, the IDF did not use all its landing craft to land a battalion-sized force in any one spot; it landed company-sized mixed units in each wave and relied on helicopter gunship and aircraft support to protect the weak advance units.

[25] Cordesman, *Jordanian Arms and the Middle East Balance*, op. cit., p. 55.

[26] *Ibid.*, p. 68.

[27] Quoted in R.D. Furlong, "Israel Lashes Out," *International Defence Review*, Geneva, No. 8 (1982), p. 1006. Luttwak and Horowitz suggested a combined arms response, employing infantry in vehicles (*op. cit.*, p. 364).

Had it not been for abysmal planning and response by the PLO, the bridgeheads at Awali and Zahrani could have been repulsed despite their air cover.

Had the IDF possessed larger numbers of landing craft, would it have tried to take control of the entire coast by landing sizable forces along its length, or would it have beefed up the initial landings and only ventured with new ones once the ground units were close enough to ensure linkage? The obvious advantage in the former case would be to control the approaches to Beirut well before the PLO had realized what was afoot and could reinforce Beirut's environs. The disadvantage of the former option would be to increase the logistic effort greatly, and to suffer dire consequences if the ground units could not link up with the beachheads fast enough. The latter option, of consolidating the initial beachheads, would still be preferable because it would allow quicker resolution of the local battle, freeing the landing craft and landed units for repeat performances elsewhere within shorter timetables. Significantly, the Israeli navy has already ordered the construction of several new landing craft.[28]

The Performance of the Different Branches of the Armed Forces

A. Armor. Israel made full use of its armor. The IDF has over 3,700 tanks in its inventory, including 1,135 M-60s, 1,100 Centurions, 650 M-48s, 300 Merkavas (maybe 600), 400 modified T-54/115s, and 150 modified T-62s. Up to 1,600 tanks were used in the invasion, consisting of M-60s, M-48s, Centurions, and Merkavas. The tactical and operational employment of the tanks shows that: (1) Tanks, supported by varying proportions of APCs, formed the spearheads of the ground units, moving fast and risking exposure to anti-tank fire. (2) In Rashidieh and the Tyre complex, infantry had to bail out the tanks, and in battles like Beaufort, Bhamdoun, and the latter part of the Ain Zhalta battle, tanks provided fire support for the infantry. In all other sectors, however, tanks accepted small losses as long as they could take their objectives. (3) There was close coordination with air and artillery support. There is no real evidence of tank-helicopter cooperation, although some western sources claim that Cobra and Defender attack helicopters accounted for 60 percent of Syrian

[28]Furlong, *op. cit.*, p. 1007.

armor destroyed (which implies a highly improbable 480 tanks and APCs out of 800 destroyed according to Israeli figures).[29] (4) Up to 1973, IDF emphasis was on high mobility of armor, implying good speed and range.[30] Since 1973, however, the obvious difficulties or inutility of such characteristics in the modern battlefield with its stronger anti-tank defenses, have led to an emphasis on "tactical" mobility, which means the ability of tanks to maneuver and survive inside the combat zone. Hence the trend toward better armor, gun and sighting capabilities, and crew protection.

The tanks showed very little capability or versatility when fighting in urban areas. Sidon and Tyre presented no real test, but Beirut showed that tanks fought blindly and could not advance if the way had not been cleared by infantry. The fighting close to the museum in Beirut showed also that the tanks could not provide adequate fire support to the infantry. Only in the advance on the airport, and then over the open sand dunes north of it, could the tanks use their gun range to deal with PLO targets at safe distances. In these operations, the tanks were accompanied by dismounted infantry. The conclusion is that despite the brief experiences of street fighting in Suez and Qantara in 1973, the IDF had not learned how vulnerable and unwieldy tanks were in urban settings.[31]

Israeli armor also showed an inability to deal with enemy infantry;[32] armor was used to achieve breakthroughs,[33] but infantry had to mop up pockets of resistance, otherwise the tanks became exposed to constant harrying on their flanks. When faced by Syrian tanks, the IDF called on air strikes to clear the way for the breakthrough. This worked well in the Chouf, but in the Beqaa and Ain Zhalta Israeli armor had to cope with

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[29]Item in *Strategic Review* (London), Vol. 3, No. 23, p. 13 (in Arabic).

[30]One author emphasizes the dynamic use of Israeli tanks for shock effect, which demands high mobility, but adds that when hampered by anti-tank weapons or aircraft, they become hamhanded and their performance declines. Richard Simpkin, *Tank Warfare* (London: Brassey's, 1979), p. 247.

[31]The difficulties faced by German armor attempting to rush through cities (losing 57 out of 120 tanks in one day in Warsaw, for example), is mentioned in Len Deighton, *Blitzkrieg* (London: Triad Granada, 1979), p. 247. Dupuy, *op. cit.*; Chaim Herzog, *The War of Atonement* (London: Futura, 1977); and Avraham Adan, *On the Banks of the Suez* (London: Arms and Armour Press, 1980); all discuss the IDF's negative experience in streetfighting with tanks in Suez and Qantara.

[32]Adan, *op. cit.*, pp. 38-39, says that infantry were "ineffective targets for tanks" and that it took three hours to eliminate one Egyptian commando ambush behind Israeli lines.

[33]General Tal still believes that the way to launch an offensive is by the breakthrough battle, but accepts that attrition is what decides the outcome. Quoted in Furlong, *op. cit.*, p. 1006.

Syrian armor directly. In all the major battles the Israeli tanks resorted to direct combat to defeat Syrian armor. In these engagements the Israeli tanks benefitted from the superior range and accuracy of their guns, as well as from their fire control systems, rangefinders, and nightviewing equipment. There was relatively little maneuver, especially the famed "indirect approach"[34] which, as myth has it, is how Israeli armor operated in 1967. However, despite some claims, it was probably the IAF that knocked out the T-72s, using guided munitions, not Israeli armor (or even the TOW-armed helicopters). Infra-red homing or laser beam riding top-attack anti-tank sub-munitions may have been used, but they are probably still in the development phase.[35]

At the technical level, combat showed the following: improvements in armor plating increased tank survivability and crew protection. The Merkava tank is known to have spaced armor and fire suppression systems, as well as added protection for the crew and mounted infantry as a result of the placing of the engine in front and of adding armor around their compartment. Crews gained added protection due to improved helmet design and flak jackets. The M-60 tank (which has weaker armor than the Merkavah, Centurion, or M-48 tanks)[36] and the Centurion tank had slabs of extra armor fitted on the turret, and on the frontal and upper surfaces of the hull. The slabs may consist of Chobham armor;[37] alternatively, they may be a metal-ceramic mix like that of the Merkava armor or fiber glass,[38] and form a sort of spaced armor. A third possibility is that they consist of an explosion-suppressing system based on small explosive charges which detonate when hit by enemy projectiles and so destroy them before they do too much damage. Some tanks and M-113 APCs had turret-mounted 60mm mortars in addition to smoke grenade

[34]Israeli armor is said to have used Captain Basil Liddel-Hart's concept of an indirect approach toward enemy positions which allows for disruption, demoralization and confusion of the enemy with minimal combat. The concept is based on maneuver, so lack of space, or using frontal combat automatically preempts any possibility of its use.

[35]A "senior IAF officer" (probably then IAF Commander Gen. David Ivri) implies this strongly: "Those tanks destroyed by the army, we captured, those destroyed by the Air Force stayed in their hands . . . we don't have any T-72's." Interview in Flight International, "Bekaa Valley Combat," October 16, 1982, p. 1108.

[36]Cordesman, Jordanian Arms and the Middle East Balance, op. cit., p. 24.

[37]W.S. Carus, "The Bekaa Valley Campaign," The Washington Quarterly (Autumn 1982), p. 36.

[38]"Exporting Israeli Arms and Technology to the US," Strategic Review, Vol. 4, No. 3, p. 13. Creveld, op. cit., p. 12, states that they are "screw on" spaced armor.

launchers. The tank guns and ancillary equipment allowed Israeli gunners to get one or two shots in at Syrian tanks before the latter had time to fire, and two or three shots were enough to zero in on enemy tanks at maximum ranges.[39] Moreover, the IDF used the Israeli-designed APFSDS round, which proved itself in combat against Syrian armor. The factors of weight and size led to a concentration of Merkavas and Centurions in the western sector, while M-48s and M-60s were used on the narrow, twisting roads of the central sector. In the Beqaa both Merkavas and M-60s were used, and the former got their first combat experience against enemy armor. Support services also maintained a high level of armor recovery and repair.

In learning lessons for the future, the IDF has to take account of several factors: the Syrian T-72s still present an unknown capability against Israeli armor;[40] the conditions of limited mobility in present-day battlefields require increased armor protection but stronger engines too; and stronger armor plating on Syrian tanks will require stronger Israeli tank guns. The Merkava represents an interim solution, but by the end of the decade, there will be need for a new main battle tank, especially as the Centurions and the M-48s will be at the end of their operational life. The choice will probably be for a radically changed Merkava with a 120mm gun, advanced armor (either new types under development or spaced armor using special metal-ceramic alloys with added fire and/or explosion suppression systems), and a much stronger engine.[41]

B. Infantry. Israeli infantry played an important role in supporting armor, in assaulting enemy infantry, and in urban fighting. The tanks normally moved ahead, but worked with dismounted infantry to clear pockets of resistance, like Ain Helweh, Rashidieh, and Burj Shemali refugee camps. When armor was completely unable to advance, infantry moved forward on foot to overcome the obstacles, after which the armor could resume its movement.[42] In built-up areas, infantry had to do the fighting, often without tank support. Infantry combat showed that APCs acted mainly as transport to take the infantry to the scene of fighting, but were unsuited for combat (the IDF has 5,000 APCs and 4,000 IFVs or

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[39]Carus, op. cit., p. 35.

[40]Amnon Sella, "The USSR and the War in Lebanon: Mid-1982," p. 40.

[41]Simpkin, Antitank, op. cit., pp. 68-69, expects a new Merkava.

[42]Infantry did not, however, operate against armor. Its anti-tank rockets and guided missiles were mainly used against enemy infantry and fortifications.

reconnaissance vehicles; 1,600 APCs and IFVs took part in the 1982 war). Mechanized infantry accompanied the tank columns, but could not move ahead of or even with the tanks when under fire. APCs receiving direct hits in such circumstances suffered from a higher proportion of casualties among the soldiers on board. The arming of the APCs with 12.7mm (0.5 inch) caliber machine guns or Vulcan six-barrelled anti-aircraft guns did not provide sufficient fire cover to allow them to engage enemy anti-tank weapons, although when used at a distance or against light opposition their volume of fire was valuable. The IDF may improve the M-113s' survivability against armor by providing them with an anti-tank capability in the form of a new, Israeli-designed 60mm anti-tank gun. Israeli infantry was basically unused to urban fighting,[43] although some units had been specially trained in the deserted southern Lebanese town of Khiam. Infantry armament was good, significantly including a very high proportion of man-portable anti-tank rocket launchers (RPG-7 and Israeli-designed B-300 or Picket), rifle-propelled grenades, and 7.62mm squad machine guns. But the soldiers could not or would not operate on their own in street fighting. Infantry casualties were greatly reduced, as were tank crew casualties, through widespread use of flak jackets. These were especially effective against shrapnel, and specially-designed helmets for infantry and armor crews reduced the lethality of head wounds.[44]

Special infantry units played an important role. Naval commandos and heliborne paratroopers were instrumental in cutting off PLO units and in securing the routes for the advance of main force units. Mechanized infantry also accompanied the tank landings. Compared with the secondary role of infantry in the 1967 and 1973 wars[45] (where infantry either mopped up islands of resistance while armor ranged far ahead, or took part in very limited operations on its own), infantry had to play a more direct role in the 1982 war. This fact indicates that future fighting in urban areas or against determined tank-infantry combinations will oblige Israeli armor to call on the infantry. This in turn will lead to greater thought about future protection. One alternative to the unavoidable human cost of increased, but necessary, infantry involvement in intense

[43]One example of the confused Israeli approach is the first attempt to enter Sidon from the south in which there were heavy casualties. See *Israel in Lebanon, op. cit.*, p. 72.

[44]"Tactical Lessons of the Lebanon War," *Strategic Review*, Vol. 3, Nos. 25/26, Appendix, p. 6. Also Creveld, *op. cit.*, p. 12, who mentions use of fire resistant suits.

[45]Dupuy, *op. cit.*, p. 595.

combat is to develop highly mobile, flexible mixed brigades of heliborne troops, armor, and artillery which can bypass and isolate enemy strongpoints at minimal cost.[46] The Israeli emphasis on tanks, however, will probably delay the development of such an alternative, especially one tailored for the anti-tank role.[47]

C. Artillery. Israeli artillery was greatly improved after the experience of the 1973 war. It was reorganized, and greater attention was paid to tying it in effectively with armor and infantry needs. This meant acquiring more self-propelled artillery, improved ammunition (including cluster and fragmentation shells and possibly "smart" munitions), better fire control and targeting equipment, and better combat performance through the use of better target acquisition, intelligence-gathering, and coordination with combat units.[48] By 1982, Israel had 1,590 guns or multiple rocket launchers, half of which were mobile (besides 900 mortars). The artillery units were tied into a communications network which allowed both combat units and commands to call on or direct fire. Moreover, the use of radars for enemy gun location[49] and computerized fire control systems, coupled with the use of RPVs for real-time intelligence gathering,[50] meant that high levels of accuracy were reached which in turn allowed reductions in ammunition expenditure. Around 600 guns or rocket launchers were used in the 1982 war, and they played an important role in the siege of Beirut, in supporting armor against enemy infantry (and even enemy armor), and in suppressing enemy anti-tank or anti-aircraft defenses. It is known that Israel has designed its own artillery anti-radar capability.[51] The suggestion is technically possible, but it is doubtful that Israel would

[46]This point is made by Cordesman, *Jordanian Arms and the Middle East Balance, op. cit.*, p. 55; Cordesman, "The Sixth Arab-Israeli Conflict," *op. cit.*, p. 30; and Tal in Furlong, *op. cit.*, p. 1006.

[47]Simpkin, *Antitank, op. cit.*, p. 221, says the shift is "not near."

[48]Both Cordesman, *Jordanian Arms and the Middle East Balance, op. cit.*, p. 82, and Goodman, "Nine Years' Homework," *op. cit.*, p. 11, make this point.

[49]Artillery location radar is generally less effective against artillery rockets due to their low trajectory. See Maj. Gen. David Ott, *Field Artillery* (Washington, D.C.: Dept. of the Army, 1975), p. 180.

[50]Real-time intelligence means reconnaissance and information gathering by photographic or electronic means which instantaneously relay back to control/observation command posts which can direct their forces according to enemy deployments as they actually are at that instant. Ordinary reconnaissance is time-consuming, several hours at least, by which time the situation on the ground has changed.

[51]Carus, *op. cit.*, p. 38.

develop such a capability when it has several effective air-to-surface weapons capable of the same role. Israeli efforts in this field are probably concentrated on developing rockets or artillery shells carrying sub-munitions with an anti-tank homing capability. Most future developments in Israeli artillery will probably focus on improving or replacing existing munitions, increasing the self-propelled component, and developing electronic and computerized communications, intelligence, and fire control systems.

D. Helicopters. In 1982, the Israeli Air Force had 163 helicopters. Of these, 12 were AH-1GIS Cobra and 30 500md Defender attack helicopters; the transport and general utility helicopters could lift a maximum of three paratroop battalions, or mixed loads of men, materiel, and vehicles or guns. In the past, helicopters were used in three main roles: as transports (but not assault transports) landing men behind enemy lines; as supply and casualty evacuation means; and as transports for commando raiding teams.[52] The IAF lacked assault transport helicopters and helicopter gunships suited for general or anti-tank attacks. By 1982, both weaknesses had been improved, although the numbers and types of IAF helicopters remain insufficient to allow for major reliance on large, hard-hitting heliborne forces.

In the 1982 war, Israeli helicopters were used against the PLO as gunships providing harassing and covering fire, as ordinary and assault transport for paratroopers landed ahead of advancing ground units, and for casualty evacuation. In several cases, the helicopters landed light armored vehicles, particularly to the east of Sidon and Damour. Against the Syrians, helicopters were used to land troops in the hills of the ante-Lebanon range and so cut off the Syrian units which the IDF could not dislodge. Helicopters were also used in the anti-tank role but, despite some accounts, probably did not play a major role.[53] While the role of helicopters in transport, supply, and casualty evacuation was consistently

[52]Combat action in 1973 included assaults on Mount Hermon, an ambush of Iraqi reinforcements, and operations against the Egyptian Air Defense system. See Dupuy, op. cit., pp. 592-93. Commando raids include action during the Egyptian-Israeli war of attrition, but Gen. Bar Lev warned that they "would not have an effect on the situation in the canal zone, but they would have their place and effects within the overall situation" (quoted in Mahmoud Azmi, Israeli Airborne Forces, Beirut: PLO Research Center, 1973, in Arabic, p. 136).

[53]See footnote 29. Also Cordesman, Jordanian Arms and the Middle East Balance, op. cit., p. 77, and Creveld, op. cit., p. 12.

effective, their performance in the attack or assault roles is open to debate. Some Israeli and American sources have it that the helicopters displayed both versatility and survivability; other, more authoritative sources assert that their vulnerability to small arms fire and the limited extent of combat trials are causes for concern.[54]

The IAF is likely to follow universal trends in helicopters by expanding and improving its anti-tank helicopter component, and by acquiring more, better suited assault transport helicopters. Existing Israeli capability is good, especially in comparison to Arab helicopters, but it suffers from basic defects that will become more serious in the near future: the Cobra helicopter is being superseded by new attack helicopters, and the Defender relies on its maneuverability rather than any armor for protection. Faced with modern Arab attack helicopters and dense anti-aircraft defenses, these Israeli helicopters will steadily lose effectiveness and survivability in the 1980s. Reinforcing this negative trend is the fact that the weapons used by Israeli attack helicopters will soon, or already, suffer from decreased effectiveness, especially against the T-72 tanks and low-altitude anti-aircraft weapons such as the SA-8 or SA-9. The TOW ATGMs used at present showed limited penetrative ability against T-72 armor,[55] while 7, 62, 12.7, or 20mm guns on board will lose their utility if the helicopter firing them has to maintain longer distances from ground defenses. One answer may be fire-and-forget anti-tank missiles, and other stand-off weapons, but until these and improved attack helicopters have been developed that provide better armor/weapon/maneuverability mixes, the IAF will extend the useful life of its current force through constant modification of weapons and improvement of protection against detection and enemy weapons, and of avionic and navigation systems. The IAF also lacks medium-sized assault helicopters that can carry 15 to 20 men, as well as external weapons. The IAF will probably focus, therefore, on acquiring new attack helicopters when they have been sufficiently developed in the west,[56] and modern medium and large-sized assault helicopters. No doubt there will be parallel organizational changes, as the

[54]The "senior IDF officer" asserts that the survivability of the Cobra does not allow effective use ("Bekaa Valley Combat," op. cit., p. 1111). Lt. Gen. Tolson, op. cit., p. 257, makes the point that what is important is helicopter "survivability" not "vulnerability."

[55]Carus, op. cit., p. 36.

[56]The IDF has a "strong incentive to wait until it can buy or build a 'next generation' system," according to Cordesman, Jordanian Arms and the Military Balance, op. cit., p. 77.

anti-tank helicopters may be assigned to the army, and the heliborne forces will undergo expansion, reequipping and rearming in order to meet future developments in operational doctrine.

E. The Navy. In 1982, the Israeli navy had 2 missile corvettes, 22 fast attack craft armed with missiles, 30 smaller patrol vessels, 3 submarines, and 9 landing craft (3 other LCMs may have been taken out of service). A large part of this force was used during the invasion: up to ten missile and patrol boats were on duty constantly, and all the landing craft were used. In the past, the navy played a very secondary role confined mainly to patrolling the Israeli coast. During the 1967 and 1973 wars, it guarded against possible Arab naval attacks and undertook some offensive action against Arab vessels and ports to neutralize them. Its only other significant contribution was to the commando raids carried out during the Egyptian-Israeli war of attrition of 1969-70, and against PLO positions in 1970-74 and 1979-81. In most of these operations, naval commandos were landed, with the occasional support of helicopters or aircraft. In others, the attack craft undertook shelling of coastal targets, on occasion using guided missiles to hit specific buildings used by the PLO. Another role was to blockade the Lebanese coast and to carry commandos or frogmen who used explosive charges to sink ships in the Tyre and Sidon harbors. The only recorded instance of use of landing craft, however, was on September 9, 1969 when an armored force was landed on the Egyptian shore. Egyptian commando raids between November 16, 1969 and February 6, 1970 caused the sinking of 5 Israeli tank landing craft.[57]

In 1982, the Israeli navy did not have to face Arab boats, so its missiles were of limited use, except against specific coastal targets. The navy therefore took on three tasks: blockading the coast to keep supplies from reaching the PLO or PLO men from escaping; shelling coastal targets; and landing IDF units. The first task was relatively straightforward, especially as no Arab vessels threatened the blockade, and as the PLO had no anti-ship guided missiles or shore guns with sufficient range. The second task was a relatively new one for the Israeli navy.[58] In March 1978, Israeli boats offered some fire support for ground units moving up the coast toward Tyre, and shelled Tyre and the surrounding camps in order to disrupt PLO commands and reinforcements. Naval fire support in 1982 was much greater, however, as the boats both supported ground units and

[57]Dupuy, *op. cit.*, pp. 368-69.

[58]Goodman, "Nine Years' Homework," *op. cit.*, p. 11.

went ahead to shell other targets that had not yet been reached. The navy enjoyed two advantages over the air force in this role: the ability of boats to stay in position for extended periods, whereas aircraft have to fly back to base for fuel and ordinance replenishment; and the ability to direct larger quantities of lighter ammunition at different or the same targets. Artillery normally plays this role, but until it was within effective range for accurate fire, the gunboats could keep up interdiction and harassment fire against PLO targets or communications routes. It could also provide unexpected angles of attack. The boats used their 76mm guns, but multiple rocket launchers may have been mounted on board for the operation.

The third task, of landing forces, was carried out by landing craft (LCTs). In some cases, such as the Awali beachhead, naval commandos landed first by night to secure the landing zone; in other cases such as at Zahrani or Khaldeh, the LCTs approached in daylight under the fire cover provided by the missile boats and aircraft.[59] Despite this fire, and that of the LCTs' own 40 and 20mm guns, the first attempt at Zahrani failed, while all attempted landings at Khaldeh, Ouzai, and Ramlet al-Baida in Beirut were beaten off (the first attempt at Khaldeh actually worked, but the landed units had to break out of the PLO encirclement and retreat southwards).

Probably future trends in the Israeli navy will focus on developing its anti-ship and long-distance capabilities. Israeli navy Admiral Almog has said that Israeli shipyards will build several more, larger landing craft,[60] which indicates the need to land larger units in each wave or to establish more beachheads at a time. Developing the navy's landing capability in turn means improving fire support and integration with helicopter or aircraft support. It is possible that the navy will also need to acquire at least one more support ship, in addition to the two it already has; otherwise seaborne forces will always have to rely on quick link-up with ground units or on naval and helicopter supply and evacuation. However, the basic objective of extending Israeli influence and of strategic "force projection" means that developing the navigational and performance characteristics of attack craft and their missiles will receive priority attention. This will mean improving the guided anti-ship missiles (the Gabriel has been adapted as an air-to-surface weapon), improving the

[59]Lt. Col. David Eshel, *The Lebanon War, 1982* (Tel Aviv: Eshel-Dramit, 1982), pp. 56-60, contains a description of the Awali landing.

[60]Quoted in Furlong, *op. cit.*, p. 1007.

vertical-launch point-defense Barak or Phalanx anti-submarine warfare (ASW) components (although the helicopter hangar of the Aliyah Corvettes has been removed), and acquiring new submarines.

F. The Air Force. The Israeli Air Force is the most famous of the three services due to its traditional role in achieving complete strategic and battlefield air superiority. The IAF had over 670 combat aircraft in 1982: 40 F-15 Eagles, 75 F-16 Falcons, 150 F-4 Phantoms, 180 Kfirs, 30 Neshrs, and 200 A-4 Skyhawks. The air force maintained a very high rate of activity, with 100 to 200 sorties a day at the peak of the fighting involving up to 400 formations[61] (one source estimates 1,200 sorties during the war).[62] IAF action in 1982 differed markedly from previous wars, however. In the past, Israeli aircraft concentrated heavily on destroying enemy air forces and air defense systems, with an equal or lesser proportion of sorties being allocated to ground attack missions. Furthermore, most ground attack missions were against exposed, undefended enemy ground units, not close support, breakthrough, or interdiction bombing. The IAF probably caused as much damage to enemy dispositions by the psychological effect of massive air superiority and dive-bombing, as it did by physical destruction.[63] In 1967 and 1973, ground units, particularly armor, achieved the real breakthrough and material gains on the ground.

By 1982, reorganization and reevaluation of IAF tasks had led to a much improved ability to support ground units. Effective interdiction bombing quickly blocked PLO communications routes, helping to prevent the withdrawal and regrouping of PLO units, although no amount of interdiction bombing and shelling could completely cut them off without supportive action by heliborne or ground forces. Breakthrough bombing helped the advancing columns penetrate enemy defenses, particularly Syrian ones in the Chouf and parts of the Beqaa. The IAF also carried out close support missions to assist the naval landings and the ground forces held up by stiff resistance. In such cases the ground forces would withdraw while the aircraft went in. The IAF also played an anti-tank role, using ordinary or guided munitions (but it is unclear if specialized, anti-tank munitions besides the ASM were used).

The other main action by the IAF was the destruction of the Syrian

[61]Cordesman, *Jordanian Arms and the Middle East Balance, op. cit.,* p. 113.

[62]Cordesman, "The Sixth Arab-Israeli Conflict," *op. cit.,* p. 29.

[63]Deighton, *op. cit.,* p. 292, mentions the effect of German dive bombing tactics on French soldiers exposed to the tank-aircraft "blitzkrieg."

SAMs and the aircraft sent to protect them. Many conflicting accounts have emerged (some deliberately misleading) about the methods used by the IAF. Given that the IAF already had extensive technical information about the SA-6 missiles and the radars,[64] it became possible to elaborate an attack plan down to the minutest detail. A combination of electronic jamming measures was probably used: Israeli RPVs, combat aircraft, and Boeing E-707s and E-2C Hawkeyes all have electronic counter measures (ECM) capabilities. The IAF command had a range of choices: it could use the RPVs both as decoys and to expose or jam Syrian radars, while the aircraft came in low using ordinary bombs or stayed high firing a variety of "smart" bombs or guided missiles; another option was to use the overflying F-15s, E-707s or E-2Cs to provide electronic jamming, while RPVs acted as decoys for any missiles that were actually fired and the aircraft followed up the attack with heavy use of chaff-blind radars on Syrian aircraft. The actual destruction of the SAM batteries could have been achieved by the use of air-launched munitions or ground fire (as some sources suggest). Artillery, including rocket artillery, and cluster munitions have some capability in suppressing anti-aircraft defenses, but to mount a combined air-ground operation involving artillery (with its spotting RPVs), ECM-RPVs, E-2Cs, E-707s and combat aircraft would lead to unnecessarily complex and risky coordination, not to economy of force. Whether the aircraft used ordinary or guided munitions is more difficult to tell. Anti-aircraft guns covering the SA-6s might pose a threat to low-flying aircraft using ordinary bombs, and to destroy them first would waste the element of surprise. One Israeli source has added that some SAM positions put out smoke screens:[65] this and the preceding considerations, plus the desire to test guided munitions developed since 1973 to counter the SAMs, imply that the IAF used guided missiles against the radars and launchers (probably laser-guided with possible illumination by RPVs). "Smart" bombs may have been used although television guided bombs and missiles probably were not.

Finally, despite the success of Israeli tactics, airborne warning and command, and air-to-air missiles in bringing about complete Israeli air superiority, and despite the overall improvement of tactical and technical capabilities, the IAF still displayed weakness in ground attack missions. The extensive use of ordinary bombs, rockets, and cluster bombs had

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[64]See footnote 18. Also see Cordesman, "The Sixth Arab-Israeli Conflict," *op. cit.*, p. 30.

[65]Eshel, *op. cit.*, p. 47.

marked effect in softening PLO defenses, but this did not reach the level of effective breakthrough bombing. In the battles for Khaldeh and the airport (open terrain), such bombing did not break the defense; eventually it was the efforts and losses of the ground units that took these positions. In built up areas, the aerial bombing had far less physical effect on military targets,[66] showing once again that a large part of air capability against ground forces is (and is meant to be) psychological. Close support by both artillery and aircraft was much improved over previous performance, with smaller distances separating the friendly ground units from the targets under attack, but it was still insufficient. This was partly due to misallocation of air sorties by the IAF command, and partly to lack of experience in supporting armor against tough resistance at such close ranges.

Following past IAF practice of equipping aircraft for multi-purpose roles, and throwing all combat aircraft into the attack when Israel is on the attack, it is unlikely that there will be any change in the tasks assigned to IAF aircraft types.[67] The IAF has tried to use each type for as long as its efficiency and survivability remain high, and so the ageing A-4s, F-4s, and Kfirs were used mainly for ground attacks while the F-16s and F-15s were used to achieve air superiority. The F-4s and Kfirs were also capable of dogfighting, and may have taken part in the major air battles, but that was not their main use. Similarly, the F-16s, which have ground-attack capability, did take some part in some ground attack missions, mainly against the Syrian SAMs. The likely changes by the IAF in the 1980s will therefore concentrate on developing and improving aircraft ordnance and dogfight capabilities. This will involve the radar, electronic, and avionic systems to allow better maneuver; protection against detection by infrared or radar means; ECM and ECCM; detection of enemy aircraft at longer ranges; and interception of several targets simultaneously at long, medium, and (increasingly) short ranges. Improvements to radar and air-to-air missiles will provide better look-down shoot-down capabilities and 360 degree attack angles, while advanced air-to-surface munitions with improved guidance and longer stand-off ranges will provide better

[66] According to a PLO battalion commander, there were only three killed and 20 wounded in his unit (300 men) throughout the battle of Beirut. Quoted in *Israel in Lebanon, op. cit.*, p. 86. Creveld, *op. cit.*, p. 12, says the IDF failed in the ground-attack role.

[67] For an excellent discussion of these aspects and others concerning the IAF, see Qasim Ja'far, "The Syrian-Israeli Air Confrontation in 1982," *Arab Strategic Thought*, No. 6, Spring 1983 (in Arabic).

and safer performance against ground targets. Other areas of probable developments are in anti-tank sub-munitions, which can take the form of mines or projectiles, and in laser guidance. The latter area can also be used by aircraft in conjunction with ground units to guide anti-tank homing munitions fired by air or ground units. The basic change in the aircraft themselves will be to acquire new types (the Israeli-designed Lavi or the F-18 Hornet), and more F-16s and F-15s, to replace the ageing A-4s (and later the F-4s and Kfirs).

Special Features

A. Special or New Weapons and Munitions. Israel receives or produces a very wide range of weapon systems, munitions, and military equipment, most of which was used in the 1982 war. However, the limited scope of the Syrian-Israeli confrontation does not provide a sufficient test of these products, much as it only provides indications, rather than lessons, concerning tactics, doctrine, and service performance. It is also difficult to tell whether certain weapons or systems were used. The IAF employed most of the "special" weapons, including Israeli-designed Shafrir and Python (Shafrir-3) and US-designed AIM-9L Sidewinder air-to-air missiles, air-to-surface Luz-1 "smart" bombs and Maverick, Shrike, and guided missiles, and assorted penetration, fuel-air explosive, and cluster bombs. The navy used its Gabriel missiles against a few coastal targets, but got no chance to try out the Barak point-defense system. Both IAF and the artillery made use of the RPVs which provided real-time intelligence, photographic and electronic reconnaissance, and ECM capabilities. The artillery also used improved munitions with better range and accuracy. Its munitions included cluster and fragmentation shells, but no specialized anti-tank homing sub-munitions. Israeli-produced artillery rockets were used, including modified versions of Soviet rockets and Israeli-designed 160 and 290 mm rockets, but it is improbable that they already had the anti-radar or infra-red homing anti-tank sub-munition capabilities imputed to them. It is obvious that in most cases the IDF fields weapons and munitions that, although in advance of Arab counterparts, are basically modifications or extensions of the arms technology already in development or production in the West. This is not to belittle Israel's achievements in tailoring or developing systems according to its needs, but to sort out fact from fiction and to emphasize that Israeli achievements in the 1982 war owe more to superior organization and training than to

"super weapons." The IDF will, nonetheless, focus more during the 1980s on developing improved or totally new munitions and ordnance to give its tanks, boats, and aircraft continued superiority, than on developing the weapon systems themselves. This will extend the active life of these systems until the 1990s, when technological breakthroughs are expected to produce radically improved tanks, boats, and aircraft, thanks to advances in armor, engines, design, avionics, and electronics.

   B. Nightfighting. The IDF has always been weak in nightfighting,[68] with the exception of commando action. In 1982, there was more nightfighting than usual, particularly while achieving the basic breakthrough in the first few days. This meant taking big risks, as the Syrian ambush of Israeli armor in Ain Zhalta showed.[69] Similarly, the night landing at Awali had to do without air support, and remained vulnerable until daylight. The main Israeli night action was harassing artillery and naval fire, with aircraft making mock bombing runs during cease-fires to maintain psychological pressure.

   C. Support Services. Logistic supply was ensured by convoys of trucks carrying the vast quantities of ammunition and food needed, a fact which made the securing of the coastal road imperative. The cost of supplying advance units by circumventing the coastal cities, had they not quickly fallen, might well have affected the northward advance. Armor recovery services were also very efficient. Casualty evacuation was particularly efficient, with immediate transport by vehicles and helicopters to field hospitals or Israel. The end result was to maintain high rates of fire by tanks and artillery, and to reduce deaths from wounds.

   D. Administration of Civilians. The IDF had few plans for management or detention of masses of civilians, let alone for feeding them. When the inhabitants of Tyre and Sidon were herded onto the beaches, water, food, and medical supplies were short. The Israeli experience in leaving the municipalities of the West Bank to ensure vital services in the wake of the June 1967 war did not work in South Lebanon, where such massive destruction and dislocation had taken place. Coupled with continued basic weakness in urban fighting, the problem of administering large, captive civilian populations hampered IDF urban operations.

   E. Ground Forces. With the growing role of the ground forces, helicopters, and of IAF ground support missions, the IDF is in need of a

[68]Luttwak, *op. cit.*, pp. 370-371.

[69]See Eshel, *op. cit.*, p. 66, for a description of the battle.

unified ground forces command, such as that which General Israel Tal has called for. The first step toward this has been the formation of a "Ground Forces Command" which, however, will only be an administrative section to "unify doctrine." The new command, which is meeting much opposition because it "will take officers out of field jobs and put them behind desks," will not end the individual subordination of each ground element to the chief of staff.[70]

F. Anti-tank Weapons. The main Israeli anti-tank weapons were tank guns and aircraft. Helicopter gunships may have destroyed some tanks, but their anti-tank role seems to have been minimal. Probably the main use of anti-tank guided weapons was by aircraft, which are equipped with ordinary and modified Mavericks (the modified version has had the warhead removed or inverted by the IAF so that it incapacitates enemy tank crews but leaves the tanks intact for later recovery by IDF ground units).[71] Infantry-held anti-tank rockets and ATGMs, of which Israel possesses large numbers, did not see much use against armor, being used instead against enemy infantry and fortifications. Arab use of such weapons against armor was more widespread and was quite effective,[72] and the RPG-7 obviously has a big future.[73] The Israeli anti-aircraft role was carried out essentially by IAF interceptors, with several Syrian helicopters and anti-aircraft guns. Arab anti-aircraft guns were suppressed by a mixture of decoys, jamming, cluster munitions, and artillery fire, and soon ceased to present a threat.

G. Urban Warfare. The IDF showed little adaptability to urban fighting. Its experiences in Jerusalem in 1967, and in Qantara and Suez in 1973 did not affect its approach. In fact, the IDF can be said not to have an approach as its past tactic was simply to bypass cities and leave them to surrender, or to barge straight through with armor. After initial setbacks, either infantry was sent in (Qantara), the attack was called off (Suez), or aircraft and artillery fire was called on to clear the resistance (Tyre and

[70]General Tal has long called for a unified command for the ground forces (instead of each branch taking orders directly from the IDF General Staff); this parallels his calls for integration of functions within the defense forces. See "IDF Ground Command Okayed," *Jerusalem Post*, August 14-20, 1982, p. 7, and Yoram Peri, *Between Battles and Ballots* (Cambridge: Cambridge University Press, 1983), p. 210.

[71]Simpkin, *Antitank, op. cit.*, p. 105.

[72]Cordesman, *Jordanian Arms and the Middle East Balance, op. cit.*, p. 72.

[73]Simpkin, *op. cit.*, p. 169.

Sidon). In Jerusalem, where the fight cost the IDF 200 dead, combat actually took place in the hills outside the walls, and was decided by the arrival of an IDF battalion in the Jordanian defenses' rear.[74]

H. Economy of Force. Due to the Arab numerical inferiority in Lebanon, and the calm of the other fronts, the IDF could afford to assign huge forces to the invasion. This was greatly assisted by the policy since 1973 of expanding the standing army to its present 175,000 men, and by calling up 70,000 reservists.[75] Thus economy of force was achieved in both senses: more objectives and axes could be covered at the same time, thus making fuller use of available forces (the Clausewitzian definition); conversely, series of objectives were taken by the same advancing units and then consolidated by follow-up units.

I. Use of the Cease-fire. As in past wars, the IDF applied its own interpretation of the term "cease-fire." Lulls were opportunities to re-inforce and improve positions, to inch forward, to harass the enemy psychologically (by overflights and mock bombing raids), and to deploy for new attacks. Frequently, the IDF broke the cease-fire once its forces were in position to make new advances: the encirclement of Beirut took place after a cease-fire with Syria on June 11 and a cease-fire with the PLO on June 12. This was partly a classic IDF approach, as in the expansion of the bridgehead on the west bank of the Suez on October 22-23, 1973. It may also have been due to differences between "activists" and "moderates" within the Israeli politico-military leadership, with the former constantly hotting things up to create pretexts for further advances.[76]

J. Technological Benefits. An essential feature of the future develop-ment of the Israeli armed forces and their combat doctrine is the role of technology. Technology is expected not only to improve protection against enemy weapons, but to provide improved neutralization and de-struction of those weapons. At the first level, better electronic detection and communication systems allow a quicker, coordinated response. Coupled with real-time photographic and electronic intelligence gathering

[74]See the description in Dupuy, op. cit., and the account by Meir Pail quoted in Israel in Lebanon, op. cit., p. 70.

[75]US Assistance to the State of Israel (Washington, DC: The US General Accounting Office, 1983), p. 30.

[76]The classic example of this conflict is "Tal's rebellion." For a discussion, see Peri, op. cit., pp. 254-56.

and a wide range of ECM and ECCM capabilities, Israeli weapons can go into action fully informed about enemy targets and able to blind them. These weapon systems can in turn deliver fire far more accurately and effectively. However advanced Arab weapon and electronic systems may become, the IDF combination of excellent command, control, communications and intelligence with good organization and training, can stay one step ahead. In the modern battlefield environment, if an electronics-weapon mix can blind and destroy the enemy's most advanced system, then the superior system gains a "force multiplication" which is exponential in effect. A numerically small force can successfully take on far larger enemies this way, with far fewer losses.

Casualties

The IDF admits to 368 killed and 2,383 wounded during the 1982 war, and to the loss of two aircraft and two helicopters. No precise information is available on other material losses, as the IDF has never disclosed anything but human and aircraft losses. One American report asserts that 150 tanks and 175 APCs were lost, although it is not clear whether these were write-offs or were repairable, and that three aircraft were downed while 16 others were damaged (not counting the helicopters).[77] The estimates of armor losses seem entirely plausible, but it is impossible to tell how many were hit by PLO or Syrian fire. Arab sources dispute the human casualty figures, pointing to previous occasions when the IDF has hidden the true extent of its losses. Nonetheless, even if this accusation is true, the cover-up could not exceed 10 per cent without exposure (given that the number of wounded may well be higher, and in any case does not include personnel not evacuated from field hospitals).[78] The aircraft losses bear more scrutiny. Most American sources mention a minimum of three aircraft lost, and several assert that there were "one or more" aircraft lost due to accidents.[79] An added element is the assertion by one American source

[77]See the Kuwait news agency dispatch in al-Khalij newspaper, July 22, 1983, p. 1.

[78]There is some discrepancy in Israeli figures for casualties due to "accidents." One source says that at least 10 percent of over 500 Israelis killed to date died in road accidents (Newsview, Tel Aviv, Vol. 4, No. 32, p. 16), while the IDF spokesman admits to 47 killed in all types of accidents. These include non-combat accidents such as mishandling weapons and ammunition or firing on friendly forces. Such incidents can account for 5 to 10 percent of total casualties in war situations.

[79]Cordesman, "The Sixth Arab-Israeli Conflict," op. cit., p. 29, estimates losses at one or two planes. Carus, op. cit., p. 38, says "some planes were badly damaged by ground fire and others were lost

that an F-16 was lost; [80] Lebanese sources say that one crashed in the Metn area on June 10.[81] Aircraft losses of five write-offs and 8 to 12 badly damaged are very likely.

Israeli estimates of PLO and Syrian losses, on the other hand, are greatly exaggerated. The IDF first claimed "1,000 to 2,000" PLO killed, and later figures varied from 2,000 to 3,000,[82] while estimates for Syrian losses were put at 1,000 dead. The Syrians were also said to have lost 400 tanks and a similar number of APCs and IFVs; 102 aircraft and four or five helicopters, and 17 SA-61819 launchers with their command vehicles. Syrian armor losses were probably lower than Israeli claims, and aircraft losses were around 84, the difference arising from counting Syrian aircraft shot down over Lebanon between 1974 and 1982 and adding them to the total. The Syrians did lose up to 1,000 dead, but probably not more (both the Syrian and Western total for all Syrian casualties is 5,000). The PLO has asserted that it lost around 560 full-time fighters; in the past the PLO has been precise concerning its human losses so the total is probably around 1,000 dead counting militiamen (and several thousand prisoners). As to the true extent of PLO material losses, whether destroyed or captured, Israeli military correspondents and officers confirm that there were some 38 T-34s, up to 300 guns and rocket launchers (including Syrian guns), and enough light arms and ammunition to equip an infantry division.[83] This is at variance with inflated claims of a 1 billion dollar arsenal.

in accidents." Western published estimates of IAF combat strength in 1983 count 67 F-16s and 37 F-15s. The decline in overall numbers is partly due to flight and training accidents, and to cannibalizing, but part may be due to combat and non-combat war losses. See the Institute for Strategic Studies, Military Balance, 1982-83, (London 1982), and Cordesman, Jordanian Arms and the Middle East Balance, op. cit., p. 100.

[80]Clarence Robinson, "Surveillance Integration Pivotal in Israeli Successes," Aviation Week and Space Technology, July 5, 1982.

[81]Quoted in the Halliyat chronology, op. cit., p. 158 (in Arabic).

[82]According to such Israeli figures, the PLO lost 3,000 killed, and 11,000 captured (see Drori interview, op. cit.). The total of 14,000 nearly equals the total number of PLO men in Lebanon according to the IDF. When the 13,000 men evacuated from Beirut, 1,000 men "at large " in South Lebanon, and several thousand others in the Beqaa and North are added, total PLO manpower exceeds 30,000—twice the IDF figure for total PLO strength.

[83]Meir Pail is quoted in Clifford Wright, "The Israeli War Machine in Lebanon," Journal of Palestine Studies, Vol. 12, No. 2 (Winter 1983), footnote 1, p. 38, as saying that the stores of weapons captured in the South were only enough for five infantry brigades. Sella, op. cit., pp. 37-38, asserts that PLO armament was mainly suited to guerrilla warfare.

The Current Phase

The IDF has lost around 150 men in the Palestinian-Lebanese guerrilla campaign since the "active" phase of the war ended. The evacuation of the PLO, reduction of IDF presence to 30,000, movement in convoys, and counter-operations have not caused a drop in the frequency of guerrilla operations or in Israeli casualties. The IDF's near paralysis contrasts strongly with its success in containing, then virtually eliminating, cross-border or locally-based operations in the West Bank and Gaza in the early 1970s. The factors behind this inability are: better organization, planning, and execution by the guerrillas; high population density coupled with hilly terrain; insufficient numbers of IDF combat troops to cover the area and population under occupation; and the practical irrelevance of the numerical and technological preponderance that tipped the balance in summer 1982. The IDF now has to face small, appropriately armed groups of "rural" or "urban" guerrillas who merge with the population and terrain, exploiting political sympathy, arms caches, and the short distances separating targets from safe areas. The IDF response so far has been to collect its forces within larger, fortified bivouacs and camps, and to move in large, protected convoys. IDF personnel are no longer allowed to mingle freely with local civilians or to wander on foot or in cars unnecessarily. These measures have proved wholly inadequate: 263 guerrilla operations in the first seven months of 1983 have caused around 200 IDF casualties.[84]

One suggestion has been to follow a more aggressive retaliatory policy by striking at PLO targets behind Syrian lines,[85] especially since local arrests, curfews, and reprisals have failed to uncover guerrillas. The temptation to use the air force and artillery (but probably not the ground forces) as they were used against Jordan in 1968 to 1970 is strong, and will grow if the IDF redeployment fails to reduce casualties. The IDF has withdrawn from the northeastern half of the Chouf to a line running along the Awali river to the strategic Barouk mountain overlooking the Beirut-Damascus highway, Sannine, and the Beqaa, and then to the Syrian-Lebanese border at a point 23 kilometers (14.4 miles) from Damascus. The line is five miles shorter than the old one at most, and will leave the IDF

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[84]H. Goodman, "Redrawing the Line," *Jerusalem Post*, August 14-20, 1983, p. 12. The figures on material losses are from Zeev Schiff quoted in Michael Jansen, *Battle of Beirut* (London: Zed Press, 1982), p. 6.

[85]H. Goodman, "A Case for Holding On," *Jerusalem Post*, June 19-25, 1983, p. 8.

in control of at least 500,000, probably 750,000 Lebanese and Palestinians.

The redeployment plan will serve two main purposes: to set up a defensive line along the advantageous Awali river to reduce guerrilla infiltration, and to perpetuate Israeli control over the South Lebanon "security zone." The resemblances between the Awali line and the Bar-Lev or Jordan river lines are striking: there will be observation posts, fortified positions, extensive trenches and bunkers, army bases in support, a road network, mobile foot and vehicle patrols, and a "sophisticated communications and electronic system."[86] No fence, electronic, "electrified or otherwise" will be built, according to the IDF, but it is an obvious possibility, given that north-south traffic will be limited to a few designated crossing points. Some Israeli observers feel that such a line may acquire political significance in addition to this security purpose, but they do not accuse their government of secretly planning to stay in Lebanon.[87] Given, however, that IDF Chief-of-Staff Moshe Levy and other officers do not expect a major reduction in casualties, and add that the new redeployment line is "not the best,"[88] political rather than military considerations must be the primary Israeli motivation. Finally, it is doubtful whether the $30 million cost of the line, plus the $1 million a day cost of maintaining the IDF in Lebanon,[89] will seriously enable the Israeli army to affect the guerrilla campaign. The presence of a large Arab population in the south with growing reason to resent the Israeli occupation and to suspect its long-term aims, will only strengthen the campaign as the Awali line becomes more permanent. In contrast to the West Bank, the population of South Lebanon is far more politicized, organized and armed: the IDF will eventually face an insurrectionary situation similar to that of Gaza in 1969-70 coupled with continued cross-line infiltration. Will the IDF resort to the same violent response it used in Gaza to break the will to resist?

[86]Edward Walsh, "Israeli Troops Digging in to Redraw Front Line in Lebanon," *International Herald Tribune*, August 20-21, 1983, p. 1. See also Goodman, "Redrawing the Line," *op. cit.*, p. 12.

[87]*Ibid.*, p. 12.

[88]Walsh, *op. cit.*, p. 1.

[89]*Ibid.*, p. 1.