Israel's War in Gaza

A Paradigm of Effective Military Learning and Adaptation

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Assessing major combat experiences to help rectify errors made in the planning and conduct of operations has enjoyed a long and well-established tradition in the fields of military history and security studies.[1] In particular, since Operation Desert Storm against Saddam Hussein's Iraq by U.S. and coalition forces in 1991, the pursuit of "lessons learned" from major combat has been a virtual cottage industry within the defense establishments of the United States and its principal allies around the world.[2]

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1. The most widely known early exemplar of this genre is Thucydides, *History of the Peloponnesian War,* trans. Rex Warner (New York: Penguin, 1954). Notable contributions of more recent vintage include Larry H. Addington, *The Patterns of War since the Eighteenth Century* (Bloomington: Indiana University Press, 1994); Bevin Alexander, *How Wars Are Won: The 13 Rules of War from Ancient Greece to the War on Terror* (New York: Crown, 2002); Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton, N.J.: Princeton University Press, 2004); Max Boot, *War Made New: Technology, Warfare, and the Course of History: 1500 to Today* (New York: Gotham, 2006); Risa Brooks, "Making Military Might: Why Do States Fail and Succeed? A Review Essay," *International Security,* Vol. 28, No. 2 (Fall 2003), pp. 149–191; Eliot A. Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: Vintage, 1991); Martin van Creveld, *The Transformation of War: The Most Radical Reinterpretation of Armed Conflict since Clausewitz* (New York: Free Press, 1991); Niall Ferguson, *Empire: The Rise and Demise of the British World Order and the Lessons for Global Power* (New York: Basic Books, 2003); and Michael C. Horowitz, *The Diffusion of Military Power: Causes and Consequences for International Politics* (Princeton, N.J.: Princeton University Press, 2010). On World War II, in particular, see, among others, Richard Overy, *Why the Allies Won* (New York: W.W. Norton, 1995); and Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (Stanford, Calif.: Stanford University Press, 1962).

2. One of the myriad examples that could be cited in this regard is the U.S. Army's activation of the Center for Army Lessons Learned six years earlier, in August 1985, at its Combined Arms Center at Fort Leavenworth, Kansas. The Center's avowed mission was to collect, analyze, and disseminate operational assessments with the intent to facilitate the development of initiatives to enhance decisionmaking, force integration, and innovation throughout the army. See "Center for Army Lessons Learned," http://usacac.army.mil/cac2/call/mission.asp. More recently, in 2006, the U.S. Air Force changed its long-standing Air Staff position of assistant chief of staff for studies

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Yet as often as not, such efforts at military institutional learning have, at best, yielded lessons merely indicated, because they cannot be said to have been truly learned until their prescriptions have been assimilated into a service's doctrine, force development, and overall combat repertoire. In some cases, lessons from past mistakes are duly identified and understood by military leaders, but they are not exploited to the best effect as a hedge against future challenges because of entrenched forces of resistance to changing long-established patterns that are endemic to large and complex military organizations. In others, military institutions incorporate erroneous or otherwise ill-advised responses and make different mistakes the next time they find themselves in combat. Only infrequently do such institutions learn the right lessons from sobering combat experiences and then systematically and effectively incorporate them into their operating routines.[3]

The twenty-three-day joint campaign conducted by the Israel Defense Forces (IDF) in late December 2008 and early January 2009 against the radical Islamist organization Hamas, which continues to rule the Gaza Strip, offers one such example.[4] That campaign followed on the heels of the IDF's less impressive showing against the Iranian-sponsored militant Islamist organization

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and analysis to a Directorate for Studies and Analyses, Assessments, and Lessons Learned. Representative instances of the many scholarly contributions made toward deriving useful lessons from combat experiences include, for Desert Storm, Thomas A. Keaney and Eliot A. Cohen, *Revolution in Warfare? Air Power in the Persian Gulf* (Annapolis: Naval Institute Press, 1995); and Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, D.C.: Brassey's, 1994); for Operation Allied Force in 1999, Ivo H. Daalder and Michael E. O'Hanlon, *Winning Ugly: NATO's War to Save Kosovo* (Washington, D.C.: Brookings Institution Press, 2000); and Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, Calif.: RAND Corporation, 2001); for the major combat phase of the war in Afghanistan that followed the terrorist attacks against the United States on September 11, 2001, Benjamin S. Lambeth, *Air Power against Terror: America's Conduct of Operation Enduring Freedom* (Santa Monica, Calif.: RAND Corporation, 2005); and for the major combat phase of the subsequent U.S.-led war of regime change in Iraq, Gregory E. Fontenot, E.J. Degen, and David Tohn, *On Point: The United States Army in Operation Iraqi Freedom* (Annapolis: Naval Institute Press, 2005); and Benjamin S. Lambeth, *The Unseen War: Allied Air Power in the Takedown of Saddam Hussein* (Annapolis: Naval Institute Press, forthcoming). On India's little-known but intense seventy-four-day war against Pakistan in the Himalayas in 1999, see Peter R. Lavoy, ed., *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict* (Cambridge: Cambridge University Press, 2009); and Benjamin S. Lambeth, "Airpower in India's 1999 Kargil War," *Journal of Strategic Studies,* Vol. 35, No. 3 (Summer 2012), pp. 289–316.

3. One of many notable examples of such contrasting experiences from the twentieth century is the British Royal Air Force's successful adaptation to the strategic and operational teachings of World War I compared to its German counterpart's failure to adapt similarly. The most thorough assessment of these dissimilar learning experiences may be found in Barry R. Posen, *The Sources of Military Doctrine: France, Britain, and Germany between the Wars* (Ithaca, N.Y.: Cornell University Press, 1984).

4. The term "joint," in standard military usage, refers to the cooperative involvement of two or more armed services in a combat, peacekeeping, or humanitarian operation.

Hezbollah during Israel's 2006 war in Lebanon.[5] The Gaza campaign achieved its immediate goal of dramatically curtailing two years of relentless rocket fire by Hamas into civilian population centers in southern Israel by means of a harsh and effective punitive reprisal. By all signs, that achievement was a direct outgrowth of force employment teachings incorporated by Israel's military leaders in response to their earlier flawed combat performance in Lebanon. The IDF's response to its arresting experience in 2006 offers a classic illustration of institutional adaptability and self-improvement. As Anthony Cordesman states, the Gaza campaign represented "a case study in how Israeli capabilities [had] changed since the fighting with Hezbollah in 2006."[6]

The discussion that follows reconstructs and assesses the IDF's Gaza campaign as a joint service operation that has received little attention in the security studies field. Principally, however, it considers the campaign from the perspective of its importance as a quintessential example of successful applied military learning from a previous combat experience with respect to force-employment effectiveness at the operational and tactical levels of war. In this regard, the assessment builds on the growing body of scholarly writing on military responsiveness to failed or flawed attempts at force employment by addressing a seminal question raised two decades ago by Stephen Peter Rosen as to whether such experiences can "help an organization innovate and improve its wartime performance."[7]

In 1991, Rosen defined military innovation as "a change in the concepts of operation of [a] combat arm, [in] the ideas governing the ways it uses its forces to win a campaign . . . [and] in the relation of that combat arm to other combat arms."[8] He further noted a widespread belief that combat experience, at least in principle, "provides the necessary environment for military learning and innovation."[9] As to whether such experience can "help an organization innovate

5. Hezbollah, which means "Party of God" in Arabic, is a virulently radical transnational Islamist movement that established deep roots in Lebanon in the early aftermath of Israel's withdrawal from southern Lebanon in May 2000, after eighteen years of occupation following the first Lebanon war of 1982. It is lavishly funded by Iran's Islamic Revolutionary Guards Corps and is by far the dominant military presence on Lebanon's soil, overshadowing the Lebanese army in discipline and combat capability. It also is unswervingly devoted to the destruction of the State of Israel. For further background on the organization, see Augustus Richard Norton, *Hezbollah: A Short History* (Princeton, N.J.: Princeton University Press, 2007).
6. Anthony H. Cordesman, "The 'Gaza War': A Strategic Analysis" (Washington, D.C.: Center for Strategic and International Studies, 2009), p. 1.
7. Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, N.Y.: Cornell University Press, 1991), p. 27.
8. Ibid., p. 7.
9. Ibid., p. 23.

and improve its wartime performance," he cited a strong empirical foundation for concluding that "organizational learning can occur in wartime if it takes place in the context of existing military missions," and that a willingness to adapt in principle has "helped wartime organizations to learn, to reform themselves, and to improve their ability to execute established missions."[10]

Expanding on this theme, Rosen also noted that when military organizations experience setbacks or failures in battle, they typically are "compelled to change their behavior."[11] He concluded, based on twenty-one case studies of peacetime, wartime, and technological innovation throughout the first half of the twentieth century, that for institutional change both during and after wars to succeed, "reformulations of [military] concepts of operations . . . must proceed from the top down."[12] That was certainly true with respect to Israel's learning experience from Lebanon in 2006 to the Gaza Strip in 2008. It was, in particular, the successive commanders of the Israeli Air Force (IAF), Maj. Gens. Elyezer Shkedy and Ido Nehushtan, and their two principal deputies, Brig. Gens. Yohanan Locker and Amir Eshel, who took the lead in the early aftermath of the troubled campaign against Hezbollah in initiating and sustaining an open dialogue with the IDF's ground forces, with a view toward forging closer and more regular cross-service cooperation in the day-to-day joint-force planning and training arenas. In an informed assessment, Dima Adamsky concluded that Israel's military culture had yet to assimilate "formalized systems for learning lessons from its campaigns" and that the IDF's "improvisational efforts [toward that end have typically, at bottom] reinvented the wheel," with lessons having been learned only "in a fragmented manner, not as a form of integrative analysis . . . but parochially, across the corps."[13] Yet as the assessment that follows shows, the IDF in this particular case seems to have departed substantially from that long-ingrained stylistic trait of years past.

The first section of this article reviews the IDF's principal shortcomings in training and readiness that largely accounted for its performance against Hezbollah in 2006. It next considers how Israel's military leaders learned from that experience and developed more appropriate measures for addressing a similar challenge in the future. After that, it explores how the IDF readied itself for its eventual showdown against Hamas, how it conducted its coordinated air and land operations, and the principal highlights of that successful experi-

10. Ibid., p. 27.
11. Ibid., pp. 30–31.
12. Ibid., pp. 251–253, 255.
13. Dima Adamsky, *The Culture of Military Innovation: The Impact of Cultural Factors in the Revolution in Military Affairs in Russia, the U.S., and Israel* (Stanford, Calif.: Stanford University Press, 2010), p. 124.

ence as viewed in hindsight. It then briefly compares the two campaigns to show that Israel's defense establishment in the latter case displayed more impressive innovation at the tactical level than it did at the more crucially important political and strategic levels that ultimately determine the extent to which a campaign can be deemed an overall success. It also suggests that Israel's 2006 war in Lebanon was no more a complete failure than its subsequent Gaza campaign was an unqualified success at the most critical political and strategic levels. Finally, the assessment considers the extent to which the IDF's performance from Lebanon to Gaza bore out Rosen's propositions noted above regarding military innovation and, as such, the extent to which it can be regarded as an enduring benchmark in the realm of combat lessons learned and applied under fire.

Previous Missteps in Lebanon

Israel's war against Hezbollah was the most inconclusive performance by the IDF in its many tests since 1948; for the first time, a major Middle East conflict ended without producing a clear resolution in Israel's favor.[14] That thirty-four-day war was a greatly escalated response to a surprise incursion by Hezbollah combatants into northern Israel on July 12, 2006, and their ensuing abduction of two Israeli troops for use as hostages aimed at forcing a release of Islamist terrorists held by Israel.

Three principal reasons explain the widespread post-campaign perceptions of Israel's poor showing. The first lay in the government's declaration of excessively ambitious goals and its failure to control Israeli and international expectations throughout the campaign. Six days into the war, in a speech before the Knesset that showed no sign of serious prior strategy deliberation, Prime Minister Ehud Olmert put forward as among his government's main objectives an unconditional return of the two kidnapped soldiers and the elimination of Hezbollah as a viable fighting force in southern Lebanon.[15] Those

14. The most comprehensive and thorough reconstruction thus far of both high-level Israeli government decisionmaking and the actual conduct of Operation Change of Direction may be found in Amos Harel and Avi Issacharoff, *34 Days: Israel, Hezbollah, and the War in Lebanon* (New York: Palgrave Macmillan, 2008). The best compilation of informed insider insights is the collection of essays by retired IDF generals and other Israeli military affairs experts presented in Shlomo Brom and Meir Elran, eds., *The Second Lebanon War: Strategic Perspectives* (Tel Aviv: Institute for National Strategic Studies, 2007). On the IAF's contribution to the campaign, see Benjamin S. Lambeth, *Air Operations in Israel's War against Hezbollah: Learning from Lebanon and Getting It Right in Gaza* (Santa Monica, Calif.: RAND Corporation, 2011), www.rand.org/pubs/monographs/MG835.html.

15. Maj. Gen. Isaac Ben-Israel, IAF (Ret.), *The First Israel-Hezbollah Missile War* (Tel Aviv: Program for Security Studies, Tel Aviv University, unpublished Hebrew translation, May 2007), p. 19; and Harel and Isaacharoff, *34 Days*, pp. 107–108.

extravagant goals were militarily unattainable at any price the Israeli people were willing to pay or the international community would likely countenance. As a result, they eluded the government throughout the war. In particular, once Olmert demanded the return of the two soldiers as a precondition for the IDF's desisting from further combat actions, Hezbollah's leader, Hassan Nasrallah, merely had to refuse to return the abducted soldiers to claim "victory," which he did, thereby depriving Olmert of the ability to make good on his promise to the Israeli people. Adding to the frustration felt throughout Israel was the inability of IDF forces to stem the relentless daily barrage of short-range Katyusha rockets that Hezbollah continued to fire into civilian population centers in northern Israel.[16]

A second reason for the IDF's inconclusive performance stemmed from its and the Olmert government's deep-seated aversion to incurring friendly troop losses in any significant number. Because of that aversion, Israel's most senior civilian and military leaders were loath to implement either of two preplanned contingency response options that the IDF's Northern Command had developed several years earlier for a possible showdown against Hezbollah of the sort that began unfolding on July 12. The first of these options, code-named Icebreaker, called solely for a precision standoff attack operation lasting from forty-eight to seventy-two hours, along with concurrent preparations for a possible brief land counteroffensive aimed at achieving limited goals to follow immediately thereafter. The second, labeled Supernal Waters, was a more massive option that envisaged several days of standoff-only preparation by air strikes and artillery fire, a concurrent large-scale call-up of reserve forces for possible imminent commitment, and either a halt to standoff fire alone after forty-eight to seventy-two hours or an escalation to combined air and ground operations aimed at decisively pushing Hezbollah's forces north of the Litani River.[17]

Given, however, that both options would almost certainly generate high numbers of IDF casualties were the government to allow combat operations to continue for more than just a few days of intense ground fighting before withdrawing, the IDF was reluctant to commit to a ground invasion at the start of its campaign against Hezbollah. After eighteen costly and nonproductive years of previous occupation of southern Lebanon from 1982 to 2000, during

16. The Katyusha is an inaccurate, unguided 107-millimeter or 122-millimeter rocket with an explosive front end and a range of twelve to twenty miles. It is essentially the same weapon that the Soviet Army employed en masse against the Wehrmacht on the eastern front during World War II. Hezbollah had an estimated 13,000 or more of them stockpiled in southern Lebanon when the war began.

17. Author interview with Colonel Shai (last name withheld), IAF (Ret.), head of the IAF's Campaign Planning Department during Operation Change of Direction, IAF Headquarters, Tel Aviv, March 26, 2008.

which time the IDF suffered more than 600 troop fatalities, almost as many as during the Six-Day War of 1967, no one wanted a replay of what most Israelis had come to regard as having been mired for a seeming eternity in the "Lebanese mud."[18]

A third reason for the IDF's troubled performance in Lebanon, and the one that the present discussion considers most closely, was the lack of significant joint training between the IAF and Israel's ground troops during the preceding six years. Since the start of its preoccupation with the Palestinian intifada in 2000, the IDF had conducted virtually no periodic large-scale exercises by its ground units for major cross-border operations. As a result, coordination in planning and training between the IAF and Israel's ground forces had all but ceased to exist, and ground-force readiness for any contingency other than dealing with the Palestinian uprising had been allowed to lapse badly. In light of that lapse, once the 2006 Lebanon war was under way, the IAF encountered numerous challenges in providing effective air support to Israel's engaged ground troops after the campaign shifted from purely standoff attacks to a full-fledged air-ground operation.

One problem in particular concerned the division of responsibility between the IAF and Northern Command for managing the battlespace in the war zone. In this division of labor, the IAF was the principal command for overseeing and conducting operations north of the Litani River, beyond the area where most of the ground engagements were taking place. For its part, Northern Command was the lead command with primary responsibility for operations within the battlespace most closely adjacent to the Israeli border.[19]

Because so much of the 2006 Lebanon war during its last two weeks entailed combat in or near built-up areas, there was no fire support coordination line (FSCL) to manage the IAF's close air support (CAS) operations in southern Lebanon.[20] Once the ground fighting got under way, however, the IDF established a terrain bisector just north of Israel's border with Lebanon that was comparable to an FSCL in the way it apportioned the principal ownership of

18. For the standard work on the first war from an informed Israeli perspective, see Zeev Schiff and Ehud Yaari, *Israel's Lebanon War* (New York: Simon and Schuster, 1984). Given the Israeli leadership's aversion to sustaining significant troop casualties going into the 2006 war, the IDF's deputy chief of staff, Maj. Gen. Moshe Kaplinsky, and other land-force generals warned Olmert that a major land invasion could cost the IDF as many as 400 soldiers killed in action. Harel and Issacharoff, *34 Days*, p. 172.

19. David A. Fulghum and Robert Wall, "Learning on the Fly: Israeli Analysts Call for More Flexibility and Renewal of Basic Combat Skills," *Aviation Week & Space Technology*, December 3, 2007, pp. 63–65.

20. In U.S. and allied practice, the FSCL is a procedural device for controlling and managing standoff fire support to ground combat operations that is established and adjusted by the land commander as necessary, typically at intervals of no less than twelve hours.

battlespace by air and land forces in joint combat. At the IAF's insistence, a "yellow line" paralleling Israel's northern border not far south of the Litani was drawn on maps used by both services to allow IAF aircrews unfettered freedom to attack Hezbollah's medium-range rockets and other time-critical targets as they were detected and geolocated. That arrangement was based on the presumption that if there were no commingled IDF troops in that battlespace, there would be no need for the IAF to conduct time-consuming prior close coordination of any attacks with Northern Command.[21]

Much as in the case of allied deep interdiction and CAS within the roughly similar FSCL during the major combat phase of Operation Iraqi Freedom in March and April 2003, a predictable problem arose in the relatively thin band of battlespace between the yellow line and Israel's border with Lebanon. Inside that battlespace, all IAF strike operations required close prior coordination with Northern Command, given that IDF troops were also operating in it. For a time, the IAF wanted the yellow line moved as far southward away from the Litani as possible. This would have allowed it to conduct the barest minimum of coordination with Northern Command in pursuing time-sensitive targets. In contrast, Northern Command wanted the line placed as far northward as possible so that it would enjoy the fullest possible freedom of maneuver on the ground.[22]

In the end, Northern Command prevailed: the line was occasionally moved in small increments by mutual consent between the two services. It mostly remained fixed, however, at around four to five miles north of the Israeli border, where it embraced the most intensely conflicted terrain in southern Lebanon within which the IAF could not operate without prior coordination with Northern Command. Only toward the campaign's end was the IAF cleared to attack the highest-value targets within that battlespace without prior consultation with Northern Command, in the interest of circumventing that often maddening delay in the sensor-to-shooter cycle.[23]

The IAF and Northern Command also struggled for tactical control of the IAF's various CAS assets. On the books, the IAF agreed to a formal joint doc-

21. Interview with Colonel Shai, Tel Nof Air Base, Israel, March 29, 2009. This "yellow line" occasioned for Israel many of the same sorts of interservice disagreements regarding the ownership and control of shared battlespace that have long plagued U.S. joint operations, most notably during the four-day endgame of Operation Desert Storm and throughout the three-week major combat phase of Operation Iraqi Freedom. For further discussion of these two U.S. cases, see Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, N.Y.: Cornell University Press, 2000), pp. 130–138; and David E. Johnson, *Learning Large Lessons: The Evolving Roles of Ground Power and Air Power in the Post–Cold War Era* (Santa Monica, Calif.: RAND Corporation, 2005), pp. 105–135.
22. Fulghum and Wall, "Learning on the Fly," pp. 63–65.
23. Ben-Israel, *The First Israel-Hezbollah Missile War,* p. 64.

trine specifying the allocation of tactical control. In accordance with that doctrine, the IAF could delegate tactical control of attack helicopters to a designated ground commander at the brigade level or below for twenty-four to forty-eight hours. In addition, there was a published provision for the assignment of air liaison officers (ALOs) to IDF ground formations who were empowered to approve air support requests from their supported units.[24]

Such agreements, however, often broke down in practice. Habituated almost entirely by the IAF's limited base of recent experience in providing on-call CAS in connection with the IDF's relatively slow-motion effort against the intifada, the service's commander at the time, General Shkedy, insisted at first on close control of air operations at the tactical level so as to ensure the greatest possible discipline in the interest of avoiding collateral damage. Yet as the campaign progressed, a consensus gradually developed between the IAF and Northern Command that IAF helicopters should be treated as the ground commander's assets when it came to tactical control. The two organizations also agreed that risk management with respect to the commitment of helicopters in the face of enemy fire should be conducted by means of a mutually accepted arrangement between the engaged ground commander and those helicopter pilots tasked at any moment to work his particular problem. Only toward the campaign's end, however, did the IAF conclude that the most effective approach would be to make its helicopters available on demand as needed by the requesting ground commander, while retaining operational control of them at all times.[25]

The IDF's Response to a Wake-Up Call

In the early aftermath of the cease-fire that ended the 2006 Lebanon war, the IDF's leaders stepped out briskly to correct the many revealed deficiencies in joint force integration and readiness that had come to be widely recognized as having figured centrally in the war's less than decisive outcome. Before stepping down not long after Operation Change of Direction ended, the IDF's chief

24. Interview with Colonel Shai, March 26, 2008. In Israeli military practice, unlike in the U.S. armed forces, anything that flies—from fixed-wing and rotary-wing combat and combat support aircraft to surface-to-air weapons such as Patriots and Hawks, and even antiaircraft artillery—is owned and operated by the Israeli Air Force, principally to ensure the safe separation of aircraft operating in common airspace and to minimize the possibilities for fratricide.

25. Interview with Brig. Gen. Gabi Shachor, IAF (Ret.), Palmachim Air Base, Israel, March 27, 2008. In this important distinction, "operational control" entails "organizing and employing forces, sustaining them, and assigning [them] general tasks," whereas "tactical control" is "the specific direction and control of forces, especially in combat." Col. Nicholas E. Reynolds, U.S. Marine Corps (Ret.), *Basrah, Baghdad, and Beyond: The U.S. Marine Corps in the Second Iraq War* (Annapolis: Naval Institute Press, 2005), p. 10.

of staff during the campaign, Lt. Gen. Dan Halutz of the IAF, launched a brutally honest effort by the three services aimed at identifying the main shortcomings that lay at the root of the IDF's flawed performance against Hezbollah. That searching inquiry, which began in September 2006, ran for six months and eventually produced two substantial reports containing key findings, as well as binding directives for all of the service arms aimed at improved training, cross-service dialogue, and joint contingency planning.[26]

Lebanon's combat lessons identified

The IDF's conclusions included a broadly understood need for significant increases in regular and reserve ground force training; a renewed emphasis on high- as well as low-intensity warfare contingencies in IDF planning, training, and force development; and a sharper focus by the IDF's Military Intelligence Directorate (or AMAN for short) on producing actionable target information.[27] The IAF's leaders reached a similar set of more service-specific conclusions, including an assessed need for more intimate mutual understanding between Israel's air and land warfare communities, IDF ground schemes of maneuver that routinely include IAF involvement from the very start, and renewed joint large-force training at the IDF's National Training Center in the Negev desert. In addition, senior IAF leaders came to recognize and accept the importance of stronger ALO representation at the IDF's brigade level, as well as more decentralized control of the IAF's attack helicopter operations in joint warfare.[28]

The IDF's application of lessons learned continued as key leaders were gradually replaced over time. Olmert remained as prime minister. But upon the departure of Amir Peretz and General Halutz in the early aftermath of the 2006 Lebanon war, Ehud Barak, a former IDF chief and later prime minister, became the new minister of defense, and Lt. Gen. Gabi Ashkenazi of the IDF's ground forces was appointed Halutz's successor as chief of staff. For his part, the still-serving IAF commander, General Shkedy, readily conceded that the IAF's fighter aircraft had not performed as well as they might have in the CAS role during the 2006 Lebanon war. He also fully supported an effort to correct that assessed deficiency.[29]

There was, of course, a ready explanation for that deficiency stemming from

26. Author interview with Lt. Gen. Dan Halutz, IAF (Ret.), former IDF chief of staff, Tel Aviv, May 25, 2012.
27. Brig. Gen. Itai Brun, IAF, "The Second Lebanon War as a 'Wake-Up Call': A Strategic Perspective and Major Lessons Learned" (Glilot Base, Tel Aviv: Dado Center for Interdisciplinary Military Studies, undated briefing charts).
28. Author interview with Brig. Gen. Yaakov Shaharabani, IAF, head of the Helicopter Division, IAF Headquarters, Tel Aviv, March 31, 2009.
29. Author interview with Maj. Gen. Elyezer Shkedy, IAF (Ret.), former commander, IAF, Tel Aviv, March 26, 2009.

a division of labor that both the IAF and Israel's ground forces had agreed to several years before. After the IDF withdrew its military presence from Lebanon in 2000, the IAF made a command decision to remove its fixed-wing fighters from the CAS mission area altogether, on the premise that with the advent of the intifada and the growing preeminence of lower-intensity threats on the home front, the era of major wars against first-tier Arab opponents was over. Indeed, from that point until the start of the 2006 Lebanon war, there was an unwritten but clear understanding between the IAF and Israel's ground forces stipulating that the latter would provide their own fire support with organic artillery and battlefield rockets, leaving the IAF free to focus exclusively on whatever independent deep-battle taskings that the IDF General Staff might assign to it.[30]

After the IDF's experience against Hezbollah in 2006, it quickly became apparent that the IAF had evolved into two almost separate air arms within the same service—its fighter component and its attack helicopter community—in terms of professional mind-set and culture. It also became clear that a similar divide had come to separate the IAF and the IDF's ground forces with respect to institutional practice at the operational and tactical levels. To all intents and purposes, each service planned and trained as though the other did not exist.[31]

new initiatives in cross-service dialogue

Not long after the imposition of the 2006 cease-fire, the head of the IAF's Air Division, General Locker, initiated a dialogue with the commander of IDF Northern Command aimed at inculcating a new pattern of regular joint contingency planning and training. Every other month, Locker took senior IAF headquarters staffers to Northern Command's headquarters to observe the new process at work and to help build greater trust and a more common language between the two services. He also pursued a similar initiative with Central and Southern Commands.[32]

Concurrently, Brig. Gen. Gabi Shachor invited each IDF division commander and selected subordinates to visit Palmachim Air Base, the main function of which was (and remains) providing rotary-wing support to the IDF's ground forces. He and his helicopter and unmanned aerial vehicle (UAV) squadron commanders similarly made the rounds of all IDF infantry and armored divisions. In all such cases, the visitors received a day of orientation on the host unit's overall mission, operations, capabilities, and support needs. Some brigade

30. Author interview with Brig. Gen. Yohanan Locker, IAF, deputy commander and chief of staff, IAF, Tel Nof Air Base, Israel, March 29, 2009.
31. Author interview with Brig. Gen. Yaakov Shaharabani.
32. Ibid.

commanders were given orientation flights in AH-1 Cobra attack helicopters and were invited to sit at UAV control stations to observe real-time imagery streaming down from various unmanned surveillance platforms.[33]

The IAF further arranged to convene periodic cross-service roundtables at Tel Nof Air Base, in which squadron and brigade commanders met to engage in capability briefings and discussion of identified joint issues. As a part of this dialogue, the IAF also flew a few brigade commanders in the back seats of F-15 and F-16 fighters so they might gain a more intimate appreciation for the strengths and limitations of high-performance aircraft in air-land operations. In all such instances of cross-service interaction, there was little intramural swordplay over petty parochial differences. On the contrary, all participants seemed genuinely committed to forging better ways of working together and developing a more common language.[34] Before long, combat units in ever-increasing numbers in both services found themselves training together in large-force exercises, including scenarios that involved the participation of tanks and other heavy armored vehicles. In each case, the two services proceeded systematically from identification of lessons indicated to joint planning, followed by joint hands-on application of the resultant learning in the training arena.[35]

first steps toward implementing corrective measures

In developing ever closer ties with the IDF's ground forces, the IAF also reexamined its existing practices in quest of better ways to conduct integrated combat operations. As a result, significant improvements occurred in IDF techniques and procedures with respect to the provision of CAS by IAF attack helicopters.[36]

To be sure, in addition to their important offerings in the realm of on-call CAS, the IAF's attack helicopters retain an independent deep-strike mission tasking that has rightly kept them, as before, under the close control of the IAF commander. For cases in which they might be needed for providing urgent CAS, however, tactical control over their operations was formally ceded after the 2006 Lebanon war to the IDF brigade commanders who would be the immediate consumers of their support in future times of need.[37] In a clear re-

33. Author interview with Brig. Gen. Gabi Shachor, IAF, Palmachim Air Base, Israel, March 31, 2009.
34. Author interview with Brig. Gen. Yaakov Shaharabani.
35. Author interview with Maj. Gen. Ido Nehushtan, IAF, Tel Nof Air Base, Israel, March 29, 2009.
36. Author interview with Brig. Gen. Gabi Shachor, March 31, 2009; and author interview with Yaakov Shaharabani.
37. Author interview with Brig. Gen. Gabi Shachor, March 31, 2009.

sponse to lessons learned from 2006, the IAF leadership consented to assign each engaged brigade a tactical air control party (TACP) that included at least one terminal attack controller with the rank of major or lieutenant colonel to ensure that all would have their own dedicated fighter, attack helicopter, and UAV support. As a result, the application of airpower in integrated air-land operations, which had been centralized in the IAF's main air operations center (AOC) throughout most of the 2006 Lebanon war, was now pushed down to the brigade level and, in some cases, even lower. In addition, the IAF's AOC took on a permanent battlefield coordination detachment staffed by officers from the IDF's ground forces.[38]

Facing a New Threat from the South

Not long after the 2006 war ended, the IDF's leaders were quick to identify Hamas as the next regional troublemaker that would most likely require an eventual combat response to its provocations.[39] That hard-core group of Palestinians who ruled the Gaza Strip had repeatedly fired short-range rockets into southern Israel's population centers in a continuing display of defiant hostility ever since the government of Prime Minister Ariel Sharon voluntarily withdrew both its forces and all civilian Israeli inhabitants from Gaza in 2005. After the organization's violent takeover of Gaza in 2007, and no doubt emboldened by the example set by Hezbollah the preceding summer, Hamas ramped up its provocations along Gaza's border with southern Israel even further by firing more than 7,200 short-range rockets and mortar rounds into southern Israel over the next two years. Most of the rockets landed without causing actual harm. Yet their potential lethality was not lost on the Israeli populace, and Hamas was plainly not deterred from launching multiple attacks against innocent Israeli civilians.[40]

Indeed, the IAF's initial planning for a possible future contingency involving Hamas began shortly after the 2006 war against Hezbollah. The first step toward that end was a systematic compilation of actionable intelligence. Then the IAF's Campaign Planning Department, in the course of a cross-service dialogue initiated by Southern Command, developed target folders that would

38. Ibid.
39. Hamas is a contraction of the Arabic Harakat al-Muqawama al-Islamia (Islamic Resistance Movement). A well-researched sociocultural treatment of the organization, prompted by Hamas's victory in the January 2006 Palestinian elections and written after the IDF's campaign against it in 2008–09, is offered in Asher Susser, *The Rise of Hamas and the Crisis of Secularism in the Arab World* (Waltham, Mass.: Brandeis University, February 2010).
40. "Rocket Statistics" (Tel Aviv: Israel Defense Forces, 2009).

enable a prompt preemptive attack against all geolocatable Hamas leaders at all levels should the government deem that any future acts of aggression on their part against civilian population centers in southern Israel warranted such a response. IAF planners also worked closely with their counterparts in Southern Command, the IDF's regional land combatant command responsible for the Gaza theater of operations, with General Shkedy explaining to its commander, Maj. Gen. Yoav Galant, his intended use of the target intelligence that underlay the concept of operations for the IAF's planned initial attacks. The concept was further refined and practiced repeatedly by IAF aircrews in actual training missions over the course of the next two years.[41]

The Problem Posed by Hamas

By way of essential background to this anticipatory move by the IDF, the previous Israeli government under Prime Minister Sharon had voluntarily withdrawn not only all IDF forces but also all Israeli civilians (some 8,000 in all from nineteen residential settlements) from the Gaza Strip in August 2005 in a "land for peace" gesture, while retaining control of the strip's airspace, land access, and maritime approaches. Immediately thereafter, an emboldened Hamas commenced the firing of short-range rockets into southern Israel in a new daily practice. A few landed in the major southern cities of Ashdod and Beersheva. Soon thereafter, in the January 2006 Palestinian parliamentary elections, Hamas won a decisive majority, defeating the PLO-affiliated Fatah party.[42] In June 2007, it threw out its more moderate Fatah rivals and seized control of the Palestinian Arab enclave.

Tension continued to mount in the ensuing months, eventually culminating in a resumption of Hamas rocket fire into southern Israel, after a shaky six-month truce negotiated in June 2008 expired the following December 19. Hamas justified its resumption of rocket attacks as an appropriate response to an Israeli strike the previous November 4 on a tunnel that Hamas had dug from the Gaza Strip into Israel. The IDF maintained that the tunnel had been dug for the purpose of capturing Israeli soldiers to be held by Hamas as hostages. In the course of the IDF's air and ground attack on the tunnel, six Hamas militants were killed, prompting the organization to fire thirty-five rockets into Israel in what a Hamas spokesman described as "a response to Israel's massive breach of the truce."[43] Hamas's rocket attacks into Israel escalated sharply

41. Author interview with Maj. Gen. Elyezer Shkedy.
42. "Who Are Hamas?" BBC News, London, January 26, 2006.
43. James Hicks, "Six Die in Israeli Attack over Hamas 'Tunnel' under Border to Kidnap Soldier," *Times* (London), November 6, 2008. See also Rory McCarthy, "Gaza Truce Broken as Israeli Raid Kills Six Hamas Gunmen," *Guardian* (Manchester), November 5, 2008.

thereafter, eventually approaching the level of daily harassment that had been the norm before the truce.

PLANNING AN IDF RESPONSE

At that point, the Olmert government decided to put a stop to the rocket attacks once and for all. By that time, both the IAF and the IDF's ground forces were ready with a new combat repertoire that had been carefully honed and validated through repeated joint planning efforts and large-force training exercises over the preceding two years.

As one such contingency measure undertaken shortly after the 2006 Lebanon war ended, the IDF's operations and intelligence directorates, in conjunction with Southern Command and Israel's domestic security service, Shin Bet, had compiled a target roster of hundreds of identified enemy military assets in the Gaza Strip, including rocket launch positions and command centers.[44] Once the government satisfied itself that Hamas had no intention of continuing to honor the existing cease-fire beyond its scheduled expiration date on December 19, the IDF completed final preparations for a surprise attack against the organization and coordinated its campaign plan with the IAF.[45]

As the clock was running out, Olmert's office intentionally misled the media into believing that the next cabinet meeting would address issues associated with global jihad. Only when the session was finally under way were the ministers informed that the main discussion topic, in fact, would be the IDF's impending campaign against Hamas. What unfolded next was a five-hour deliberation over the now-imminent operation, during which the ministers were given detailed briefings by all involved principals in the IDF's leadership. Afterward, the ministers voted unanimously to approve the operation, leaving it to Olmert, Barak, and Foreign Minister Tzipi Livni to decide on the exact timing and other final details. Said one minister later, "Everyone fully understands what sort of period we are heading into and what sort of scenarios this could lead to." The minister added that the five-hour review of the campaign's operational aspects and their potential ramifications affirmed that the conclusions reached earlier by the Winograd Commission regarding the uneven performance of Israel's decisionmakers during the 2006 Lebanon war had been "fully internalized."[46] At long last, an opportunity for the IDF to

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44. Amos Harel, "Most Hamas Bases Destroyed in Four Minutes," *Haaretz* (Tel Aviv), December 29, 2008.

45. That determination was materially aided by an express declaration by Hamas that it would resume its rocket fire after the cease-fire ended.

46. Barak Ravid, "Disinformation, Secrecy, and Lies: How the Gaza Offensive Came About," *Haaretz* (Tel Aviv), June 2, 2009. The Winograd Commission was established by Olmert not long af-

erase its image of irresolute performance created during the 2006 Lebanon war was at hand.

An Improved Performance in Gaza

The IDF's carefully preplanned campaign, which it dubbed Operation Cast Lead, began with an air-only phase that lasted eight days. Its intent was to pave the way for a joint air-land effort to follow as soon as possible thereafter. The campaign next featured a second phase entailing an air-supported ground assault into the heart of Hamas's main strongholds in the Gaza Strip, followed by a brief endgame consisting of a unilateral cease-fire declared by Israel on January 18, 2009, which Hamas honored with a reciprocal cease-fire announced twelve hours later.

AIR OPERATIONS UNFOLD

The opening round of the offensive began on the morning of December 27, 2008, with 88 IAF fighter aircraft and attack helicopters systematically servicing around 120 preplanned targets in all during the campaign's first day. In the initial attack wave, F-15I fighters struck numerous known Hamas-affiliated police and paramilitary facilities throughout the Gaza Strip. With no forewarning provided to the enemy, the opening attack yielded confirmed the deaths of more than a hundred targeted Hamas combatants in a span of three minutes and forty seconds.[47]

A second wave of fighters and attack helicopters then struck dozens of previously geolocated and targeted underground rocket launch positions and storage facilities, eliminating several hundred launchers. All told, the IAF destroyed more than 170 Hamas infrastructure assets during the campaign's first day, in the process killing some 140 known Hamas security personnel, including Gaza City's chief of police, Tawfiq Jabber. Those assets included a multitude of known homes of Hamas field commanders.[48]

After its initial attacks during the campaign's first day, the IAF transitioned into an around-the-clock hunter-killer mode of operations, using no fewer than a dozen simultaneous UAV orbits and manned surveillance aircraft to conduct visual and signals intelligence (SIGINT) monitoring of the entire Gaza

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ter the 2006 Lebanon war ended to assess his government's and the IDF's performances throughout the campaign. It was named for its appointed chairman, Judge Eliahu Winograd, a retired president of the Tel Aviv District Court.

47. Author interview with Brig. Gen. Yaakov Shaharabani.

48. Hanan Greenberg, "IDF Ponders Response to Rocket Attacks," *Israel News* (Tel Aviv), January 18, 2009.

Strip.[49] To support this effort, two Gulfstream G550 airborne early warning and control aircraft were employed by the IAF and AMAN for precise geolocation and identification of ground targets. The IAF's similar G550 special electronic mission aircraft provided electronic order of battle information by detecting and fixing Hamas radio frequency emitters. Both surveillance platforms also enabled a mapping of the enemy's communications network, as well as intercepts and analysis of enemy radio voice communications. Through the use of these electronic warfare platforms, the IAF jammed all means of radio and telephone communication employed by Hamas.[50]

During the campaign's second day, Defense Minister Barak made it clear that the IDF was committed to "an all-out war against Hamas."[51] The Olmert government declared as its immediate combat objectives the infliction of severe structural damage to the organization and its military assets, a decrease in the rate of its daily rocket fire, an increase in the valuation of Israel's deterrent by all observers who mattered, and an avoidance of any escalation on other fronts. An avowed longer-term goal was to produce a more enduring end to further rocket and other attacks against Israel emanating from the Gaza Strip.[52]

As the air-only phase of the campaign entered its third day, the IAF's now-expanded target roster was said to include not only individual Hamas combatants and their weapons and equipment, but also all aspects of Hamas's infrastructure that allowed the organization to remain in power and operate. A senior IDF official remarked that the main aim of the campaign was to "hit Hamas disproportionately and [thereby] create an image that Israel is ready to go berserk in response to rocket fire from Gaza."[53]

Well before the campaign's start, AMAN had conducted a meticulous preparation of the battlefield, precisely geolocating and mapping out likely placement sites for improvised explosive devices (IEDs) and other targets of interest.[54] As a British Royal Air Force (RAF) analysis later described this ef-

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49. *The 2008/09 Gaza Conflict—An Analysis* (RAF Waddington, U.K.: Air Warfare Centre, Air Warfare Group, 2009), p. 4.
50. "New Twists on Israeli Intel," *Aviation Week & Space Technology,* February 9, 2009, p. 22.
51. Griff Witte and Sudarsan Raghavan, "'All-Out War' Declared on Hamas: Israel Expands List of Targets to Include Group's Vast Support Network in Gaza," *Washington Post,* December 30, 2008.
52. "Operation Cast Lead: IAF Missions and Operations," briefing charts provided to the author by Brig. Gen. Nimrod Sheffer, IAF, head of the Air Division, IAF Headquarters, Tel Aviv, March 31, 2009.
53. Alon Ben-David, "Shoots of Recovery: Israeli Operation Leaves Hamas Weak but Alive," *Jane's Intelligence Review,* March 2009, p. 15.
54. David A. Fulghum, David Eshel, and Douglas Barrie, "New War, Fresh Ideas: Israel's Battles in the Gaza Strip Appear to Show Innovation and Might," *Aviation Week & Space Technology,* January 12, 2009, p. 26.

fort, "prior to the conflict, the area was subject to an 'intelligence soak' which employed a comprehensive approach supported by civilian and military intelligence services."[55] Using the archived information that AMAN had systematically compiled since the end of the 2006 Lebanon war, the IAF developed an initial target list of 603 identified Hamas paramilitary facilities, including headquarters buildings, training camps, command posts, weapons storage caches, and underground rocket-launching positions. Armed with this information, IAF campaign planners and targeteers divided the battlespace into four sectors—the smuggling route through which Hamas covertly infiltrated rockets and other munitions into the Gaza Strip from Egypt, weapons storage and paramilitary training facilities in southern Gaza, command and control centers in Gaza City, and forward fighting positions along the strip's northern border with Israel.[56]

During the war's air-only phase, the IAF destroyed 275 facilities known to have been used by Hamas to manufacture and store munitions. It also targeted the underground tunnel complex that Hamas used to smuggle in weapons and other contraband from Egypt. These tunnels ran along the so-called Philadelphi corridor paralleling the Gaza Strip's southern border with Egypt. IAF attacks against some 600 tunnel-related targets that had been identified and geolocated began on the operation's first night and continued until the campaign ended.[57]

The Move to a Joint Air-Ground Offensive

After eight days of air-only operations, the IDF unleashed its preplanned air-land assault. Starting during the early hours of darkness on January 3, 2009, dismounted elements of four infantry-based brigades, aided by night-vision goggles and supported by IAF attack helicopters, moved into targeted Hamas strongholds after IDF special operations forces cut off much of the electricity throughout the Gaza Strip. Most of the troops (around 10,000 in all) committed to the ground incursion consisted of the four active brigades under the command of the IDF's Gaza Division.[58] The ground combat phase made the greatest possible use of night-fighting techniques, in which the IDF maintained a pronounced qualitative edge, relying on infantry rather than tanks and taking scru-

55. *The 2008/09 Gaza Conflict*, p. 4.
56. Ibid.
57. "Operation Cast Lead."
58. Comments on an earlier draft by Colonel Meir (last name withheld), IDF, commander of the Doctrine Department, IDF Ground Forces, October 4, 2009. See also David Eshel and David A. Fulghum, "Two Steps Forward: Israeli Technologies and Coordination Detailed in Gaza Strip Combat Analyses," *Aviation Week & Space Technology*, February 9, 2009, p. 62.

pulous care to avoid confined areas and tight zones of fire. Repeatedly throughout the air-land portion of the campaign, and by preplanned arrangement, IDF ground maneuver elements supported the IAF rather than the other way around by shaping Hamas force dispositions and thereby creating both targets and an unobstructed field of fire for IAF fighters and attack helicopters.[59]

In a clear application of the IAF's tactical learning from its earlier experience during the 2006 Lebanon war, its main weight of effort shifted from preplanned attacks against fixed targets and interdiction of emerging time-critical targets to on-call CAS as required by ground commanders. Although the majority of these support missions were performed by attack helicopters and by F-15I and F-16 multirole fighters, the IAF's two F-15C squadrons, though mainly fielded as air-to-air units, had recently been certified to deliver satellite-aided 2,000-pound GBU-31 joint direct attack munitions (JDAMs). Accordingly, they also took part in the campaign's strike and CAS operations.[60]

IDF Southern Command planned all of its ground engagements down to the finest possible detail, and those engagements were generally informed by fresh and accurate battlefield intelligence. As a result, there were few troops-in-contact situations that required immediate and urgent CAS. The IDF had learned the hard way from its earlier ground skirmishes with Hezbollah during the 2006 Lebanon war that unanticipated close combat was almost certain to result in friendly casualties. Accordingly, Southern Command bent every effort to minimize operations in built-up areas in which its troops would be exposed to enemy ambushes and sniper fire.[61] By the end of the war's second week, thanks to continued electronic jamming by the IAF and AMAN, a senior infantry commander with the Palestinian Authority, Maj. Gen. Younis al-Assi, reported that Hamas leaders in Gaza City were unable to communicate with their counterparts in the central and southern parts of the strip and were incapable of sustaining a coherent fighting strategy.[62]

To avoid causing collateral damage to the greatest extent possible, the IAF used precision-guided munitions (PGMs) exclusively during the first three days of air-only operations. This, too, reflected a clear lesson learned from the 2006 Lebanon war, during which the IAF and IDF were less sensitive to the political costs of incurring noncombatant civilian casualties, with the result

59. Author telephone conversation with Lt. Col. Ron Amir, IAF, head of the IAF Doctrine Branch, September 23, 2009.
60. Alon Ben-David, "Battle Picture Helps IDF Target Hamas Tunnels," *Jane's Defence Weekly*, January 21, 2009, p. 4.
61. Interview with Colonel Meir, IDF installation near Tel Aviv, March 30, 2009.
62. Mohammed Najib, "Hamas Is 'On the Defensive' in Gaza Crisis," *Jane's Defence Weekly*, January 14, 2009, p. 5.

that Israel was forced to pay a high price in international disapprobation for its often indiscriminant attacks against enemy targets in built-up areas. Over the course of the campaign's first ten days, roughly 90 percent of the munitions expended by the IAF were PGMs. In all, 81 percent of the munitions used in Operation Cast Lead were precision-guided, compared with only 36 percent during the 2006 Lebanon war.[63] In the most heavily populated areas of the Gaza Strip, the IAF employed PGMs exclusively. General Nehushtan, who had relieved General Shkedy as the IAF commander in May 2008 upon the latter's scheduled retirement, later indicated that the only targets for which unguided general-purpose bombs were used were in "open areas, such as the smuggling tunnels in the south."[64]

A new approach to collateral damage mitigation developed by the IAF for use in precision strikes into urban areas entailed forewarning the occupants of a targeted house that a bombing attack was imminent. Once a house associated with Hamas was targeted, an IDF or Shin Bet intelligence officer would place a phone call to the occupants advising them that the structure was scheduled to be struck and to vacate it within ten to fifteen minutes. In some cases, the IAF also delivered a small nonfragmenting precursor munition of low yield into a corner of the roof of a targeted house as a figurative "knock on the door" warning occupants to vacate.[65] In all, the IDF and Shin Bet made upward of 165,000 individual telephone calls to civilian residents of the Gaza Strip warning them beforehand of an impending air attack. They also dropped 2.5 million leaflets, some of which urged civilians to distance themselves from military targets and others directing residents to leave a particular location and move to a designated safe zone by a certain route within a defined period of time.[66]

Hamas and its allies, as a central element of their operating style, bent every effort to maximize the extent to which noncombatant civilians in the Gaza Strip would be exposed to IDF fire for its propaganda value.[67] In contrast, General Nehushtan later remarked that the IAF did not strike numerous ap-

63. Barbara Opall-Rome, "Major General Ido Nehushtan, Commander, Israel Air and Space Force," *Defense News*, August 3, 2009, p. 30. In contrast, the PGM percentages of total U.S. and allied aerial munitions delivered during Operations Desert Storm, Allied Force, Enduring Freedom, and the three-week major combat phase of Iraqi Freedom were 8 percent, 35 percent, 60 percent, and 68 percent, respectively.
64. Opall-Rome, "Major General Ido Nehushtan, Commander, Israel Air and Space Force."
65. *The 2008/09 Gaza Conflict*, p. 3. See also "IDF Phones Gaza Residents to Warn Them of Imminent Strikes," *Haaretz* (Tel Aviv), January 3, 2009. This tactic also entailed prior visual confirmation that the targeted structure had been evacuated.
66. *The Operation in Gaza: 27 December, 2008–18 January, 2009* (Tel Aviv: State of Israel, Intelligence and Terrorism Information Center, July 29, 2009), p. 99.
67. Avi Mor, Tal Pavel, Don Radlauer, and Yael Shahar, *Casualties in Operation Cast Lead: A Closer Look* (Herziliya, Israel: International Institute for Counterterrorism, 2009).

proved targets, and guiding munitions in free fall were sometimes steered away from their designated aimpoints by pilots or weapons systems officers (WSOs) at the last moment.[68]

As Operation Cast Lead neared its endgame, Prime Minister Olmert declared at a weekly cabinet meeting that "Israel is getting close to achieving the goals it set for itself. But patience, determination, and effort are still needed to achieve these goals in a manner that will change the security situation in the south."[69] Olmert's top two security deputies, Defense Minister Barak and Foreign Minister Livni, reportedly differed over when and how the operation should end, whether or not the IDF should seize and occupy the entire Gaza Strip, or at least the Philadelphi corridor at its southern end, and whether the government should seek a negotiated cease-fire with Hamas or simply declare victory unilaterally and withdraw. That difference in outlook between the two ministers notably affected the timing of the campaign's last two phases and ultimately occasioned a major IAF push to disable as much as possible of Hamas's underground tunnel complex during the campaign's final day before the cease-fire went into effect.[70] It arguably also prolonged the campaign longer than was necessary to achieve its preplanned targeting objectives. No one this time, however, was calling for the IDF to seek an attempted "knockout" of the organization. As the IAF's Maj. Gen. Amos Yadlin, the director of AMAN, remarked frankly during the meeting, Hamas "is not expected to raise a white flag."[71]

On January 17, the Olmert government declared a unilateral cease-fire, stating that Israel had achieved its avowed goals of damaging Hamas, discouraging further rocket fire into Israel, and stemming the smuggling of arms into Gaza. The cease-fire went into effect early the next day, with IDF troops and tanks beginning a phased withdrawal from the Gaza Strip. About twelve hours later, Hamas and other militant Palestinian groups in the strip announced a reciprocal weeklong cease-fire, with the organization's most senior leaders remaining in hiding. This time, in marked contrast to the aftermath of the 2006 cease-fire, a widespread feeling of triumph prevailed among Israelis as radio stations throughout the country played classic Zionist songs in celebration of the campaign's conclusion.[72] As just one testament to the IDF's chastening effect, Hamas's leaders soon thereafter launched an openly publicized in-

68. Opall-Rome, "Major General Ido Nehushtan, Commander, Israel Air and Space Force."
69. Griff Witte, "Israelis Push to Edge of Gaza City: Move Could Signal a Long Urban Battle," *Washington Post,* January 12, 2009.
70. Author telephone conversation with Lt. Col. Ron Amir, September 29, 2009.
71. Griff Witte, "Israel Advances on Cities in Gaza: Declares It Is Close to Reaching Aims," *Washington Post,* January 12, 2009.
72. Ethan Bronner, "Israel Speeds Gaza Withdrawal as Efforts to Buttress Ceasefire Continue," *New York Times,* January 20, 2009.

quiry into the unimpressive performance of its military wing both before and during the execution of Operation Cast Lead. Special criticism was directed at the rocket team commanders who had unilaterally chosen to end the truce with Israel on December 19 at a time when Hamas had yet to fully dig out tunnels and secure communications links before the IDF's inevitable retaliation.[73]

operational and tactical results achieved

In anticipation of an Israeli combat response once they resumed their rocket fire into Israel on December 19, most of Hamas's top leaders went underground before the onset of Operation Cast Lead. As a result, none of the organization's most senior leaders were killed during the campaign's opening round or at any time thereafter. On January 1, however, Hamas lost one of its most revered figures, Nizar Rayyan, a cleric who had served as liaison between Hamas's political and paramilitary wings. He was killed in an attack on a known weapons cache hidden under his house.[74]

In the end, roughly 70 percent of all Hamas combatants killed during the campaign met their fate at the hands of Israeli airpower, with IAF aircrews having achieved a reported 97 percent success rate in putting precision munitions on their assigned aimpoints throughout the operation.[75] Accurate, actionable intelligence was crucial in enabling that achievement. In contrast, combat casualties sustained by the IDF were unexpectedly light, with only nine Israeli servicemen lost throughout the course of the ground incursion, four of whom were inadvertently killed by friendly ground fire. (There were no instances of fratricide caused by air-delivered weapons.)

In marked contrast to the IDF's inability to significantly reduce the rate of daily Katyusha fire from southern Lebanon into northern Israel more than two years before, Southern Command this time was expressly designated by the IDF General Staff as the combatant element responsible for dealing with the short-range rocket threat presented by Hamas. The IAF supported that assigned tasking through two concurrent efforts that entailed, respectively, real-time detection, tracking, and kinetic engagement of Hamas's rocket launch squads and preplanned attacks against previously identified and geolocated launch facilities. In all, Hamas combatants fired 650 rockets into southern Israel over the course of the IDF's campaign, with a sharply declining rate of daily fire once the air-ground phase got under way. The IDF later estimated

73. Mohammed Najib, "Hamas Investigates Poor Military Response to IDF," *Jane's Defence Weekly*, January 28, 2009, p. 16.
74. Griff Witte, "Senior Hamas Leader Killed: Israelis Stand Ready to Invade Gaza by Land," *Washington Post*, January 2, 2009.
75. Author interview with Brig. Gen. Yaakov Shaharabani.

that it destroyed 1,200 enemy rockets in its combined aerial attacks and ground fighting.[76]

Although Operation Cast Lead lasted only twenty-three days compared to the IDF's thirty-four-day war against Hezbollah in 2006, it featured more precision munitions fired from attack helicopters (1,120 compared to 1,070 during the 2006 Lebanon war), reflecting the closer involvement of the IAF's AH-1 Cobras and AH-64 Apaches in integrated support of IDF ground operations.[77]

Israel's Gaza Campaign Assessed

Operation Cast Lead was the most intense and sustained use of military force in the Gaza Strip since Israel first took control of that contested slice of terrain during the Six-Day War of 1967. Until its endgame neared, most of its combat operations were carefully preplanned by the IDF. As an after-action appraisal conducted by the RAF's Air Warfare Centre rightly noted, "In contrast to the 2006 Lebanon war, which was a reactive campaign from the Israeli perspective, this event was deliberate and the subject of considerable preparation."[78]

comparisons and contrasts with lebanon

In some respects, the IDF's operational challenge in the Gaza Strip bore a close resemblance to the familiar enemy modus operandi that Israeli forces encountered in Lebanon in 2006. Most notably, these included a Hezbollah-like opponent in Hamas that stored rockets and other weapons inside public facilities, mosques, hospitals, and private homes and apartments; that positioned and fired rockets in close proximity to schools and residential buildings; and that systematically exploited innocent civilians as human shields to inhibit IDF attacks against its military assets. By one informed account, as of early December 2008, Hamas had more than 20,000 armed operatives who were directly subordinated to the organization's military wing. It divided these forces into semi-military formations throughout the Gaza Strip and fielded them in territorial brigades, each consisting of more than 1,000 combatants.[79] In many ways, Hamas as a fighting organization was also similar to Hezbollah in its tactics, techniques, and procedures, only less competent and less well supplied with front-line weapons and equipment. Also like Hezbollah, Hamas sought not to "win" but merely to survive in the face of far superior Israeli combat power.

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76. Ben-David, "Shoots of Recovery," p. 16.
77. "Operation Cast Lead."
78. *The 2008/09 Gaza Conflict*, p. 3.
79. *The Operation in Gaza*, p. 28.

There were significant differences as well, however. To begin with, the battlespace in the Gaza Strip was notably unlike that in southern Lebanon, in that Gaza presented a more concentrated population and denser urban areas. Gaza contains upward of 1.5 million residents packed into just 139 square miles of mostly built-up terrain, making it one of the most heavily populated areas anywhere in the world. Gaza City, in particular, presented a notably greater urban warfare challenge to the IDF than did the scattered Shiite villages throughout southern Lebanon when it came to the need to mitigate collateral damage.[80]

In addition, the IAF faced far more confined airspace over the IDF's immediate area of operations in the Gaza Strip than it did in southern Lebanon, as well as the presence of numerous nongovernmental organizations whose staffers commingled with Hamas combatants and the surrounding civilian population. Furthermore, given that Operation Cast Lead took place in late December and early January, inclement winter weather adversely affected more than half of the IAF's combat sorties flown throughout the campaign. Although marginal weather never forced any significant mission cancellations, attack helicopters often operated below a 3,000-foot ceiling, with fighters armed with various types of precision munitions holding in orbits high above the cloud deck. Apache attack helicopters and UAVs operating under cloud cover provided, respectively, persistent precision firepower and live streaming video imagery over the battlefield. For their part, fighter aircrews, cued by UAVs operating below the cloud deck that provided them real-time target laser illumination and aimpoint coordinates, dropped laser-guided bombs and satellite-aided JDAMs from higher altitudes through the weather with consistent accuracy.[81]

Improvements in the IDF's Repertoire

With respect to the efficiency of combat operations, force connectivity was much better in Operation Cast Lead than it had been during the IDF's earlier war against Hezbollah. New surveillance technologies reportedly allowed the identification, tracking, and targeting of individual Hamas combatants in a crowd.[82] Also, unlike during the 2006 Lebanon war, the IDF's ground forces possessed a capability analogous to the American global positioning system–based Blue Force Tracker, which provided a real-time indication of the exact location of all engaged IDF ground units on situation displays in the IAF's AOC

80. "Operation Cast Lead."
81. Ibid.
82. Eshel and Fulghum, "Two Steps Forward."

and in other command posts that were linked into the overall network.[83] The digital software that powered the IDF's command and control system allowed all services to have a common operating picture of the battlespace showing the location of friendly forces as well as intelligence-generated information on enemy force dispositions. Once a target was designated from information shown on the display, the most appropriate available munition would be assigned to attack it. At times, thanks to closely fused target information, the sensor-to-shooter cycle time was reduced to less than sixty seconds, but more normally to as little as one to two minutes.[84]

Fortunately for the relative success of Israel's combat operations in the end, Hamas underestimated the extent of Israel's likely response to its continual firing of rockets into southern Israel, just as Hezbollah had done two and a half years before in Lebanon. As an Israeli security affairs scholar pointed out in this regard, "Hezbollah's survival in 2006 [had] allowed Nasrallah to market a narrative of victory, and two and a half years later Hamas was tempted to try the same recipe."[85] This time, however, unlike the case in Lebanon after Hezbollah's abduction of the two IDF soldiers in July 2006 when the organization was primed and ready for Israeli retaliation, the IDF achieved clear tactical surprise in its opening move against Hamas in December 2008.

The IDF's conduct of Operation Cast Lead also had a perceptible impact on Hezbollah. Notably in this respect, three Katyusha rockets were fired into northern Israel from southern Lebanon on January 8 in what at first appeared to have been the initial round of a delayed reaction by Hezbollah to the IDF's incursion into Gaza in a probe to see what the possibilities might be for Nasrallah to open a second front in Israel's northern theater of operations. Hezbollah's top leaders, however, lost no time in denying responsibility for those isolated attacks, suggesting that Israel's deterrence of Hezbollah was still holding firm.[86]

Where Israel Got It Right This Time

Operation Cast Lead sent a sufficiently impressive message to Hamas to induce its leaders to accept and honor a cease-fire within just three weeks and

83. Author interview with Maj. Gen. Elyezer Shkedy.
84. Ibid.
85. Shai Feldman, "Deterrence and the Israel-Hezbollah War: Summer 2006," paper presented at the "Framing Deterrence in the 21st Century" conference, sponsored by the Royal United Services Institute, the Center for Defence Studies at King's College London, and the U.S. Air Force Research Institute, London, May 18–19, 2009, p. 8.
86. Nicholas Blanford, "New Gaza Front Unlikely despite Lebanon Rockets," *Jane's Defence Weekly*, January 14, 2009, p. 6.

two days from the start of the IDF's campaign. To be sure, much as in the case of Israel's earlier experience during the 2006 Lebanon war, the operation's results were less than definitive for the Olmert government at the most important political and strategic levels, as attested most notably by Hamas's having lived on to fight another day as a sworn opponent. Yet although Operation Cast Lead, like the 2006 war before it, failed to provide closure for Israel in that it left Hamas intact as a challenge still to be dealt with, the IDF unquestionably showed a much-improved joint combat repertoire the second time around.

A BETTER STRATEGIC APPROACH

With potentially game-changing national elections looming in little more than a month, great pressure had been building on the Olmert government before the IDF's combat response was under way to seek not just to "degrade" Hamas but to deal it a mortal blow. Yet the prime minister held firm in the end by settling for more modest and achievable campaign goals. Operation Cast Lead, as one observer later noted, was "limited in scope, duration, and intensity," with the IDF having used only a small fraction of the combat power that had been available to it.[87] Shortly after the 2006 Lebanon war, the IDF had begun developing multiple response options against the increasingly intolerable cross-border rocket and other provocations by Hamas, ranging from punitive retaliatory air strikes of limited scope and duration to a full invasion and reoccupation of the Gaza Strip and an attempted destruction of Hamas once and for all. Wishing to avoid getting caught up in another open-ended quagmire as the IDF had done in Lebanon between 1982 and 2000, however, Olmert and his cabinet opted for a more limited operation aimed, as the prime minister explained, at seeking a "new security reality" in Gaza.[88]

Senior officials with fresh memories of the bitter recriminations that followed on the heels of the IDF's less than stellar performance in the 2006 Lebanon war also well appreciated the power of domestic and international perceptions and the need for Israel to bend every effort this time to control them. Said one spokesman on this point: "If there is a cease-fire and a perception that Hamas was defeated, it will put even more pressure on them, and on the Iranians, to strive to achieve a balance. It's a war of the narrative. The one who controls the narrative is the one who wins."[89] Toward that end, as an RAF analysis of Operation Cast Lead subsequently reported, "Perhaps the most

87. Jeffrey White, "Examining the Conduct of IDF Operations in Gaza," Policy Watch, No. 1497 (Washington, D.C.: Washington Institute for Near East Policy, March 2009).
88. Ben-David, "Shoots of Recovery," p. 15.
89. Sebastian Rotella, "Israel Hopes Iran and Hezbollah Get Message of Gaza Offensive," *Los Angeles Times*, January 18, 2009.

striking aspect of the Israeli information operations campaign was the 'secondary' war fought in cyberspace. Israeli citizens were recruited into active blogging teams . . . which set up social media war rooms to fight for the Israeli cause by influencing online discussion." Relatedly, "the IDF launched its own YouTube channel to deliver a positive spin on activities such as targeting; the site was visited more than 5 million times in its first week of operation."[90]

In addition, the Olmert government went to unusual lengths this time to ensure the barest minimum of firsthand reporting of any sort that might have worked to advance Hamas's cause. The IDF leadership likewise recognized the importance of perceptions management and accordingly minimized media coverage of the campaign by prohibiting journalists, both Israeli and foreign, from entering the Gaza Strip and reporting on the combat once Operation Cast Lead was under way. It also prohibited its troops from bringing personal cellphones into the war zone, out of its recognition that Hezbollah's ability to locate and monitor the sources of unencrypted IDF cellphone traffic had caused significant problems on several occasions during the 2006 Lebanon war.[91] (During the 2006 war, Hezbollah SIGINT operators in southern Lebanon were able to locate the positions of IDF ground forces by triangulating mobile media emissions.[92])

The Olmert government also did much better this time at controlling public expectations by working especially hard to ensure that the operation would be as brief as possible. Having been badly stung once by its headlong resort to force majeure in Lebanon without having given adequate prior thought to a viable exit strategy, it took special care this time to set more modest and attainable goals, rejecting all temptations to seek a regime change in the Gaza Strip by attempting to reintroduce rule by the Palestinian Authority and Fatah, to disarm Hamas once and for all as a fighting force, or to reoccupy the Gaza Strip with an open-ended IDF troop presence. It also moved from being reactive to proactive in its approach to dealing with Hamas's continuing cross-border provocations. Once Operation Cast Lead was ready for execution, the IDF would have to be universally perceived afterward as having prevailed.

Polls and street interviews conducted by the Israeli media throughout the war showed that nearly 90 percent of Israel's populace not only favored the operation, but backed it strongly to its very end.[93] Their exposure to a new sort of asymmetric and hybrid enemy in southern Lebanon in 2006 that com-

90. *The 2008/09 Gaza Conflict*, p. 4.
91. Cordesman, "The 'Gaza War,'" p. 15.
92. *The 2008/09 Gaza Conflict*, p. 4.
93. Ethan Bronner, "Israel United on War as Censure Rises Abroad," *New York Times*, January 13, 2009.

bined elements of a nonstate entity with those of a conventional combat organization taught both the Olmert government and the IDF that the ultimate challenge for senior leadership in wars against such resilient opponents is to "underpromise and overdeliver."[94]

Improvements at the execution level

The extent of cross-service cooperation displayed by the IAF and the IDF's land forces was unprecedented in its seamlessness when it came to the integration of UAVs and attack helicopters with the ground scheme of maneuver. Shortly after the 2006 war ended, the IAF, for the first time in six years, initiated a regular regimen of joint training with the IDF's ground forces. Its Air-Ground Coordination and Cooperation Unit played a key role in planning and implementing those exercises. Before long, 70 to 80 percent of the IDF's exercises at the brigade level included dedicated CAS provided by IAF fighters and attack helicopters. Shortly before the Olmert government committed itself to taking on Hamas, those ground units that were slated to take part in the operation engaged in a major large-force training exercise with the IAF.[95]

By the time Operation Cast Lead was set in motion, much had changed with respect to Israeli air-land integration since 2000 when, with the consent of Israel's ground force leaders, the IAF had removed its ALOs from the IDF's brigades. That decision was based on the presumption that the latter would henceforth be tasked mainly by lower-intensity threats, such as that presented by the Palestinian intifada, against which air support was deemed to have become largely irrelevant. Accordingly, in July 2006, when the Olmert government launched Israel's war against Hezbollah, there were no ALOs assigned to IDF units directly engaged with enemy forces. (During that campaign, the only ALOs provided to Israel's ground units were at the division level, where they could not operate side by side with those ground troops actually engaged in the fighting.[96])

In all, most of the combat effectiveness displayed by the IDF throughout Operation Cast Lead resulted from the greatly improved force integration that the IAF's leaders had forged with the IDF's ground forces during the two years that followed the end of the 2006 Lebanon war. Throughout most of the 2006 war, in a comparatively inefficient use of resources, the IAF's attack helicopters and UAVs had been under the exclusive tactical control of the IAF's forward AOC that was collocated with Northern Command. In Operation Cast

94. Author interview with Maj. Gen. Ido Nehushtan, March 29, 2009.
95. Ibid.
96. Ibid.

Lead, those assets were now instead directly subordinated to the IDF's engaged brigade commanders, with each able to count on dedicated, around-the-clock support from them on request.[97] General Nehushtan also ceded to brigade commanders the prerogative of exercising direct tactical control over the IAF's attack helicopters. Indeed, by the time combat operations against Hamas were ready to be launched, the IAF's attack helicopter force had become, to all intents and purposes, army aviation in the manner in which it was employed.[98]

Also for the first time in Operation Cast Lead, the brigade headquarters was the nerve center for all combat activity, and it exercised a substantial degree of autonomy from higher headquarters both at Southern Command and in the IDF's General Staff compound back in Tel Aviv. With respect to air operations, the brigade headquarters controlled all IAF attack helicopter and UAV assets, along with some fighter aircraft. To ensure the fullest and most helpful exploitation of air power in support of ground operations, the joint force commander within the brigade headquarters, an army brigadier general, had at his side an IAF colonel constantly, who saw to the uninterrupted provision of direct air inputs into the planning and conduct of combat operations. The associated presence of IAF squadron officers in the brigade's field headquarters also contributed pivotally to the development and maintenance of a high degree of trust and understanding between the headquarters and engaged front-line units.[99]

In addition, every participating brigade had an embedded TACP consisting of five IAF team members who sorted raw incoming information and converted it into actionable intelligence for time-critical targeting. Each TACP included both an attack helicopter pilot and a fighter pilot or weapons system officer as assigned ALOs, some of whom were veteran reservists up to the age of sixty. The TACP members also coordinated CAS attacks and controlled the

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97. General Nehushtan was clear to point out, however, that although brigade commanders had the lead in exercising tactical control of joint air-land operations, "professional considerations" regarding precisely how and under what circumstances Israel's air assets could and should be used in combat remained the IAF's final call. Opall-Rome, "Major General Ido Nehushtan, Commander, Israel Air and Space Force."

98. Author interview with Colonel Meir.

99. *The 2008/09 Gaza Conflict*, pp. 5, 7. It bears noting that this now battle-tested approach toward ensuring the fullest possible exploitation of air power at the tactical level has a direct bearing on current U.S. counterinsurgency operations in Afghanistan. More specifically, it testifies to the need for decentralized control of air assets and for a command and control entity, below the level of the AOC and staffed by high-quality airmen of the appropriate rank and experience, to provide a suitable level of air influence in joint combat at the tactical level. For a thoughtful commentary on this increasingly apparent need for a devolution of organic air expertise to lower command echelons in the case of U.S. counterinsurgency operations, see Lt. Col. Jeffrey Hukill, U.S. Air Force (Ret.) and Daniel R. Mortensen, "Developing Flexible Command and Control of Air Power," *Air and Space Power Journal*, Vol. 25, No. 1 (Spring 2011), pp. 53–63.

airspace over each brigade's area of responsibility. Each brigade also now had the support of a dedicated attack helicopter squadron, which provided a pilot to the TACP who communicated with airborne attack helicopter aircrews. To reduce the workload on brigade commanders and on the IAF's Air-Ground Coordination and Cooperation Unit, TACP members could call in air support themselves. ALOs also had constant access to real-time streaming UAV imagery. New operating procedures allowed attack helicopters to deliver fire support, in some cases, to within 100 feet of friendly troop positions.[100] They also gave attack helicopter flight leaders essentially unrestricted freedom of tactical decision throughout the Gaza operation.

Furthermore, during the IDF's campaign against Hezbollah in 2006, General Shkedy's personal approval had been required for IAF aircrews to provide on-call CAS to embattled IDF troops in sufficiently close proximity to enemy forces to risk causing an inadvertent fratricide incident. In the subsequent Gaza operation, IAF terminal attack controllers assigned to IDF ground units could grant that approval.[101] Moreover, in a major departure from 2006, the IAF's main AOC this time was out of the command and control loop except for transmitting rules of engagement and special instructions to participating IAF aircrews. Most nonpreplanned targets were now nominated by the IDF's brigade commanders.

To further fine-tune the integration of ongoing air and ground operations while the fighting was actually under way, the IAF's senior leaders met with their ground force counterparts a week after the campaign's start and again ten days before Operation Cast Lead concluded. Once engaged in the ensuing fight, IAF aircrews found their combat tasking to be relatively undemanding, thanks in large part to their earlier cooperative training with the ground forces, which familiarized them beforehand with virtually any cross-service friction point that might arise. In all, a former IAF commander and later IDF deputy chief of staff remarked in a post-campaign reflection that the Gaza operation had shown a "major improvement" in air-ground coordination compared to that displayed during the more troubled 2006 Lebanon war.[102]

The campaign's integrated air-land phase also saw an unprecedented unity of effort between the IDF's ground forces and Israel's internal security agency Shin Bet. The IAF and Shin Bet likewise, for the first time on that scale, merged their capabilities to create new sources of real-time intelligence for hunting down a variety of time-sensitive targets. Shin Bet embedded its representatives

100. Eshel and Fulghum, "Two Steps Forward."
101. Author interview with the commander of 160 Squadron, Palmachim Air Base, Israel, March 31, 2009.
102. Author interview with Maj. Gen. David Ivry, IAF (Ret.), Tel Aviv, March 25, 2009.

in various IDF command posts, as well as in forward-deployed combat units. The latter operatives gathered valuable human-source inputs to supplement what AMAN and the IAF were collecting by means of their SIGINT and other standoff assets.[103]

To speed up the process of battle damage assessment and the quickest possible provision of its results to engaged ground commanders for next-day operations planning, General Nehushtan authorized IAF analysts to presume that any JDAM that had been successfully released within proper parameters had achieved a valid hit on its designated aimpoint, given the weapon's proven reliability over time.[104] Live streaming video imagery from UAVs also allowed ALOs to view a real-time picture of any area of interest, thereby facilitating their assistance with route clearing, targeting of IEDs, and the elimination of enemy force concentrations that might threaten advancing IDF forces.

The Payoff in Closer Force Integration

After the Gaza conflict was over, the IDF's ground commanders uniformly adjudged CAS delivery during the campaign to have been more than satisfactory, reflecting a clear payoff from the greatly intensified joint training exercises that were conducted and the associated cross-service trust relationships that the IAF and Israel's ground forces had forged during the two years following the end of the 2006 Lebanon war. As General Nehushtan later remarked on this point, the main lesson to be drawn from the integrated air-land combat operation against Hamas was the IAF's "full partnership with the ground forces," which enabled "well-planned, well-rehearsed, truly joint operations based on a suit of capabilities specifically sewn for their missions." Essential to this, Israel's air commander added, was "intimate cooperation between all relevant intelligence branches, which allowed commanders to constantly replenish their target banks during the course of the fighting." Even more so, he further added, was the intimate cooperation down to the lowest tactical levels that the IAF's most senior leaders had painstakingly cultivated with the IDF's ground forces over the preceding two years. IAF aircrews and UAV operators, General Nehushtan pointed out, worked directly with Israel's ground commanders from the earliest stages of joint mission planning, each in his own assigned sector, to a point where "they knew one another. They recognized each other's voices over the network and could smell each other's sweat."[105]

These and other improvements in IDF force integration from Lebanon to

103. Author interview with Maj. Gen. Ido Nehushtan, IAF Headquarters, Tel Aviv, March 31, 2009.
104. Ibid.
105. Opall-Rome, "Major General Ido Nehushtan, Commander, Israel Air and Space Force."

Gaza bore more than ample witness to the essential validity of Rosen's finding from previous historical experience that military institutions are inherently capable of duly implementing appropriate innovations and reforms when these are initiated from the top down in response to lessons understood and learned from past mistakes. They also would appear to have vitiated Adamsky's related proposition, referred to earlier, regarding the IDF's seemingly systemic incapacity in previous years to implement anything more than the most narrow "quantitative-technological upgrades" in response to the harsh teachings afforded by its past errors made under the stress of modern combat.[106]

Israel's Lebanon and Gaza Wars in Broader Perspective

As impressive as the IDF's improvements in force employment practice were at the tactical and procedural levels between 2006 and 2008, the same cannot be said with respect to the larger Israeli security establishment's performance at the more important political and strategic levels, where the ultimate success or failure of campaigns is typically decided. In notable contrast to the organizational coherence and well-honed professionalism of Israel's uniformed services, the country's civilian leadership structure is less well configured to match combat tasks to a broader game plan aimed at setting attainable goals and achieving a truly decisive outcome. Such nominally important institutions as the National Security Council and Ministry of Foreign Affairs, and even the civilian apparatus in the Ministry of Defense, typically have a hard time gaining a credible voice in high-level campaign planning, and their activities in the political and bureaucratic arenas are not usually orchestrated with a view toward producing a coherent and consolidated response to strategic challenges. That systemic deficiency in the country's organization for national security was well attested by the above-noted endgame sparring between Barak and Livni over the best terms for concluding the campaign, which spoke to a lack of clarity with respect to overall campaign goals that persisted right up to the last days of fighting in Operation Cast Lead.

At the same time, viewed with the benefit of six years' hindsight, Israel's war against Hezbollah in 2006 was no more a total failure in its longer-term achievements than its Gaza campaign was a total success at the all-important political and strategic levels. In light of these considerations, a duly balanced

106. Adamsky, *The Culture of Military Innovation*, p. 114. On the latter count, Adamsky has since indicated that his proposition applied to the IDF's conduct up to the 2006 Lebanon war and that the IDF's subsequent Gaza campaign of 2009 showed "a clear discontinuity from the previous trend"—assuming, of course, that campaign represents an enduring transformation of the IDF's military culture. As for that, he added, "[T]ime will tell." Dima Adamsky, comments on an earlier draft of this article, June 25, 2012.

understanding of the overall historical import of the two successive combat experiences warrants an unsentimental retrospective overview of each, with a view toward clarifying where the latter campaign fell short in seeking its most high-level goals and where the former ended better in the long run than it has generally been given credit for.

THE POLITICAL DOWNSIDE OF THE IDF'S TACTICAL SUCCESSES IN GAZA

On balance, the Olmert government's overall performance in Gaza was arguably as flawed at the political and strategic levels as was its earlier performance in Lebanon. In this regard, a former IAF fighter pilot and now prominent strategist, Shmuel Gordon, has found "puzzling" what he calls "the Israeli consensus that the lessons of the [2006 Lebanon war were] learned and implemented and the [improved] warfighting skills . . . vastly improved the outcome of the campaign."[107] In a similar vein, another former IAF fighter pilot, Ron Tira, who served as a reservist in the IAF's Campaign Planning Department during the Gaza war, concluded that, although most in Israel have deemed Operation Cast Lead a success, "in many ways it repeated the errors of 2006. Once again the political echelon failed to fully play its role in war fighting, and once again there was insufficient synchronization between the military operation and the desired political achievement."[108]

For example, as the IDF's combat operations against Hamas were getting under way, the Olmert government declared that its overarching campaign goals were to "deal a heavy blow to the Hamas terror organization, to strengthen Israel's deterrence, and to create a better security situation for those living around the Gaza Strip that will be maintained for the long term."[109] Yet, in Tira's assessment, that declaration did not offer a clear political directive for the campaign, because it left unspecified what was meant by "a heavy blow to Hamas" and by the creation of "a better security situation."[110] Tira conceded that the campaign indeed achieved its short-term goal of battering Hamas badly and most definitely made the organization "pay a price" for its transgressions. He also noted, however, that it "did not produce a clear, reality-altering military end state—there was no decision against the military wing of Hamas, and the rocket threat was not removed." Furthermore, he added,

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107. Col. Shmuel L. Gordon, IAF (Ret.), "The Air War—A Success or a Failure?" *IsraelDefense,* October 2011, p. 98. For a fuller development of this critical view of the Gaza campaign, see Gordon, *Grizzly vs. Scorpion: Strategic Decisions in Operation Cast Lead* (Tel Aviv: Fisher Institute for Air and Space Strategic Studies, 2012).
108. Ron Tira, "In Search of the Holy Grail: Can Military Achievements Be Translated into Political Gains?" *Military and Strategic Affairs,* Vol. 2, No. 2 (October 2010), p. 46.
109. IDF spokesperson on Operation Cast Lead, *Israel Defense Forces,* http://dover.idf.il/IDF/English/News/today/09/01/0301.htm.
110. Tira, "In Search of the Holy Grail," p. 44.

Hamas remained in control of the Gaza Strip in the campaign's aftermath and in no way abandoned its implacable armed struggle against Israel.[111]

In assigning credit where due, Tira did acknowledge "the tactical excellence" that was widely—and properly—attributed to the campaign. In this regard, he granted that "a relatively large and complex maneuver was carried out successfully in an urban setting, accurately, and with a great deal of operational discipline." Furthermore, he acknowledged, "intensive tactical intelligence gathering and massive, precise firepower accompanied the maneuver," and "the IAF operated with great success in carrying out its missions in every kind of weather and introduced new ways of integrating with the ground units." In all, he concluded, the IDF at a purely tactical level "managed to project a sense of military effectiveness and complete domination of the battlespace."[112]

Despite that, Tira insisted, the military achievement of Operation Cast Lead "was little more than wide-ranging pressure on Hamas, a demonstration of tactical competence, and the demonstration of the capacity to create a strategic threat (without realizing the strategic threat in practice and translating it into a military end state)." In this regard, he acknowledged that, although the campaign did not generate "a better peace," impose Israel's will on Hamas, or produce a decisive exit strategy, "in its own non-ambitious way, the operation was something of a small success"—perhaps the most that Israel can reasonably expect given the security dilemmas it currently faces on a daily basis.[113] He also concluded, however, that the government's overall failure "to clarify sufficiently the political idea for the war that would realize [a] political objective" both exposed and starkly dramatized Israel's persistent "functional problems in the echelons above the field ranks."[114]

That charge, moreover, applies in equal measure to Israel's senior military leadership at the General Staff level in Tira's assessment. Although typically more than accomplished professionally when it comes to the operational details of campaign planning, Israel's top military leaders have not been characteristically adept at providing well thought-out and purposeful strategic direction to such plans. In the Lebanon and Gaza cases, the campaigns' duration, tempo, and patterns of maneuver "were not arrived at as a result of in-

111. Ibid., p. 49.
112. Ibid., pp. 49–50.
113. Ibid., p. 50.
114. Ibid., p. 53. In addition, notwithstanding the initial success of Operation Cast Lead in quelling Hamas's provocations, the situation in Gaza has since flared up again with renewed rocket firings into southern Israel. In March 2012, the targeted killing of a senior member of the Popular Resistance Committee by an IAF air strike prompted a renewed barrage of Qassams out of Gaza, with some 250 fired into southern Israel as of the end of that month. In this case, however, the IDF's recently fielded Iron Dome point defense system intercepted nearly 90 percent of the rockets that threatened to land in a vital area. Sheera Frenkel, "Israel Sees New Advantage in Iron Dome Anti-Missile System," McClatchey, March 26, 2012.

depth analysis," in Tira's informed judgment, and accordingly were "divorced not only from a political-civil idea but also from a military-strategic and even campaign-level one." What was notably missing in both cases, in Tira's view, were "coherent ideas tying everything together in an ordinary flow" by means of a systematic strategy-to-tasks approach that proceeded from overarching political objectives through a political war idea, a strategic war idea, a top-down campaign plan with clearly defined campaign themes, and from there to an operational plan followed by detailed force-employment tactics.[115] In both wars, the IDF leadership could, at best, be said to have performed effectively only at the last two of these tasks. This observation nicely bears out "the IDF's emphasis on practice over learning" noted by Adamsky when it comes to higher-level strategic conceptualization, as well as the inherent tendency of its most senior leaders to think and operate largely "in tactical terms, concentrating on giving ad hoc, piecemeal solutions to immediate problems."[116]

WAS THE 2006 LEBANON WAR REALLY A LOST CAUSE FOR ISRAEL?

Although Israel's performance in Operation Cast Lead has been regarded by most observers as having been a resounding success when compared to the IDF's earlier flawed experience in Lebanon, it would be wrong to conclude that Israel's war against Hezbollah in 2006 was a total failure. To begin with, it was easy enough for Nasrallah to proclaim in the campaign's early aftermath that Hezbollah had "prevailed" simply by virtue of having survived. Yet as a direct result of the IDF's escalated response to his provocation, his organization sustained a debilitating blow and paid a high price for its abduction of the two Israeli soldiers. The IDF killed 700 of his most seasoned combatants and wounded around a thousand more. In addition, the IDF's relentless aerial and artillery bombardment destroyed a considerable portion of Hezbollah's military infrastructure. During the campaign's first hours, the IAF preemptively took out the majority of Hezbollah's medium-range rockets. Shortly thereafter, the IAF all but eliminated Nasrallah's command and control nexus in downtown Beirut.[117]

In light of these and other achievements at the tactical level, the IDF's war against Hezbollah was not the unqualified setback for Israel that many initially thought, as best attested by the post-campaign strategic reality on Israel's northern border. From the first weeks of his selection as Hezbollah's commander in 1992, Nasrallah had, with impunity, lobbed short-range rockets into northern

115. Dima Adamsky, comments on an earlier draft of this article, June 17, 2012.
116. Adamsky, *The Culture of Military Innovation,* p. 127.
117. Author interview with Maj. Gen. Amos Yadlin, IAF, director of Military Intelligence, IDF Headquarters, Tel Aviv, March 26, 2008.

Israel from time to time with maddening regularity until the start of the 2006 Lebanon war. Yet not a single rocket was fired from Lebanon into Israel during the years since the campaign ended until three were launched, desultorily and without effect, during the IDF's subsequent operation against Hamas. Even though Hezbollah by that time had accumulated more short-range rockets (as many as 40,000) in its since-reconstituted weapons inventory than ever before, its leaders were quick to disavow responsibility for those launches. Since then, the Lebanese border region north of Israel has remained quiescent.

This reality suggests that Nasrallah almost surely understood the consequences of gratuitously firing rockets into northern Israel, a lesson no doubt reinforced by the 2008 Gaza campaign. Moreover, as a result of his keen appreciation that he remains targeted by the IDF, he and his most senior deputies have been forced to command from their bunkers and, with but few exceptions, have not appeared in public during the years since the 2006 Lebanon war ended.

Looking back, one can further ask whether Nasrallah, in planning his abduction operation in 2006, fundamentally miscalculated Israel's fortitude by so grossly underestimating the probable intensity of the IDF's response. Shortly after the cease-fire went into effect, Hezbollah's leader admitted that he would never have ordered the capture of the IDF soldiers had he known what would follow by way of an IDF response: "You ask me if I had known on July 11 . . . that the operation would lead to such a war, would I do it? I say no, absolutely not."[118]

To sum up, one can say in hindsight about the 2006 war in Lebanon what Mark Twain once supposedly said about Wagnerian opera—it's not as bad as it sounds. In a post-campaign statement to the Winograd Commission that captured the case for this more encouraging outlook, General Halutz said: "When I judge the results [of the campaign] in light of the targets [that were attacked], and when I look at the military outcome where an improved military situation has been created [and] where Hezbollah has been weakened, . . . I think that . . . the starting point today is substantially superior to what it was before the outbreak of the fighting. . . . From the military point of view, [Hezbollah] has been dealt a blow like it had never felt before."[119]

Conclusion

In their assessment of five cases of what they called "military misfortunes," ranging from the abortive British amphibious landing attempt at Gallipoli in

118. "Hezbollah Chief Revisits Raid," *Washington Post*, August 28, 2006.
119. "Testimony by Lt. Gen. Dan Halutz, IDF chief of staff, to the Winograd Commission Investi-

August 1915 to Israel's close call Yom Kippur War in October 1973, Eliot Cohen and John Gooch identified three fundamental variants of military failure—"failure to learn, failure to anticipate, and failure to adapt."[120] Without question, the IDF and its civilian superiors in the Olmert government failed to anticipate that Hezbollah's provocation would ultimately lead to Israel's 2006 Lebanon war. The casus belli for that combat response was an enemy move that most now agree should have been foreseen and hedged against by the IDF in adequate time. As the onset of the 2006 Lebanon war neared, Hezbollah's provocations along Lebanon's southern border with Israel had mounted relentlessly in frequency and salience. The IDF should have read those taunts as clear warning of more of the same to come.

Yet when the provocation that ultimately forced the government's hand finally occurred, Olmert and the IDF responded as though it was not just a tactical but also a strategic surprise. On this count, a U.S. Air Force intelligence officer later concluded that the government's national security principals, in the end, "proceeded to prosecute a linear attrition strategy that failed to produce linear and anticipated consequences." He added, "Although immediate post-conflict appraisals quickly devolved into debates over the merits of air power, subsequent reviews [more correctly attributed] Israel's disappointing results to a flawed grand strategy centered on an ineptly prepared military solution." This observer further noted that the course of events that ultimately transpired was in no way preordained once combat operations got under way: "Israel had a . . . learning opportunity to alter its ineffective strategy early in the war, but failed to exploit it." As a result, he concluded, the IDF "slugged its way through a 34-day war for which it was not adequately prepared while combating an enemy who was."[121]

In its response to the inconclusive outcome in 2006, however, the IDF showed anything but a failure to learn and adapt in the realm of cross-service planning and training at the operational and tactical levels of warfare. On the contrary, in its preparations for and conduct of its campaign in Gaza, the IDF embraced the need for closer air-ground integration. During the 2006 war, especially after significant conventional ground operations had commenced, the IAF found itself almost completely unhabituated by past training practice to providing needed air support to Israel's engaged ground forces. At the same

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gating the Second Lebanon War," unpublished English translation from the original Hebrew, Jerusalem, Israel, January 28, 2007.

120. Cohen and Gooch, *Military Misfortunes*, p. 26.

121. Maj. Chad J. Hartman, U.S. Air Force "Field-Testing the Intelligence Estimate: A Strategy for Genuine Learning," master's thesis, School of Advanced Air and Space Studies, Air University, 2008, p. 48.

time, IDF Northern Command and its subordinate ground units that were pitted in close combat against Hezbollah's forces had little experienced insight into how to employ the air support that was available to them in principle. The net result was a badly flawed incorporation of Israel's airpower into the land battle, with all the inefficiencies in combined-arms employment that it naturally produced.

In sharp contrast, the IDF, having drawn the right tactical-level conclusions from its earlier experience in Lebanon, envisaged a joint air-ground campaign from the first moments of its options planning. Additionally, it fully accepted the possibility of incurring more than occasional troop losses in achieving its avowed goals. In the end, its actual casualties sustained during the campaign's air-land phase were far lower than anticipated, with only nine Israeli servicemen lost throughout the course of the ground incursion, four of whom succumbed to inadvertent friendly ground fire. (There were no instances of fratricide caused by air-delivered weapons.) The IDF further showed a willingness to run greater risks this time by putting attack helicopters into airspace above hot areas on the ground that were concurrently being serviced by bomb-dropping fighters, thereby increasing the effectiveness of its CAS efforts. It also went from providing on-call CAS to offering up proactive CAS, in which the IAF took the initiative by asking all engaged brigade commanders what they needed via daily phone conversations rather than waiting passively for emergency requests for urgent CAS from IDF troops in actual contact with enemy forces.[122]

In all, through its successful response to its disappointing performance in Lebanon in 2006 at the procedural and tactical levels, the IDF bore out convincingly Rosen's theoretical observation drawn from past campaigns that an adaptive military organization determined to improve its readiness and repertoire can muster the needed wherewithal not only to identify and understand but also to learn and profit from teachings offered by a flawed but instructive combat experience. It must remain a topic for future research to determine the extent to which this impressive achievement in the lessons-learned arena reflects an enduring change in the traditional character of Israel's military culture. That said, the IDF's effective implementation in 2008 of force-employment lessons learned offers a worthy example for closer consideration and, as appropriate, emulation by the United States and its friends and allies around the world.

122. Comments on an earlier draft of this article by Brig. Gen. Yaakov Shaharabani, November 4, 2009.