U.S. Air Force (William Green)

IDF participate in training exercise

FORGING JOINTNESS UNDER FIRE

Air-Ground Integration in Israel's Lebanon and Gaza Wars

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In July and August 2006, the Israel Defense Forces (IDF) waged a 34-day war against Hizballah, an Iranian proxy terrorist organization based in Lebanon, in response to a raid by a team of Hizballah combatants into northern Israel that resulted in the abduction of two Israeli soldiers to be held as hostages. That escalated response, code-named Operation *Change of Direction*, ended up being the most disappointing IDF performance in its nearly six-decade history in that it represented the first time a major war had ended without the achievement of a clear-cut military victory by Israel.

The main reason for the IDF's poor showing in that campaign was the failure of Prime Minister Ehud Olmert and his government to size up the enemy correctly, set achievable goals, apply a strategy suited to the attainment of those goals, and manage expectations as the campaign unfolded. No less at fault, however, was a near total breakdown in the effective integration of air

and land operations that had been allowed to develop in Israel after the onset of the Palestinian intifada in 2000 and the almost exclusive fixation of IDF ground forces on that domestic uprising ever since.

A little more than 2 years later, the IDF conducted a more satisfactory campaign against Hamas in the Gaza Strip in which the problems of air-ground integration that had been unmasked during the second Lebanon war were all but completely corrected. The net effect of that success was to replenish Israel's stock of deterrence that had been badly depleted in the aftermath of the IDF's more uneven performance in 2006.

A Wakeup Call in Lebanon

At the time Operation *Change of Direction* first got under way on July 6, 2006, neither IDF ground forces nor the Israel Air Force (IAF) had had any first-hand experience against a well-armed opponent such as Hizballah after the country ended its 18-year military presence in Lebanon in 2000. Its only use of force during those 6 years had consisted of recurrent low intensity policing operations against the intifada in the West Bank and Gaza Strip. On the premise that the era of major wars against first-tier Arab opponents was over, at least for the time being, IAF leaders, with ground-force concurrence, had removed their fighters from the close air support (CAS) mission area altogether. There even was a signed contract between the IAF and Israel's ground forces affirming that the latter would provide any needed fire support with their own organic artillery and rockets, leaving the IAF free to concentrate exclusively on whatever independent deep battle missions might be assigned by the General Staff.[1] Throughout the years since the IDF withdrew from Lebanon, it conducted no exercises in which its joint command and control system was tested from top to bottom in a realistic training environment. As a result, ground force preparation for any combat challenges other than countering the intifada had lapsed badly, and operational integration between the IAF and Israel's ground forces had become all but nonexistent.

Not surprisingly in light of that lapse, the IAF encountered numerous challenges in providing effective air support to Israel's ground forces once the campaign against Hizballah shifted from standoff attacks alone to a more joint and coordinated air-land counteroffensive. One problem that persisted throughout most of the campaign had to do with the division of responsibility between the IAF and Northern Command, which oversaw ground operations, for dealing with the enemy's Katyushas and other short-range rockets that rained continually into northern Israel throughout the course of the fighting. In this division of labor, the IAF was the supported command for servicing Hizballah's medium- and long-range rockets, virtually all of which were kept north of the Litani River beyond the area where most of the ground fighting was taking place. For its part, Northern Command was the supported command with primary responsibility for negating the Katyushas and other shorter-range rockets that were stored and operated mainly within its battlespace most closely adjacent to the Israeli border.[2]

Because so much of the war during its last 2 weeks entailed combat in or near built-up villages, there was no fire support coordination line (FSCL) to manage IAF CAS operations in southern Lebanon. However, once the ground fighting got under way, there was a terrain bisector just north of Israel's border with Lebanon that was analogous to the FSCL in its effect on the efficiency of joint operations. At IAF insistence, a "yellow line" paralleling Israel's northern border not far south of the Litani River was drawn on maps used by both services to allow IAF aircrews unfettered freedom to attack Hizballah's medium-range rockets as they were detected and geolocated on the premise 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 and its field commanders.[3]

This yellow line occasioned many of the same interservice disagreements regarding the control of joint battlespace that have long plagued American joint combatants at the operational and tactical levels. Yet it was accepted by Northern Command as the most convenient means for deconflicting the respective taskings assigned to Israel's air and land forces. In this arrangement, Northern Command bore responsibility for all targets and operations from the yellow line southward to Israel's northern border. Everything north of the line up to the Litani was the IAF's responsibility as the supported command in the hunt for medium-range rockets. The IAF could only attack identified short-range rocket launch areas south of the line if it received prior permission from Northern Command.

Much as in the case of American kill-box interdiction and CAS inside the roughly similar FSCL during the 3-week major combat phase of Operation *Iraqi Freedom*, a predictable problem arose in the relatively thin band of battlespace between the yellow line and Israel's northern border. Upward of 70 percent of the short-range Katyushas were stored in and fired from this region, yet any attempted IAF operations against them required prior close coordination with Northern Command because IDF troops were also operating in that battlespace. For a time, there was a serious disagreement between the IAF and Northern Command over the placement of the yellow line, with the IAF wanting the line moved southward, as far away from the Litani as possible. Moving the line thusly would enable the IAF to conduct the barest minimum of coordination with Northern Command in the course of its pursuit of time-sensitive targets. Northern Command, for its part, wanted the line placed as far northward as possible, out of an understandable concern that it would otherwise bear the brunt of any criticism that might arise after the war ended for having failed to address the Katyusha threat satisfactorily.[4]

for battlespace management, the IDF used designated kill boxes in a common geographic grid reference system

In the end, Northern Command prevailed in this disagreement. The line was occasionally moved in small increments by mutual consent between the two services, but it mostly remained fixed at around 4 to 5 miles north of the Israeli border, where it embraced most of the terrain in southern Lebanon that contained Hizballah's dispersed Katyushas, yet within which the IAF could not operate without prior coordination with Northern Command. Only toward the campaign's end was the mission of attacking targetable short-range rockets assigned directly to the IAF in the interest of circumventing that

delay in the sensor-to-shooter cycle. Accordingly, only a few short-range rocket storage and launch sites were hunted down and neutralized by either service.[5]

There also was a recurrent struggle between the IAF and Northern Command for tactical control of various IAF CAS assets. One example of such disagreement concerned who should control IAF attack helicopters working with IDF ground units—the IAF or the engaged ground commander? On the books, there was formal joint doctrine for such a situation that the IAF had agreed to regarding the allocation of tactical control. In accordance with that joint doctrine, tactical control of attack helicopters could be delegated by the IAF to a ground commander for 24 to 48 hours. In addition, there was a published provision for the assignment of air liaison officers (ALOs) to IDF formations at the division level who were empowered to approve air support requests from their supported units.[6]

However, such doctrinal contracts on paper often broke down in practice. Habituated almost entirely by its limited base of recent experience in providing on-call CAS in connection with the IDF's relatively slow-motion effort against the intifada, the IAF commander insisted at first on micromanaging air operations at the tactical level so as to ensure the closest possible control over them in the interest of avoiding any untoward collateral damage incidents, much as U.S. Central Command did regarding responsive strike operations conducted from time to time by allied aircraft enforcing the no-fly zone over southern Iraq for nearly a decade.[7]

Israel Air Force

Then–Major General Dan Halutz, Israel Air Force, became Israel's first airman to become IDF chief of staff as lieutenant general responsible for Israel's military forces

As the campaign progressed, however, a consensus gradually developed between the IAF and Northern Command that both attack and utility helicopters should be treated as the ground commander's assets when it came to tactical control and that risk management concerning the commitment of helicopters in the face of enemy fire should be conducted by means of a mutually agreed-upon contract between the engaged ground commander and those helicopter pilots tasked at any moment to work his particular problem. In the end, the IAF concluded that the most effective approach would be to make its helicopters available on demand by the requesting ground commander while retaining operational control of them at all times.[8]

A different situation prevailed, however, when it came to the integration of fixed-wing fighters into the IDF's ground scheme of maneuver. Tactical control of IAF F-15s and F-16s invariably remained the sole prerogative of the IAF's main Air Operations Center (AOC) throughout the war. One of many problems encountered in this particular area of joint operations entailed the use of unfamiliar terms of reference by fighter aircrews and ground combatants. Often the same targets had as many as three different names depending on whose maps were being referred to. Also, the engaged ground commander often would not know whether a requested target had been successfully struck.

The management of airspace directly above the ground fighting worked out reasonably well, despite the presence of as many as 70 aircraft simultaneously operating over southern Lebanon at any time. Regarding helicopters in the lowest altitude blocks, achieving the needed deconfliction turned out to have been simply the result of an eventual IAF decision to stay out of the process. In time, IAF helicopter pilots came to work fairly harmoniously with the ground forces, although ground commanders repeatedly complained about inadequate support from attack helicopters owing to IAF reluctance to employ those aircraft at lower altitudes and closer slant ranges in the face of an ever-present threat posed by enemy antiaircraft artillery and man-portable infrared-guided surface-to-air missiles.[9]

For battlespace management, the IDF used designated kill boxes in a common geographic grid reference system much along the lines of American practice in joint air-ground operations.[10] That approach proved to be problematic at times, however, because ground commanders often lacked a clear picture of their battlespace. For their part, airborne aircrews could never be sure that friendly ground troops were not inside a given kill box. Fortunately, no fratricide occurred as a result of IAF attack operations within kill boxes controlled by Northern Command.

In all, as attested by these and similar examples, most IAF officers would readily agree with the retrospective conclusion that the IDF's "ability to use close air support [had] declined in recent years, largely due to the degeneration of the liaison system that [had been] established in the past between the air force and the ground forces."[11] On this point, the Winograd Commission established by Olmert to assess his government's and the IDF's performance throughout the campaign found that IAF support to ground combat operations had revealed "many flaws" emanating from multiple shortcomings in planning, readiness, and training.[12] It further found that those flaws were the result of conscious prior investment choices by a succession of IDF chiefs to concentrate ground-force readiness almost exclusively toward meeting the immediate needs of combating Palestinian terrorist operations in the occupied territories.

Regarding the air support provided to friendly ground troops during the IDF's war against Hizballah, the commissioners noted "significant deficiencies" in peacetime training for cross-service integration.[13] They also determined that those failings were attributable to the IAF and to the ground forces in equal measure because neither had planned nor exercised the requisite measures for proper air-ground coordination during their normal peacetime training in recent years. For his part, the IAF's commander at the time, Major General Eliezer Shkedy, later explained that a major factor behind this lapse in joint peacetime training was simply the fact that it was "hard for the IAF to practice CAS with a ground force that isn't practicing."[14]

Incorporating Lebanon's Lessons

If there ever was an instance of lessons indicated by a disappointing combat performance becoming truly lessons *learned* and assimilated by a defense establishment in preparation for its next challenge, the IDF response to the insights driven home by its experience during the second Lebanon war offered a classic case of institutional adaptability and self-improvement. The often badly flawed attempts at air-ground integration once the land offensive entered full swing drove home forcefully the fact that each service's expectations of the other were in dire need of adjustment. Those well-intentioned missteps further confirmed that because of their failure to train together over the preceding 6 years, the IAF and Israel's ground forces spoke different languages and had become entities that did not even know each other.

Accordingly, in the early aftermath of the ceasefire in Lebanon, IDF leaders moved with dispatch to assess and correct the revealed deficiencies in joint force readiness that, by then, had come to be widely recognized as having figured prominently in accounting for the war's less than decisive outcome. That comeuppance got the attention of the IAF and Israel's ground forces in equal measure, both of which lost no time in pursuing a better approach to joint combat that would address the identified insufficiencies and in duly preparing the IDF for its next test. As a first order of business, the IDF Directorate of Operations (J-3) organized and led a systematic lessons learned effort that brought together senior leaders from all three services to correct those deficiencies and to revise and update joint tactics, techniques, and procedures.[15]

The IAF also took new looks at its existing practices when it came to seeking better ways of conducting integrated combat operations. Throughout most of the second Lebanon war, General Shkedy had insisted on retaining close control of IAF attack helicopters that were supporting IDF ground operations out of an understandable concern that even a single major tactical error, such as an egregious friendly fire incident, could have a disproportionate strategic downside effect. Yet the inefficiencies introduced into attack helicopter operations as a result of this insistence until the campaign's last days were later acknowledged by all to have been a self-inflicted source of friction that demanded immediate corrective attention.

U.S. Air Force

F-16I Sufa multirole fighters participate in training over Nevada

As another outgrowth of the IDF's disappointing experience, it became apparent to all that the IAF had evolved by that time into two almost separate air arms within the same service—its fixed-wing fighters and its attack helicopter community—in terms of mindset and culture. It also became apparent that a similar divide had come to separate the IAF and Israel's ground forces when it came to their respective techniques and procedures at the operational and tactical levels. The two services planned and trained almost as though the other did not exist. Recognition of this across service lines soon led to a series of joint command post exercises between the IAF and Israel's ground forces aimed at inculcating a new pattern of regular joint contingency planning and training.[16]

One conclusion driven home by the IAF's rocky experience with CAS delivery in Lebanon was the criticality of having an authoritative senior representative attached directly to the commander of all IDF regional land commands as, in effect, the designated head of an Air Component Coordinating Element to the land component. There was often a lack of sufficient understanding by the ground commander of what the IAF could and could not do on his behalf. All too often, the tendency was to ask for a particular platform or type of munition rather than for a desired combat effect. The most important next step toward ameliorating that assessed deficiency was widely seen as the institution of a serious air-ground dialogue on a routine basis in peacetime.

Another lesson highlighted by the ground fighting in southern Lebanon was the need for the IAF to think, plan, and train in closer conjunction with Israel's ground forces. For 6 years, as a result of the IDF's preoccupation with the intifada, the IAF had put itself out of the business of CAS provision and found itself forced to rediscover the most basic principles of the mission as the IDF's operations against Hizballah unfolded. Prompted by that arresting experience, the IAF moved to convene periodic roundtable discussions in the campaign's early aftermath, in which IAF squadron and IDF brigade commanders would engage in capability briefings and solutions-oriented discussion of identified joint issues.

In connection with this unprecedented dialogue, the IAF also flew a select few IDF brigade commanders in the back seats of fighters so they might gain a more intimate appreciation of the strengths and limitations of high performance aircraft in air-land operations. In these repeated instances of searching cross-service engagement, there was little petty parochial swordplay over doctrinal differences and related issues. On the contrary, all participants appeared genuinely committed to forging a more common language and better mutual understanding.[17]

In addition to these initiatives, the IAF, for the first time in 6 years, began a regular regimen of joint training with IDF ground forces. Before long, combat units in both services in ever increasing numbers found themselves training together in live exercises featuring scenarios that often

involved the participation of tanks and other armored vehicles.

As these teachings from the IDF's sobering experience in Lebanon were gradually being assimilated, the Olmert government began redirecting its attention to Hamas as the next regional troublemaker that would eventually require a substantial response by the IDF. That hardcore sect of radical Palestinians who ruled the Gaza Strip as a de facto enemy enclave within Israel's borders had repeatedly fired short-range rockets into southern Israel's population centers in a continuing display of defiant hostility ever since the government of Ariel Sharon voluntarily withdrew both its forces and all civilian Israeli inhabitants from Gaza in 2005.

Finally, in December 2008, the government decided that it had had enough of that sometimes lethal daily harassment and chose to proceed with a determined effort to put an end to it. By that time, both the IAF and IDF ground forces were ready with a new repertoire that had been carefully honed through repeated joint planning efforts and large-force training exercises over the preceding 2 years.

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A Better Showing in Gaza

The IDF counteroffensive against Hamas, code-named Operation *Cast Lead*, began on the morning of December 27, 2008, with an air-only phase that lasted 8 days. The campaign next featured an air-supported ground assault into the heart of Hamas's main strongholds in the Gaza Strip, followed by an endgame consisting of a unilateral ceasefire declared by Israel on January 18, which Hamas honored with a reciprocal ceasefire announced 12 hours later. Repeatedly throughout the air-land portion of the campaign, IDF ground maneuver elements supported the IAF rather than the other way around by shaping Hamas force dispositions and thereby creating both targets and a clear field of fire for IAF fighters and attack helicopters.[18]

At both the operational and tactical levels, the extent of cross-service cooperation displayed by the IAF and IDF land forces was unprecedented when it came to the integration of unmanned aerial vehicles (UAVs) and attack helicopters with the ground scheme of maneuver. This greatly improved performance was a direct result of the heightened interaction between the two services that had first developed during the early aftermath of the second Lebanon war.

During Operation *Change of Direction*, IAF attack helicopters and UAVs had been under the tactical control of the IAF's forward AOC collocated with Northern Command until almost the very end. In Operation *Cast Lead*, those assets were now instead directly subordinated to IDF brigade commanders, with each now able to count on dedicated, around-the-clock support from them on request.[19] By the time the counteroffensive against Hamas had become imminent, the IAF attack helicopter force has essentially become army aviation in the manner in which it was employed.[20]

For the first time in Operation *Cast Lead*, the brigade headquarters was the nerve center of combat activity, and it enjoyed substantial autonomy from higher headquarters both at Southern Command and in Tel Aviv. Regarding air operations, the brigade headquarters controlled all IAF attack helicopter and UAV assets, along with some F-15s and F-16s. To ensure the most effective exploitation of airpower in support of ground operations, the ground commander, an IDF brigadier general, had constantly at his side an IAF colonel who saw to the uninterrupted provision of direct air influence on the planning and conduct of combat operations. The supporting presence of other IAF officers in the brigade headquarters further contributed to the enhancement of trust and understanding between Southern Command's air and land components.[21]

In addition to these improved arrangements at the brigade headquarters level, every participating ground-force brigade had an embedded Tactical Air Control Party (TACP) comprising five IAF team members who sorted raw 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 systems officer as assigned ALOs. TACP members also coordinated CAS attacks and deconflicted the airspace over each brigade's area of operations.

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 Air-Ground Coordination and Cooperation Unit at IAF Headquarters, TACP members were authorized to call in air support on their own initiative. 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.[22]

To be sure, IAF attack helicopters retain an independent deep-strike responsibility for which they remain under the tactical control of the IAF commander. When their immediate tasking is on-call CAS, however, they are now controlled directly by those brigade commanders who are the intended beneficiaries of their support.[23] In a clear response to its lessons learned from Lebanon, IAF leadership consented to assign to each involved brigade a TACP including 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 of this changed IAF mindset, the application of airpower in integrated air-land operations, which had been centralized in the IAF's main AOC throughout most of the second Lebanon war, was now pushed down to the brigade level and, in some cases, even lower.[24]

Furthermore, during the IDF's counteroffensive against Hizballah in 2006, the IAF commander's personal approval had been required for IAF aircrews to conduct CAS in so-called danger close conditions, meaning that friendly forces were 600 meters or less from a designated target. In the subsequent Gaza operation, IAF terminal attack controllers assigned to engaged ground units were cleared to grant that approval, which naturally entailed a great deal of personal responsibility on their part.[25] Also, in a major departure from its practice throughout the second Lebanon war, the IAF's main AOC this time was completely out of the command-and-control loop other than for transmitting rules of engagement and special instructions to participating IAF aircrews. Most nonpre-planned targets were now nominated by IDF brigade commanders.

In all, the IDF showed in its conduct of Operation *Cast Lead* that it had ridden a clear learning curve from the second Lebanon war to Gaza when it came to refining an effective air-land battle repertoire. In the lead-up to its campaign against Hamas, the IDF, having drawn the right conclusions from its earlier experience in Lebanon, envisaged a joint campaign from the first moments of its options planning. It further showed a willingness to run greater risks 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, via daily phone conversations with the engaged brigade commanders, what they needed rather than waiting passively for emergency requests for on-call CAS from IDF troops in actual contact with enemy forces.[26]

For their part, IAF aircrews found their exertions in actual combat to have been relatively undemanding, thanks in large part to their earlier cooperative training with IDF ground forces that familiarized them beforehand with virtually any friction point that might arise. After it was over, CAS delivery by the IAF was uniformly adjudged to have been more than satisfactory, reflecting a clear payoff from the intensified joint training and associated cross-service trust relationships that the IAF and IDF had both cultivated during the 2 years that followed the end of the second Lebanon war.[27]

So What for Us?

As for its teaching value for the U.S. joint community, the successful IDF response to its disappointing performance in Lebanon in 2006 showed convincingly how 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 lessons offered by a flawed but instructive combat experience. With respect to the opportunity costs incurred by the IDF's excessive fixation on the intifada until corrective measures were introduced, there is a cautionary note here for all U.S. leaders who would continue deferring needed investment against potential near-peer challengers in years to come in order to concentrate all of our limited defense resources against the country's lower intensity counterinsurgency preoccupations of the moment.

By the same token, on the force-employment front, the IDF's proven approach toward ensuring the fullest possible exploitation of airpower during its subsequent Gaza campaign 2 years later has direct relevance to continuing U.S. combat operations in Afghanistan. It is testimony to the need for decentralized control of air assets against hybrid opponents such as the Taliban, along with a duly empowered air command and control entity below the level of the AOC staffed by airmen of appropriate rank and experience to provide effective air influence in joint warfare at the tactical level.[28] The IDF's Gaza experience further bore witness to the merits of getting the most skilled and credible air operators out of the AOC and deployed forward as ALOs working directly with those on the ground in need of on-call air support in the sort of fourth-generation warfare that has been the principal form of American joint force engagement since the end of major combat in Iraq in 2003. **JFQ**

NOTES

[1] Interview with Brigadier General Yohanan Locker, Israel Air Force (IAF), Tel Nof Air Base, Israel, March 29, 2009.

[2] 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, 63–65.

[3] Interview with the Head of the IAF's Campaign Planning Department during Operation *Change of Direction*, Tel Nof Air Base, Israel, March 29, 2009.

[4] Fulghum and Wall, 63–65.

[5] Major General Isaac Ben-Israel, IAF (Res.), *The First Israel-Hezbollah Missile War* [in Hebrew] (Tel Aviv: Tel Aviv University, May 2007), 64.

[6] Interview with the Head of the IAF Campaign Planning Department, IAF Headquarters, Tel Aviv, March 26, 2008.

[7] For further discussion on the latter count, see Michael Knights, *Cradle of Conflict: Iraq and the Birth of the Modern U.S. Military* (Annapolis, MD: Naval Institute Press, 2005), 213–217.

[8] Interview with Brigadier General Gabriel Shachor, IAF, Palmachim Air Base, Israel, March 27, 2008.

[9] Alon Ben-David, "Israel Introspective after Lebanon Offensive," *Jane's Defence Weekly*, August 23, 2006, 18–19.

[10] For a concise description of that U.S. practice, see Colonel Robert B. Green, USAR, "Joint Fires Support, the Joint Fires Element and the CGRS [Common Grid Reference System]: Keys to Success for CJSOTF West," *Special Warfare*, April 2005.

[11] Colonel Gabriel Siboni, IDF (Res.), "The Military Campaign in Lebanon," in *The Second Lebanon War: Strategic Perspectives*, ed. Shlomo Brom and Meir Elran, 65 (Tel Aviv: Institute for National Strategic Studies, 2007).

[12] "Arms, Combat Support Units, and Special Operations," in *Final Winograd Report on the Second Lebanon War* (Reston, VA: Open Source Center, February 2008); see also "The Air Force, Lessons," ibid., para. 30. The Winograd Commission was named for its appointed chairman, Judge Eliahu Winograd, a retired president of the Tel Aviv District Court.

[13] "Recommendations for the IDF," in *Final Winograd Report*.

[14] Interview with Major General Eliezer Shkedy, IAF Headquarters, Tel Aviv, March 27, 2008.

[15] Barbara Opall-Rome, "Interview with Major General Eliezer Shkedy, Commander, Israel Air and Space Force," *Defense News*, May 19, 2008.

[16] Interview with Brigadier General Yohanan Locker, IAF, Tel Nof Air Base, Israel, March 29, 2009.

[17] Interview with Brigadier General Ya'akov Shaharabani, IAF Headquarters, Tel Aviv, March 31, 2009.

[18] "Operation 'Cast Lead': IAF Missions and Operations," briefing charts provided to the author by Brigadier General Nimrod Sheffer, IAF, Head of the Air Division, IAF Headquarters, Tel Aviv, March 31, 2009.

[19] Barbara Opall-Rome, "Major General Ido Nehushtan, Commander, Israel Air and Space Force," *Defense News*, August 3, 2009, 30.

[20] Interview with Colonel Meir (last name withheld), Commander, Doctrine Department, IDF Ground Forces, at an IDF installation near Tel Aviv, March 30, 2009.

[21] *The 2008/09 Gaza Conflict—An Analysis*, RAF Waddington (United Kingdom: Air Warfare Centre, The Air Warfare Group, 2009), 5, 7.

[22] 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, 61.

[23] Interview with Brigadier General Gabriel Shachor, IAF (Res.), Palmachim Air Base, Israel, March 31, 2009.

[24] Interview with Major General Eliezer Shkedy, IAF (Res.), Tel Aviv, March 26, 2009.

[25] Interview with the commander of 160 Squadron, Palmachim Air Base, Israel, March 31, 2009.

[26] Ibid.

[27] Interview with the former deputy commander of 105 Squadron during Operation *Change of Direction*, Palmachim Air Base, Israel, March 31, 2009.

[28] For a further development of this point, see the informed and thoughtful commentary by Lieutenant Colonel Jeffrey Hukill, USAF (Ret.), and Daniel R. Mortensen, "Developing Flexible Command and Control of Air Power," *Air and Space Power Journal* (Spring 2011), 53–63.