

# U.S. Relations With Israel: The Military Benefits

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Discussions of the relationship of the United States to Israel regularly concentrate on one of two axes. Supporters of a closer relationship between the two nations focus on the moral obligation to a people that lost one-third of its number to the Nazis, the attraction of Israel as a Western-style democracy, and the importance of a reliable ally in a turbulent and unstable but crucial region of the world. Many in the national security bureaucracy believe that Israel has a right to exist in peace, but argue that an intimate relationship with Jerusalem is detrimental to U.S. interests. According to this view, the Israeli connection alienates Arab regimes, which would otherwise maintain closer cooperation with the United States to protect oil fields and supply routes. They argue that the Arabs would otherwise coordinate more closely with Washington's efforts to thwart Soviet expansion and to block the enhanced power of radical regimes. Advocates of this perspective often place the reasons for Soviet successes in the Middle East at Israel's doorstep. Many who take this position believe that the connection of the United States with Israel prevents the establishment of U.S. bases in the area. They argue that vulnerable conservative Arab regimes are afraid to associate too closely with the chief superpower sponsor of the Jewish state lest their radical Arab opponents retaliate against them.

In the 1980s, with the fall of the Shah and the advent of the Reagan administration, it became fashionable for many politicians to begin talking about Israel as a "strategic asset." The meaning of this slogan was never clear, but it seemed to suggest that in an unstable region Israel's reliability and military prowess were advantages to U.S. interests in the area. Thus, Ronald Reagan claimed in an article in the *Washington Post* in the summer of 1979, "The fall of Iran has increased Israel's value as perhaps the only remaining strategic asset in the region on which the United States can truly rely."

Israel's ill-fated experience in Lebanon might have been expected to affect its reputation adversely, but as evidenced by the flowering of the Israeli-American relationship after 1983, America's own debacle in that tragic nation and the growing threat of international terrorism reversed the lessons drawn. At least to those who already held the position, Lebanon reinforced the notion that Israel is an advantage in a highly complex and dangerous region.

These discussions of the U.S. relationship to Israel have generally been conducted within the context of the Middle East. Yet Israel has had recurring experiences in the conduct of conventional warfare and the development of conventional arms. These experiences are applicable to U.S. interests. Instead of viewing Israel within the context of the Arab-Israeli dispute, this article will examine how Israel affects U.S. interests when seen in the global military context, which might yield important lessons for the ongoing debate concerning American conventional strategy.

Israel can be viewed in the global military context from five perspectives: its intelligence techniques, the implications of its battlefield experiences, the combination of a tight defense budget

and a penchant for innovation, the effect of its activities on the calculations of Soviet planners, and the impact of its military performance on the reputation of U.S. arms.

## ISRAEL'S INTELLIGENCE TECHNIQUES

Israeli intelligence, widely regarded as the best in the Middle East, has consistently demonstrated its expertise and daring. American intelligence services have cooperated with their Israeli counterparts for more than three decades. Shared information has enabled the United States to save on training, deploying fewer intelligence operatives and utilizing fewer facilities.

On numerous occasions, Israeli intelligence has scored important coups regarding both the Middle East and the Soviet bloc. It is believed--and with good reason--that the Israelis have eyes and ears in most every Arab nation. Before 1967, for example, they successfully infiltrated one of their members into a high-ranking position with the Syrian government. Israeli agents also managed to convince an Iraqi air force officer to fly his never-studied-in-the-West MIG-21 to Israel. In the summer of 1977, the recently elected Begin government warned Anwar Sadat about an effort by Libyan-backed conspirators to overthrow him. The Israelis have also provided repeated secret warnings to the Saudis and have passed warnings to King Hussein about reputed plots to assassinate him.[1] As early as the mid-1950s, a former aid of Allen Dulles quotes him as saying, during an evaluation of "amateur" actions of Arab intelligence services, that Israel's intelligence operation was the "only one on which we can count. Not against the Arabs, of course, but against our common target, the Russians." In testimony to this statement, Mossad gained a copy of the famous Khrushchev speech to the Soviet Central Committee in 1956.[2]

Israel has long been at the forefront of the battle against international terrorism. Years ago the upper echelons of the Palestine Liberation Organization were penetrated.[3] In the Lebanon War, Israel captured a treasure of documents about terrorist activities worldwide. In 1985 it warned Italy that one of its cruise ships might be hijacked, and then taped radio transmissions from the ship when the *Achille Lauro* was later seized. When the hijackers were about to be flown out of Egypt, Israel's monitoring of radio communications enabled it to provide the United States with such data as when the plane would take off and what the registration number on its tail was. This supplement to American information was crucial in facilitating identification of the plane in the skies over the Mediterranean, which led to its being forced down in Sicily.[4]

Despite the continued popularity of cloak-and-dagger tales, in the 1980s intelligence gathered by electronic devices rather than by human spies has become central to the collection of intelligence data. Israel has become not only a provider of information, but also an important developer of instruments designed for collection intelligence data. The Israelis have helped devise intelligence systems with U.S. corporations like Boeing, Sylvania, RCA, E-systems, Beechcraft, and 21st Century Robotics. In each of these cases, Israeli sponsorship saves dollars, because the Israelis assume the development costs, after which the United States either adopts the already refined product or benefits from the information acquired. For example, the Israelis spent over \$100 million developing a small plane, "the Guardrail V," which serves as a tactical intelligence system. This effort saved the U.S. Army \$70 million. On some systems the Israeli contributions to their own intelligence-gathering capabilities has implications for U.S. operations in other regions. An intelligence balloon developed by Israel for more than \$100 million is now being used by the United States to monitor activities inside Cuba. Indeed, one expert estimates that 60 to 70 percent of high technology intelligence equipment developed in Israel is also being used by the U.S. intelligence community.

Israeli experiences contribute in other ways. In March 1985, the Israel Defense Forces (IDF), the U.S. Army, and NASA began testing the Wasp remote control mobile robot for antidemolition tasks. During the Summer Olympic Games in Los Angeles, an Israeli intrusion detection system (DTR) was used on the fences that protected the world's athletes.[5]

## THE IMPLICATIONS OF ISRAEL'S BATTLEFIELD EXPERIENCES

The Israelis cannot contribute to such areas as strategic weapons system or aircraft carrier technology, but Israel is the only nation recently to fight repeatedly on the front line against the authentic electronics, aircraft, and artillery of the Soviet Union. The lessons learned cannot be purchased, developed, or simulated. The advantage Israel offers is not only data but experience, technique, and tactics that--with the rapidly changing technology of modern warfare--cannot be gained elsewhere.

The Israelis have provided crucial information about the latest Soviet weaponry, especially because much of the equipment recently gained by Damascus from Moscow is similar to that possessed by the Warsaw Pact nations and the Soviets themselves. One of the more spectacular items that Israel gained from the Egyptians in the 1969-1970 War of Attrition included an entire Soviet radar station. Similarly, the U.S. defense community learned many lessons from Israel's experiences in the 1973 war. Because weapons systems are designed according to performance objectives, Israeli military experiences reinforce and often contribute to research and development activities in the United States. In 1975, Dr. Malcolm Currie, then director of defense research and engineering, testified before Congress:

The war has provided much evidence which helps to clarify our perspective on our own R&D programs. . . . For the most part, the war confirms that the United States has been on the right track in developing and acquiring weapons. In some cases, the war has clarified our understanding, and this has led . . . to acceleration of certain programs or assignment of high priority to certain characteristics in ongoing programs.[6]

In this manner the Israeli experience in the 1973 war highlighted the importance of antitank systems, air-to-air combat (the continued role of dogfighting in aerial conflict), and electronic jammers.[7]

Similarly, the Israelis helped the United States acquire knowledge about Soviet equipment and how American weapons performed in combat with that equipment. Initially in 1973, the Israelis were vulnerable to some of the new Soviet surface-to-air missiles used by the Arabs. This situation, although difficult for Israel, became a tactical bonanza for the United States. "The Israelis, using our equipment, learned to deal with those systems. . . . The intelligence we have obtained from that conflict will enable us to modify our electronic jammers and so on to take better account of what we know about the surface-to-air missile." [8] The myriad of specific details shared over the years have been similarly important, especially during involvement of the United States in Southeast Asia.

In the 1982 Lebanon War, the Israelis were able to inspect electronic equipment from the remains of several MiG-23s and one MiG-25, which had been shot down, providing the basis for adjusting operational tactics and improving American weaponry to counter equipment of Soviet design.[9] The Israelis also devised a method of destroying the T-72 tank, the Soviets' main battle tank, which is the principal weapon on which the Warsaw Pact relies for an offensive in Europe and which was hitherto considered difficult, at best, to penetrate. They did so by the relatively simple means of developing a modified 105mm shell that pierced the tank's composite armor.[10] Development of ways to protect their own men and to penetrate Soviet tanks was one important outcome of Israel's wars.

After the Yom Kippur War, six Soviet T-62s were sent to the United States; one was to be disassembled, one sent to Fort Knox, one sent to a location near Washington, and three used as "aggressors" for exercise. Israel's recent innovations and successes in antitank weaponry

prompted the armies of several Western states (Canada, West Germany, Denmark, Sweden, and Switzerland) to adopt Israeli ammunition.[11] The Lebanon War also highlighted the vulnerability of light-armor vehicles and the need to provide improved protection systems.

In Europe, military experts have identified two other major Israeli innovations from the 1982 war, which will assist NATO commanders in the continent's defense. The first deals with packages of add-on armor that are attached to tanks and reduce the vulnerability of the vehicle to antitank missile and rocket fire. Second, and of greater importance, the Lebanon War provided lessons in the use of antitank helicopters deployed for extensive use in combat. This use has encouraged NATO defense planners, who are designing a 4.5 ton antitank helicopter for mass deployment in the 1990s along the Russian front, armed with a "fire and forget" missile with a range of 4,000 meters. This weapon is being developed to compensate for the lack of all-weather and day/night capabilities, some of the deficiencies in antitank helicopters discovered by the Israelis during the Lebanese engagement.[12]

As illustrated by these cases, Israeli experiences affect the timing and direction of large sections of the conventional research and development programs of the United States, thereby reducing expenditure on faulty programs. By demonstrating the relative utility or weaknesses of established weapons and revealing the latest innovations of the Soviets, years are saved by enabling unnecessary American programs to be terminated early and others to be initiated long before their importance might have been realized. Thus, the Israeli experience in the 1967 war strengthened the case for a highly maneuverable air superiority fighter, helping the development of the F-16. The 1973 war highlighted the new significance of electronic warfare, leading to intensified development of such weapons as air-to-ground, antiship, and ground-to-air missiles, and electronic countermeasures. Both wars, in retrospect, demonstrated the continued viability of tanks, whose future utility many had questioned. For example, Israeli experiences significantly influenced the development of the M-1, the latest American main battle tank (MBT).[13]

Israeli combat experiences have led to (1) decreased use of searchlights, (2) increased use of thermal sights for night fighting, (3) greater use of tanks and armored personnel carriers (APCs) in tandem, (4) improvements in command, control, and communications facilitating the coordination of air, land, and sea operations down to the unit level, (5) use of electronic warfare in reconnaissance units, and (6) enhanced air-to-air missiles and electronic countermeasures.[14]

It is not that the U.S. armed forces copy Israeli systems and approaches; each respective army and air force has its own particular concerns. Rather, the Israelis have identified problems and influenced solutions. They are affected by their experiences, especially because many technical challenges cannot be addressed conceptually until they are discovered in combat. It is the Israeli sharing of experiences gained and lessons learned which is especially valuable. In this period, when wars are shorter and attrition rates are progressively higher, the power of weapons has been enhanced and increased mobility is essential.

A particularly dramatic example of the value of Israeli experiences short of actual battlefield conditions occurred in 1975, when the Israeli army High Command began receiving reports that something was wrong with a critical type of ammunition its troops were using in training exercises. Upon investigation, the High Command discovered that Israeli-manufactured shells were operating adequately but that the majority of Israeli shells came from the United States and most of that ammunition was not performing. When informed, U.S. officials were incredulous but were ultimately convinced that, indeed, the American-manufactured munitions were not functioning properly. Finally, U.S. experts discovered that adjustments were required in most American shells that were in stockpile worldwide and immediately set about correcting the problem.

The process, however, took several months, until the new shells could be supplied. During this period the Israelis were placed in a dangerously exposed position in the event of an Arab attack, as had happened just two years earlier. The United States would have been similarly inhibited if a Warsaw Pact attack had occurred in Europe or a crisis had emerged in Korea. The Western powers were left without an effective way of confronting an armored onslaught both in the Middle East and in Europe. Only the Israelis had discovered the problem in the first place.[15]

It is obviously not in the interest of the United States or of Israel for periodic wars in the Middle East to occur. However, once conflicts have been initiated and battles have been fought, there is no reason--despite an aversion to war in both nations--not to admit the value for the United States in terms of the enhanced credibility of U.S. arms, the lessons learned, and the lost credibility of Soviet weapons.

### **THE COMBINATION OF A TIGHT DEFENSE BUDGET AND A PENCHANT FOR INNOVATION**

The Israeli penchant for technological innovation helps to offset the effects of their tight budgets and creates intriguing solutions to conventional defense problems at lower costs. This propensity for innovation and their technical expertise helps to explain Israeli military successes. The persistent Arab-Israeli conflict, in conjunction with the nation's small population, creates an environment in which many of the most talented and able personnel in Israel must serve in the military. The need for reserves provides an additional large pool of civilian scientists, mechanics, and engineers who are acquainted with the technical requirements of the military. Because of the pressures of living with hostile neighbors, the Israeli public supports the military and its needs to an extent not found in other contemporary Western societies. Israel is the only Western nation where military requirements are seen as absolutely necessary by all strata of society. Consequently, there is a degree of cooperation between the military, civilian, scientific, and academic communities that is unparalleled in the West. This situation dramatically improves Israel's technological capacities, especially because a high percentage of Israel's civilians have military experience. Many in the defense-scientific area work on improving weapons that they will later use in combat.

In general, Israeli research and development procedures are quicker and cheaper than those in the United States--in part because the hard-pressed Israelis cut corners and are more flexible, since they live under the perception of imminent danger; in part because their small size limits inhibiting regulations; and in part because their small budgets impose greater cost constraints. Improvisation and shortcuts are the Israeli specialty, and they operate on a quick-reaction crisis basis that permits crash programs not possible with standard peacetime procedures in the United States. Therefore, the U.S. armed forces can and have benefited from Israeli developments whose licenses are later sold to U.S. companies for larger production. Recent examples include various types of mine- and obstacle-clearing equipment in which Israel is particularly advanced, the American SMAW (shoulder-launched multipurpose assault weapon) warhead matched with an Israeli-designed B-300 rocket launcher purchased by the Marines from McDonnell Douglas as an antifortification device, and newly developed air filters for helicopters to keep out sand particles and preserve the engines (an example of the dangers of working without filters is exemplified by the disastrous rescue raid over Iran in April 1980). A Counter Obstacle Vehicle for use by the Army Corps of Engineers is being developed in the United States to Israeli technical specifications in an unusual joint project. In cooperation with a Pennsylvania-based company, BMY, the Israelis are also assisting in the development of a Heavy Assault Bridge for the United States' newest main battle tank, the M-1.[16]

Israeli innovations have a wide application. The Israeli air force faces a complex challenge. When an Israeli fighter takes off, the pilot does not know whether he will confront Soviet, European, or American equipment in hostile hands. This complicated threat drives Israeli

developers and designers to search constantly for improvements and refinements and to produce or conceive of new operational systems because of the diversity of the challenges they face. Necessity forces them always to probe the fringes of the latest technical limits, to look forward to the next war rather than backward at the last one. Because of the close integration of Israeli inventors with U.S. corporations, the United States inevitably benefits in its larger programs from sharing Israeli concepts and ideas, helping American developers to enhance the future operational capability of U.S. weaponry by pressing for higher requirements.

American arms are generally the most sophisticated produced by any nation. There are still several examples of Israeli modifications of existing U.S. weaponry adopted by the U.S. armed forces. The following pattern has occurred repeatedly: (1) The Israelis receive permission to purchase an American weapon, for example, the F-15. (2) They then deal directly with the company producing the weapon. The Israeli team may request particular features in which the Pentagon is not interested, or it may be offered features the Defense Department was not prepared to develop. Often the Israelis are informed that if they will pay the research and development costs to build the feature for themselves, the American company will include the item in their model of the weapon. (3) The Israelis then approve the company proposal, the item is developed, and they deploy it. (4) Once the weapon has been built with the feature that the Israelis paid to have developed, the Pentagon may adopt it for versions of the weapon procured for American use. A few recent examples of this process include the conformal fuel tanks on the F-15, leading edge slats for the F-4E Phantom, an external fuel tank for the M-113A, modification of the M-109 self-propelled 155mm artillery piece, a Head-UP Display and a weapons delivery system for the A-4N Skyhawk, bomb racks for the F-16, certain types of FLIR night vision equipment, and a digital weapons delivery system for the F-4 Phantom.[17]

Similarly, Israeli experiences have become important to the improvement of U.S. equipment, potentially saving American lives and certainly cutting costs. Just realizing that a problem exists with a piece of equipment may be more critical than providing a solution. Several examples follow:

- Israeli aircraft are operated under far more severe conditions than those of other nations; they suffer "fatigue damage" much earlier. When the Israelis expend funds refining their American-built aircraft, this knowledge is passed on to the United States. The same can be said for the operation of American air-to-air and air-to-ground missiles.

- Because of budgetary constraints, the Israelis are forced to operate American planes more efficiently at lower cost than the United States itself, thereby providing ample lessons to be learned on maintenance and readiness.

- Israel discovered problems in the fuel pumps of the F-100, the engines for the F-15 and F-16, and it provided American engineers with ideas on how to deal with the difficulties. In all, the Israelis have made twenty-seven substantial recommendations for changes in the F-15.

- The Israelis learned from combat use of the M-60 tank before the October 1973 war that its hydraulic fluid was highly flammable, thereby increasing casualties. This discovery led to the adoption of measures to prevent such casualties in the future. Over the years, Israel had made 114 modifications to the M-48 and M-60 main battle tanks, many of which (such as improvements on tank air cleaners and the development of new cupolas for the M-48) have been adopted by the U.S. Army. Israel has also developed many of the armored protection systems in British and other NATO armored vehicles, which in turn has influenced U.S. tanks.

- The ideas of General Israel Tal, father of the Israeli Merkavah MBT, have influenced the further development of German, Swedish, and American tanks and armor tactics.[18] His main

emphasis is on making the survivability of the crew the first priority, accomplished by increasing the vehicle's mobility and by leaving as small a target area exposed as possible.

- The Israelis have successfully developed dry-clad storage for their tanks so that they can be kept in storage for years and can still be used quickly in a crisis.
- When the United States built two new airfields in the Negev to replace Israel's Sinai facilities (returned to Egypt in April 1982), it became clear that Israeli methods were cheaper once Israeli developments in airfield construction were shared with the Army Corps of Engineers.
- When the U.S. Army built a new combat training center at Fort Irwin near Barstow, California, the facilities and programs were based generally on Israeli methods.

Other Israeli innovations and advanced maintenance and repair technologies have been transferred to the United States, as well as to other nations from which Israel purchased weapons. Israel Aircraft Industries (IAI) has developed metallurgical heat treatments that increase the lifetime of turbine engine blades by reducing blade "creep," which is the slow deformation of these crucial jet engine components. In addition, the Israelis developed improved fuel-nozzle rings for the A-4 Skyhawk using electron beam welding techniques developed by IAI. These start-of-the-art maintenance adaptations have found their way into U.S. companies, including Pratt and Whitney, one of America's largest and most important jet engine manufacturers.[19]

During the Franco-Israeli entente, the Israelis made several modifications of French-made Fouga Magister jet-trainers and of the Mirage 3 combat aircraft. IAI improvements of the Fouga included plastic aircraft components and a radio compass for improved navigation capabilities; both features were innovations in military aircraft. These modifications turned the trainer into an attack and ground-support aircraft, several of which saw extensive action during the 1967 Arab-Israeli war. New avionic components were installed in the Mirage-3, improvements which were adopted by the French in their Mirage-5.[20]

The 1982 war revealed the utility of remotely piloted vehicles (RPVs). The Israelis had been the first in the world to deploy mini-RPVs as an antimissile system operationally and successfully. They also demonstrated that intelligence could be gained during battle more cost-effectively and at a dramatically lower risk to the lives of airmen.

By contrast, in 1976 the American RPV program was almost terminated because of early vehicle losses. Originally, the RPV was developed in the United States as an expendable warplane that would not need a pilot. Experts predicted unmanned aircraft capable of "dogfighting" by remote control and "carrying out strikes in support of ground troops with pinpoint precision." [21] Out of the 986 RPVs once built, however, only thirty-three still existed in the United States by 1982, and all those were in storage. Yet Israel's use of the mini-RPV in Lebanon has renewed United States' interest in its own RPV programs. In fact, the most advanced American model, the Aquila, did not complete its first successful test flight with a stabilized TV camera until April 1984. A sense of urgency also surrounds the development of an effective American RPV; testimony indicates that the Soviet Union is already into its second generation of pilotless drone development.[22]

In addition to its having been battle-tested, the Israeli mini-RPV is far cheaper than the American Aquila, whose development cost, once estimated at \$350 million, is now anticipated to cost the American taxpayer \$2.17 billion. In stark contrast to this cost overrun of over 600 percent, the Israeli Tadiran Mastiff cost about \$15 million to develop. The IAI's Scout is priced at less than \$4 million for a system of five mini-RPVs, including spare parts and training.[23] Obviously, the American RPV, when completed, will be far more sophisticated, but it will also be far more expensive, and it is not yet available.

It is not Israel's development of the RPV so much as the unique way it was put to use that is of greatest significance. It is evident that the U.S. defense community did not conceive of using RPVs against Soviet missile emplacements. At most they perceived the RPV to be a reconnaissance craft or unmanned attack platform. Israel's use of the RPV will be a technique incorporated by the U.S. armed forces to their benefit. Indeed, one Technical Committee paper concluded that unmanned vehicles are now seen as offering a partial solution to many U.S. and NATO problems confronting the numerical superiority of the Warsaw Pact's military. Although the more expensive Aquila will be more complex than the Israeli RPVs, the utility of the latter to the U.S. military is demonstrated by the decision of the U.S. Navy to purchase them for maritime use. The Mastiff was used by the U.S. Marines for battlefield reconnaissance in Lebanon from the amphibious assault ship USS Guam.[24]

Israel's military ingenuity has impressed the U.S. Navy so much that in April 1985 the two nations entered an agreement to jointly develop a number of weapons systems, with the United States assisting Israel to pursue several projects. These include a new ship-to-ship missile, electronic decoys, submarines, and a corvette (the SAAR 5).[25] The navy also appreciates the performance of Israeli-designed piloted aircraft; it has leased twenty-five Kfir C-1s for its "Adversary and Aggressor" aircraft program. The Israeli aircraft will play the role of high performance Soviet fighters in combat simulations with Navy interceptors. Israeli pilots are also in the United States training U.S. pilots and passing on the fruits of their experiences.[26]

The Israelis are particularly adept at improving older weapons, making it worthwhile to keep them in production. This saves the United States new development costs and facilitates exports to nations that cannot buy the latest models. They also have contributed to maintaining competition in bids for Pentagon contracts, thereby keeping costs down by providing contracts to companies for particular types of equipment. Without these contracts, several companies would have removed themselves from a particular type of work, limiting the field of future competitors and costing American jobs. For example, Israeli improvements on the M-48 have made these thirty-year-old, Korean War-vintage tanks still reliable weapons platforms. According to Gerald Steinberg, "The Israelis have equipped the M-48s with new diesel engines, larger 105-millimeter guns, new armor, computers, laser range finders, and night-vision infrared systems. With these additions, the "obsolete" M-48 is superior to the newer U.S. M-60, and in many respects it is equivalent to the improved M-60A3 still used by the U.S. Army." [27]

In several other areas, Israeli innovative techniques are useful. The Israelis have pioneered in military medicine, providing means of saving lives in emergencies in an arena where the United States has had less recent experience. Israel's new fighter aircraft, the LAVI, which is being developed in conjunction with several American firms, especially Grumman, has aroused controversy in both nations. Yet, Israel's ability to undertake the project suggests the comparatively advanced state of its technical capabilities. Given the close and growing level of cooperation with the United States, any new technologies that emerge from this enterprise will necessarily be shared. Similarly, in 1986, Israel formally became part of the Strategic Defense Initiative program.

In sum, Israel is constantly feeding information back to American defense contractors and military services about the strengths and weaknesses of defense equipment, which leads to frequent changes in American systems. The information is also utilized so that the company involved is able to maintain the same or similar production lines, thereby lowering costs. Renovation of production lines can be extremely expensive, particularly if a major change is involved. Thus, by assisting in the prevention of major renovations, Israel helps individual American firms save funds that can be reinvested in research and development activities.

## THE EFFECT OF ISRAEL'S ACTIVITIES ON THE CALCULATIONS OF SOVIET PLANNERS

Since Israel is both the most effective military power in the Middle East and closely aligned with the United States, Soviet planners must take into account the deficits created thereby. Israel regularly embarrasses clients using Soviet weaponry, provides intelligence to the West on the performance of these weapons, and provides practical assessments of Soviet block arms when they are captured.

As a further problem for the Soviets, the Israelis have even been particularly successful in modifying and upgrading captured Soviet tanks. Hundreds of Soviet T-54 and T-55 tanks captured during the 1967 war have been converted into totally new vehicles, improved sufficiently enough that one military analyst bluntly wrote, "No doubt, given the opportunity, both Soviet and Arab tank crews would gladly exchange their original tanks for the Israeli model." Among the improvements are enhanced firepower, upgraded powerpack, and greater regard for human engineering.[28]

An especially dramatic event occurred in 1982, when Israel proved that there was a means of breaking the anti-aircraft missile wall that the Soviets thought they had developed against Western air forces. This development is bound to have cost Moscow heavily. Assuming the Soviets wished to keep their air defense concept viable, they would have had to make major adjustments and improvements in their entire air defense system, including changing production lines and developing new equipment. Of all of Israel's defeats of the Arabs, this victory was the most costly to the Soviets in technical terms because of the sophistication of the weaponry involved and the challenge to an entire defense concept. Since this system is similar to the Warsaw Pact air defense system currently deployed in Eastern Europe, the Israeli achievement affects the conventional balance between the United States and the Soviet Union as well. An impression of weakness in the Soviet air defense system revealed by Israel's action in Lebanon is reinforced by the apparent numerous errors made by Soviet personnel, which presumably led to the shooting down of Korean Air Line Flight 007 in September 1983.

One Central Intelligence Agency estimate suggests that the Soviets regularly spend about 12 percent of their overall defense budget on air defense systems (primarily missiles, guns, and associated radar)--more than they spend on their strategic forces. Adding the cost of the MiG-21 and MiG-23 interceptors, which are part of the Soviet air defense complex, produces a total of about 20 percent of their entire defense budget--about the same as their navy.[29] That such a substantial percentage of their defense operations should be compromised must be seen as nothing less than a major blow to vital Soviet defense concerns. In this light, it is understandable that high-ranking Soviet intelligence and air defense experts began to swarm over Syria after June 1982. The initial batteries of SAM-2s, -3s, -6s, -7s, and -9s were augmented first by SAM-8s and then after the Israelis destroyed these, by the longer-range SAM-5s and short-range SAM-13s after the war. This time they were operated at first by larger numbers of Soviet technicians.[30]

This overwhelming evidence of the significance of Israeli technical victory has been met with three arguments, all decrying its importance. The first is that the Israelis operated with impunity because they were in combat with the Syrians, not the Soviets. This is undoubtedly true, but the Syrians had been trained by Soviet advisers. Moreover, not counting Afghanistan, which is hardly comparable, the Soviets have not had serious combat experience in a major operational role (with the exception of "volunteers" in Korea) since World War II. In August 1970, when the Israelis surprised five jets piloted by Soviets near the Suez Canal, they were all summarily shot down. The Syrians, for their part, fought well in October 1973. They certainly acquitted themselves well on the ground. It would have been more difficult for the Israelis against the Soviets, but there is no reason to believe that the final results would have been different. The Syrians should not be underestimated.[31]

A second argument used against the significance of the military results of Israel's attack on Syria's missiles in Lebanon is that the Syrians do not receive first-line Soviet equipment. If the stand on the Soviet vs. Syrian personnel is debatable, this position is misleading. Between 1974 and the spring of 1982, the Soviets shipped arms worth \$30 billion (not counting approximately 20 percent extra for auxiliary subsystems, spare parts, etc.) to the Arab states--primarily Syria, Iraq, Libya, Algeria, South Yemen, North Yemen, and, until 1975, Egypt. Actual deliveries included 8,800 tanks, 5,000 armored personnel carriers, 3,000 military pieces, 180 surface-to-surface missile launchers (including the Frog-7 and the Scud B), 1,300 combat aircraft (not including transports), 300 helicopters, 370 antiaircraft batteries of all kinds, and 90 naval vessels (including 46 missile boats, of which more than 75 percent were for use in the Mediterranean.). These were not out-of-date weapons; rather, the Arab nations have been supplied with a more advanced mixture of hardware by the Soviets than many of their own units. Previously, the Soviets sent equipment that was five years old; now they are sending material that is perhaps two years old.[32]

Except for the first echelon of Soviet troops and the East Germans, the Arabs have regularly been the first to receive the latest in Soviet weaponry. For example, the second and third echelon units in the Soviet Union (mainly reserves) are still to a large extent equipped with T-54 and T-55 tanks, as are most East European countries (Poland and Czechoslovakia both produce the T-54 and the T-55). These are not good enough for the Syrians, who rely primarily on the T-62 and the T-72. Arab nations received the SAM-6s, -7s, and -8s before the East Europeans (except the East Germans). The SAM-5 was first deployed outside the Soviet Union in Syria. The Soviets only later deployed SAM-5s in Eastern Europe. Syria is today phasing out the MiG-21, which is still the backbone of the Soviet Tactical Air Force. In addition to possessing MiG-25s and -27s, it is about to receive the MiG-29. The 5,000 armored personnel carriers delivered to the Arabs from 1974 to 1982 would have enabled the Soviets to equip twenty to twenty-five divisions; many divisions in the Soviet Union are still equipped with trucks.[33]

The problem the Soviets face is that they send much of their first-line equipment to the Arab states--otherwise, they cannot continue to compete politically or economically with the West in the Middle East. The Arabs are very quick to blame their poor military showing on Soviet equipment. In order to convince the Arabs that they are receiving weapons comparable to those received from the West by the Israelis, Moscow compensates by sending the latest materiel. This explains why the Arabs receive the most advanced weaponry earlier than such regular Soviet customers as North Korea and Cuba. Although they take cash when they can get it, the Soviets often agree to barter deals and even ship prior to payment. They prefer to be paid, but they will settle for influence; arms shipments constitute the main attraction they represent to those Arab states still prepared to align with them.

If the Soviets did not deliver thousands of weapons to the Arabs, they would still produce and supply them in greater quantity to their own units and to the East Europeans. In this case, they would not confront the risk of broken intelligence secrets, which is inevitable once they send weapons to the Middle East. Therefore, the argument that the Syrians suffered from inferior equipment in 1982 simply is not accurate. In most cases, the Israelis face the same type of equipment the United States would face in a conventional war with the Soviet Union, a condition that has intensified as a result of the even greater sophistication of the arms delivered to Syria since the June 1982 Lebanon conflict.

The most convincing argument against the significance of the war's developments for the West is that now the Soviets are forewarned of the deficiencies in their systems and they can adjust accordingly. The West, in turn, will have to counter these adjustments.[34] The argument is deceptive. First, it assumes that the Israeli-Syrian confrontation represented an East-West conflict. However, battlefield conditions in the Middle East are not similar to other arenas of East-West confrontation. For example, cloud cover is extremely rare in the Middle East; this is not the case in

most other major crisis areas (particularly Europe and the Korean peninsula). The weapons used against the SAM sites in the Bekaa Valley were also built to Israeli specifications and did not precisely equal American systems. Similarly, the Israelis did not use all available American systems, so that several could not have been compromised. The Israelis were also able to learn what types of tactics to use in specific situations, which will help both the IDF and the U.S. armed forces in the future.

Indeed, the actions taken by the IDF indicate that they constantly change their tactics and approaches, so any information the Soviets may have gained from the battles of 1982 is now obsolescent. The Soviets are trying to determine how the Israelis were able to totally defeat their SAM umbrella through the deployment since 1982 of tactical electronic intelligence (ELINT) helicopters along the Syria-Israeli border. They have installed in Syria improved countermeasure equipment and satellite links to Moscow, and they have deployed special teams to operate radar and communication links. They have also attempted to upgrade Syrian command, control, communications, and intelligence (C3I) performance. These moves suggest that the Soviets have not been quite sure how to deal with Israeli advancements and consequently have used traditional Soviet tactics in order to deal with the threat.

It will take several years for the Soviet Union to prepare appropriate new systems and to make extensive renovations in existing systems. This process is very expensive and will rely on stagnant data, frozen in the tactics and technology of June 1982. While the Soviets alter their air defense system based on the lessons of 1982, the Israelis and the Americans are also adjusting. Even worse from the perspective of Soviet planners, one of their systems was breached. They can try to make it less vulnerable, but it is easier for the West to adjust to these changes than for the Soviet Union to develop them. Besides, since Israel exposed her secrets to the United States as well, the United States also now knows how to penetrate the system.

Thus, both sides learned valuable lessons in Lebanon, but the Western powers still have the advantage. Since the information is shared, only the Israelis and the Americans know why the Soviet equipment was soundly defeated. The Soviets are reduced to adapting, guessing, and hoping that the technical personnel they sent to Syria after June 1982 produced adequate answers. To the extent that they must renovate their air defense umbrella instead of expanding into new arenas or improving offensive weapons, the Western position is strengthened, both because of reduced Soviet offensive readiness and because of reduced Western costs to counter new Soviet equipment.

The 1982 war affected U.S. and Soviet fortunes in opposite directions. The credibility and reputation of Soviet arms were seriously damaged. It will take a major new confrontation for them to recoup lost prestige, which may be one reason they sent SAM-5s and twelve SS-21 surface-to-surface missile launchers to Syria, and why they continue to subsidize Assad's armed forces heavily. In this regard, they are rumored to be about to deliver SS-23s, SAM-11s, and SAM-14s. In addition, the failure of Soviet arms, especially the air defense umbrella, affects adversely the confidence of Soviet and East European military planners in the reliability and capabilities of their equipment.

On the other hand, the United States has gained immeasurably. The technical victory was a boost to the reputation of the reliability of American-made arms. For example, the much-maligned TOW antitank weapon had a 72 percent kill rate (99 hits out of 137 fired) in Lebanon in the hands of the Israelis, while the Cobra helicopter proved to be a highly effective antitank weapon as well.[35] In Europe, the Israeli performance alters the psychological atmosphere by proving the efficacy of American technology and raising nagging doubts for the armies of the Warsaw Pact.

In another unexpected area, the Israelis also affect Soviet calculations. Although not noted for its naval prowess, Israel has become a major surface power in the eastern Mediterranean.

Since relinquishing the Sinai in April 1982, the Israelis have concentrated the bulk of their Aliyah, Reshef, and Saar III missile boats off Israel's west coast. Coupled with her powerful air force, the IDF effectively dominates the seas for 250-300 nautical miles off the Israeli shoreline. This area represents 12.5 percent of the Mediterranean, including ports and other facilities of crucial importance to the United States and the Soviet Union.

Israel is also becoming progressively important to the operations of the Sixth Fleet: to the maintenance of U.S. ships and aircraft and to the use of Haifa as a port of call for shore leave for American servicemen. These opportunities assume added importance in the light of worsening relations with Greece.

Since late 1983, officials from both nations have been meeting on a regular basis to discuss combined planning, joint exercises, and prepositioning of U.S. equipment in Israel. Joint antisubmarine exercises have been held to simulate the evacuation of U.S. forces from navy ships to Israeli hospitals. The two nations have also reached agreements concerning the use of Israeli facilities in emergencies.[36]

Despite the Reagan administration's naval buildup, combat vessels that were once routinely a part of the Sixth Fleet have been diverted to other theaters of operation. The single carrier that usually operates with the Sixth Fleet does not give the United States naval superiority in the Mediterranean because of the Soviets' dramatic buildup in surface combatants and long-range bombing capabilities. In addition to their Mediterranean squadron, the Soviets can utilize forces from their Black Sea fleet. This capability was demonstrated during the October 1973 war, when the Soviet squadron grew from 52 vessels to 95 warships (including 51 combatants) in one month. By contrast, even if the U.S. deployed a two-carrier American battle group it would have no more than 35 ships, only 19-22 of which would be combatants.[37]

The presence of Israel compensates for the diminution of American forces. For example a few years ago it was reported that a U.S. Navy investigation determine that Israel's air force was capable of destroying the entire Soviet Mediterranean fleet.[38] Secretary of Defense Caspar Weinberger has stated that "the Soviets would dearly love control over the Middle East's resources and strategic choke points, but Israel stands determinedly in their way." [39]

Because the Israeli presence bolsters diminishing U.S. capabilities, the Soviets would have to hesitate before committing their Black Sea fleet's estimated 100 Tu-16 Badger, Tu-22 Blinder, and Tu-26 Backfire bombers to conflict with the West in the Mediterranean. Even the dozen Forger attack aircraft from the Soviet's only aircraft carrier, the Kiev, would hardly be a match for the American F-14s and Israeli F-15s and F-16s.[40] Since Israeli as well as American forces must be taken into account if the Soviet Air Force wishes to entertain operational activities in the vicinity, it must expend much greater forces, and its preparatory expenses must be a great deal higher, to confront not only the normal U.S. air cover over the Sixth Fleet, but the Israeli Air Force as well.

## **THE EFFECT OF ISRAEL'S MILITARY PERFORMANCE ON THE REPUTATION OF U.S. ARMS**

Arms sales represent an ironic example of the effect of Israel's military successes. Since the War of Attrition in 1969-1970, Israel has advertised the proficiency of U.S. weaponry in combat. This process has been expanded considerably as a consequence of the Lebanon War in 1982.

U.S. arms sales worldwide from 1972 to 1982 nearly tripled from about \$6.8 billion to \$19.6 billion in constant 1982 dollars. Washington's efforts to strengthen regional proxies and reduce America's military commitments abroad, led to an expansion of military transfers after the late 1960s. After the 1973-74 oil crunch, arms sales were also seen as a way to recycle the

petrodollars paid to oil producers back into the American economy. Consequently, by 1982, Arab states accounted for 50 percent of U.S. sales worldwide, compared with 11 percent in 1972. Sales increased tenfold, from \$.0.7 billion to \$7.8 billion annually in the ten years in constant 1982 dollars.[41]

Even though Israel's American supporters have occasionally been able to restrain arms sales to Arab states, these sales have flourished. Ironically, Israeli weapons capability makes American arms attractive to Arab nations, precisely because the Israelis have succeeded so well with them. Even several of the weapons systems improved by the Israelis have been sold to Arab nations by the United States. Modifications in F-15s and F-16s suggested by the Israelis were then incorporated in the models sent to Arab countries. The conformal fuel tanks for the F-15 have been sold to the Saudis; E-Systems has had sales to Saudi Arabia and Egypt of equipment to which Israel contributed; about thirty helicopters with Israeli-improved designs have been sold to Jordan; and the updating of the Jordanian Centurion by Teledyne-Continental is based on Israeli improvements. An Israeli-improved version of the A-4 Skyhawk was sold to Kuwait after that nation insisted on receiving a version that contained the Israeli improvements.[42]

Even when wars are not being fought, the Israeli reputation for military prowess means that when they purchase a system the reputation of that weapon is enhanced. For example, the Japanese debated for more than a year whether to purchase the Grumman E-2C Hawkeye, the airborne command and control system that the Israelis used so effectively in the Lebanon War. After Israel decided to purchase it, the Japanese made their affirmative decision. Since the Lebanon War, Singapore and Egypt have purchased the Hawkeye, and several nations have expressed interest--including South Korea, Spain, Switzerland, and Australia; there have been reports that the Malaysian and Pakistani governments may also be interested. Grumman officials have estimated that this could lead to the sale of twenty to thirty planes abroad, meaning up to \$4 billion in sales, including ground support and training facilities.[43]

It is well known in the U.S. defense field that many nations secretly send representatives to Israel to discuss weapons purchases. In the case of the Hawkeye, Grumman gained at the expense of the British equivalent, the Nimrod. What the Israelis once did for the French Mirage, they now accomplish for American aircraft such as the F-16 at the expense of the Mirage-2000. Once the Israelis purchased the MD-500 helicopter (which they had helped to improve), the Jordanians, South Koreans, and Kenyans moved to purchase it at the expense of the German-made BO-106 and the Franco-British Gazelle.

Why do so many nations seek F-16s? Because the Israelis have demonstrated their effectiveness from Osiraq to Tunis. Egypt, South Korea, Greece, Venezuela, Pakistan, and Turkey ordered them after the Israelis. Following long frustrations in attempts to sell its F-20 Tigershark, Northrop now wants Israel to co-produce the F-20 in order to make it more salable. [44]

The model of Franco-Israeli cooperation when France was Israel's major arms supplier in the 1950s and early 1960s is particularly instructive for understanding contemporary events. Israel's success with French aircraft facilitated French overseas sales, perhaps accounting for a reduction in the assembly-line price of French aircraft by one-third. In many instances, Israel helped modify equipment, a service it performs for the United States today. For example, by adopting the Israeli suggestion that a cannon should be added to the original Mirage design for low-level defense, "France widened the appeal of the aircraft for Switzerland, South Africa, and Australia, which bought the Mirage on Israeli advice." [45] A "technological symbiosis" emerged between the French and the Israelis, and Israeli suggestions were repeatedly proven successful on the battlefield. Indeed, "Israeli pilots sent continuous performance reports and flight photos to the Dassault company, producer of the Super-Mystere, and . . . many of their recommendations--

especially on radar, electronics and the use of the 30mm cannon--were to find their way into the Mirage." [46]

By contrast with the previous French and the present U.S. relations with the Israelis, the Soviet Union's trade with the Arab nations (excluding arms) accounts for only 5 percent of those nation's exports and imports. Moscow's stock in trade is in arms, yet the reputation of these arms has plummeted as a result of the Lebanon War. For example, both Iraq and Peru openly questioned the adequacy of their Soviet-supplied weapons after the debacle in Lebanon. [47] Thus, while Israel enhances the reputation of American arms, it lowers the status of Soviet weapons.

## CONCLUSION

Viewing the relationship of the United States and Israel from these five perspectives leads to the conclusion that the United States has interests in Israeli military performance and capability beyond exclusive concern for the Arab-Israeli balance of power. The intelligence-gathering capabilities of the Israelis are superior. The Israelis are important to the refinement and development of the American conventional deterrent. They improve American arms and advertise their superiority. Their combat experience yields important lessons. They simultaneously create serious problems for Soviet military planners, who must adjust whenever the Israelis capture or destroy their weapons in the Middle East. The Soviets must also take the growing Israeli importance in the Mediterranean into account.

In broader terms, the Israeli experience suggests the importance of innovation and technical expertise. Their ability to squeeze an impressive product out of a limited defense budget provides elements of a model for those who would reform the Pentagon's development and procurement systems. [48] Their quick-paced and original research and development approach offers room for study and for possible enhanced cooperation in those areas in which they specialize.

Israel is not an oversized military laboratory. Like any other ally, it is a country with distinctive credits and debits. Yet in evaluating the nature of the relationship between Washington and Jerusalem, the military aspect of the connection that transcends the Middle East cannot be ignored. As uncomfortable as it may seem to both supporters and opponents of Israel, that country's conventional military expertise is a fact of contemporary international politics.

## NOTES

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3. Steven, *Masterspies*, Chapter 21.
4. Shipler, "Terror."
5. "Jerusalem Exhibit Looks at Terrorism: MAGAL Security Systems Ltd.," *Jane's Defence Weekly*, March 16, 1985, p. 437.
6. Department of Defense Appropriations for 1975: *Hearing Before a Subcommittee of the House Committee on Appropriation*, 93rd Cong., 2nd sess., Part 4, 1975, p. 465.

7. See, e.g., *Department of the Air Force: Hearing Before a Senate Subcommittee on Tactical Air Power of the Committee on Armed Services*, 93rd Cong., 1st sess., 1974, pp. 4244, 4247, 4249, 4309-4311.
8. Testimony of John L. McLucas, former Secretary of the Air Force, March 7, 1975, in *Department of Defense Appropriations for FY 1975: Hearings Before the Subcommittee on Appropriations*, 93rd Cong., 2nd sess., 1975.
9. See Benjamin S. Lambeth, *Moscow's Lessons from the 1982 Lebanon Air War* (Santa Monica, Calif., Rand Corporation, R-3000-AF, 1984), p. 13.
10. The Israelis were successful in destroying nine T-72 tanks during the Lebanese campaign. For an in-depth discussion of the development and capabilities of the Merkava, see Peter Hellman, "Israel's Chariot of Fire," *Atlantic Monthly*, March 1985, pp. 81-95; and "Israel's Merkava: A National Enterprise," *Defense and Foreign Affairs Digest*, September 1984, pp. 13-17, 34.
11. See W. Seth Carus, *U.S. Procurement of Israeli Defense Goods and Services*, AIPAC Papers on U.S.-Israel Relations, American Israel Public Affairs Committee (Washington, D.C., 1984), pp. 14-15, 37; Karl Schnell, "Experiences of the Lebanon War," *Military Technology*, July 1984, pp. 28-29.
12. Schnell, "Experiences," pp. 28-30.
13. *International Defense Review*, February 1982, p. 171; Gerald M. Steinberg, "The Israeli Arms Industry," Paper prepared for the Stockholm International Peace Research Institute, August 1984, p. 26.
14. See Carus, *U.S. Procurement*, pp. 9-10.
15. Author's confidential interview.
16. See Walter Andrews, *Washington Times*, December 2, 1983, p. 4; *House Committee on Appropriations: Department of Defense Appropriations for 1983*, Part 7, pp. 477-480; *Near East Report*, November 4, 1983, p. 192; and Carus, *U.S. Procurement*, pp. 27-28. The B300/SMAW is a good example of the mutual benefit derived from U.S.-Israel industrial cooperation. See *Armed Forces Journal*, November 1983, p. 21, "Interview with Mr. Vincent L. Jones, President BMY," in *Military Technology*, VII, October 1983, p. 86; *United Press International*, February 24, 1983; *Defense and Foreign Affairs Daily*, July 29, 1983, p. 1; and "BMY: expanded operations," *Military Technology*, VII, April 1983, p. 95, "U.S. Awards Bridge Contract to Israel Military Industries," *Jane's Defence Weekly*, July 7, 1984, p. 1093; and *Armed Forces Journal International*, December, 1984, pp. 64-66. For information regarding the anti-mine mechanical lift plow purchased by the U.S. Army for M-60 and M-1 tanks, see *International Defense Review*, 1985, p. 518; *Army Research & Development & Acquisition*, December 1984, p. 26.
17. See Marcelle Size Kraack, *Encyclopedia of U.S. Air Force Aircraft and Missile Systems, Volume 1: Post World War II Fighters, 1945-1973* (Washington, D.C.: Office of Air Force History, 1978), pp. 277, 280, 282; and Joshua Brilliant, *Jerusalem Post*, May 6, 1984, p. 1. In a related example, Israel's Elbit Computers manufacturers displays and flight control equipment used in 60 percent of the world's F-16s. *Jane's Defence Weekly*, July 7, 1984, p. 1122.
18. See Hellman, "Israel's Chariot of Fire," p. 86. *Defense Update International* 56, p. 3. For details on the Israeli Merkava Mk-2 tank, see *International Defense Review*, "Merkava Mark 2: New Version of a Remarkable Israeli Tank," 1985, pp. 311-17. See also "Israel's New Hedgehog," *Defense and Foreign Affairs Weekly*, December 16, 1984, p. 1.

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Defense News Release, April 15, 1985, p.1; *Aviation Week and Space Technology*, "Israelis Forming U.S. Support Base for Navy's Leased Kfir Fighters," April 1, 1985, p. 57.

27. Steinberg, "Recycled Weapons," p. 35.

28. *Defense Update International* 56, "New Life for the T-55," p. 27; *Military Technology*, "The 5 Tank -- An Upgraded T-54/55," February 1985, pp. 46-48.

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31. For testimony concerning American pilots' superiority to Soviet pilots see "Department of Defense Appropriations," 3rd sess., Part 1, 1983, p. 97. For skill of Israeli pilots, see Lambeth, *Moscow's Lessons*, pp. 28-29.

32. Figures from author's confidential interview. For information regarding Soviet arms shipments to the Middle East, see *Stockholm International Peace Research Institute Yearbook 1983*, pp. 361-69. U.S. government figures for 1975-1982 show Soviet shipments of 7,040 tanks and self-propelled guns, 7,670 pieces of artillery, 9,450 APCs, 2,520 combat aircraft, 900 helicopters, 102 surface combatants (including 49 Guided Missile Boats) and over 15,000 surface-to-air missiles. See Kevin G. Nealer et. al., "Unconventional Arms Policy: Selling Ourselves Short: Promotion of Foreign Military Sales to the Developing World Under the Reagan Administration," Prepared for the Senate Democratic Policy Committee, Senate Special Publications, No. 225948-3, 1983, p. 85. As the Soviets do not reveal these details of their weapons transactions, statistics which cover dollar-values of Soviet arms export are estimations which should not be considered as precise reports of Russian arms export activity. Figures concerning numbers of weapons delivered also represent compilations of inexact data.

The Arms Control and Disarmament Agency estimates that between 1979 and 1983 the Soviet Union transferred \$29.4 billion in weapons to its Arab clients. This total includes Libya (\$5.8 billion), Algeria (\$3.2 billion), Iraq (\$7.2 billion), Iraq (\$7.2 billion) and Syria (\$9.2 billion). See "World Military Expenditures and Arms Transfers, 1985," U.S. Arms Control and Disarmament Agency, ACDA Publications, April 1985, pp. 131, 134.

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