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SPECIAL REPORT

THE PROLIFERATION OF UNCONVENTIONAL WEAPONS IN THE ARAB WORLD

Gerald M. Steinberg

A series of recent events and media headlines have announced that the era of weapons of mass destruction has arrived in the Middle East. First, in April 1990, the U.S. announced that Libya had begun large-scale production of chemical weapons at its Rabta plant. At about the same time, Iraq moved its surface-to-surface missiles to bases near the Jordanian border, within striking distance of Tel Aviv, raising fears in Israel and discussion of a possible Israeli preemptive strike. A few days later, American and British customs agents foiled Iraqi efforts to smuggle nuclear triggering devices (krytrons) from the U.S. Responding to pressure, Iraqi strongman Saddam Hussein threatened to use chemical weapons to "incinerate half of Israel" in retaliation for an Israeli attack on his chemical, nuclear, or missile facilities. Having already used chemical weapons to kill thousands of Kurdish tribesmen and Iranian troops in the Gulf war, these Iraqi threats were taken quite seriously. In response to condemnation of these threats, leaders of the Arab world made statements of support for Iraq,

thereby intensifying Israeli fears. A few days later, Iraq announced that its airforce commanders had been instructed to launch a chemical attack on Israel in the (highly unlikely) event of an Israeli nuclear strike on Iraqi targets.

On April 3, in the midst of these events, Israel launched its second satellite, Ofek 2. Although this launch was planned far in advance and the timing was not linked to the other events, the demonstration of this Israeli capability (coupled with the Iraqi failure to launch its own satellite in December 1989) served as a reminder of Israeli missile capabilities. Then, on April 12, NBC News ran a story highlighting the Iraqi biological warfare capability, and on the same day, British customs officials intercepted parts of a long-range artillery system purchased by Iraq and ostensibly designed to fire nuclear, chemical and biological warheads. (Indeed, a common threat running through many of these recent Iraqi actions is the obsession with duplicating Israeli "achievements." Thus, the Iraqi effort to launch a satellite immediately after

Jerusalem Center for Public Affairs. Daniel J. Elazar, Editor and Publisher; Zvi R. Marom, Executive Editor; Raphael Israeli and Hillel Frisch, Contributing Editors. 21 Arlozorov St., Jerusalem 92181, Israel, Tel. 02-639281, Fax 972-2-639286. © All rights reserved. ISSN: 0334-4096.

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Israel did so and the continued search for nuclear technology of any kind.)

In fact, these events in themselves should not have taken anyone by surprise. Iraqi chemical and biological capabilities have been known for some time, and their efforts to acquire nuclear weapons have been tracked since the 1970s, and particularly in the wake of the Israeli destruction of the Osirak nuclear facilities near Baghdad in 1981. Syria has had chemical weapons and SS-21 surface-to-surface missiles for a number of years, and the Libyan efforts were also well-known. Nevertheless, for Israel and the rest of the world, these events and "revelations" raised a number of questions. What was the purpose of this intense effort to buy any and all forms of what are known as "weapons of mass destruction"? What motivated Saddam Hussein's declarations and threats to use chemical weapons against Israel? How credible are these threats? Do they represent a new form of threat to Israel or to the rest of the world?

Chemical Weapons: The Quick Path to Massive Destruction

Chemical weapons have been present in varying degrees in the Middle East for decades. Egypt acquired and used poison gas and, according to some reports, nerve agents in its war in Yemen in the early 1960s. Sources in the U.S. estimate that Egypt mounted 32 attacks involving chemical agents between 1963 and 1967 in Yemen. These weapons were believed to have been provided by the USSR, and the Soviets were also active in preparing the Egyptian military with equipment necessary to fight in a chemical warfare environment.

Prior to the outbreak of the 1967 war, the Israeli military and its civilian population were prepared for the possibility of Egyptian chemical attacks. (The silence of the international community in response to the Egyptian use of chemical weapons in Yemen was seen as legitimizing these weapons.) Indeed, during the June 1967 war, Egyptian forces in the Sinai were equipped with chemical warfare protection gear and decontamination equipment. There

are reports that Israeli troops captured a facility for filling aircraft bombs with chemical agents at an Egyptian air base at El Arish.(1) By 1973, the entire Egyptian army was equipped with protective gear, and was capable of delivering chemical warheads with bombers, artillery, and short-range rockets.(2) While these weapons were not used against Israel in 1967 or 1973, Egypt has continued to develop its chemical arsenal. Its manufacturing facilities probably produce nerve and mustard gas, and the Egyptian military has continued to stage chemical exercises on a regular basis.(3)

In 1972, Egypt provided Syria with artillery shells loaded with chemical weapons, and there are also reports that Syria has received chemical weapons from the Soviet Union and Eastern Europe. In the early 1980s, Syria purchased a chemical weapons laboratory and manufacturing facility from West Germany, and by 1986, Damascus was believed to have a stockpile of sarin nerve gas.(4) As will be discussed in detail below, this Syrian chemical warfare capability, coupled with the relatively advanced Soviet SS-21 surface-to-surface ballistic missiles deployed within striking distance of Israel's northern bases and settlements, are of particular concern to military planners.

Iraq has also developed, produced and used chemical weapons. Production facilities purchased from West German firms and capable of producing 100 tons of nerve agents (tabun and sarin) per year have been operating for some time, while mustard gas production is estimated at over 700 tons annually. Other more lethal agents such as VX are also reportedly in production.

Iraq first used its chemical arsenal in the Gulf war against Iranian forces in March 1983.(5) Since then, Iran claims that 45,000 of its troops were killed or wounded in Iraqi chemical attacks. In addition, the government used chemical weapons against Kurdish tribesmen residing in Iraq itself, killing 5,000 and wounding an additional 4,000 people.(6)

Iraq has made no effort to hide these activities. Iraqi military officials have

stated that "If you gave me a pesticide to throw at these swarms of insects to make them breathe and become exterminated, I'd use it."(7) In April 1990, Iraqi strongman Saddam Hussein declared that Iraq had begun manufacturing binary nerve gas (referring to the production and storage process in which two non-lethal components are stored separately but can be combined into a weapons form).

Libya's chemical weapons capability was also highlighted in the beginning of 1990 when the U.S. State Department revealed that the Rabta plant had apparently begun large-scale production. This complex, which the Director of the CIA has called the largest chemical weapons complex in the Third World, is based on technology and know-how purchased from Japan and Western European firms. This plant is reportedly capable of producing between 10 and 40 tons of chemical weapons per day, or up to 13,000 tons annually.(8)

Shortly after this revelation, the Libyans reported that a fire in the facility had placed it entirely "out of production." Although Khaddafi blamed sabotage, within a few days satellite data revealed that the fire had been deliberately staged, apparently in order to ward off an expected American or Israeli attack. The facility was not damaged and apparently continues to operate without interference.

Biological Weapons

According to many analysts, "the potentialities for mass destruction in bacteriological warfare exceed even those of the most potent nuclear bomb, in that one or a few strategically placed units of bacteriological material can easily create epidemics affecting an unlimited number of people."(9) Biological weapons and toxins capable of producing cholera, anthrax and plague can be produced rapidly (in a few days with the right equipment) and are relatively simple to manufacture.(10)

In April 1990, while reports of Iraqi nuclear and chemical weapons capability were in the headlines, NBC News reported that Iraq had also developed a biological warfare capability. In fact, although this report served to highlight this activity, no

new information was revealed. In 1989, U.S. officials said that "everybody knows the Iraqis are trying to develop biological weapons" and other reports revealed that the Iraqis were producing botulin toxins. In addition, work on typhoid, cholera, anthrax, tularemia, and equine encephalitis agents was known to be proceeding.(11) Syria is also known to have an active biological warfare program, perhaps based on assistance from North Korea.(12)

Nuclear Weapons

Although Egypt was the first Arab state to show significant interest in developing nuclear technology and obtained a small research reactor from the USSR in the 1950s, by the 1970s, Iraq had become the leader in this activity. Baghdad purchased a relatively large reactor for producing plutonium and the Osirak facility (or Tamuz, as the facility is called in Iraq) was given the highest priority. The enriched uranium fuel for this reactor, which was supplied by the French, in itself, could have been used as the basis for the fabrication of one or perhaps two small nuclear weapons. Iraq also purchased hot cells for separating plutonium and other technology necessary for the manufacture of nuclear weapons. In 1981, the Israeli Airforce attacked and destroyed this facility.

The Iraqi nuclear program was slowed by this attack and by the Gulf war, but in the late 1980s was reactivated. Negotiations with the French began again, and in April 1990, Iraqi agents were arrested for trying to smuggle electronic nuclear triggers out of the U.S. The Iraqi nuclear effort is being financed by the Saudis, leading to some skepticism regarding the recent Saudi accession to the Nuclear Non-Proliferation Treaty, which came in response to U.S. pressures.

Libya has also made a number of efforts to buy nuclear weapons and related material. In the 1970s, Khaddafi tried unsuccessfully to purchase weapons from China, and has financed Pakistani nuclear activities in the hope of receiving access to weapons. Libya sought to cut off oil sales to India in an effort to receive nuclear assistance, but in this case, as in the

others, with little success to date.(13) Nevertheless, the Libyan effort in these countries, as well as other possible sources of materials and technology in Europe and South America, continues.

Missiles, Long-Range Bombers, and Other Delivery Systems

Surface-to-surface missiles are not entirely new to the Arab-Israel system. In addition to the efforts of Nasser to develop missiles in the 1950s (with the assistance of German rocket scientists), Egypt, Syria, Libya, and Iraq have had Soviet Frog and Scud missiles for many years. Although a few of these missiles were fired at Israeli targets in the 1973 war, the ranges, accuracy, and payloads were too limited to present any significant threat to Israel.

In the early 1980s, Syria became the first Arab country to deploy advanced (second-generation) missiles in the region. The Syrians have deployed 18 highly accurate mobile short-range (120 km) SS-21 surface-to-surface missiles, and are negotiating for longer-range and larger payload M-9 missiles from China. The SS-21 is capable of striking targets in the north of Israel, and the M-9 would extend this coverage to the rest of the country.

During the Iran-Iraq war, the Iraqis succeeded in increasing the range of their Soviet-made Scud-B missiles, thereby enabling them to strike Teheran. (The extended range, which was achieved at the expense of a reduced payload, was the result of technical changes provided by North Korea.) These improved-range Scud-B missiles can also reach Tel Aviv, particularly when deployed along the Iraqi-Jordanian border closer to Israeli territory. Iraq has also continued with its efforts to develop more powerful and longer-range missiles. In December 1989, Iraq launched a three-stage missile which is believed to have a range of over 2,000 kilometers. (This was apparently an effort to launch a satellite into orbit. The third stage of the missile did not achieve the necessary trajectory and burnt up upon reentering the earth's atmosphere.)(14) This Iraqi effort is apparently linked to a cooperative effort

with Egypt, is based on Argentinean technology (the Condor 3), and also included technology obtained from U.S. firms such as Hewlett Packard, and the West German firm MBB.(15) This missile was reported to have a designed range of 800 kilometers.(16)

In early 1988, Saudi Arabia received and began to deploy a number of CSS2 intermediate range ballistic missiles (IRBM) purchased from China. These missiles were initially part of the PRC's nuclear force. While Saudi sources claim that these weapons were acquired in order to deter Iranian attacks, these missiles are also more than capable of hitting Israel. Brazil is also reported to be developing missiles for Libya.

Nuclear, chemical, and biological warheads can, of course, be delivered by other means, including bombers. Although Israel has long held air superiority in the region, a single aircraft carrying weapons of mass destruction can wreak enormous damage. In 1989, Iraq and Libya acquired a number of low-level, all-weather Su-24 bombers, which have a longer range and a greater payload than previous systems deployed in the Middle East theater. Such bombers are reportedly to be delivered to Syria and Iraq in the near future.(17) Libya has also reportedly obtained mid-air refueling capability for its bombers.

Implications for Israel

This growing strategic threat poses a number of problems for the Israeli military. Israel is a thin wedge less than 500 kilometers long, 160 kilometers at the widest point, and most of its population is concentrated in the coastal plain around Tel Aviv. The Israeli military is taking the threat of a chemical attack against population centers very seriously and is issuing the entire civilian population with protective equipment. In previous wars, the Arab states have largely refrained from bombing Israeli cities, but there have been some efforts in this direction in the past. Given the experience in the Gulf war, as well as fears that Israeli deterrence is weakening, the possibility of such attacks must be considered.

A chemical attack against Israeli military targets such as air bases or reserve-force mobilization and staging centers is also considered to be a major threat to Israeli survival. Israel depends on a large reserve army to support its standing forces, and in the event of crisis or war, as in 1973, the reserve units are mobilized and dispatched to the various fronts. In 1973, the reserve forces eventually pushed back the Egyptian and Syrian attacks and forward penetration, and enabled Israel to mount a successful counterattack. A chemical or biological attack which would interfere with this process and weaken the ability of the IDF to mobilize would pose a major danger to Israel.

It is in this area that the addition of accurate surface-to-surface missiles to the Arab arsenals represents a significant change. Although the Arab states have been able to launch an air attack on Israeli bases in the past, such an air attack against protected targets is far more difficult than a missile attack. An air attack would have to penetrate significant air defense systems, and in the Gulf war, Iraqi pilots had difficulty striking even undefended targets.(18)

One possible scenario involves a Syrian "quick grab" in the Golan Heights. According to this scenario, Syria would mount a surprise attack on the Heights, sufficient to overwhelm the Israeli positions, as in the initial period of the 1973 war. Israeli efforts to mobilize its reserve forces and to mount a counterattack, however, could be blocked by Syrian missiles armed with chemical warheads.(19)

The deployment of ballistic missiles armed with chemical, biological, and perhaps even nuclear weapons would also threaten Israeli "escalation dominance."(20) During the 1969 War of Attrition between Israel and Egypt, Israeli forces escalated the level of conflict steadily, eventually mounting deep penetration raids into Egypt in order to force a cease-fire. In 1973, Syria launched missiles apparently aimed at Israeli air bases in the North. The missiles missed their targets and landed near the town of Migdal HaEmek. This immediately led to Israeli escalation, including

an intensive attack on the Defense Ministry buildings in Damascus, and the missile attacks ceased. With the deployment of missiles and chemical weapons, however, the Arabs can threaten to retaliate or escalate further, inflicting large-scale casualties on the Israeli population. Thus, as the Arab states acquire chemical and nuclear weapons, Israel's ability to control and limit the level of conflict is reduced.

Implications for the Rest of the World

The proliferation of unconventional weapons in the Arab world is not only a danger for Israel, this process also threatens the rest of the world. The terrorism which has emanated from the Middle East has claimed victims from the U.S., Western Europe, and, with increasing frequency, Eastern Europe and the Soviet Union. Radical regimes and fundamentalist groups in the Arab and Islamic worlds are not only at war with Israel, but also see themselves as leading a jihad against the West. In past years, aircraft and airports throughout the world have become frequent targets for Arab terrorism. As more lethal weapons are available, they become part of the arsenal available for use against the U.S. and the Western world.

In a broader sense, the availability of chemical, biological, and, eventually, nuclear weapons in countries like Libya, Syria, and Iraq can and will be used to alter the international system. For the past 40 years, the U.S. and Soviet Union enjoyed overwhelming military superiority which allowed them to exercise a form of condominium and to control warfare in regional conflicts. The two superpowers intervened repeatedly to limit or end warfare in the Middle East and to protect their own national interests during this period. During the Gulf war, the U.S. deployed a large naval task force to protect oil shipments. However, as the capability of the states in the region to challenge the superpowers increases (particularly with the threat to use chemical or even nuclear weapons), the hegemony enjoyed by the superpowers will be reduced.(21)

As ethnic conflict involving the Muslim population of the Soviet Union increases,

the developing nuclear and chemical capabilities of the Islamic states in the Middle East is of increasing concern to the Kremlin. Support for efforts by the Islamic population in the USSR in conflicts with other ethnic groups could lead to direct clashes with the Arab states in the Middle East which are in close proximity to the Soviet border. These states, however, could now use their non-conventional capabilities in order to threaten retaliation against Soviet efforts.

In addition, a regional conflict involving unconventional weapons could seriously disrupt or even destroy the oil supply on which the industrialized world depends. The oil fields in Saudi Arabia, Iraq, and other states are prime targets for attack in any extended conflict.

Possible Israeli Responses

Despite the claims of Arab leaders, Israeli military technology is still far superior. Israel has launched two satellites into earth orbit, and is close to developing reconnaissance satellites to monitor Arab force deployments and to target missiles and warhead storage sites. The launchers used to place these satellites into orbit demonstrate that Israel also has advanced ballistic missiles capable of placing a relatively large warhead on any target in the Middle East (and beyond) with a high degree of accuracy. As a result, the IDF could attack and destroy most of the Arab chemical, biological and missile capability currently deployed.

However, this strategy of preemptive attack is limited. After the successful destruction of their nuclear facility in 1981, the Iraqis dispersed their chemical and new nuclear weapons manufacturing plants in well-defended underground sites. Thus, it is becoming increasingly difficult and costly to destroy these capabilities, and the Iraqis will be able to recover more quickly.

As a result, Israel has begun to rely increasingly on a policy of deterrence based on the threat of massive retaliation in response to Arab threats. In response to recent Arab threats, Israel's leaders have repeatedly noted that they are well

prepared to meet any Arab threat and retaliate "one-thousand fold."

Although never officially acknowledged, Israel's nuclear program, which began in the late 1950s, is clearly the most advanced in the Middle East. By the mid-1970s, Israel was credited, according to various estimates based on approximations of the throughput of the Dimona reactor, to have an arsenal of over 100 nuclear weapons. In addition, other reports, including claims made by a former technician at the Dimona complex, assert that Israel also has thermonuclear weapons.

There have also been numerous reports regarding Israeli chemical warfare capability, including facilities for the manufacture of mustard and nerve gases. The scale of these facilities are not known, and there are some reports that Israel has eschewed the production of chemical weapons while relying on its nuclear capabilities for deterrence. Similarly, Israel clearly has the scientific ability to produce biological agents, but there is no evidence to indicate that such agents and related weapons have been manufactured.

In addition to strengthening its deterrence, Israel has also explored defensive measures. Gas masks and protective clothing have reportedly been acquired for every Israeli citizen, and drills are held with increasing frequency. (In contrast, none of the Arab states have equipped their citizens with any form of protective gear.) Such measures could conceivably protect a large portion of the Israeli public in the event of a chemical attack.

Israel is also exploring the development of ballistic missile defense systems (BMD). The Israel Aircraft Industries has developed the Arrow system designed to intercept incoming missiles at high altitudes and before they can release their payloads.

Long-Term Survival for All

Ultimately, the security of the entire region rests on the development of a system of mutual limitations and arms control agreements. While negotiations and agreements may seem quite distant now, in fact, the U.S. and Soviet Union passed through a similar history before finally

beginning to agree on mutual and verifiable limitations to enhance their chances of survival. Eventually, the threat of instability, "mutual assured destruction," and accidental war, which chemical, biological and nuclear weapons create, can force even the most hostile leaders and peoples to seek some form of accommodation.

Until now, however, discussion of arms control has been largely unrealistic and designed more for its propaganda effect than to prevent mutual destruction. For example, Arab calls for Israel to join the nuclear non-proliferation regime ignore the fact that this system is fundamentally flawed and provides undemocratic and totalitarian states like Iraq with many ways of avoiding the safeguards to assure Israel that they are not developing nuclear weapons.(22) For their part, the Arabs have ignored Israeli proposals for negotiations to create a regional nuclear-free zone, in which inspectors from all the states in the region, including Israel, would be responsible for monitoring activities of the other states.

In addition, even an effective regime covering nuclear, chemical, and biological weapons would be incomplete in the Middle East. The Arab states have developed massive conventional forces and the combined strength of the major "confrontation states" -- Syria, Iraq, and Egypt -- is over three times that of the IDF even when fully mobilized.(23) While Israel has always relied on its qualitative superiority to offset its quantitative inferiority, the Arab states have invested heavily in conventional weapons and technology over the past decades.(24) The high cost of this technological arms race is also straining the Israeli defense budget and economy. The defense budget, which consumes some 30 percent of the Israeli GNP and 35 percent of the government's budget (excluding debt repayments), has been reduced over the past five years. (While there have been some reports that Syria and perhaps other Arab states have also been forced to reduce their military expenditures recently, the evidence is ambiguous and the claims are disputed.)(25)

Ironically, in some ways the current strategic arms race in the Middle East may even turn out to be beneficial. Ultimately, the survival of all states in the region -- Israel as well as all the Arab states -- now depends on avoiding situations in which an unlimited regional war can destroy all of them. As the political leadership in Washington has learned, in such a situation the survival of all depends on increasing understanding, developing reliable channels of communication, and creating a system of mutual restraints on the deployment and use of these deadly weapons. The Arab states must now fear that even a "limited" conventional war against Israel, which Israeli leaders worry could involve unconventional weapons or a threat to Israeli survival, could lead to a swift and devastating preemptive strike on Arab capitals. Despite their new and powerful weapons, and, indeed, because of them, the Arab states will be forced to act more cautiously in order to avoid creating situations in which actions move out of control.

In the long term, this means that all the Arab states, including Iraq, Syria, Saudi Arabia, and perhaps even Libya, will find themselves negotiating arms control agreements and limitations with Israel. Thus, rather than bringing about Israel's destruction, the Arab effort to deploy deadly unconventional weapons could, in the long term, lead to the establishment of negotiations and acceptance of Israel in the region. However, in the short term, before this realization is reached, the region is likely to remain highly dangerous and unstable.

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Notes

1. W. Seth Carus, "Chemical Weapons in the Middle East," Washington Institute for Near East Policy, Research Memorandum Number 9, December 1988, p. 2.
2. Ibid.
3. Ibid., p. 3.
4. Ibid., p. 4.
5. Ibid.

6. As Carus notes, Iraq is a signatory to the Geneva Protocol of 1925 which forbids the use of chemical agents except in retaliation against another country that had initiated the use of these weapons. Seth Carus, "The Genie Unleashed: Iraq's Chemical and Biological Weapons Production," Washington Institute for Near East Policy, Policy Paper Number 14, 1989, p. 1.
7. "Is Baghdad Using Poison Gas?," Newsweek, March 19, 1984, pp. 39-40, as cited by Carus, "Chemical Weapons in the Middle East," p. 14.
8. Cited by Carus in "The Genie Unleashed," p. 9.
9. Hans Morgenthau, Politics Among Nations (New York: Knopf, 1985), p. 403.
10. Carus, "Chemical Weapons in the Middle East," p. 5.
11. Carus, "The Genie Unleashed," p. 29-30.
12. Carus, "Chemical Weapons in the Middle East," p. 6.
13. Leonard Spector, The Undeclared Bomb (Cambridge, Mass.: Ballinger, 1988), p. 196.
14. In announcing the test, the Iraqis only released data on launch weight and height. Tracking information revealed that the third stage of this missile achieved a low-level irregular orbit, but reentered and burned up in the atmosphere after six orbits. From this limited information, it is difficult to calculate range-payload information, and little is known regarding the guidance system.
15. Seth Carus, Missiles in the Middle East: A New Threat to Stability (Washington, D.C.: Washington Institute for Near East Policy, 1988); Aaron Karp, "Ballistic Missile Proliferation in the Third World," SIPRI Yearbook 1989, (Oxford: Oxford University Press, 1989); Seth Carus, "The Genie Unleashed."
16. Washington Post, 25 June 1988, p. 1.
17. Syria has ordered 48 Su-24s, and pilots are training in the Soviet Union, providing a clear indication that delivery is imminent.
18. Aaron Levran, Surface to Surface Missiles: The Threat to Israel (Hebrew), Jaffee Center for Strategic Studies, University of Tel Aviv, July 1988, p. 3.
19. Ibid.
20. In the literature, "escalation dominance" usually refers to nuclear weapons and strategy. In this case, however, it can be applied in the conventional realm in the context of an escalatory process in which asymmetric deployments and use of weapons is used to "up the ante" and thereby bring the conflict to a more rapid conclusion.
21. See Gerald M. Steinberg, "Technology Transfer and the Future of the Center-Periphery System: A Realist Perspective," Jerusalem Journal of International Relations, Vol. 11, No. 2 (June 1989).
22. For a detailed analysis of the inherent limitations in the NPT system and IAEA safeguards system, see Gerald Steinberg, "Deterrence, Defense, or Arms Control: Israeli Perceptions and Responses for the 1990s," California Seminar for International Security, Santa Monica (forthcoming).
23. Cited by Avner Yaniv, Deterrence without the Bomb: The Politics of Israeli Strategy (Lexington, Mass.: Lexington Books, 1987), p. 191.
24. A. Levran, ed., The Middle East Military Balance: 1987-1988, Jaffee Center for Strategic Studies, Tel Aviv University (Boulder, CO: Westview Press, 1989); Yaniv, p. 247.
25. The Arab oil producers, led by the Saudis, have been a major source of funds for new weapons acquisition in Syria, and for the development of missiles and nuclear weapons in Iraq. The evidence presented in this debate regarding Syrian military expenditures is summarized in the Jerusalem Post, December 14, 1989, and December 21, 1989 ("Yariv: Syria actually increasing military activity, expenditure").

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Gerald Steinberg, an Associate of the Jerusalem Center for Public Affairs, is a Senior Lecturer in Political Science at Bar-Ilan and Hebrew Universities. He specializes in the study of public policy-making in matters of technology and weapons systems.