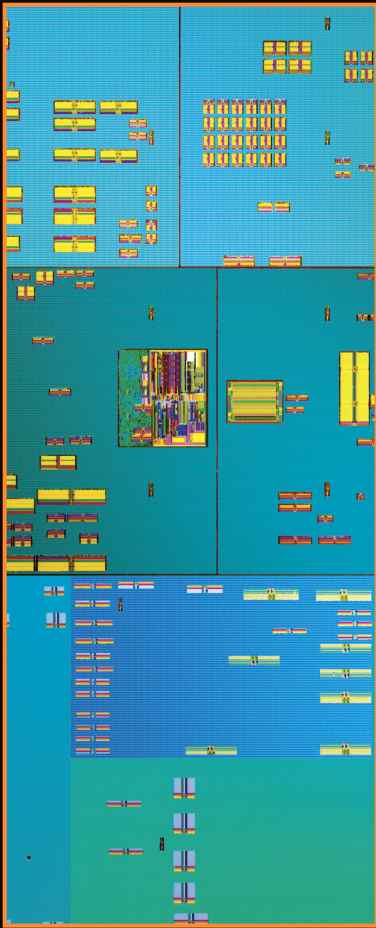


A WASHINGTON INSTITUTE STRATEGIC REPORT

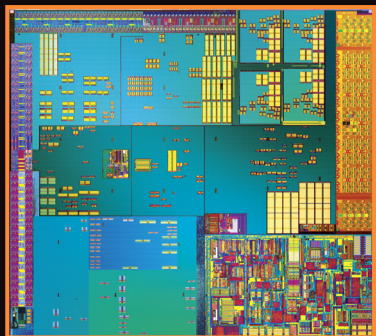


ASSET TEST

*How the
United States
Benefits from
Its Alliance
with Israel*

*Michael Eisenstadt
David Pollock*

STRATEGIC REPORT 7



IDEAS. ACTION. IMPACT.

**Michael Eisenstadt
David Pollock**

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*How the United States Benefits
from Its Alliance with Israel*

THE WASHINGTON INSTITUTE FOR NEAR EAST POLICY

STRATEGIC REPORT 7
SEPTEMBER 2012

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COVER: Detail from die photo of Intel 's Tolapai System on Chip (SoC). Computer processors developed by Intel's Israel R&D center account for 40 percent of the company's revenues worldwide.

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Executive Summary

THE U.S.-ISRAEL special relationship has traditionally been defined in terms of a moral obligation, shared values, and common interests. During the Cold War, Israel also came to be seen as a strategic asset that served as a bulwark against Soviet influence and a counter to radical Arab nationalism. U.S. military assistance to Israel contributed to peace treaties with Egypt and Jordan, and has deterred the outbreak of major interstate Arab-Israeli conflicts since 1982. The U.S.-Israel relationship likewise has helped spur closer U.S.-Arab ties ever since the 1973 war, because most Arabs have believed that only the United States could deliver the Israeli concessions that they required for a peace agreement. Yet since the end of the Cold War, some in the United States—and Israel—have preferred not to discuss the details of the security relationship, at least in public, because it was feared that it would disrupt U.S. cooperation with Arab and Muslim allies. As a result, many of the benefits of U.S.-Israel security cooperation have gone unrecognized.

A decade after 9/11, however, al-Qaeda is a fragmented, weakened organization. And while the war on al-Qaeda and its affiliates is far from over, the United States faces a changed, more complex security environment. It is defined not only by the “hard” security challenges posed by terrorism and conventional/hybrid military threats, but also by new and emerging “soft” security challenges related to economic competitiveness, the information technology revolution, sustainability (i.e., water and food security, and the quest for energy alternatives), and public health. All of these challenges will test U.S. resilience and require broad international cooperation if they are to be solved. Israel is one of the few countries positioned to help the United States deal with both these traditional and emerging security challenges.

The Enduring Strategic Logic

Many of the considerations that provided the rationale for the U.S.-Israel security relationship during the Cold War remain valid today. Israel is a bulwark against radical Islamism in the Levant, as embodied by Hamas and Palestinian Islamic Jihad, and a quiet but effective ally of Jordan. U.S. military support helps bolster Israeli deterrence against hostile state and nonstate actors, while military equipment pre-positioned in Israel, valued at nearly \$1.2 billion, is available to support U.S. contingencies in the eastern Mediterranean and Persian Gulf. Likewise, Israel continues to serve as a testing ground for advanced weapons and war-fighting concepts, many of which are eventually employed by the United States. Washington, for its part, is still seen as an address for Arabs seeking to influence Israeli policies, while Israel is still seen as an address for some Arabs seeking to influence Washington.

Israel is the only de facto nuclear weapons state in the region. While Israel’s bomb may have contributed to initial, unsuccessful attempts at nuclear proliferation by Egypt, Libya, and Syria, its policy of opacity also made it easier for some of these countries to subsequently forgo nuclear weapons. And its policy of prevention in the region has precluded the emergence of additional nuclear weapons states in Iraq (1981) and Syria (2007)—at least thus far.

The relationship with Israel has not been without risks for Washington, or without costs for the United States in terms of its standing in Arab and Muslim states. The 1973 October War nearly led to a confrontation between the United States and the Soviet Union, while the emergency resupply of Israeli forces during the war prompted an Arab oil embargo. The 1982 Israeli invasion of Lebanon led to an ill-fated U.S. intervention in Lebanon and helped catalyze the emergence of Hizballah, which has

targeted both U.S. and Israeli interests. American support for Israel during the first and second intifadas, the 2006 war against Hizballah, and during the 2008–2009 war in Gaza reinforced negative attitudes against the United States in many Arab states. Likewise, U.S. support for Israel has been used by al-Qaeda as a central theme in its propaganda. Apart from these cases, however, the impact of American support for Israel on U.S. interests has been quite limited—and nowhere near as great as the costs of U.S. policy in the Persian Gulf.

In fact, the historical record shows that in recent decades, U.S. support for Israel has not affected the substance of America’s relationship with its Arab, Muslim, or other allies. Except for UN votes, which are largely symbolic, there is no evidence that any of these countries withheld support for U.S. efforts to contain Iraq in the 1990s, fight al-Qaeda, or contain Iran. Measured in concrete terms at both official and popular levels, Arab ties with the United States have flourished over the past decade: bilateral trade and investment are booming, Arabs are coming to the United States in record numbers, anti-American street protests have fallen dramatically since the start of the Iraq war in 2003, and defense cooperation is as close as ever—all despite continued U.S. support for Israel. Furthermore, several Arab states maintain intelligence ties with Israel and even engage in behind-the-scenes efforts to enlist Israel as an intermediary with Washington. All this only underscores the enduring primacy of interests, as opposed to attitudes, in U.S. relations with Arab and other predominantly Muslim states.

The United States has given Israel extensive diplomatic, economic, and military support, committed to preserve Israel’s “qualitative military edge,” granted it “major non-NATO ally” status, signed a free-trade agreement with the Jewish state, and has provided Israel with substantial military and economic aid—topping \$115 billion since 1949. But this assistance has enabled Israel to build a military that has obviated the need for U.S. military intervention on Israel’s behalf. By contrast, the United States has spent much in blood and treasure—since the 1970s,

more than 6,500 killed, tens of thousands wounded, and several trillion dollars—to ensure the free flow of oil, prevent the emergence of a regional hegemon (first Iraq, then Iran), and fight terrorist groups that arose partly in response to the U.S. presence in the Gulf. This was all because America’s Arab allies were unable to secure these objectives on their own.

Israel is a democracy that shares Washington’s interests in regional stability, in successful democratic transitions in formerly authoritarian regimes, in countering violent Islamic extremism, and in preventing additional nuclear proliferation in the Middle East. The Arab uprisings have highlighted the unstable foundations of some of Washington’s traditional Arab allies. At a time of great uncertainty, and of growing tensions with Iran, the United States is even more likely to depend on its more stable nondemocratic allies, such as Saudi Arabia, and its stable democratic allies, such as Israel and Turkey, to secure its interests in the region.

Dealing with Traditional Threats

To deal with the traditional “hard” security threats they both face, the United States and Israel collaborate in numerous areas: intelligence sharing, rocket and missile defense, military and defense-industrial cooperation, and since 9/11, homeland security.

Intelligence cooperation. During the Cold War, Israeli intelligence provided invaluable information regarding Soviet intentions, weapons systems, and intelligence activities, as well as the activities of Palestinian and other Arab terrorist groups (such as Hizballah) that targeted both U.S. and Israeli interests. Israeli intelligence played a key role in exposing Iraqi efforts to rebuild its nuclear program following the Osiraq raid of 1981, helping UN weapons inspectors dismantle Iraq’s WMD programs after the 1991 Gulf War, uncovering Russian support for Iran’s missile program in the mid-1990s, and exposing Syria’s nuclear program before Israel’s air force destroyed it in 2007. Today, Israeli intelligence remains a major source of information regarding Iran’s nuclear program, Hizballah’s global activities, and the activities of

al-Qaeda affiliates—and Israeli intelligence operations have helped delay Iran’s nuclear program. Israel’s comparative advantages include a sustained focus on key hard targets, the cultivation of unique sources and innovative methods, and a willingness to incur risk. And as Washington cuts its intelligence budget in the coming years, it will increasingly rely on allies such as Israel to fill capabilities and knowledge gaps, manage risk, and maintain situational awareness.

Rocket/missile defense. Israel is America’s most sophisticated and experienced partner in this domain. It is the only country in the world with an operational national missile defense system protecting major population centers. Since the late 1980s, U.S. aid for this program has exceeded \$3 billion. In return, the United States has obtained a deeper understanding of the rocket and missile threat in the Middle East, and lessons-learned drawn from Israel’s extensive operational experience dating to 1991. Moreover, U.S. funding of the Arrow III interceptor will provide Washington with insights into a system that will be more capable and advanced than anything the United States has on the drawing board. Israel’s Iron Dome counter-rocket system has enabled Israel to act with restraint during recent rocket attacks from Gaza and, along with another system, David’s Sling, provides unique capabilities that neither the United States nor its allies currently possess. Accordingly, the United States and some of its allies are considering acquiring the latter system to protect troops deployed in areas subject to a heightened threat of rocket attack.

Military cooperation. The armed forces of the United States and Israel have benefited from decades of extensive collaboration in the fields of counterterrorism, military lessons learned, and unmanned aerial vehicles (UAVs).

- *Counterterrorism.* The Israeli military conducted the first successful rescue of hostages from a hijacked airline in 1972 and pioneered many of the tactics eventually adopted by counterterrorism

units the world over. Since then, U.S. and Israeli special forces have forged professional relationships and regularly train together. Israeli intelligence support has been instrumental to the apprehension by U.S. authorities of wanted terrorists, and Israel is widely believed to have killed Hizballah’s Imad Mughniyah, who had more American blood on his hands than any terrorist besides Usama bin Laden. The United States and Israel also conduct cooperative counterterrorism research and development (R&D) through the Combating Terrorism Technical Support Office.

- *Military lessons learned.* Lessons learned from the 1973 October War influenced the design of a number of key weapons systems and contributed to the emergence of the U.S. military that prevailed in Operation Desert Storm in 1991. Lessons learned from Israel’s 1982 war in Lebanon regarding the use of decoys and UAVs and the conduct of an integrated air-defense suppression campaign were applied in subsequent U.S. operations over Libya, Iraq, and the former Yugoslavia. And lessons learned from the 2000–2005 intifada and the 2008–2009 Israeli incursion into Gaza regarding counterterrorist operations, urban warfare, and the use of dogs in combat have been applied by U.S. forces in Iraq, Afghanistan, and beyond. In particular, Israel’s approach to integrating human and technical collection means and weapons platforms (attack helicopters, strike aircraft, and UAVs) has profoundly influenced the U.S. approach to targeting violent extremist networks in Iraq, Afghanistan, Pakistan, and Yemen.
- *UAVs and robotics.* Israel is a pioneer in the development and use of UAVs for intelligence, surveillance, reconnaissance, and combat, and Israeli innovations in this area during the 1982 Lebanon war and afterward jump-started the U.S. program. Since purchasing its first Israeli UAVs in the mid-1980s, the United States has emerged as the world leader in the production and employment of unmanned vehicles—although the

U.S. government and industry continue to use a number of Israeli systems. Israel is also producing robotic systems for use on the land and in the sea, and the IDF is pushing to rapidly integrate robotic systems into its force structure. Given its head start in this arena, Israel stands to play a leading role in the fielding of ground and naval unmanned systems, much as it led in the development and use of unmanned aerial vehicles.

Defense-industrial cooperation. In the past decade, Israel has emerged as a major supplier of defense articles to the U.S. military, with sales growing from \$300 million prior to 9/11 to \$1.5 billion annually today (or about 20 percent of Israel's total arms exports). In many cases, Israeli firms have partnered with American firms to enhance the prospects of sales to the U.S. military and to third countries, thus preserving or creating U.S. jobs. The numerous Israeli-origin defense articles used by the U.S. military include UAVs, airborne targeting pods, precision air-to-ground munitions, helmet-mounted sights, lifesaving armor used on armored bulldozers, thousands of logistical vehicles, and more than 15,000 armored vehicles (MRAPs, Bradley IFVs, M1 tanks, and AAV-7 and Stryker AFVs), naval point-defense weapons systems, and battlefield intelligence, surveillance, and reconnaissance (ISR) systems. In the future, Israel's defense industries—working with U.S. partners—are likely to remain important niche suppliers of innovative high-tech items and systems that fill U.S. capabilities gaps in a number of areas, including robotics, rocket defenses, battlefield ISR, advanced munitions, passive and active defenses for armored vehicles, and mini-satellites.

Homeland security. Following the attacks of 9/11, homeland security became a major U.S. priority, and in the decade since, U.S.-Israel cooperation in this area has expanded dramatically. Areas of cooperation include counterterrorism; critical infrastructure protection; emergency planning, response, and consequence management; aviation and port security; cybersecurity; chemical, biological, nuclear, and radiological (CBNR) security; and joint R&D of homeland security technologies. Since 9/11, tens of

thousands of U.S. law enforcement, homeland security, and emergency services personnel have been trained on counterterrorism, emergency response, and consequence management techniques used in Israel. Accordingly, the Transportation Security Administration adopted aircraft security measures (sealed cockpits with armored doors) and an approach to screening airport passengers based on behavioral observation techniques used in Israel. And many U.S. government agencies and local security authorities have acquired Israeli homeland security technologies to secure border crossings, critical infrastructure, and air- and seaports.

Beyond The Post-9/11 Era

With the passing of the post-9/11 era, the nature of national security is being redefined. In addition to traditional threats—terrorism, rocket/missile and WMD proliferation, and conventional warfare—the United States faces a number of new and emerging security challenges. These include the imperative to revitalize the American economy, secure and exploit the cyber domain, deal with threats to water and food security, pursue diverse and renewable energy sources, improve public health, and enhance societal resilience. Israel is positioned to make significant contributions in all these areas.

Economic revitalization. There is bipartisan agreement that restoring the vitality and competitiveness of the U.S. economy is crucial to preserving U.S. global leadership. Technological innovation is key to achieving this goal. While Israel is a small country, it ranks among the top half-dozen countries worldwide in various indices of innovation. U.S.-Israel investment, R&D, and joint ventures create tens of thousands of jobs for American workers in information technology, medical R&D, and defense. Israel is among the top twenty international direct investors in the United States, and two-way trade between America and Israel leads a number of much larger countries, such as Spain and Saudi Arabia.

Moreover, in certain niche areas (such as information technology and cybersecurity, clean technology [cleantech] and renewable energy sources,

biomedical devices and instruments, and defense) Israel plays an outsize role. Many of the largest U.S. high-tech companies have set up technology incubators in Israel (including Microsoft, Apple, Cisco, Abbott Laboratories, IBM, Google, GE, and General Motors). In addition, the United States and Israel have created several very successful binational foundations to spur joint R&D and start-ups in emerging technologies, generating billions of dollars in additional revenues over the past quarter-century. And because of the longstanding U.S.-Israel relationship, U.S. companies are frequently the partners of choice for Israeli firms seeking to market their products in the United States and globally.

Cyberdefense/Cyberwar. Israel has emerged as a pioneer in IT, and U.S.-Israel cybersecurity cooperation in the private sector is substantial. The architecture for many of Intel's most successful computer chips was invented in Israel, accounting for an estimated 40 percent of the firm's revenues. Israeli-designed algorithms and techniques are also key to securing a significant percentage of U.S. financial transactions and telecommunications. Thus, in early 2012, Cisco paid \$5 billion to acquire the Israeli-founded firm NDS, one of the top TV-encryption companies worldwide. Israeli researchers also play a disproportionate role in many other computer-related and telecommunications inventions and applications, including instant messaging, voice-over internet protocol (VoIP), online money transfers, and data mining programs. Official U.S.-Israel cyber cooperation is also reported to be significant, and may include offensive cyberwarfare against Iran's nuclear program.

Water and food security. In the coming years, large parts of the Middle East, the western United States, and other regions of the world are increasingly likely to experience freshwater shortages due to rapid population growth, climate change, and economic development—with potentially serious implications for food security. Israel has been developing solutions to this problem since its establishment, becoming a world leader in water conservation and management and high-tech

agriculture. Israel recycles more than 80 percent of its wastewater, the highest level in the world. Israel is also a pioneer of drip-irrigation for farming in arid regions, capturing 50 percent of the global market in this area—with major production facilities in the United States. And Israel is emerging as a player in desalination, ranking fourth worldwide in reverse osmosis, which requires less energy than other means of desalination and is well suited for producing water for the agricultural and industrial applications that account for 80 percent of total use.

Israel's 100,000 dairy cows are the most productive in the world, due to scientific breeding and feeding techniques that it is sharing with developing countries. An Israeli firm has developed an online system to advise farmers on how to maximize crop yields—partnering with IBM to market this product worldwide. And Israel is providing aquaculture techniques for an international partnership at Lake Victoria, which is the source of sustenance for five million Africans. Such innovations support long-term U.S. national security objectives in the developing world, including sustainable development, water and food security, economic growth, and political stability.

Energy security. The recent discovery of large natural gas deposits off Israel's shores promises to make it self-sufficient in energy within a decade, and a significant net gas exporter. But Israel also has the potential to make important contributions in cleantech/renewable energy sources. Ideas, products, and processes originating in Israel already help U.S. energy companies. These include the top finishers in recent GE Ecomagination competitions—including a solar window that will enable office buildings to produce their own electricity, and a design for a more efficient, more cost-effective wind turbine rotor. Israeli innovations also underpin the achievements of BrightSource Energy, which is building a plant in California to double the amount of solar thermal electricity produced in America. Other examples are the Israeli technologies in use by the U.S. firm Virent Inc. to

commercialize biofuels made from cellulose feedstock, and the Better Place electric car, which will provide insights into the commercial viability of this highly innovative technology.

Medical research. Israel is a world leader in basic research and clinical applications in the medical field. It produces the most medical device patents per capita of any country, and the Weizmann Institute of Science has generated thousands of medical products and earned more royalties from them than any other academic institution anywhere. Teva is the largest generic drug manufacturer in the world, with major operations in the United States. Israel is also a world leader in the computerization of patient records. The most recent Israeli medical innovations include a video camera in a pill for noninvasive diagnostics; a cancer vaccine currently in clinical trials; a method of noninvasive brain-function imaging; and a growing list of highly effective medicines.

U.S.-Israel medical cooperation is broad and deep; Israeli-developed techniques, procedures, and products are in widespread use in the United States, in both military and civilian settings. The U.S. military and numerous emergency services use a novel Israeli bandage that enables more rapid treatment of the injured, and U.S. Department of Veterans Affairs (VA) hospitals are evaluating an Israeli exoskeleton that enables wounded veterans to walk again. Israel is also on the cutting edge in medical imaging, nuclear medicine, and health care IT, with GE's Israeli subsidiaries contributing to that company's leading status in these areas.

Israel's medical accomplishments contribute to the health of the American public and economy, by helping reduce health care costs, increasing the productivity of the American workforce, and adding to the commercial success of U.S. biomedical manufacturers. U.S.-Israel cooperation also provides public health benefits for the developing world, such as a U.S.-UN project to circumcise 20 million Africans to prevent AIDS—based on Israeli techniques and inventions used in Swaziland and South Africa.

Societal resilience. As a country that has endured six decades of war and terror and has still managed to build a flourishing economy and vibrant democracy, Israel offers insights into individual and societal resilience. Israeli techniques for enhancing warrior resilience are helping U.S. soldiers prepare for multiple combat tours and deal with post-traumatic stress disorder. U.S. government agencies have drawn lessons-learned from the Israeli experience in dealing with terrorism. And practitioners and administrators from both countries collaborate on advances in emergency response, mass casualty treatment, and preventive education and information strategies.

Future challenges

Israel is a small country that punches way above its weight in a number of areas, enabling it to make important contributions to various U.S. national security, economic, and global foreign policy objectives. Achieving the full potential of this strategic partnership, however, will require that Israel (and the United States) deal with a variety of challenges enumerated below.

Peace with the Palestinians. The perception that Israel bears a measure of responsibility for the current impasse with the Palestinian Authority has gained traction in various circles in the United States, including parts of official Washington, and could someday endanger the U.S.-Israeli relationship. This is a largely self-inflicted wound; greater restraint with regard to land expropriations, the destruction of illegal Palestinian dwellings, and settlement construction would help avoid unnecessary tensions between Israel and the United States while keeping the focus on the many common interests these allies share.

The Arab uprisings. To the extent that new, more populist governments in Egypt and perhaps elsewhere are hostile to Israel, or more sensitive to public opinion, the United States may find it more difficult to balance its relationship with Israel and the Arabs. Yet Arab political turmoil also has the potential to reinforce the U.S.

alliance with Israel—because it is already a strong, stable democracy where public opinion is solidly pro-American.

Reducing mistrust. While rooted in close ties in a large number of areas, U.S.-Israel relations are still affected by an undercurrent of mistrust. This reflects past incidents (such as the Jonathan Pollard affair, Israeli technology and arms transfers to China, or Washington's insistence on the 2006 election that brought Hamas to power), and current tensions caused by divergent approaches toward the peace process and toward Iran. It also reflects the impact of an Israeli interpersonal and political style that some Americans find off-putting. While differences between even the closest of allies are inevitable, both sides can do more to avoid or defuse such tensions.

Self-reliance. The U.S.-Israel relationship has thrived, in part, because Israel has never asked Americans to risk their lives on its behalf. Should the United States eventually decide—for its own reasons—to bomb Iran's nuclear facilities, some Americans may nonetheless conclude that the United States acted at Israel's behest, thereby undermining a principle that has underpinned the U.S.-Israel relationship for decades. Moreover, indefinite requests for U.S. military aid, especially if the U.S. economy remains in the doldrums and Israel reaps an energy windfall in the coming years, could introduce additional tensions into the relationship.

Economic challenges. Israel transformed an economy with high unemployment and hyperinflation in the 1980s into one enjoying solid growth ever since. This is a remarkable achievement. Yet there are danger signs to be addressed if Israel is to ensure its economic vitality. These include the highest poverty rate of any country within the Organisation for Economic Co-operation and Development (OECD), with dramatic disparities in the distribution of wealth; a lackluster public education system; and a growing number of unemployed in the ultraorthodox Jewish and the Arab communities—which by 2040 may make up half of Israel's population. Steps are under way to

address some of these issues, but it remains to be seen if they will prove sufficient.

Delegitimization. Israel's enemies and critics are turning to boycotts, divestment campaigns, and efforts to delegitimize the Jewish state as a means of diplomatically isolating it, limiting its military and economic options, and pressuring it to unilaterally withdraw from the West Bank (which, for some, would be a first step toward Israel's elimination). While such efforts have not garnered widespread support in the United States and have had only a limited impact thus far, they could, if successful, harm investment in Israel and hinder collaborative R&D and production efforts central to the Israeli economy and to U.S.-Israel relations.

Conclusions

Israel is a small country, but one that contributes significantly in a number of areas important to the security of the United States. Israel is a valued partner for the U.S. intelligence and counterterrorism communities and for the U.S. military. It is a leader in the development of technologies that are transforming the face of modern warfare, including cyber systems, robotics, rocket/missile defenses, battlefield ISR, advanced munitions, passive and active defenses for armored vehicles, and mini-satellites. And Israeli innovations in a number of civilian areas—IT, water conservation and management, high-tech agriculture, medical R&D, clean-tech/renewable energy, and societal resilience—have the potential to help the United States meet many of the “soft” security and global economic competitiveness issues of the future.

For this potential to be fully realized, there needs to be greater recognition that Israel not only benefits immensely from U.S. support, but also contributes significantly to U.S. interests. Israel's own strength and stability, along with its military, technological, and scientific achievements, enhance the U.S. ability to meet the security, economic, and development requirements (at home and abroad) that are increasingly essential to preserving American prosperity and leadership.

Thus, U.S. leaders and officials should encourage and explicitly acknowledge these partnerships with Israel, alongside the more traditionally invoked shared democratic values, moral commitments, and Middle East peacemaking aspirations. U.S. commercial, technical, scientific, medical, and aid agencies should take greater advantage of Israeli experience and expertise—and more

actively involve Israel alongside other international partners. And the U.S. private sector business, technological, and scientific communities, which are already deeply invested in practical partnerships with their Israeli counterparts, should be further incentivized to bring home the benefits of these multifaceted and unusually productive bilateral connections.

1 | Introduction

THE U.S.-ISRAEL special relationship has traditionally been defined in terms of a moral obligation, shared cultural and political values, and common interests.¹ During the Cold War, in the context of the geopolitical struggle with the Soviet Union, Israel also came to be seen as a strategic asset. It served as a bulwark against Soviet influence, defeating Soviet allies in 1967, 1969–1970, 1973, and again in 1982, victories that were a blow to Soviet prestige and a vindication for U.S. arms. And it served as a counter to radical Arab nationalism—tipping off the moderate leaders of Jordan, Egypt, and Saudi Arabia regarding coup plots and assassinations and working with the United States to turn back a Syrian invasion of Jordan in 1970.² U.S. military support for Israel and U.S.-Israel security cooperation contributed to peace treaties with Egypt and Jordan and, since 1982, have deterred the outbreak of a major interstate conflict involving Israel and its neighbors—while U.S. munitions and military equipment stockpiled in Israel have been available for use by the United States (and Israel) for various regional contingencies.³ Finally—and somewhat counterintuitively—the U.S.-Israel special relationship helped spur closer U.S.-Arab ties following the 1973 war, because many Arabs believed that only Washington could deliver the Israeli concessions that they required for peace.⁴

Since the end of the Cold War, however, the United States and Israel have often preferred not to publicly discuss the details of their security relationship, lest it draw unwanted attention and complicate U.S. efforts to work with Arab and Muslim allies, first to contain Saddam Hussein's Iraq and later to defeat al-Qaeda. As a result, many of the benefits of U.S.-Israel security cooperation have gone unrecognized, making it easier for critics to portray Israel as a strategic liability.⁵ Although this view has not gained broad currency in the U.S. government, it has, in recent years, garnered support in

some media, academic, and policy advocacy circles. Other critics see U.S.-Israel relations primarily, if not exclusively, through the prism of the Israeli-Palestinian peace process, ignoring or neglecting the many ways that the United States benefits from the relationship.

A decade after 9/11, al-Qaeda is a fragmented, weakened organization. And while the war on al-Qaeda and its affiliates is far from over, the United States faces a changed, more complex global security environment, defined not only by the hard security challenges posed by terrorism and conventional/hybrid military threats, but also by new and emerging soft security challenges.⁶

Israel possesses highly professional intelligence services and counterterrorism forces, and has pioneered many of the technologies and concepts that are transforming the face of modern warfare, including unmanned vehicles/robotics, rocket and missile defenses, intelligence, surveillance, and reconnaissance systems, passive and active defenses for armored vehicles, and cyberwarfare. It thus remains an important partner in efforts to deal with the hard security challenges of the future and in preserving the competitiveness of the U.S. defense-industrial base—through joint development efforts or the coproduction of cutting-edge Israeli systems. Just as important, Israel is well positioned to contribute to U.S. efforts to deal with emerging soft security challenges related to economic competitiveness, the information technology revolution, sustainability (i.e., water and food security, and the quest for energy alternatives), and public health, which will test U.S. resilience and require broad international cooperation if they are to be solved. And while this is not a relationship of equals—the United States clearly provides a great deal more to Israel than it receives—it is a relationship that benefits both countries and that has intrinsic value above and beyond moral

commitments, democratic ideals, domestic politics, or the Arab-Israeli peace process.

Notes

1. For more on the cultural and religious wellsprings of American support for Israel, see Walter Russell Mead, “The New Israel and the Old: Why American Gentiles Back the Jewish State,” *Foreign Affairs* (July/August 2008): pp. 28–46.
2. For Cold War–era perspectives on Israel as a strategic asset, see Steven L. Spiegel, “Israel as a Strategic Asset,” *Commentary* (June 1983): pp. 51–55; Steven L. Spiegel, “U.S. Relations with Israel: The Military Benefits,” *Orbis* 30, no. 3 (Fall 1986): pp. 475–497.
3. Dennis Ross and David Makovsky, *Myths, Illusions, and Peace: Finding a New Direction for America in the Middle East* (New York: Viking Books, 2009), pp. 270–271, 279–280.
4. Thus, Egyptian president Anwar Sadat famously observed that the United States held 99 percent of the cards for resolving the Arab-Israeli conflict. Anwar el-Sadat, *In Search of Identity: An Autobiography* (New York: Harper & Row, 1978), p. 293.
5. See, for example, John J. Mearsheimer and Steven M. Walt, *The Israel Lobby and U.S. Foreign Policy* (New York: Farrar, Straus and Giroux, 2007). This line of criticism is neither original nor new. See, for instance, George W. Ball, “How to Save Israel in Spite of Herself,” *Foreign Affairs* (April 1977): pp. 453–471.
6. David Omand, *Securing the State* (London: Hurst & Company, 2010), pp. 9–20.

2 | The Enduring Strategic Logic

U.S. INTERESTS in the Middle East today remain much as they have been for decades: ensuring the free flow of oil at reasonable prices; safeguarding the security of Israel as well as Washington's Arab allies from external threats; preventing the emergence of a hostile regional hegemon (in the past, Iraq under Saddam Hussein; today, the Islamic Republic of Iran); halting the spread of missiles and weapons of mass destruction (WMD), especially nuclear weapons; and defeating violent extremism and terrorism. And since the Arab uprisings, one can add to this list: supporting political reform and peaceful democratic transitions in the region.

Geostrategic/military. In this light, many of the considerations that underpinned the U.S.-Israel security relationship during the Cold War remain valid today. The United States still derives significant benefits from its relationship with the Jewish state. Israel remains a bulwark against the expansion of radical Islam in the Levant (as embodied by Hamas and Palestinian Islamic Jihad) and is a quiet and effective ally of Jordan.¹ U.S. military support for Israel and the preservation of its qualitative military edge helps bolster Israeli deterrence against both hostile state and nonstate actors and thus contributes to regional stability. The United States still pre-positions military equipment in Israel (nearly \$1.2 billion worth), as it does at other locations in the region, in order to support eastern Mediterranean or Persian Gulf contingencies.² And Israel continues to serve as a testing ground for advanced weapons and warfighting concepts, some of which are adopted or employed by the U.S. military.

Political. Washington is still seen as an address for those Arab countries seeking to influence Israeli policies, though some Arab states may have a less sanguine view than in the past on whether the United States can deliver Israeli policy adjustments

or concessions. And some have opened their own channels to Israel as a result of common fears regarding a nuclear Iran, or as another means of seeking access and influence in Washington.³ Conversely, Washington has sometimes benefited from Israel's contacts in the Arab world; thus, Yitzhak Molcho, advisor to Israeli prime minister Binyamin Netanyahu, used his close ties to Egypt's Supreme Council of the Armed Forces (SCAF) to help gain the February 2012 release of nineteen American NGO workers being held by Egypt.⁴

Peace process. The ongoing impasse over negotiations with the Palestinians has obscured the fact that Israel has often played an initiating or leading role in past peace process diplomacy—a pillar of U.S. Middle East policy for more than forty years. Thus, secret Egypt-Israel contacts set the stage for Egyptian president Anwar Sadat's dramatic 1977 visit to Jerusalem and the 1979 Israel-Egypt peace treaty, which confirmed Egypt's reorientation from Soviet client to U.S. ally. Likewise, the 1993 Oslo Accords were the result of a secret channel initiated by Israeli, Palestinian, and Norwegian officials, the 1994 Israel-Jordan peace treaty was the product of secret contacts by senior officials in both countries, and negotiations between Israel and Syria were repeatedly energized by initiatives taken by Israeli prime ministers—Binyamin Netanyahu in 1997–1998, Ehud Barak in 1999–2000, and (indirectly, through Turkey) Ehud Olmert in 2007–2008. More recent Israeli efforts to reduce Arab-Israeli tensions include its unilateral 2000 withdrawal from Lebanon, its 2005 disengagement from Gaza, Olmert's September 2008 peace proposal to Palestinian Authority (PA) president Mahmoud Abbas, and Netanyahu's settlement moratorium and formal acceptance of a two-state solution in 2010.

Nonproliferation/counterproliferation. While Israel's status as the only (de facto) nuclear weapons state in the region has sometimes been a source

of controversy, its policy of opacity has made it easier for those neighbors that had sought the bomb (such as Egypt and Libya) to eventually forgo these ambitions. Likewise, Israeli preventive strikes against the nuclear infrastructures of Iraq (1981) and Syria (2007) helped forestall the emergence of additional nuclear weapons states in the region.⁵ While the wisdom of prevention has sometimes been questioned, there can be little doubt that these actions advanced U.S. interests and contributed to regional stability.⁶

Risks and Costs?

The relationship with Israel has not been without risks for Washington, nor without costs in terms of U.S. standing in Arab and Muslim states and its ability to project soft power in the Middle East. The 1973 October War nearly led to a confrontation between the United States and the Soviet Union, while the emergency resupply of Israeli forces during the war prompted an Arab oil embargo. The 1982 Israeli invasion of Lebanon led to an ill-fated U.S. intervention there and helped catalyze the emergence of Hizballah, which has targeted both U.S. and Israeli interests—though its anti-American stance is as at least as much a function of Iranian resentment over the U.S. role in modern Iranian history as it is a result of American support for Israel.⁷ American support for Israel during the first and second intifadas, the 2006 war against Hizballah, and the 2008–2009 war in Gaza reinforced negative attitudes against the United States in many Arab societies. Likewise, U.S. support for Israel has been used by al-Qaeda as a central theme in its propaganda, though the root cause of al-Qaeda’s animosity toward the United States was America’s military presence in Saudi Arabia and its role in propping up “illegitimate” Arab and Muslim regimes.⁸ And the perception that Israel is insincere about its official acceptance of a Palestinian state and is taking a variety of steps (including the construction of settlements) to preclude such an outcome—all with apparent U.S. “acquiescence”—has hurt America’s standing in Arab and some other predominantly Muslim countries.

Arab attitudes versus actions. By and large, U.S. support for Israel has *not* affected the substance of the relationship between the United States and its Arab and Muslim allies. Since the Arab oil embargo of 1973, one can search in vain for even a single instance in which any Arab government penalized the United States for its support of Israel. And except for largely symbolic votes at the United Nations—Arab states continue to vote 92 percent of the time against the United States, according to the State Department’s latest annual survey—no evidence suggests that any of these countries has withheld support for the United States due to the latter’s support for Israel.⁹ This has been especially so when it was in these states’ interests to help the United States contain Iraq (under Saddam Hussein), fight al-Qaeda, or contain an increasingly assertive Iran.

While American support for Israel has helped stoke the anti-Americanism so prevalent in Arab and Muslim societies, Arab and Muslim anti-Americanism also stems from a variety of other issues, including U.S. support for authoritarian Arab and Muslim regimes.¹⁰ These attitudes, however, have not translated into any tangible increase in anti-American behavior. In fact, quite the opposite has occurred. From the last year of the Clinton administration to the present, one can discern a clear broadening and deepening of ties with the United States, involving most Arab governments and peoples. This occurred during a decade of acute Arab-Israeli tension, regression in the peace process, and “uncritical” American support for Israel.

U.S.-Arab ties. Since the year 2000, except for brief periods after 9/11 and the U.S. invasion of Iraq in 2003, the numbers of Arabs coming to the United States as students or tourists grew steadily. In 2011, more Saudis—110,000—applied for U.S. visas than any other nationality in the world, and the number has risen by 100 percent in the past four years.¹¹ Moreover, sales of iconic American brands in Arab countries—cars, clothing, soft drinks, and so on—rose even more during the past decade, despite occasional talk of boycotts. In particular,

sales of U.S. cars in Saudi Arabia grew fivefold and in the United Arab Emirates (UAE) tenfold, while sales of other consumer goods grew by more than 50 percent across the region.¹² Today, U.S.-Arab trade is booming; U.S. exports to the Middle East increased by 15 percent in 2011, reaching \$56 billion—an all-time high.¹³ Oil exports to the United States from most Arab producers rose or remained steady, regardless of political tensions.¹⁴ And defense cooperation remains as close as ever, with massive arms deals to Saudi Arabia and the UAE, despite tensions caused by the abandonment of Egypt’s president Hosni Mubarak—a key regional ally—by Washington.¹⁵

Diverse sources of Arab anti-Americanism. On the popular level, disapproval of the United States and of American foreign policy has often been the

majority view in the handful of Arab (and other predominantly Muslim) societies polled on this question over the past decade. This was the case even during the Clinton administration’s intensive efforts to support the PA and broker the establishment of an independent Palestinian state from 1993 through 2000. Polls suggest that the Palestinian issue and U.S. support for Israel were important, but by no means exclusive, factors behind these anti-American attitudes. In particular, negative sentiments spiked sharply as a result of other post-9/11 developments: the detentions at Guantanamo Bay, the invasions of Afghanistan and Iraq, and the Abu Ghraib scandal and other abuses. Negative sentiments were also sustained by perceived U.S. hostility toward Islam and continuing U.S. support for unpopular Arab autocrats.

Fig. 1a: Arab-U.S. Ties Trend

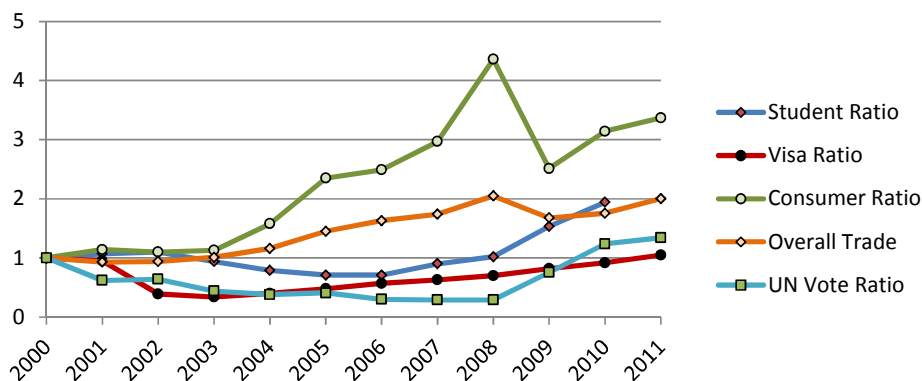


Fig. 1a: The Arab-U.S. ties trend is represented in the form of an all-inclusive Arab Behavioral Index (ABI), calculated from five categories of U.S.-Arab relations: Arab student enrollment rates in the United States, non-immigrant U.S. visas issued to Arabs, U.S. consumer exports to Arab countries, overall bilateral trade between Arab countries and the United States, and Arab countries’ percentage of UN votes that agreed with U.S. votes. To calculate the ABI, annual comprehensive data for each category was divided by its value in the year 2000, the study’s base year. This data represents trends expressed by 20 Arab countries with occasional omissions where specific data was not available. Data was taken from the U.S. Census Bureau, the Institute of International Education, UNESCO, the U.S. Department of State, and the IMF.

Fig. 1b: Israel-U.S. Ties Trend

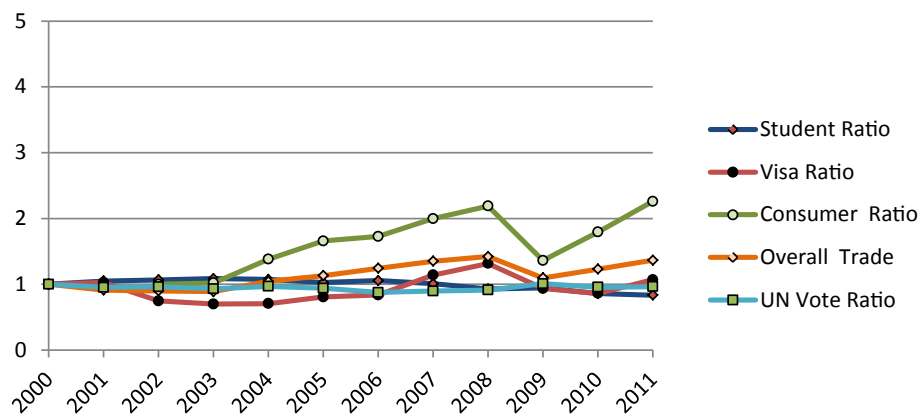


Fig. 1b: For comparison, the Israeli-U.S. ties trend has been calculated from the same five categories detailed above. For full details, see Pollock, *Actions, Not Just Attitudes*.

In President Obama's first year in office, there was a noteworthy but brief improvement in these views. Beyond the general sense of new possibilities inherent in this transition, this temporary improvement was tied to Obama's June 2009 Cairo speech and other overtures toward Muslims, his promises to withdraw from Iraq and close Guantanamo Bay, his rhetorical embrace of democratic change, and his commitment to active support of Palestinian independence. Within about a year, however, the delays in meeting these expectations resulted in another sharp fall in the U.S. image among most Arab publics polled. Once again, the Palestinian issue combined with others to produce widespread Arab popular disappointment with U.S. policy.¹⁶

Popular behavior, however, followed quite a different pattern. Anti-American street protests, which spiked in 2003–2004 over Iraq, declined dramatically and were nearly nonexistent by the end of the decade.¹⁷ The massive Arab uprisings of 2011–2012 in Tunisia, Egypt, Yemen, and Bahrain, and the smaller but still significant demonstrations elsewhere in the region (Morocco, Jordan, Iraq), all showed virtually no sign of anti-Americanism. Moreover, the large-scale popular opposition movements in Libya and Syria demonstrated actively in favor of U.S. and NATO intervention on their behalf.

In short, at both official and popular levels, local concerns tend to trump resentment of U.S. support for Israel and other perceived American faults. This is true especially when it comes to actions, and not just attitudes expressed to pundits or pollsters. All this does not mean that the Arabs are hypocritical—just human.¹⁸ And it underscores the enduring primacy of interests, as opposed to attitudes and sentiments, in U.S. relations with Arab and other predominantly Muslim states and societies.¹⁹

Perhaps more important, public opinion in every Arab or predominantly Muslim country polled during this period turned sharply against al-Qaeda—and explicitly against acts of terror targeting American civilians.²⁰ The main reason for this huge decline in support for terrorism, as the

timing of the shift makes clear, was that al-Qaeda violence began to hit home—literally. It inflicted terrible civilian casualties in city after city, across mostly Muslim societies—in Casablanca, Riyadh, Amman, Istanbul, Baghdad, Kabul, Islamabad, Bali, and elsewhere. From all the evidence available, Israel had nothing to do with this trend.²¹ Moreover, by 2012, al-Qaeda had largely disintegrated into scattered organizations that emphasize local issues—rather than pan-Arab, pan-Islamic, or Palestinian grievances.²²

Israel-Arab cooperation. Despite sensitivities regarding the Palestinian issue, a number of Arab states that have yet to sign peace treaties with Israel have nonetheless quietly cultivated quasi-diplomatic and intelligence ties with it. While some of these contacts predate the Egypt-Israel peace treaty (e.g., Morocco), most were a product of the Oslo process, and the more recent convergence of Arab-Israeli interests in countering radical Islamist groups such as Hamas, Hizballah, and al-Qaeda, and containing an increasingly assertive Iran. Despite a cooling of these ties following the second Palestinian intifada, informal contacts, especially with a number of Gulf Arab states, reportedly continue and have even intensified in recent years—thanks to shared concerns about Iran.²³

U.S. support for Israel in context. The United States has given Israel extensive diplomatic, economic, and military support: Washington has, *inter alia*, committed to preserve Israel's "qualitative military edge," granted it "major non-NATO ally" status, signed a free trade agreement with it, and provided it with substantial military and economic aid, topping \$115 billion since 1949.²⁴ The importance of this support cannot be overstated. Since 1976, Israel has often been the largest annual recipient of foreign aid (though eclipsed in recent years by the tens of billions of dollars spent to rebuild Iraq and Afghanistan), and it is the largest cumulative aid recipient since World War II.²⁵ But this money has enabled Israel to build a military that has obviated U.S. military intervention on its behalf.

Furthermore, under U.S. law, Israel is required to spend around 75 percent of the military aid in the United States, thus recycling most of the assistance into the U.S. economy. By contrast, the United States has spent much in blood and treasure (more than 6,500 killed, tens of thousands wounded, and several trillion dollars since the 1970s) to secure the flow of oil from the Persian Gulf, to prevent the emergence of Iraq as a regional hegemon, and to fight al-Qaeda (a group that arose partly in response to the U.S. presence in the Gulf to contain Iraq)—because its Arab allies were unable to do so on their own.²⁶

Needless to say, dependence has its costs; because of this American largesse, Israel has sometimes subordinated its own policy preferences in deference to U.S. concerns or interests. Thus, during the 1991 Gulf War, Israel eschewed retaliation for Iraqi missile strikes in order not to fracture the U.S.-led coalition against Saddam Hussein; it halted arms sales to China in 2000 when they became a source of tension in the U.S.-Israel relationship; and it acquiesced (against its better judgment) to U.S. demands for PA elections in 2006, setting the stage for the emergence of a Hamas government in Gaza.

Enter the Arab Uprisings

The ongoing Arab uprisings—which broke out in December 2010 in Tunisia and have since spread to Egypt, Libya, Yemen, Bahrain, and Syria—have the potential to transform the U.S. relationship with the region. How might they affect U.S.-Israel relations? The Arab uprisings have highlighted the unstable foundations of many of Washington's traditional Arab allies, and at a time of change and uncertainty in parts of the Arab world and of growing tensions with Iran, the U.S. may therefore be more inclined to lean more heavily on its more stable nondemocratic allies (such as Saudi Arabia), and its stable democratic allies (Israel and Turkey).

To the degree that public opinion is more likely to inform policy than in the past, several outcomes are possible. On the one hand, if many young people in Arab and other predominantly Muslim

societies are more preoccupied with making a living and finding a place to live than they are with politics or the Arab-Israeli conflict—as some polls seem to suggest—America's relationship with Israel may not pose insurmountable obstacles.²⁷ On the other hand, to the extent that Islamists are likely to play a greater role in decisionmaking in countries in which the *ancien regime* has been overturned (such as Tunisia, Libya, and Egypt), the United States may find itself under greater pressure to distance itself from Israel.²⁸ Managing this tension will almost certainly prove more challenging in the near future than it has been in the past. Nevertheless, as noted before, recent experience demonstrates that strong Arab disapproval for U.S. support for Israel has not had a significant effect on Arab behavior toward the United States. It remains to be seen whether this pattern will continue to hold in the future.

At the same time, popular attitudes are often fickle, of limited consequence for foreign policy even in relatively democratic states, or at such variance with U.S. interests and values as to be beyond the pale of serious policy consideration. Even now, some key Arab governments (Egypt, Jordan, the UAE, and others) continue, in the post-Arab uprisings environment, behind-the-scenes efforts to enlist Israel as an intermediary with Washington, demonstrating that the United States can maintain good working relations with all parties—though it remains to be seen whether this situation will persist with the seating of an Islamist government in Egypt.

Conclusions

Israel, as a stable democracy that shares Washington's interests in regional stability, countering violent Islamic extremism, preventing additional nuclear proliferation in the Middle East, and encouraging successful democratic transitions in formerly authoritarian regimes (the last is a position that Israel, admittedly, came around to belatedly), is the U.S. ally in the region whose interests are most closely identified and intertwined with

those of the United States. The end of the Cold War, the decline of al-Qaeda, and the uprisings of the Arab Spring have not changed this fact, and may have even reinforced this coincidence of interests.

Moreover, the decline of al-Qaeda and the unprecedented developments brought on by the Arab uprisings, mean that the war on violent extremism is no longer the overarching consideration shaping the relationship between the United States and Arab and predominantly Muslim states. And while U.S.-Israel cooperation to address traditional hard security concerns (terrorism, conventional/hybrid military threats, and missile/WMD proliferation) remains the foundation of the two countries' security relationship, these concerns have been joined by the need for cooperation on a variety of new soft security challenges that will increasingly influence how the United States thinks about its relationship with Israel.

Notes

1. Ross and Makovsky, pp. 268–288.
2. Barbara Opall-Rome, “U.S. to Boost War Stocks in Israel to Record Levels,” *Defense News*, November 8, 2010, <http://www.defensenews.com/article/20101108/DEFPEAT06/11080308/U-S-Boost-War-Stocks-Israel-Record-Levels>.
3. Eli Lake, “Israel, Gulf States Conducted Secret Diplomacy: Adversaries Fearful of Iran,” *Washington Times*, December 1, 2010, <http://www.washingtontimes.com/news/2010/dec/1/israel-gulf-states-conducted-secret-diplomacy/?page=all>; Yoel Guzansky, “Tacit Allies: Israel and the Arab Gulf States,” *Israel Journal of Foreign Affairs*, 5, no. 1 (2011), pp. 9–18, <http://israelcfr.com/documents/5-1/5-1-2-YoelGuzansky.pdf>.
4. Eli Bardenstein, “Obama Personally Thanked Molcho for the Freeing of the American NGO Volunteers in Cairo,” *Maariv*, March 8, 2012, p. 3.
5. Avner Cohen, *Israel and the Bomb* (New York: Columbia University Press, 1998), pp. 5, 243–244, 289–290.
6. Richard B. Cheney, *In My Time: A Personal and Political Memoir* (New York: Simon & Schuster, 2011), p. 227.
7. Shimon Shapira, “The Origins of Hizballah,” *Jerusalem Quarterly*, no. 46 (Spring 1988), pp. 121–123. For more on Hizballah’s worldview, see the “Open Letter from Hizballah to the Oppressed in Lebanon and the World” (1985): Article 3, titled “America is behind All Our Catastrophes,” states that “Imam Khomeini has stressed time and again that America is behind all our catastrophes, and it is the mother of all vice.... When we fight it we only exercise our legitimate right of defending our Islam and the dignity of our umma.” Joseph Alagha, *The Shifts in Hizballah’s Ideology: Religious Ideology, Political Ideology, and Political Program* (Amsterdam: Amsterdam University Press: 2006), p. 225.
8. See Usama bin Laden’s 1996 “Declaration of War against the Americans Occupying the Land of the Two Holy Places,” http://www.pbs.org/newshour/terrorism/international/fatwa_1996.html, and his 1998 “Declaration of War against the Crusaders and Zionists,” http://www.pbs.org/newshour/terrorism/international/fatwa_1998.html. Despite this anti-American blowback, the events of 9/11 and their aftermath probably enhanced popular sympathy in the United States for the security and policy dilemmas faced by Israel.
9. Official U.S. government statistics for UN voting patterns during the decade 2000–2009 can be found in David Pollock with Curtis Cannon and Cole Bunzel, *Actions, Not Just Attitudes: A New Paradigm for U.S.-Arab Relations* (Washington, D.C.: Washington Institute, 2010), chapters on methodology and sources and on the “Arab Behavioral Index,” <http://www.washingtoninstitute.org/policy-analysis/view/actions-not-just-attitudes-a-new-paradigm-for-u.s.-arab-relations>.
10. See, for instance, James Zogby, “Arab Attitudes, 2011” (Arab American Institute Foundation, 2011), p. 1: “Top Arab Concerns: U.S. Interference and Unresolved Palestine Issue.” See also David Pollock, *Slippery Polls: Uses and Abuses of Opinion Surveys from Arab States*, (Washington, D.C.: Washington Institute, 2008), pp. 47–54, <http://www.washingtoninstitute.org/uploads/Documents/pubs/PolicyFocus82.pdf>.
11. Salim Salman, “110,000 Saudis Applied for Visa in 2011,” *al-Sharq al-Awsat* (London), January 22, 2012, <http://www.asharq-e.com/news.asp?section=1&cid=28193>.
12. David Pollock, *Slippery Polls: Uses and Abuses of Opinion Surveys from Arab States* (Washington, DC: Washington Institute for Near East Policy, 2008), pp. xiii–xiv and passim.

13. National U.S.-Arab Chamber of Commerce, “2011 Trade Data: Preliminary Information,” February 15, 2012, <http://www.nusacc.org/2011prelim>.
14. Pollock, *Slippery Polls*, pp. xiii–xiv and passim.
15. Mark Landler and Steven Lee Meyers, “With \$30 Billion Arms Deal, U.S. Bolsters Saudi Ties,” *New York Times*, December 29, 2011, <http://www.nytimes.com/2011/12/30/world/middleeast/with-30-billion-arms-deal-united-states-bolsters-ties-to-saudi-arabia.html>; Will Lester, “U.S. Seals Deal on \$3.48 Billion Sale of Missiles, Technology to UAE, a Close Ally in Mideast,” Associated Press, December 30, 2011, http://www.boston.com/business/articles/2011/12/30/us_seals_348b_missiles_technology_sale_to_uae/; Robert Burns, “U.S. Quietly Expanding Defense Ties with Saudis,” Associated Press, May 19, 2011, http://articles.boston.com/2011-05-19/news/29561404_1_saudi-arabia-saudis-fear-security-force.
16. Pollock, *Slippery Polls*, passim, and Pollock et al., *Actions, Not Just Attitudes*, passim.
17. Pollock et al., *Actions, Not Just Attitudes*, passim.
18. Pollock, *Slippery Polls*, pp. xiii–xiv and passim.
19. Pollock, *Slippery Polls*, passim.
20. See, for instance, “On Anniversary of bin Laden’s Death, Little Backing of al-Qaeda” (Pew Global Attitudes Project, April 30, 2012), <http://www.pew-global.org/2012/04/30/on-anniversary-of-bin-ladens-death-little-backing-of-al-qaeda/>; “Osama bin Laden Largely Discredited among Muslim Publics in Recent Years” (Pew Global Attitudes Project, May 2, 2011), <http://pewresearch.org/pubs/1977/poll-osama-bin-laden-death-confidence-muslim-publics-al-qaeda-favorability>.
21. Pollock, *Slippery Polls*, passim.
22. James R. Clapper (director of national intelligence), “Unclassified Statement for the Record on the Worldwide Threat Assessment of the U.S. Intelligence Community for the Senate Select Committee on Intelligence,” January 31, 2012, http://www.fas.org/irp/congress/2012_hr/013112clapper.pdf.
23. Shlomo Shpiro, “Israeli Intelligence and al-Qaeda,” *International Journal of Intelligence and Counter Intelligence* 25, no. 2 (2012), pp. 242–243, 249, 255; Lake, “Israel, Gulf States”; Guzansky, “Tacit Allies.”
24. Jeremy M. Sharp, *U.S. Foreign Aid to Israel*, Congressional Research Service Report RL33222 (March 12, 2012), p. 24, <http://www.fas.org/sgp/crs/mideast/RL33222.pdf>.
25. Jeremy M. Sharp, *U.S. Foreign Assistance to the Middle East: Historical Background, Recent Trends*, Congressional Research Service Report RL32260 (July 17, 2009), p. 3, http://pdf.usaid.gov/pdf_docs/PCAAB954.pdf.
26. Ironically, some critics assert that Israel does not contribute to U.S. power-projection capabilities in the region. In fact, it is Israel’s military capabilities that obviate the need for U.S. power projection in the Levant, while the weakness of U.S. allies in the Gulf creates the need for U.S. power projection there. Thousands of U.S. lives would have been spared and trillions of dollars saved if America’s Arab Gulf allies had been able to deter or defend themselves against would-be regional hegemony. For one critic’s view, see, for instance, Chas Freeman, “Israel Is Useless to U.S. Power Projection,” *Mondoweiss*, April 30, 2010, <http://mondoweiss.net/2010/04/freeman-israel-is-useless-to-us-power-projection.html>. For one attempt to estimate the amount spent by the United States to secure Persian Gulf oil, see Roger J. Stern, “United States Cost of Military Force Projection in the Persian Gulf, 1975–2007,” *Energy Policy* 38, no. 6 (June 2010), pp. 2816–2825, <http://www.princeton.edu/oeme/articles/US-military-cost-of-Persian-Gulf-force-projection.pdf>.
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3 | Cooperation on Hard Security Issues

TO DEAL WITH terrorism, conventional military threats, and missile/WMD proliferation, the United States and Israel work together in a number of areas: intelligence sharing, rocket/missile defense, counterterrorism, military lessons learned, defense-industrial cooperation, and, since 9/11, homeland security. Collaboration in several of these areas goes back decades and owes much of its success to the fact that it has been, by and large, insulated from political considerations. Moreover, security cooperation has broadened and deepened over time, to the point that President Obama could say, without exaggeration, that the United States and Israel have “never had closer military and intelligence cooperation” than they do today.¹ The following section attempts to provide a sense of the scope, nature, and significance of the U.S.-Israel security relationship, though because much of what occurs is done on the quiet (or is classified), this brief survey is necessarily illustrative rather than exhaustive.

Intelligence Sharing and Cooperation

U.S.-Israel intelligence cooperation dates to the early 1950s and has long been one of the pillars of the security relationship.² Each party brings to the table different attributes. The United States is a superpower that operates globally and possesses technical capabilities that most nations could only dream of, though its activities are sometimes hindered by a risk-averse bureaucratic and political culture. Conversely, although Israel is a small country, its intelligence services devote significant resources to collecting against regional actors that are also of special interest to the United States (e.g., Iraq under Saddam Hussein, Iran, Hizballah, and Syria). Israeli intelligence has also demonstrated an ability to cultivate unique sources, employ innovative methods, and incur significant risk in order to obtain information or carry out covert action. Cooperation reportedly covers some of the most sensitive activities,

including the sharing of raw communications intercepts, the exchange of intelligence regarding terrorist targets, and joint offensive cyberwarfare operations against Iran’s nuclear program.³

During the Cold War, Israeli intelligence provided invaluable information regarding Soviet intentions and capabilities, weapons and tactics, Eastern bloc intelligence operations, and the activities of radical Arab terrorist groups that targeted both U.S. and Israeli interests, such as Black September, the Abu Nidal Organization, and the Lebanese Hizballah. After its 1967, 1969–1970, 1973, and 1982 wars, Israel provided the United States with captured Soviet weapons for technical exploitation and shared its assessment of the performance of Soviet weapons systems it encountered in combat. This intelligence helped the U.S. Air Force develop tactics to counter Soviet MiG aircraft in Vietnam and influenced the design of the M1 Abrams tank and other armored fighting vehicles, as well as the development of U.S. tactics and operational concepts to deal with a possible Soviet invasion of Western Europe.⁴ Israeli and U.S. intelligence also tipped each other off regarding sensitive penetrations by Soviet agents during the Cold War.⁵

Israeli intelligence likewise played an important role in ensuring the survival of a number of key U.S. allies, tipping off Jordan’s King Hussein, Egypt’s President Sadat, and Saudi Arabia’s King Faisal (as well as his successor, King Khalid) regarding assassination plots of which it had learned.⁶ And today, Israeli intelligence and security cooperation with the PA and Jordan help ensure their survival, which is a critical interest of both Israel and the United States.⁷

The United States and Israel regularly share intelligence regarding terrorist organizations and cooperate in the apprehension of terrorist suspects. For instance, the two cooperated in tracking the hijackers of the Italian cruise liner *Achille Lauro* in 1985,⁸ in the roll-up in 1988 of an Iran-inspired

network of the Popular Front for the Liberation of Palestine–General Command (PFLP-GC) that had been conducting operations against U.S. targets in Europe,⁹ in the disruption of Hizballah smuggling and arms-procurement rings and sleeper cells that have been operating in the United States since the 1990s,¹⁰ and in the arrest in Baku, Azerbaijan, in 2005 of suspects wanted in the 1998 al-Qaeda bombing of the U.S. embassies in Kenya and Tanzania.¹¹ Israel is also widely believed to have been behind the February 2008 killing of the head of Hizballah's security apparatus, Imad Mughniyah, who had more American blood on his hands than any terrorist other than Usama bin Laden, and who played a central role in the 1983 U.S. embassy and Marine barracks bombings in Beirut, and the 1996 Khobar Towers bombing in Saudi Arabia.¹² Needless to say, the cooperation flows both ways; thus, the United States provided intelligence that was key to the December 2001 seizure by the Israeli navy of the *Karine A*, a ship carrying arms from Iran for elements of the PA in Gaza.¹³

Since the end of the Cold War, Israeli intelligence has also made important contributions in the field of nonproliferation. It reportedly alerted U.S. intelligence of Iraqi efforts to reconstitute its nuclear program in 1989,¹⁴ of Russian support in 1997 for Iran's efforts to increase the range and accuracy of its missile arsenal,¹⁵ and of Syrian efforts in 2007 to build, with North Korean help, a plutonium-production reactor as part of a nascent nuclear program.¹⁶ Israeli intelligence was also critical to efforts by the United Nations Special Commission on Iraq (UNSCOM) to penetrate Iraq's concealment mechanism and to dismantle Iraq's residual WMD programs in the mid-to-late 1990s.¹⁷ In each of the aforementioned cases, Israeli intelligence alerted the United States to critical proliferation-related developments in regional states hostile to both Israeli and U.S. interests, allowing Washington to bring to bear its own formidable intelligence capabilities to flesh out and confirm the information provided by Israel.

Israeli and U.S. intelligence cooperation

regarding Iran's nuclear program is believed to be extensive. Israeli intelligence has reportedly worked closely with U.S. and British intelligence to disrupt and delay Iran's nuclear program during the past decade through various acts of sabotage, including the transfer of defective materials and equipment as well as the introduction of malware such as Flame and Stuxnet into the computer networks running Iran's enrichment program.¹⁸ These joint efforts are believed to have delayed the Iranian nuclear program by several years.¹⁹ Israel is also reported to have taken a number of steps on its own, such as the assassination of Iranian nuclear scientists.²⁰

Today, Israel is helping the United States keep abreast of developments in countries in the region where American access has been limited due to the Arab uprisings—though the United States still probably provides the lion's share of intelligence in these exchanges. For instance, Israel has reportedly helped Washington fill intelligence gaps created by the closure of the U.S. embassy in Syria in February 2012.²¹ And with the United States planning to cut its intelligence budget by as much as \$25 billion in the coming decade, enhanced cooperation with capable counterpart services (such as those of Israel) could enable the U.S. intelligence community to fill gaps in its capabilities, manage risk, and maintain situational awareness of developments in the Middle East and beyond.²²

Rocket/Missile Defense

Israel is America's most sophisticated and experienced partner in rocket and missile defense. Israel is the only country in the world with operational rocket defenses, and an operational national missile-defense system protecting major population centers—which is interoperable with deployable U.S. missile-defense systems. Missile-defense cooperation began in 1986, and since then, total U.S. funding for the program has exceeded \$3 billion. This aid was indispensable to the creation of the Arrow missile system, the central pillar of Israel's multilayered rocket and missile defenses.²³

These defenses include (from lower to upper

tiers) Iron Dome, David's Sling (to be fielded in 2013), Patriot PAC-2 GEM+, Arrow II, and Arrow III (to be fielded in 2015).²⁴ Moreover, Israel's ship-based Barak air- and missile-defense system could presumably defend point targets along Israel's coastline against land-attack cruise missile strikes, while the Israel Defense Forces (IDF) is considering deploying the Arrow at sea, on warships it will be building in the coming years.²⁵

The United States has reaped a number of benefits from its cooperation with Israel in this area. It has obtained a deeper understanding of the Iranian rocket and missile threat (which jeopardizes American forces as well as Arab allies in the Gulf) through the intelligence sharing that is integral to the process of developing missile defenses. The close partnership between the United States and Israel has also allowed the two sides to achieve synergies and obtain critical insights, while lessons derived from Israel's operational experience have informed ongoing R&D efforts and enabled the United States to identify shortcomings in its own systems.²⁶

Thus, when queried by a U.S. senator about the benefits that accrued to the United States from its funding of the Arrow I missile, then Ballistic Missile Defense Organization head Lt. Gen. Malcolm R. O'Neill stated:

The U.S. technical benefits from the Arrow...come from providing alternative technologies for risk reduction efforts on U.S. theater missile defense (TMD) programs. Arrow uses the identical focal plane array, manufactured by the same U.S. vendors as that of THAAD [Theater High-Altitude Area Defense]. Also, Arrow uses the same focal plane array materials as the Navy Standard Missile II Block IV A (SM-2 Block IV/A). Arrow provided flight data to the THAAD and the SM-2 Block IV/A programs. Other benefits for the U.S. TMD development programs include risk reduction data on hypersonic missile flight, lethality and kill assessment; target signatures for infrared and radio-frequency seekers; infrared signature prediction codes; booster stage separation at high velocities and dynamic pressure; and hypersonic flight performance of radomes in the endo-atmosphere.

It is in the U.S. national interest to support the development and deployment of the Arrow Missile System in order to provide for a robust missile defense capability in Israel. This system will contribute to the deterrence of future TBM [tactical ballistic missile] conflicts in that region and has the potential to contribute to a more robust defensive response if deterrence fails. The potential interoperability of the Arrow System with U.S. systems would facilitate effective coordinated defense with U.S. systems deployed to the Middle East theater.²⁷

U.S. funding of the Arrow III exoatmospheric interceptor will provide Washington with a front-row seat in the development of a system that, according to senior U.S. Missile Defense Agency (MDA) officials, uses advanced sensor and propulsion technologies to create a missile that will be more capable than anything the United States has on the drawing board.²⁸ The advanced sensor and propulsion system will enable the interceptor to divert to a secondary target if its primary target has been destroyed and to be adapted for the antisatellite role if need be. Insights gained from this program will benefit future U.S. missile-defense efforts.²⁹

U.S. efforts to knit the various regional missile defenses of its allies into a global network benefit from data provided by Israel's Green Pine and the Israel-based U.S. X-band radar, and enable improved early-warning, tracking, and targeting solutions, thereby bolstering the ability of the United States to defend its allies against Iranian and other missile threats.³⁰ According to MDA head Lt. Gen. Patrick O'Reilly:

By placing our radar in Israel, we get to track missile activities in that region of the world. We collect a significant amount of data...and when testing is done with missiles in neighboring countries, the radar data we collect benefits Israel, the United States and our other international partners.... But beyond the [threat assessment] data, every time we track something, it gives us [an] opportunity to exercise the U.S.-Israel interfaces...and all this put together elevates our confidence that it's all going to work well together in combat."³¹

Israel's rocket and missile defenses enable Israel to act with restraint in the face of rocket and missile attacks, making escalation and war less likely. Thus, the successful intercept of rockets fired from Gaza by the Israeli Iron Dome system in the spring and summer of 2011, and again in the spring of 2012, has averted (at least thus far) a conflict in Gaza that could have jeopardized U.S. ties with Egypt and sparked a regional crisis at a particularly sensitive time.³²

The United States and its allies also stand to benefit from Israel's rocket-defense R&D efforts, which have produced two systems: Iron Dome (operational) and David's Sling (under development), both of which offer capabilities that no other country in the world currently possesses. The Israeli firm Rafael developed the Iron Dome system on its own—the world's first combat-proven counter-rocket and mortar system—and has partnered with Raytheon to produce it for U.S. allies (South Korea has reportedly expressed interest) and perhaps for the U.S. military. These kinds of partnerships provide jobs and help preserve the U.S. defense-industrial base at a time of reduced defense spending, and provide U.S. and allied forces with a rocket-defense capability that they currently lack.³³ Likewise, David's Sling is being jointly developed by Raytheon and Rafael to meet U.S. and Israeli operational requirements, and might be procured by the U.S. military to enhance its ability to deal with rockets, short-range missiles, and eventually cruise missiles and other air-breathing threats in the Persian Gulf and elsewhere. Several other U.S. allies, including India, Singapore, and South Korea, have likewise reportedly shown interest in the system.³⁴

Looking to the future, U.S.-Israel rocket- and missile-defense cooperation is likely to deepen even further. The United States continues to support and remains engaged in the development of the Arrow III system, and both Israeli and U.S. companies are working on solid-state lasers as the "next big thing" in missile defense, creating likely future opportunities for further collaboration.³⁵ Moreover, the United States and Israel are expected to hold the rescheduled Austere Challenge 12 missile-defense

exercise in October 2012, which will involve Israeli Iron Dome and Arrow missiles, and U.S. Theater High-Altitude Area Defense (THAAD) and Standard SM-3 missiles—and more than four thousand troops from both countries.³⁶ And for the immediate future, only Israeli rocket-defense systems (Iron Dome and, in another year, David's Sling) provide a solution to the short- and medium-range rocket threat in the region, which affects U.S. personnel in Iraq and Afghanistan, and U.S. allies in the Persian Gulf and elsewhere.

Military Cooperation

Israel has made a number of important contributions to the American way of war, despite the fact that the U.S. military can draw on incomparable human and material resources, has an unparalleled record since World War II of technological, organizational, and doctrinal innovation, and possesses unrivaled power-projection capabilities. Because of the IDF's small size, egalitarian culture, relative lack of bureaucracy, and rich operational experience, it has been a leading innovator in a number of critical areas.³⁷ Accordingly, the U.S. military has often looked to its Israeli counterparts for lessons learned, innovative technologies and tactics, and novel warfighting concepts—just as the IDF has frequently looked to the U.S. military as a model and source of inspiration due to the latter's achievements in the 1991 Gulf War, Kosovo (1999), Afghanistan (2001), and Iraq (2003).³⁸

Although the U.S. military has accumulated unmatched experience of its own in Iraq and Afghanistan during the past decade, it continues to consult with its Israeli peers (as well as its British, Australian, and other first-tier allies), while sharing its own insights with them. And although both sides have occasionally withheld their most sensitive tactics, techniques, and procedures or "game changing" technologies (with Israel, for its part, fearing that such material would eventually make its way to Arab states allied with the United States), the collaboration has been intimate, far reaching, and mutually beneficial.

To facilitate mutual learning and deepen cooperation, the two sides send personnel to attend each other's military schools, swap liaison officers, and conduct regular military-to-military exchanges. The relationship is overseen by a number of joint committees that meet regularly, such as the Defense Policy Advisory Group (DPAG) and the Joint Political-Military Group (JPMG). The armed forces of both countries also conduct regular joint training exercises: for instance, the air forces of the two countries conduct periodic joint aerial training exercises (Juniper Stallion); U.S. naval aircraft conduct live fire exercises at Israeli bombing ranges (Juniper Hawk); Israeli aircraft and crews periodically attend Red Flag exercises at Nellis Air Force Base in Nevada; U.S. Marine Corps units regularly train at Israel's national urban warfare training center in the Negev (Noble Shirley); and the United States and Israel conduct biennial missile-defense exercises in the eastern Mediterranean (Juniper Cobra).

Over the years, some of the most important collaboration has involved the transfer of Israeli lessons learned concerning counterterror tactics, techniques, and procedures, conventional and unconventional combat, the use of unmanned aerial vehicles (UAVs), and even the employment of dogs in combat and for counter-IED (improvised explosive device) tasks.

Counterterrorism. The Israeli military conducted the first successful airline hostage rescue in 1972 (a feat repeated at Entebbe in 1976) and has pioneered a number of the tactics, techniques, and procedures eventually adopted by counterterrorism units around the world, including America's Delta Force and SEAL Team 6.³⁹ Delta Force was founded in 1977—partly in response to the Israeli Entebbe operation—though in its early years, its main source of inspiration and influence was the British Special Air Service (SAS).⁴⁰ Israeli Special Operations units have, since then, forged mutually beneficial professional relationships with their U.S. counterparts, with which they frequently train. As a result, Israeli counterterrorism tactics, techniques, and procedures (for instance, regarding the fusion

and dissemination of intelligence, the use of high-value target teams, the employment of UAVs, and the use of dogs in combat—discussed below) have been adopted by their American counterparts.⁴¹

In particular, Israel's approach to targeting terrorist bombmakers and leaders by closely integrating human and technical collection means and targeting platforms (including UAVs, attack helicopters, and strike aircraft) has, for better or worse, profoundly influenced the U.S. approach to targeting violent extremist networks in Iraq, Afghanistan, Pakistan, and Yemen. The United States and Israel also conduct cooperative counterterrorism R&D as part of the U.S. government's Combating Terrorism Technical Support Office (CTTSO), which seeks to develop rapid technical solutions to terrorism challenges. The CTTSO's current membership also includes Australia, Canada, Singapore, and the United Kingdom.⁴²

Conventional and unconventional combat. The 1973 October War had an important impact on U.S. joint doctrine, organization, and weapons development. The sharing of war experiences in the course of numerous conversations and formal workshops, the sharing of battlefield data, and the transfer of captured Soviet equipment helped catalyze trends that were to have a profound impact on U.S. preparations to fight a Soviet invasion of Western Europe. It contributed to the eventual emergence of the U.S. AirLand Battle doctrine and affected substantially the development of key U.S. weapons systems, such as the M1 Abrams tank. In many ways, the 1973 war helped pave the way for the emergence of the U.S. military that prevailed in Operation Desert Storm in 1991.⁴³

Likewise, following the 1982 Lebanon war, the United States gained insights into the Israeli use of decoys and UAVs in the suppression of Syrian air defenses in the Beqa Valley—insights that influenced subsequent U.S. air operations over Libya, Iraq, and the former Yugoslavia—and into the performance of Soviet armor, aircraft, and air-defense systems used by the Syrians.⁴⁴

The second Palestinian intifada (2000–2005),

characterized by a campaign of suicide bombings against major Israeli urban centers, led to a series of Israeli innovations to counter this threat. These included the real-time fusion of all-source information; vastly improved interagency cooperation between the Israel Security Agency and the IDF; the targeted capture or killing of suicide bombers, bombmakers, and terrorist leaders; novel tactics for military operations in urban areas; and population control measures (checkpoints, roadblocks, and security barriers) to hinder the movement of suicide bombers. These measures produced a dramatic decline in the number of suicide bombings (from fifty-five in 2002 at the height of the intifada to only one in 2007). Some of these innovations were adopted by the American military in Iraq as part of the ultimately successful U.S. effort to quell the insurgency that had roiled Iraq since 2003.⁴⁵

In particular, the Israeli military refined its tactic of targeted killing, used against bombmakers and terrorist leaders. It originally used attack helicopters and strike aircraft for these missions but increasingly came to rely on combat UAVs. The United States has incorporated Israeli tactics, techniques, and procedures for targeted killings in operations in Iraq, Afghanistan, Pakistan, and Yemen, though the U.S. military was the first to use armed UAVs for this task (in Afghanistan in October 2001).⁴⁶

In the run-up to the 2003 invasion of Iraq, delegations from the U.S. Army, Marine Corps, and Joint Staff traveled to Israel to learn the lessons the Israelis drew from operations in the West Bank to combat the second intifada and, in particular, to better prepare U.S. forces for urban operations in Baghdad.⁴⁷ Two of the major lessons involved the need for add-on armor to enhance the survivability of armored vehicle crews in the lethal urban environment and the use of D9 armored bulldozers for mobility tasks in urban areas and as a weapons system. (They were often used by the Israelis to collapse buildings on enemy snipers and combatants.) A dozen D9 armor kits were subsequently purchased from Israel by the U.S. military, while thousands of Israeli-designed add-on armor modules

(developed by Rafael, but coproduced with General Dynamics) for the Bradley infantry fighting vehicle (IFV), M-1 Abrams tank, and other armored vehicles were eventually purchased by the U.S. military for use in Iraq.⁴⁸

Furthermore, senior Israeli officers observed U.S. training exercises leading up to the war and offered their own observations.⁴⁹ Following the invasion, thousands of U.S. troops trained at Israel's urban warfare training center, "Baladia City," at the National Urban Training Center in the Negev, which incorporates features of a "typical" Middle Eastern town or urban quarter.⁵⁰ Throughout the wars in Iraq and Afghanistan, and the far-flung U.S. campaign against al-Qaeda, Israeli military personnel briefed their U.S. counterparts regarding Israeli lessons learned from their own war on terror.⁵¹

Finally, Israel's 2006 war in Lebanon sparked a debate in the United States regarding the U.S. military's ability to deal with "hybrid" threats (irregular organizations, such as Hizballah, that are equipped with advanced conventional weapons and fight like conventional forces). Just as years of fighting irregular adversaries in the West Bank and Gaza left the Israeli military unprepared to deal with the hybrid threat posed by Hizballah in 2006, many U.S. military thinkers are concerned that years of fighting counterinsurgency operations in Iraq and Afghanistan have left the U.S. military unprepared to face the hybrid threats of the future. This Israeli experience has spurred and informed the U.S. debate about the future role of U.S. ground forces, even if there are disagreements regarding the relevance of Israeli lessons learned from Lebanon for the United States.⁵²

Unmanned vehicles. Israel has been a pioneer in the development and use of UAVs for intelligence, surveillance, and reconnaissance (ISR) and for combat missions (its Harpy attack UAV, which was designed to attack air-defense radars, was the first operational combat UAV).⁵³ Israel first used UAVs on a widespread basis during the 1982 Lebanon war. After the war, a delegation from the U.S. Navy and Marine Corps went to Israel to investigate Israel's

use of UAVs during the conflict—thus beginning a collaboration that continues to this day.⁵⁴

The U.S. Navy initially bought several Pioneer UAVs—coproduced by AAI Corporation and Israel Aircraft Industries (IAI)—which were subsequently used by the navy for naval fire spotting and by the Marines and U.S. Army for ISR tasks in Iraq (1991 and 2003), Somalia, Bosnia, and Kosovo.⁵⁵ The U.S. Army later purchased more than seventy Hunter UAVs (coproduced by TRW and IAI, and subsequently Northrup-Grumman and IAI) that were used in Iraq (1991 and 2003), Bosnia, and Afghanistan.⁵⁶ These UAV purchases jumpstarted the U.S. unmanned aerial vehicle program. Since then, the United States has become the world leader in the production and employment of UAVs, with Israel its main peer (and, sometimes, commercial competitor) in this arena.⁵⁷

Nonetheless, U.S. military and civilian agencies continue to use a number of Israeli UAVs. U.S. Southern Command has used U.S.-built versions of the IAI Heron UAV in El Salvador as part of its war on drugs.⁵⁸ The Department of Homeland Security used Israeli Hunter and Hermes UAVs as part of its Arizona Border Control Initiative.⁵⁹ And Israeli UAVs are used by American industry; Chevron Texaco, for instance, uses the Aeronautics Defense Systems' Aerostar UAV to provide patrol and protection services for its oil field operations in Angola.⁶⁰ Israel has even produced a UAV to monitor water loss from pipelines, harnessing synergies among its competencies in robotics, information technology, and water management technologies (discussed below).⁶¹

Israel currently produces robotic systems for use in the air, on land, and in the sea, and according to some estimates, within ten to fifteen years, one third of Israeli military machines will be unmanned.⁶² At present, Israel employs remotely operated machine guns and Guardium unmanned ground vehicles to help secure its border with Gaza, Protector SV unmanned armed speedboats to secure its coastline, and it plans to field the remotely controlled VIPeR family of portable combat robots and the

Rex wheeled-equipment carrier with infantry units in the not-too-distant future.⁶³ Given its head start in this area, Israel stands to play a leading role in employing robotic systems on the ground and in the sea, much as it pioneered their use in the air.

IEDs and the dogs of war. IEDs have been the main cause of U.S. casualties in Iraq and Afghanistan. When the United States first started grappling with the problem in Iraq, it approached Israel and Britain due to their experience in this area. The U.S. military evaluated and tested a number of Israeli systems and deployed Israeli microwave jammers, with inconclusive results.⁶⁴ Yet it has had greater success with IED-detection dogs, and special search dogs in particular, a concept that was developed in Israel and has come to play a critical role in the U.S. counter-IED effort.⁶⁵

Although the United States has long used military working dogs for explosives-detection tasks, its military working dogs operated on leashes, which unnecessarily exposed the handler to risk. Israel, however, has bred and trained special search dogs that operate off-leash at great distance from their handlers (one hundred meters or more) and that respond to hand, voice, and radio commands. Starting in 2005, the U.S. military acquired special search dogs from Israel and subsequently sent dog handlers for training there.⁶⁶

Since then, the U.S. military has emulated various aspects of the IDF's approach to using military working dogs in combat. The IDF uses dogs to detect booby traps, IEDs, and ambushes; to deter or disrupt attempts to abduct or capture soldiers; to subdue terrorist suspects so that they can be captured alive; and to reconnoiter structures before troops enter to clear them (remotely guided dogs fitted with dog-cams are used for this task).⁶⁷ U.S. forces in Iraq, and now Afghanistan, use off-leash special search dogs for many of these tasks, including bobby trap/IED detection and pre-assault reconnaissance. In these roles, the dogs are credited with having saved many American lives. So, perhaps, it should come as no surprise that U.S. Navy SEALs reportedly brought along a dog during the

May 2011 raid to kill Usama bin Laden in Abbottabad, Pakistan.

Defense-Industrial Cooperation

In recent decades, Israel has emerged as a major defense industrial player. In 2010, Israel exported more than \$7 billion in arms, making it one of the four largest arms exporters in the world. The close ties that have emerged between the defense-industrial establishments of Israel and the United States during this time have yielded important benefits for both.⁶⁸

Israel and the United States have long cooperated in the modification and development of U.S. weapons systems, with Israel providing feedback to U.S. manufacturers regarding the performance of their weapons in combat, resulting in numerous modifications to these systems that have benefited both militaries.⁶⁹ Likewise, the success of U.S. arms in Israeli service, such as the F-4 Phantom, F-16 Falcon, and F-15 Eagle fighters, has contributed to their worldwide commercial success.⁷⁰

Israel benefits greatly from U.S. military assistance, although, as previously noted, some 75 percent of the assistance is spent in the United States. However, Israel's defense industries have unique attributes that benefit U.S. defense contractors that partner with them. These include the close cooperation between military operators and those involved in weapons R&D, which ensures that new weapons are tailored to the needs of the former, and the speed with which Israel fields new systems. For instance, the Iron Dome rocket-defense system (which is being marketed jointly by Raytheon and Rafael) was fielded in less than four years.

Moreover, in the past decade, Israel has emerged as a major supplier of defense articles to the U.S. military, with sales growing from \$300 million to \$1.5 billion annually (about 20 percent of Israel's total arms exports).⁷¹ In many cases, Israeli firms have partnered with American companies to enhance the prospects of sales to the U.S. military and to third countries, enabling U.S. firms to benefit from Israeli R&D and combat experience while preserving or creating U.S. jobs. The numerous

Israeli-origin defense articles used by the U.S. military include battlefield ISR systems, UAVs, air-borne targeting pods, precision munitions, helmet-mounted sights, armored bulldozer kits, armor used on more than 15,000 fighting vehicles (MRAPs, Bradley IFVs, M1 tanks, and AAV-7 and Stryker AFVs), and naval point-defense systems.

This was not always so. In the past, the U.S. military was extremely reluctant to procure Israeli products, given Washington's close ties with a number of Arab states. Thus, in the run-up to the 1991 Gulf War, U.S. forces were short of breaching equipment needed to break through Iraqi defenses in Kuwait. The U.S. Marines had previously considered purchasing Israeli mine-clearing equipment but had not done so due to a lack of funds. On the eve of the war, funds became available, and the Marines sent a secret mission to Israel to obtain these items on a rush basis. The Israelis provided nineteen mine rollers, ten dozer plows, and thirty tank-mounted mine plows—some free of charge. Some of the gear was even provided to Arab coalition members. The United States, however, took great pains to remove Israeli markings from the equipment and likewise eschewed the deployment of Israeli-made AGM-142 Have Nap missiles with B-52H bombers to the theater, lest America's enemies use this for propaganda purposes.⁷² The decade of war since 9/11, however, seems to have eliminated this taboo—even if the United States still prefers not to highlight the Israeli origins of some of its weapons.

U.S.-Israel defense-industrial cooperation has, at times, been marred by mistrust. Israeli technology and arms transfers to China during the 1990s (e.g., the Python-3 air-to-air missile, technology developed for the canceled Lavi fighter, the Harpy anti-radar drone, and the proposed sale of the Phalcon airborne early-warning aircraft) have been a source of contention due to concerns about the transfer of proprietary U.S.-origin technology and Israeli help in modernizing China's increasingly capable military. (For the Israelis' part, they also complain—and not without justification—that Israeli ideas and concepts are sometimes copied and marketed by U.S. firms.)

Table 1. Select Israeli-Origin Systems in Recent Use by the U.S. Military

Item	Number	Manufacturer	Comments
AERIAL SYSTEMS			
Mastiff UAV*	n/a	IAI	Used by USN/USMC, followed by purchase of Pioneer UAV
Pioneer UAV	72	AAI/ IAI	Used by U.S. Army, Navy, USMC in Kuwait/Iraq 1991, Somalia, Bosnia, Kosovo, Afghanistan, and Iraq 2003
Hunter UAV	70–100	TRW/ Northrop-Grumman/IAI	Used by U.S. Army in Kuwait/Iraq, Bosnia, Afghanistan, and Iraq, and by DHS for border surveillance
Heron UAV*	2	IAI	Used by U.S. military for war on drugs, by DHS for border surveillance
Litening targeting pod	1,000+ (U.S./allies)	Northrop Grumman/Rafael	Used on most first-line U.S. and many allied strike aircraft
Joint Helmet Mounted Cueing System	2,500+ (U.S./allies)	Boeing/Rockwell Collins/Elbit	Used on most first-line U.S. and many allied fighter aircraft
AGM-142 Have Nap air-ground missile	200+	Lockheed Martin/Rafael	Carried by USAF B-52H bombers
ADM-141 TALD air-launched decoy**	2,000+	IMI	Used by the USN in Kuwait/Iraq
LAND SYSTEMS			
MRAP/M-ATV armor	12,500+	Plasan	For U.S. Army/USMC MRAPs/M-ATVs serving in Afghanistan and Iraq
M2/M3 Bradley ERA armor upgrade kit	1,450+	General Dynamics/Rafael	For U.S. Army Bradleys serving in Iraq
M1A2 Abrams TUSK survivability upgrade kit	565+	General Dynamics/Rafael	For U.S. Army M1s serving in Iraq
M1126 Stryker armor upgrade kit	n/a	General Dynamics/Rafael	For U.S. Army Strykers serving in Afghanistan
AAV-7A1 amphib. assault vehicle armor upgrade kit	1,137+	Rafael	For USMC AAV-7A1s
MTVR truck armor kit	7,500	Plasan	For USMC MTVR trucks serving in Afghanistan and Iraq
M915 tractor trailer cab armor kit	1,915	Plasan	For U.S. Army M915 trucks serving in Afghanistan and Iraq
D7 bulldozer armor kit	n/a	IMI	For U.S. Army D7 bulldozers serving in Kuwait/Iraq
D9 bulldozer armor kit	12	IMI	For U.S. Army D9 bulldozers serving in Iraq
Golan armored vehicles	60	PVI/Rafael	Used by USMC in Iraq
M120/M121 120mm mortar	n/a	Soltam	Used by U.S. Army in Kuwait/Iraq and Iraq
Cardom 120mm mortar system	320+	Soltam	Used by U.S. Army in Iraq
SMAW shoulder-launched assault weapon	n/a	IMI	Used by USMC
Mine-clearing equipment (plows, rollers, dozer blades)	150+	Urduan, IMI	Used by U.S. Army, USMC, coalition forces in Kuwait/Iraq and Iraq
SINGCARS tactical radios	Thousands	General Dynamics/Tadiran	Produced 45% of all SINGCARS used by the U.S. Army
Skystar-180 tactical aerostat system	n/a	RT LTA Systems	Used on U.S. bases in Afghanistan
Spider long-range automatic border surveillance system	n/a	Controp Precision Technologies Ltd.	Used by the U.S. Army in Afghanistan, the air force, and other agencies
Eye Ball R1 hand-tossed audio-visual sensor	n/a	Remington/ODF	
Xaver through-wall imaging system	n/a	Camera-Tech	
Simon/M100 GREM door-breaching rifle grenade	n/a	GD/Rafael	Selected by the U.S. Army as one of its top ten inventions of 2005
Corner-Shot weapon system	n/a	Golan Group	
Laser Target Designator	hundreds	Elbit	Used by USMC
RPDA-57 Rugged PDAs	n/a	Talla-Tech/Tadiran	Used by U.S. Army
NAVAL SYSTEMS			
Mk. 38 Mod 2 25mm machine gun system	129+	BAE/Rafael	Used on U.S. warships to counter small-boat/swarm attacks

* Israeli UAVs are also very popular with U.S. allies. The Elbit Hermes 450 has been used by British forces in Iraq and Afghanistan; the Elbit Skylark UAV has been used by Australian, Canadian, French, and Dutch forces in Afghanistan; and the IAI Heron UAV has been used by Australian, Canadian, French, German, and Spanish forces in Afghanistan.

** Originally produced by the Brunswick Corporation for the Israeli military, subsequently license-produced for the U.S. military by IMI.

To deal with these U.S. apprehensions, Israel halted arms and most military technology transfers to China in 2000, and a joint mechanism to review potential Israeli arms and technology transfers to countries of concern was established in 2003. This problem, however, was not fully resolved until the conclusion of a 2005 agreement that led, *inter alia*, to personnel changes at the Israeli Ministry of Defense, the passing of Israeli export control legislation, the creation of a Defense Export Control Directorate in the Defense Ministry to oversee implementation of this legislation, and the establishment of a U.S.-Israel Defense Export Control Working Group.⁷³ These steps appear to have assuaged U.S. concerns, and the issue no longer seems to be a source of bilateral contention.

Israel's defense industries—working with U.S. partners—are likely to remain important niche suppliers of innovative high-tech items and systems for the U.S. military, particularly unmanned vehicles and robotic systems, battlefield intelligence, surveillance, and reconnaissance sensors and platforms, and perhaps rocket defenses, passive and active defenses for armored vehicles,⁷⁴ and minisatellites—the last of which may offer a relatively inexpensive way for the U.S. intelligence community to surge its capabilities during crises.⁷⁵

The United States has derived a number of unanticipated benefits from its aid to Israel, by directly and indirectly fostering the emergence of one of the most innovative and dynamic defense industries in the world. As a result of the U.S.-Israel relationship, U.S. firms are the partner of choice for Israeli firms wishing to market their products to the U.S. military and its allies. This has enabled U.S. defense contractors to keep employees on the payroll or to create new jobs, and to preserve or expand their market share, while benefiting from Israeli experience and R&D. And the United States and allied militaries gain access to technologies and systems that enhance their qualitative edge and save lives on the battlefield; to wit, Israeli-developed armor, which has been used on thousands of U.S. armored vehicles in Iraq and Afghanistan, has probably saved thousands of American lives.⁷⁶

Homeland Security

Following the attacks of 9/11, homeland security became a top U.S. priority. In the decade since then, U.S.-Israel cooperation in this area has expanded dramatically. The prior existence in Israel of a robust homeland security services and technology sector—created years before in response to domestic needs—and the dramatic growth in U.S. and global demand for homeland security solutions since 9/11 helped catalyze Israel's emergence as a U.S. partner and global homeland security capital.⁷⁷

U.S. law enforcement, emergency management, and homeland security agencies on the federal, state, and local levels enjoy close working relationships with their Israeli counterparts. U.S. government agencies involved include the Department of Homeland Security, Federal Bureau of Investigation, Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF), Secret Service, U.S. Marshals Service, Federal Emergency Management Agency (FEMA), U.S. Northern Command, Army National Guard, and various state and local law enforcement authorities, while Israeli government organizations include the Ministry of Public Security, IDF Home Front Command, Israel Police, and Ministry of Foreign Affairs. Areas of cooperation include counterterrorism; critical infrastructure protection; emergency planning, response, and consequence management; aviation security; cybersecurity; chemical, biological, and radiological/nuclear security; and joint R&D in a number of areas, including explosives-detection technology and techniques.⁷⁸ Moreover, observers from the United States and Israel regularly attend civil defense/homeland security exercises held in each country.⁷⁹

U.S. law enforcement, emergency services, and civil aviation authorities have accrued numerous lessons learned from their Israeli counterparts.⁸⁰ And various federal and local government agencies have acquired Israeli homeland security technologies to help secure border crossings, critical infrastructure, and air- and seaports.

Law enforcement. Tens of thousands of U.S. law enforcement and homeland security officials have been trained on counterterrorism, bomb disposal, and consequence management techniques developed in Israel.⁸¹ According to then D.C. police commander (and now D.C. chief of police) Cathy Lanier, “No experience in my life has had more of an impact on doing my job than going to Israel” for an exchange with Israeli law enforcement professionals.⁸² Capt. Jack Oakley, who oversees bomb, hazardous materials, K9, and SWAT units in the New Jersey State Police, said that the training he received at a law enforcement conference in Israel

was the most outstanding training—second to none—that we could ever get anywhere. We received firsthand, personal information from people who handle terrorist events on a regular basis, and are arguably the most up-to-date and knowledgeable individuals in the world when it comes to terrorism. They not only gave us information that was new, but also reaffirmed some of the operational procedures we already have in place. It helped solidify our plans enormously.⁸³

Emergency services. U.S. public health and emergency services officials have traveled to Israel to study how Israel deals with emergency planning and mass-casualty incident response, and Israeli experts regularly visit the United States to brief their counterparts and to participate in professional conferences.⁸⁴ Israel has extensive experience in dealing with mass-casualty terror attacks and incidents and has developed principles that stress the rapid assessment and treatment of victims, their rapid evacuation to hospitals, and returning the scene of the incident to normalcy within just a few hours, to minimize the trauma to the public. Many of the principles developed in Israel have been adopted by emergency services providers in the United States.⁸⁵

Airline and airport security. Following 9/11, long-standing Israeli security measures, such as sealed cockpits with armored doors, have become de rigueur on U.S. airlines. And Israel was the first country to introduce antimissile countermeasures on its fleet of civilian airliners, though the United

States almost certainly will not adopt this solution due to a lack of perceived threat and the cost involved.⁸⁶ Israeli officials and security consultants have advised U.S. airport authorities regarding airport security, and elements of the Israeli approach to passenger screening have been adopted by many U.S. airports and the TSA (Transportation Security Administration).⁸⁷ Specifically, the TSA has adopted behavior pattern recognition, a method first developed and used in Israel and now part of the TSA’s Screening Passengers by Observation Techniques (SPOT) program by three thousand behavior-detection officers at 161 U.S. airports.⁸⁸

Homeland security technologies. Building on its strong IT and defense-industrial base and decades of real-world experience, Israel’s homeland security services and technologies industry has emerged as a world leader, with more than four hundred homeland security firms exporting goods and services worth more than \$2 billion annually.⁸⁹

Israeli homeland security firms have an extensive global presence. For instance, Nice Systems, which provides integrated digital recording and management solutions, claims more than 25,000 customers in 150 countries, including over eighty Fortune 100 companies, and nine of the top ten public safety organizations in the United States.⁹⁰ All incoming telephone calls to the Los Angeles and New York City police departments are recorded using Nice technology, as are some 90 percent of all brokerage transactions worldwide.⁹¹ DDS-Security, which produces access-control and alarm monitoring systems, has installed its systems on hundreds of thousands of doors in forty countries.⁹² And Verint, which since its founding has become an American-based company, specializes in business and security intelligence solutions used by more than 10,000 organizations in upwards of 150 countries, including more than eighty-five Fortune 100 companies.⁹³

Given Israel’s prominence in the homeland security industry, it is not surprising that various local port authorities as well as U.S. federal government agencies have acquired a range of Israeli homeland

security technologies, including border monitoring technologies, video surveillance and incident information-management systems for air- and sea-ports, video synopsis systems, biometric scanning technologies, and surveillance technologies for critical infrastructure.⁹⁴ Demand for Israeli homeland security solutions is likely to remain strong in the coming years, particularly in the areas of explosives and contraband detection, video surveillance management and analytics, smart sensors, access controls, mobile device-based security applications, and cybersecurity.⁹⁵

Notes

1. Jeffrey Goldberg, "Obama to Iran and Israel: 'As President of the United States, I Don't Bluff,'" *The Atlantic*, March 2, 2012, <http://www.theatlantic.com/international/archive/2012/03/obama-to-iran-and-israel-as-president-of-the-united-states-i-dont-bluff/253875/>.
2. For brief accounts of the history of the U.S.-Israel intelligence relationship, see Jeffrey Richelson, *Foreign Intelligence Organizations* (Cambridge, MA: Ballinger Publishing Co., 1988), pp. 233–240; Wolf Blitzer, "The CIA and the Mossad," in *Between Washington and Jerusalem: A Reporter's Notebook* (New York: Oxford University Press, 1985), pp. 82–97.
3. David Martin and John Walcott, *Best Laid Plans: The Inside Story of America's War against Terrorism* (New York: Harper & Row, 1988), pp. 241–243, 248, 255; Erich Follath and Holger Stark, "How Israel Destroyed Syria's al-Kibar Nuclear Reactor," *Salon*, November 3, 2009, http://www.salon.com/2009/11/03/syria_israel/; William J. Broad, John Markoff, and David E. Sanger, "Israeli Test on Worm Called Crucial in Iranian Nuclear Delay," *New York Times*, January 15, 2011, <http://www.nytimes.com/2011/01/16/world/middleeast/16stuxnet.html?pagewanted=all>.
4. Steven J. Zaloga, *T-62 Main Battle Tank: 1965–2005* (Oxford: Osprey Publishing, 2009), pp. 5, 37; Benjamin S. Lambeth, *Moscow's Lessons from the 1982 Lebanon Air War*, RAND Corporation Report R-3000-AF (1984), p. 12, <http://www.rand.org/content/dam/rand/pubs/reports/2007/R3000.pdf>. In the 1960s, Israel provided the United States with a MiG-21 and two MiG-17 fighters. (The former was flown to Israel by an Iraqi pilot whom the Mossad had persuaded to defect in 1966, the latter two were accidentally landed in Israel by their Syrian pilots in 1968.) These aircraft were brought to the United States so that American pilots could fly them and develop air-to-air tactics, which they implemented to great effect over Vietnam. For more on the contribution of these aircraft to the development of U.S. air-to-air tactics over Vietnam, see Marshall L. Michel III, *Clashes: Air Combat over North Vietnam, 1965–1972* (Annapolis, MD: Naval Institute Press, 1997), pp. 75–117, 268. The value of Israel's contribution during the Cold War was such that the former chief of U.S. Air Force intelligence, Maj. Gen. George Keegan Jr., said, at least somewhat hyperbolically, that the United States could not have acquired the kind of intelligence on the Soviet military that it received from Israel "with five CIAs." He further stated that the ability of the U.S. military to defend Western Europe "owes more to Israeli intelligence...than it does to any other single source of intelligence" and that "for every dollar of support which [the United States] has given Israel, we have gotten a thousand dollars' worth of benefits in return." See Blitzer, "The CIA and the Mossad," pp. 89–90; see also Wolf Blitzer, "Accustomed to Controversy: Interview with Maj. Gen. (Ret.) George Keegan," *Jerusalem Post*, August 5, 1977, pp. 6–7.
5. Thus, Israel was responsible for tipping off the United States about one of the most damaging penetrations of Western security during the Cold War—that of South African naval commodore Dieter Gerhardt, who provided the Soviets with information concerning NATO naval weapons systems and naval surveillance capabilities until his arrest in 1982. Thomas O'Toole, "South Africa's Spying Seen as Painful Blow to West," *Washington Post*, June 11, 1984, p. A10. Likewise, the 1983 arrest of Soviet spy Marcus Klingberg, who worked in Israel's chemical and biological warfare program and who was the most important Soviet spy caught in Israel, came about as a result of CIA-Mossad collaboration. Ronen Bergman, *The Secret War with Iran* (New York: Free Press, 2007), p. 152.
6. These Israeli warnings were generally passed on via the Central Intelligence Agency (CIA). David K. Shipler, "Terror: Americans as Targets," *New York Times*, November 26, 1985, pp. A1, A10; Sidney Zion and Uri Dan, "The Untold Story of the Mideast Peace Talks," *New York Times*, January 21, 1979, Sunday magazine, pp. SM5; Keegan, quoted in Blitzer, "The CIA and the Mossad," pp. 89–90. The best-known case involving Jordan's King Hussein followed the 1958 Lebanon crisis, when Israel allowed British aircraft carrying paratroopers en route to Jordan to overfly its airspace, and facilitated vital U.S. fuel-oil shipments to the kingdom. Later that year, Israel passed word to the king, via the UK, of a planned assassination plot they had learned about. For more on this episode, see Joseph Nevo, *King Hussein and the Evolution of Jordan's Perception of*

- a Political Settlement with Israel, 1967–1988* (Portland, OR: Sussex Academic Press, 2006), p. 19. Regarding the warning to Sadat, Israeli intelligence reportedly informed its Egyptian counterparts in a face-to-face July 1977 meeting in Morocco of a Libyan plot to assassinate the Egyptian president. This was one of the events that served as the backdrop to Sadat's November 1977 offer to travel to Jerusalem in pursuit of peace.
7. See, for instance, Jack Khoury, Avi Issacharoff, and Anshel Pfeffer, "Palestinian Authority Closely Coordinating Security Operations with Israel," *Haaretz*, January 26, 2011, <http://www.haaretz.com/news/diplomacy-defense/Palestinian-authority-closely-coordinating-security-operations-with-israel-1.339205>; Joshua Mitnick, "From Intifada Hub to Model Palestinian City: How Jenin Turned Around," *Christian Science Monitor*, August 5, 2010, <http://www.csmonitor.com/World/Middle-East/2010/0805/From-intifada-hub-to-model-Palestinian-city-How-Jenin-turned-around>; and Shpiro, "Israeli Intelligence and al-Qaeda," pp. 240–259.
 8. Martin and Walcott, *Best Laid Plans*, pp. 241–243, 248, 255. According to Martin and Walcott, Israeli intelligence reports to the National Security Council regarding the whereabouts of an EgyptAir flight on which the hijackers had been placed by the Egyptian government consistently preceded the arrival of National Security Agency reports by about fifteen minutes.
 9. Bergman, *The Secret War*, p. 129.
 10. *Ibid.*, pp. 205–212.
 11. Stewart Bell, "Mossad's Canuck Gets His Man," *National Post*, October 17, 2005.
 12. Anthony Shadid and Alia Ibrahim, "Bombing Kills Top Figure in Hezbollah," *Washington Post*, February 14, 2008, <http://www.washingtonpost.com/wp-dyn/content/article/2008/02/13/AR2008021300494.html?sid=ST2008021303878>.
 13. Condoleezza Rice, *No Higher Honor: A Memoir of My Years in Washington* (New York: Crown Publishers: 2011), pp. 135–136.
 14. Former State Department and NSC official Richard Clarke relates that CIA analysts had been skeptical of the Israeli claims when they brought these claims to him in 1989, and concludes his description of this episode with the judgment: "The Israelis had been right, the CIA had been wrong." Richard A. Clarke, *Your Government Failed You: Breaking the Cycle of National Security Disasters* (New York, HarperCollins: 2009), pp. 98–99. Former defense secretary and vice president Richard Cheney concurs with Clarke, stating, "After the war, we would find out that the Israelis had been closer to the truth than our own intelligence community was." Cheney, *In My Time*, p. 182.
 15. Stuart D. Goldman, Kenneth Katzman, Robert D. Shuey, and Carl E. Behrens, *Russian Missile Technology and Nuclear Reactor Transfers to Iran* (Congressional Research Service Report for Congress No. 98-299F, December 14, 1998), p. 3, http://digital.library.unt.edu/ark:/67531/metacrs6968/m1/1/high_res_d/98-299_1998Dec14.pdf. See also Barbara Opall, "Israelis Say Russia Aids Iran's Quest for Missiles," *Defense News*, February 10–16, 1997, p. 1; Robin Wright, "Russia Warned on Helping Iran Missile Program," *Los Angeles Times*, February 12, 1997, http://articles.latimes.com/1997-02-12/news/mn-27904_1_missile-program; Bill Gertz, "Russia, China Aid Iran's Missile Program," *Washington Times*, September 10, 1997, http://www.fas.org/news/iran/1997/wt_970910.htm.
 16. Cheney, *In My Time*, pp. 465–473; David E. Sanger, *The Inheritance: The World Obama Confronts and the Challenges to American Power* (New York, Random House, 2009), pp. 271–278. According to these accounts, the information that led to the discovery of the Syrian reactor at al-Kibar (including ground photos of the reactor) came from Israel. These photos were later released by the United States—to the chagrin of some Israeli intelligence officials.
 17. Charles Duelfer, *Hide and Seek: The Search for Truth in Iraq* (New York: Public Affairs Books, 2009), pp. 119–120, 128. Four countries were key to this effort: the United States, Britain, the Netherlands, and Israel. According to former UN weapons inspector Scott Ritter, "[I]f it weren't for Israel, the Special Commission would not have been able to carry out the anti-concealment effort." Barton Gellman, "Shell Games: The Hunt for Iraq's Forbidden Weapons" (two-part series), *Washington Post*, October 11, 1998, p. A1, and October 12, 1998, p. A1, <http://www.washingtonpost.com/wp-srv/inatl/longterm/iraq/stories/unscom101198.htm>. See also David Makovsky's interview of former UN weapons inspector Scott Ritter, "Hide and Seek with the Palace Guard," *Haaretz*, September 29, 1999, <http://groups.yahoo.com/group/iraq-1/message/1926>.
 18. Broad, Markoff, and Sanger, "Israeli Test on Worm Called Crucial"; Philip Sherwell, "Israel Launches Covert War against Iran," *Telegraph*, October 28, 2011, <http://www.telegraph.co.uk/news/worldnews/middleeast/israel/4640052/Israel-launches-covert-war-against-Iran.html>; Eli Lake, "Operation Sabotage: Our Secret War against Iran," *New Republic*, July 14, 2010, <http://www.tnr.com/article/world/75952/operation-sabotage>; William J. Broad and David E. Sanger, "In Nuclear Net's Undoing, a Web of Shadowy Details," *New York Times*,

- August 25, 2008, <http://www.nytimes.com/2008/08/25/news/25iht-25nuke.15597447.html?pagewanted=all>. For an account of early U.S.-Israel sabotage operations in Iran, see James Risen, *State of War: The Secret History of the CIA and the Bush Administration* (New York: Free Press, 2006), p. 209.
19. Broad, Markoff, and Sanger, "Israeli Test on Worm Called Crucial."
 20. Bradley Klapper, "U.S. Denies Role in Iranian Scientist's Death," Associated Press, January 11, 2012, <http://www.washingtontimes.com/news/2012/jan/11/us-denies-role-iranian-scientists-death/>.
 21. Kimberly Dozier, "Israel Won't Warn U.S. Before Iran Strike," Associated Press, February 28, 2012, <http://www.npr.org/2012/02/28/147552939/ap-source-israel-wont-warn-u-s-before-iran-strike>.
 22. John Walcott, "Intel Cuts Mean U.S. Will Have More Blind Spots," Bloomberg News, November 4, 2011, <http://www.bloomberg.com/news/2011-11-04/intelligence-budget-cuts-mean-u-s-will-have-more-blind-spots.html>.
 23. This includes more than \$2 billion for the development and procurement of the Arrow missile system, \$205 million for the procurement of Iron Dome, \$139 million for THEL (which was cancelled), and \$53 million for the Boost Phase Intercept program (also cancelled). Jeremy M. Sharp, *U.S. Foreign Aid to Israel*, Congressional Research Service Report RL33222, March 12, 2012, pp. 8-15, at: <http://www.fas.org/sgp/crs/mideast/RL33222.pdf>.
 24. Iron Dome was developed, and initial batteries were paid for, exclusively by Israel. The United States, however, provided a \$205 million supplemental appropriation in 2011 to permit the emergency purchase and deployment of two additional Iron Dome batteries, for a total of four, in response to intensified rocket fire from Gaza in the early months of that year. More recently, the U.S. Congress has been considering a \$680 million aid package to enable Israel to purchase four more Iron Dome batteries over the next five years. Israel believes that it needs thirteen or fourteen batteries in all to protect targets in northern and southern Israel. Yaakov Katz, "IDF Considering Iron Dome Deployment Near Eilat," *Jerusalem Post*, May 16, 2012, <http://www.jpost.com/Defense/Article.aspx?id=270145>.
 25. Yaakov Katz, "Arrow Missile Defense May Be Installed on New Warships," *Jerusalem Post*, August 5, 2011, <http://www.jpost.com/Defense/Article.aspx?id=232568>.
 26. For instance, Israel discovered a software problem that plagued the Patriot PAC-2 during its initial combat deployment in 1991, permitting the United States to eventually fix the problem. Michael Blair et al., *Patriot Missile Defense: Software Problem Led to System Failure at Dharan, Saudi Arabia* (General Accounting Office, Information Management and Technology Division), pp. 6-10, <http://archive.gao.gov/t2pbat6/145960.pdf>.
 27. Question for the record taken by Lt. Gen. Malcolm R. O'Neill, Director, Ballistic Missile Defense Organization, before the Senate Armed Services Committee, March 25, 1996, http://www.fas.org/spp/starwars/congress/1996_h/s960325q.htm.
 28. According to MDA head Lt. Gen. Patrick O'Reilly, "The design of Arrow 3 promises to be an extremely capable system, more advanced than what we have ever attempted in the U.S. with our programs.... This has to do with the seekers that have greater flexibility and other aspects, such as propulsion systems—it will be an extremely capable system." Noam Eshel, "Israel, U.S. to Embark on Collaborative 'Upper Tier' Missile Intercept Program to Include Arrow 3 and Land-Based SM-3 Missiles," *Defense Update*, May 24, 2009, <http://defense-update.com/products/a/arrow3.html>.
 29. Barbara Opall-Rome, "Israeli Experts: Arrow-3 Could Be Adapted for Anti-Satellite Role," *Space News*, November 9, 2009, p. 16, ftp://64.14.13.138/SPN_20091109_Nov_2009.pdf.
 30. According to Lt. Gen. (Ret.) Malcolm R. O'Neill, then director of the Pentagon's Ballistic Missile Defense Organization, "The U.S. continues to derive valuable data and experience through our participation in the Arrow program. In particular, we are gaining important experience in establishing interoperability with U.S. TMD systems and the Arrow system." Statement before the Committee on National Security, House of Representatives, March 7, 1996, http://www.mda.mil/global/documents/pdf/ps_oneilltest1.pdf.
 31. Barbara Opall-Rome, "Israel Integrating Upper-, Lower-Tier Missile Defenses," *Defense News*, June 20, 2011, p. 4.
 32. Uzi Rubin, *Iron Dome in Action: A Preliminary Evaluation*, Perspectives Papers no. 151 (Begin-Sadat Center for Strategic Studies, October 24, 2011), <http://www.biu.ac.il/SOC/besa/docs/perspectives151.pdf>.
 33. According to MDA head Lt. Gen. Patrick O'Reilly, "This is one which the United States benefits from understanding and studying exactly how they've been successful with the Iron Dome system," as U.S. troops could face similar threats. "US to Help Israel

- Buy 4 More Iron Dome Interceptors,” Reuters, May 26, 2011, <http://in.reuters.com/article/2011/05/26/idINIndia-57287720110526>. See also Yaakov Katz, “U.S. May Buy Iron Dome to Defend ME Bases,” *Jerusalem Post*, January 4, 2012, <http://www.jpost.com/Defense/Article.aspx?id=247684>; Barbara Opall-Rome, “Israel Accelerates Iron Dome Purchases,” *Defense News*, August 29, 2011, p. 28; “Raytheon-Rafael Get Boost for Iron Dome,” United Press International, August 23, 2011, http://www.upi.com/Business_News/Security-Industry/2011/08/23/Raytheon-Rafael-get-boost-for-Iron-Dome/UPI-18551314128093/.
34. Barbara Opall-Rome, “U.S.-Israel to Develop David’s Sling Missile Defense,” *Defense News*, August 7, 2008, <http://www.defensenews.com/story.php?i=3664531>; Noam Eshel, “David’s Sling Short-Range Missile Defense Systems Enter a New Stage,” *AviationWeek.com*, September 28, 2010, <http://www.aviationweek.com/aw/blogs/defense/index.jsp?plckController=Blog&plckScript=blogScript&plckElementId=blogDest&plckBlogPage=BlogViewPost&plckPostId=Blog:27ec4a53-dcc8-42d0-bd3a-01329aef79a7Post:48ffc19f-060b-4f8b-bdd1-78ee6d0a6981>.
 35. Yuval Azulay, “Defense Officials View Solid Laser as Future of Anti-Missile Technology,” *Haaretz*, March 24, 2008, <http://www.haaretz.com/news/defense-officials-view-laser-as-future-of-anti-missile-technology-1.242193>; Paul McLeary, “U.S. Army Pushing Laser-Based Defenses,” *Defense News*, May 13, 2012, <http://www.defensenews.com/apps/pbcs.dll/article?AID=2012305130001>; Grace Jean, “New ONR Program Aims to Develop Solid-State Laser Weapons for Ships,” Office of Naval Research, May 8, 2012, http://www.navy.mil/search/display.asp?story_id=67041.
 36. Yaakov Katz, “Israel-U.S. Anti-Missile Drill Back on Track,” *Jerusalem Post*, April 4, 2012, <http://www.jpost.com/LandedPages/PrintArticle.aspx?id=264712>.
 37. Eliot Cohen, Michael Eisenstadt, and Andrew Bacevich, *Knives, Tanks, and Missiles: Israel’s Security Revolution* (Washington, D.C.: Washington Institute, 1998).
 38. For more on the U.S. influence on the Israeli military, see Col. Dr. Meir Finkel and Dr. Eitan Shamir, “From Whom Should the IDF Learn?” *Maarachot*, no. 433 (October 2010), pp. 32–33; Dima Adamsky, *The Culture of Military Innovation: The Impact of Cultural Factors on the Revolution in Military Affairs in Russia, the U.S., and Israel* (Stanford, CA: Stanford University Press, 2010), pp. 101–104; and Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory* (London: Frank Cass Publishers, 1997), pp. 250–331.
 39. Dan Raviv and Yossi Melman, *Every Spy a Prince: The Complete History of Israel’s Intelligence Community* (Boston: Houghton Mifflin Company, 1990), pp. 183, 358; J. Paul de B. Taillon, *Hijacking and Hostages: Government Responses to Terrorism* (Westport, CT: Praeger Publishers, 2002), pp. 116, 141–142, 144.
 40. Martin and Walcott, *Best Laid Plans*, p. 39; Bernard C. Nalty, *Winged Shield, Winged Sword: A History of the United States Air Force*, Vol. II, 1950–1997 (Washington, D.C.: Air Force History and Museums Program, 1997), p. 401; David Patrick Houghton, *U.S. Foreign Policy and the Iran Hostage Crisis* (Cambridge: Cambridge University Press: 2001), p. 111. For the impact of the Entebbe operation on planning for the Tehran hostage rescue operation, see pp. 17–18, 81–87, 115–116, 120–121, 144–145, 147, 159, 164.
 41. Charlie A. Beckwith and Donald Knox, *Delta Force: The Army’s Elite Counterterrorism Unit* (New York: Harcourt Brace Jovanovich, 1983), p. 171; Richard Marcinko, *The Real Team: Rogue Warrior* (New York: Simon & Schuster, 1999), p. 265.
 42. For more on CTTSO, see <http://www.cttso.gov/>.
 43. Saul Bronfeld, “Fighting Outnumbered: The Impact of the Yom Kippur War on the U.S. Army,” *Journal of Military History* 71 (April 2007), pp. 465–498. See also George F. Hoffmann and Donn A. Starry, *Camp Colt to Desert Storm: The History of U.S. Armored Forces* (Lexington: University Press of Kentucky, 1999), pp. 365–367, 393, 408–409, 438–439, 445–447, 548–550, 554–555, 559; and Benjamin S. Lambeth, *The Transformation of American Airpower* (Ithaca, NY: Cornell University Press, 2000), pp. 55–56, 69–70, 74, 82.
 44. Lambeth, *Moscow’s Lessons*, p. 12; Lambeth, *The Transformation*, pp. 91–96, 101, 112, 175.
 45. Israeli efforts to fuse intelligence and greatly enhance interagency cooperation had their analogue in the formation of U.S. high-value target teams, which were key to defeating al-Qaeda in Iraq and the success of the surge. Christopher J. Lamb and Evan Munsing, *Secret Weapon: High-Value Target Teams as an Organizational Innovation* (Institute for National Strategic Studies, Strategic Perspectives no. 4, March 2011), <http://www.ndu.edu/inss/docuploaded/Strat%20Persp%204%20Lamb-Munsing.pdf>. For a study of successful tactics and techniques used by U.S. forces in Iraq during the surge, some of which seem to reflect Israeli experience, see David E. Johnson, M. Wade Markel, and Brian Shannon, *The 2008 Battle of Sadr City* (RAND Occasional Paper, OP-335, 2011), http://www.rand.org/content/dam/rand/pubs/occasional_papers/2011/

- [RAND_OP335.pdf](#). U.S. forces sometimes also applied controversial Israeli tactics and policies such as home demolitions (though this policy was not widely applied and was soon abandoned) and the use of concrete barriers as population-control measures. See Jeff Wilkinson, "In Tikrit, U.S. Destroys Homes of Suspected Guerillas," *Philadelphia Inquirer*, November 18, 2003, http://articles.philly.com/2003-11-18/news/25462524_1_tanks-and-apache-helicopters-targets-homes-houses; Lt. Gen. Ray Odierno, "In Defense of Baghdad's 'Walls'," *Los Angeles Times*, April 25, 2007, <http://www.latimes.com/news/opinion/commentary/la-oe-odierno25apr25,0,2228547.story>. Finally, elements of the approach to military planning and campaign design used by Israeli commanders during the second intifada (Systemic Operational Design, or SOD) were incorporated by the U.S. and allied militaries into their own approach to planning and campaign design, though the concept remains controversial in both Israel and the United States.
46. Christopher Drew, "Drones Are Weapons of Choice in Fighting Qaeda," *New York Times*, March 16, 2009, <http://www.nytimes.com/2009/03/17/business/17uav.html?ref=unmannedaerialvehicles>; Scott Shane and Tom Shanker, "Strike Reflects U.S. Shift to Drones in Terror Fight," *New York Times*, October 1, 2011, <http://www.nytimes.com/2011/10/02/world/awlaki-strike-shows-us-shift-to-drones-in-terror-fight.html?ref=unmannedaerialvehicles>.
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4 | Cooperation on Soft Security Challenges

DURING THE COLD WAR, the overarching U.S. security concern was deterring aggression and avoiding a conventional or nuclear war with the Soviet Union. Terrorism emerged in the 1960s as an additional significant concern, joined in the 1980s and 1990s by the threat of missile and WMD proliferation by rogue regimes. By contrast, the post-9/11 era was dominated by concerns over the threat to the U.S. homeland posed by conventional and mass-casualty terrorism conducted by violent extremist groups and rogue regimes.

More than a decade after 9/11, the U.S. approach to national security is changing. In addition to a continued focus on traditional “hard” security concerns—terrorism, conventional/hybrid military threats, and missile/WMD proliferation—the United States faces a number of new “soft” security challenges. These include restoring the competitiveness of the U.S. economy—the cornerstone of America’s military strength and global leadership; dealing with the threats, as well as opportunities, created by the cyber/ information technology revolution; managing the water and food security implications of rapid population increase, climate change, and economic growth in the developing world; enhancing the prospects for sustainable development by fostering alternative/renewable energy sources; promoting the welfare of the American people by improving public health; and enhancing societal resilience in a time of dramatic, potentially disruptive change.¹ No one country can solve all these challenges on its own; surmounting them will require the United States to work with other nations.² As the following sections show, Israel is a world leader in a number of these areas, and one of a relatively small number of countries that can make a significant contribution to U.S. efforts to meet these diverse soft security challenges.

Economic Revitalization

There is bipartisan agreement that restoring the vitality and competitiveness of the U.S. economy is key to affording a capable military, securing core U.S. national interests, and preserving U.S. global leadership. Technological innovation has been the mainspring of material progress through all of human history, and it is central to current efforts to revitalize the U.S. economy.³

Israel’s economy scores near the top of the developed world in many indicators of scientific and technological innovation and achievement.⁴ On a per capita basis, Israel is home to more engineers and scientists, and spends more on research and development as a percentage of gross domestic product (4.25 percent in 2010), than any other country in the world, and ranks fifth in scientific publications per capita.⁵ Its metrics for high-tech start-ups per capita are likewise among the highest in the world, and it has more firms listed on the high-tech heavy NASDAQ stock exchange than any other country except China and the United States.⁶ According to a recent Global Competitiveness Report from the World Economic Forum, while Israel rates about average for a developed economy in terms of overall competitiveness, due partly to its government bureaucracy and entrenched conglomerates, it ranks sixth in the world for overall innovation—including number one in quality of scientific research institutions, number four in patents per million people, and number seven in capacity for innovation.⁷ As the U.S. State Department’s chief science and technology advisor put it in May 2012, “[In this area] Israel is a world leader and a model not only for small countries, but for all countries.”⁸

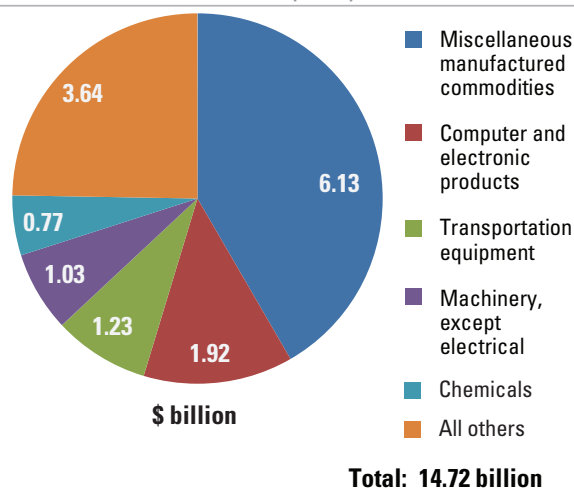
Clearly, the economy of Israel (\$225 billion GDP for a population of nearly 8 million) is tiny

compared to that of the United States (roughly \$14.5 trillion GDP for a population of nearly 315 million). Yet Israel contributes disproportionately to the U.S. economy. Total two-way trade was over \$37 billion in 2011 (with Israeli imports of U.S. goods accounting for some \$14 billion of this total). This puts Israel in the same league as advanced European economic partners like Switzerland or Belgium—and way ahead of Spain, with a population six times as large as Israel’s.⁹ Furthermore, Israel, with about 3 percent of the population of the Middle East, accounts for nearly 25 percent of U.S. exports to the region. And in five of the past seven years, U.S. exports to Israel surpassed exports to Saudi Arabia, which enjoys huge surpluses from high global oil

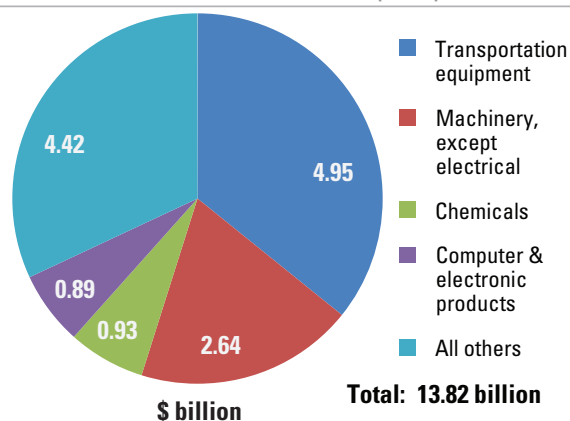
prices and has more than three times Israel’s population.¹⁰ (Figs. 2a-d)

The figures on Israeli investments in and loans to the U.S. economy, in both the public and private sectors, are similarly out of proportion to Israel’s relatively small size. In 2009, during the depth of the global recession, Israel was among the top twenty international direct investors in the United States, to the tune of just over \$7 billion.¹¹ And as of early 2012, Israel had effectively loaned the U.S. government some \$23 billion, in the form of U.S. Treasury bills—about as much official U.S. debt as held by a number of larger, traditional U.S. allies such as Spain, Italy, Australia, and the Netherlands.¹²

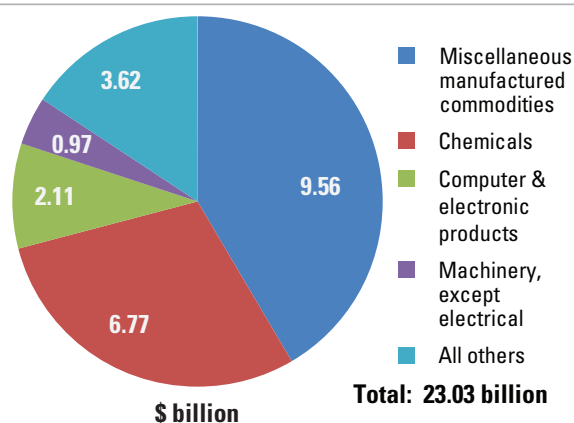
U.S. EXPORTS TO ISRAEL (2011)



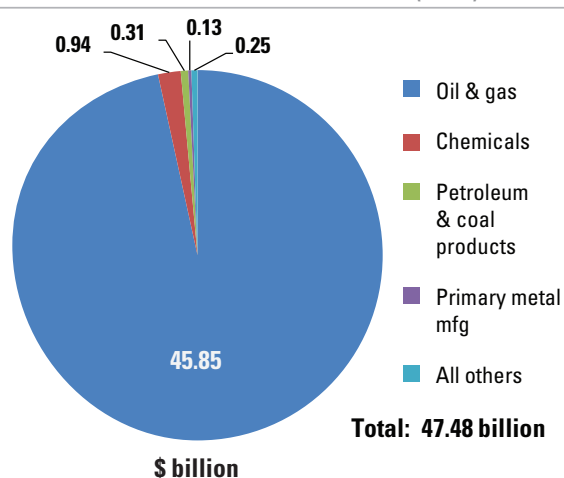
U.S. EXPORTS TO SAUDI ARABIA (2011)



U.S. IMPORTS FROM ISRAEL (2011)



U.S. IMPORTS FROM SAUDI ARABIA (2011)



Israel's economic progress has permitted the phasing out of U.S. economic assistance to Israel. U.S. military aid, at a little over \$3 billion annually, is also down by about half in real (inflation-adjusted) terms, compared with its high point in the aftermath of Israel's peace treaty with Egypt. The more than \$2.25 billion in arms Israel obtains annually from the United States with American taxpayer funds represents about 16 percent of Israeli imports from the United States, and 6 percent of total U.S.-Israel bilateral trade—a far cry from the early 1980s, when Israel faced a severe economic crisis and was heavily dependent on U.S. assistance. And as mentioned before, this aid has contributed to the development of Israeli defense firms that regularly partner with U.S. defense contractors to jointly market Israeli products to the U.S. military and its allies.

Israel also offers an important platform for U.S. economic ties with Egypt and Jordan. Thanks to the U.S.-Israel Free Trade Agreement, to Israel's peace treaties with both those neighbors, and to additional legislation and diplomatic agreements, Egypt and Jordan each host Qualifying Industrial Zones (QIZs) employing tens of thousands of people and exporting hundreds of millions of dollars of goods each year duty-free to the United States—provided these goods contain a certain percentage of Israeli content. More than half of Jordan's exports to the United States in 2009 and 43 percent of Egypt's exports in 2010 came directly from these QIZs, in which Israel is a quiet partner.¹³

These statistics suggest that Israel is now a useful international economic and technological partner for the United States, rather than a liability or a rival, reaching the order of magnitude of some much larger, longstanding U.S. allies in Europe and elsewhere—even if Israel's small size makes it a minor factor in the overall American economic equation.¹⁴ And in certain niche areas, Israeli economic and technological cooperation with the United States is sufficiently significant to qualify as a strategic partnership. Many of these niches are in the high-tech sector: cybersecurity, software

and related computer and telecommunications applications, electronics, advanced biomedical devices, and the like. Indeed, 8 percent of Israel's total labor force works in these and similar high-tech fields, one of the highest such proportions in the world.¹⁵ And many of the largest U.S. high-tech companies have set up technology incubators in Israel (e.g., Microsoft, Intel, IBM, Google, Apple, GE, Abbott Laboratories, and General Motors) where they can sponsor world class R&D while spending one-half to two-thirds of the labor costs they would incur in the United States.¹⁶

Other niche partnerships with the United States cover a broad range of interests, from water management techniques to high-tech agriculture to alternative energy technologies. Israel's successful specialization in some of these areas, even when not directly relevant or significant to the U.S. economy per se, may serve U.S. global policy objectives. And in each of these areas, Israeli institutions, private companies, and experts play an outsize role in profitable joint ventures with U.S. counterparts, cutting-edge R&D programs essential to technological and scientific innovation, and contributions to shared international development goals. For instance, Israel contributes thousands of skilled professionals, hundreds of joint patent applications, and hundreds of coauthored scientific and technical papers to the American economy, workforce, and advanced industrial base. In these three categories, Israel's recent annual contributions range between one quarter and one half those of Germany—an economic and technological powerhouse with more than ten times Israel's population.¹⁷

These partnerships have recently reached a level significant not merely in Israeli per capita terms but in global terms. According to the director of Innovation and Industry Services at the U.S. National Institute of Standards and Technology,

In the past, the [U.S.-Israel Binational Industrial Research and Development, or BIRD] Foundation mainly paired small Israeli companies with larger U.S. companies...But the approval this

Table 2. Select U.S. Corporations with R&D Centers in Israel

NAME	SECTOR	EMPLOYEES	COMMENTS
Abbott	IT	100	Software for laboratory information management systems.
AMD	IT	5	Advanced solutions for 3D graphic developers.
Apple	IT	-	Opening in 2012, to focus on semiconductor research; Apple's first technology development center outside the U.S.
Applied Materials	IT	1,500*	Metrology and inspection products for semiconductor manufacture.
AT&T	IT	140	Integrated conferencing technologies; AT&T's first foundry (development center) outside U.S.
Avaya	Communications	110	Communications systems and software.
Broadcom	Communications	600	Seven centers focused on infrastructure/networking and wireless/broadband communications.
CISCO	Communications	500	Networking solutions; CISCO's second largest R&D center outside the U.S. CISCO also owns nine companies in Israel.
Dell	IT	75	Storage technologies and cloud-computing solutions.
Ebay	IT	300	Electronic commerce applications.
GE	IT Medical Devices CleanTech	450	Eight R&D centers focusing on medical imaging, medical devices, healthcare management, renewable energy, smart grid and energy-efficiency technologies, water treatment and desalination technologies
GM	Industrial Tech	25	Alternative driving systems, vehicle electronics/communications systems, robotics, advanced materials, imaging systems, safety.
Google	IT	200	Two R&D centers focusing on search experience, analytics, applications, and infrastructure.
HP	IT	3,500+	Four R&D centers focusing on machine learning, data mining, imaging, digital printing, and business technology optimization.
IBM	IT	2,000	Five R&D centers focusing on healthcare and life sciences, verification technologies, multimedia, information retrieval, and business transformation. Haifa Development Lab is IBM's largest R&D lab outside of the U.S. (500+ people).
Intel	Semiconductors	5,000	Four R&D centers and two manufacturing facilities, engaged in microprocessor and software design; was Intel's first R&D center outside of U.S. Products include Pentium, Centrino, Sandy Bridge, and Ivy Bridge processing chips.
Johnson & Johnson	Medical Devices Therapeutics	300	Two R&D centers, focusing on software and hardware for cardiac mapping, navigation devices, biosurgery, and passive immunotherapy products.
John Deere	Agriculture	30	Precision irrigation and crop enhancement technologies.
McAfee	IT Security	90	IT security and data loss prevention.
Medtronic	Life Sciences	20	Intraoperative MRI image guidance systems.
Microsoft	IT	600	Security, telecom, and internet products; One of three strategic R&D centers outside the U.S.
Motorola	Communications	1500	Communications products and communications network management systems. Motorola's largest development center worldwide.
Oracle/Sun Microsystems	IT	440	Five centers developing products for Java Software division, Wireless Convergence Servers, and information management, data aggregation, and portfolio development software.
Paypal	IT	80	Online payment fraud detection and protection.
Perrigo	Life Sciences	160	Two R&D centers focusing on active pharmaceutical ingredients.
Qualcomm	Communications	300	Wireless communications systems and technologies.
RSA (EMC)	IT	300	IT security.
SanDisk	Semiconductors	600	Three R&D centers focusing on memory and data storage technologies.
Sears	IT	60	E-commerce/social commerce web platforms.
Texas Instruments	Semiconductors	450	Cable modem, Bluetooth, and WiFi products.
Yahoo	IT	15	Web search and information extraction technologies.

* Number of employees involved in R&D unavailable. The figure cited reflects total number of employees involved in R&D, manufacturing, and sales.
Sources: Israeli Industry Center for R&D (MATIMOP), corporate representatives, and media reports.

time [in late 2011] of three joint projects featuring U.S. start-ups indicates that Israel now offers the Americans more than previously.

Israeli companies want access to the U.S. market and worldwide distribution networks, but the United States, too, he continued, can now use Israeli companies to market internationally, “and the Foundation helps support that.”¹⁸ BIRD, along with the Binational Agricultural R&D Foundation (BARD) and the Binational Science Foundation (BSF)—three binational foundations created by the U.S. and Israeli governments to spur joint R&D and funded equally by both governments—and the tax receipts yielded by their products over the past thirty years have fully repaid the U.S. government’s share. Moreover, those products alone have generated, by a conservative estimate, direct and indirect U.S.-based production and global sales of \$5 billion and somewhere between 18,000 and 50,000 jobs for the U.S. economy.¹⁹

Despite its small size, Israel is a much sought-after partner by local government officials seeking business opportunities for their cities and states. Cornell University recently teamed with Israel’s Haifa-based Technion as its first international partner in a new NYC Tech Campus, to serve as a global magnet for technology talent and entrepreneurship aimed at transforming New York into “Silicon City.” NYC Tech is expected to create six hundred spin-off companies, 30,000 permanent jobs, and \$23 billion in economic activity over the next thirty years.²⁰ Moreover, top officials from more than fifteen states have led trade missions to Israel, ten states have opened trade offices in Israel, and five have signed agreements to take advantage of Israeli innovation, involving joint ventures, R&D, and investment, along with career opportunities in IT, biotech and medical R&D, defense, and other fields.²¹ Around the United States, Israeli firms from Teva Pharmaceuticals to Tower Semiconductor to Strauss food products, among others, have set up major manufacturing plants, with tens of thousands of employees.²²

For example, Massachusetts hosts nearly one hundred companies with Israeli founders or Israeli-licensed technologies, which in 2009 employed nearly six thousand people and generated \$2.4 billion in direct revenue for the state.²³ In July 2011, the two governments formally established the Massachusetts-Israel Innovation Partnership to reinforce these common endeavors. The state of Virginia hosts dozens of successful Israeli firms and licensed product lines; one of the newest arrivals, the Sabra agribusiness company, in a joint venture with Pepsico, plans to double its employment to almost five hundred American workers within just its first two years of operation near Richmond. Its sales have increased more than twenty-fold, to \$250 million annually, since 2005.²⁴ Two other top Israeli firms in very different sectors, Teva Pharmaceuticals and Zim Shipping Lines, together employ more than a thousand Virginians, with another thousand or so making careers in a wide range of smaller Israeli companies.²⁵ And Georgia, with relatively few ethnic or political links to the Jewish state, hosts foreign headquarters of no fewer than fifty Israeli companies. Many of these are in biotech and related fields, including Given Imaging, Mazor Surgical Technologies, Alpha Omega, and Veritas Venture Partners.²⁶

In short, while Israel’s overall contribution to America’s economic strength is relatively modest, it is often concentrated in sectors that are key to revitalizing the U.S. economy and restoring its competitiveness overseas.

Cyber/Information Technology

The cyber domain may well be the most dynamic, strategically vital, and promising area of U.S.-Israel civilian and military cooperation. There are few areas of modern life that have not been touched by computers, information technology, and the cyber revolution. Power grids, mass communication, banking and finance, transportation, and nearly all economic activity depend on information technology and computers. With this dependence, however, comes vulnerability. The reliance of nearly

every aspect of modern life on computers creates vulnerabilities for cybercrime, cyberterror, cyber-espionage, and cyberwarfare—to include attacks on civilian critical infrastructure and military computer networks. As a result, the revolution in cyber affairs has the potential to change the way states think about deterrence and national security. Moreover, because offensive cyber capabilities are much more developed than cyber defenses, even sophisticated individuals and nonstate actors can potentially cause significant damage.²⁷ To deal with these unprecedented challenges, the U.S. National Cyber Strategy has stressed the need to partner with foreign countries to secure cyberspace against criminals and hostile states.²⁸

Israel's capabilities in all areas of cyber technology—in both the civilian and military domains—are substantial, as are its partnerships with leading U.S. companies and governmental institutions in this field. Israeli experts play a disproportionate role in many practical computer-related and telecommunications inventions and applications, in hardware and software alike. Instant messaging, voicemail menus, Voice-over Internet Protocol (VoIP), online money transfers, and data-mining programs are a few of the widespread innovations to which Israel has contributed a major share. The leading U.S. firms with interests in this area, such as Microsoft, Google, Apple, Cisco, Hewlett-Packard, Texas Instruments, and Intel, have all established R&D centers in Israel, where key employees are often veterans of elite military computer units.²⁹

As Microsoft founder Bill Gates noted not long before his first visit to Israel in mid-2006, the “innovation going on in Israel is critical to the future of the technology business.”³⁰ More recently, in April 2012, a top Intel executive noted that many, if not most, of the firm's major technical innovations over the past thirty years had started off in Israel—including the latest generation of processors (“Ivy Bridge” and “Sandy Bridge”)—and that Ivy Bridge accounted for 40 percent of Intel's global revenue in 2011. He claimed further

that Intel has never had an intellectual property rights, piracy, or patent problem in Israel, and that the Intel factory in Kiryat Gat, Israel, is the first to produce microchip wafers with a zero defect rate.³¹ Likewise, a number of Google applications were either started or designed in Israel, including Google Suggest, Google Insights for Search, In-Page Analytics, Live Results, Person Finder, Interactive YouTube Videos, Gmail Priority Inbox, Hot Topics, Hot Searches, and “Got the wrong Bob?”

In the domain of cyber applications for national security, Israel clearly has much to contribute to the United States (and other allies).³² Israel's overall capabilities in this area—in both the civilian and military domains—are significant. A recent report by a Brussels-based security and defense think tank, based on a survey of 250 experts worldwide, placed Israel (along with only Finland and Sweden) in the first tier of nations in terms of readiness to deal with cybersecurity threats.³³ Likewise, the Israeli military is believed to be perhaps the first to have integrated cyber into tactical combat operations, in Lebanon in 2006 and in Gaza in December 2008–January 2009.³⁴ And as part of its September 2007 strike on the Syrian nuclear reactor at al-Kibar, Israel is rumored to have taken down Syrian air defenses by means of electronic attack and network penetration.³⁵ In August 2011, Israel formally established a National Cyber Directorate to coordinate civilian and military activities in this area, better coordinate government activities with the private sector, and promote partnerships among academia, government, and industry—though its establishment has reportedly been accompanied by teething problems.³⁶

It remains to be seen how effective this new National Cyber Directorate will be. Israel may be the most heavily targeted country in the world, by hostile hackers, nonstate actors, and states, with as many as a thousand web attacks per minute—though most of these are simple denial-of-service attacks.³⁷ While Israel's critical infrastructure is considered among the best protected in the world

against cyber attacks that would threaten national security, its private sector is much more vulnerable.³⁸ Thus, a spate of recent hacking or unauthorized disclosure incidents affected systems ranging from Israeli banks and credit card companies to Israel's Interior Ministry, demonstrating that the country's civilian cyber defenses are far from impregnable.³⁹ Some websites associated with parts of the country's critical infrastructure, including the stock exchange and the air carrier El Al, were also brought down, at least for short periods, though these attacks did not affect the functioning of the infrastructure itself.

There is substantial U.S.-Israel cybersecurity cooperation in the private sector, including in critical infrastructure, banking, communications, utilities, aviation, surface transport, and internet connectivity.⁴⁰ Israeli-licensed proprietary commercial algorithms and techniques are integral to many secure U.S. financial transactions and an estimated one third of U.S. cable TV transmissions.⁴¹ To cite just one recent illustration of this close connection, in early 2012, Cisco paid \$5 billion to acquire the Israeli-founded cybersecurity firm NDS, a leading international secure video technology provider with 1,200 employees in Israel.⁴² Because 85 percent of the IT backbone is located in the private sector, this kind of commercial collaboration has risen to the level of a strategic partnership, as solutions to threats to this infrastructure are best advanced by partnerships with the private sector. As Shawn Henry, former FBI chief of cybersecurity, told a reporter upon his retirement in early 2012, the main defense in this domain "won't be the U.S. government...so it's going to have to be the private sector."⁴³

In addition to the thousands of Israelis at work in both Israeli and American computer-related firms operating in the United States, privately financed "business accelerator" programs are bringing Israeli start-ups in this field directly to Silicon Valley and other high-tech clusters for temporary networking and expansion projects.⁴⁴ And Israel is poised to remain on the cutting edge

of technology, by installing a nationwide ultra-high-speed broadband network architecture known as FTTH (Fiber to the Home).⁴⁵ So Israel's drive to maintain a qualitative leadership position in this area augurs well for its continued partnership with top U.S. firms and research projects in a very broad swath of private sector IT innovation.

Less is known about U.S.-Israel government-to-government cooperation in the cyber arena, though in certain areas such as offensive cyberwar against Iran's nuclear program, there is reason to believe it may be substantial. For instance, in media reports citing anonymous senior U.S. officials, the so-called Flame and Stuxnet computer malware have been credibly described as part of a sophisticated U.S.-Israel joint effort to sabotage Iran's nuclear centrifuge program.⁴⁶ If true, this would mark a major advance in bilateral cooperation in this increasingly crucial domain. Israeli military cyber capabilities are likely considerable—if one judges from the commercial success of Israeli IT entrepreneurs who got their start in the cyberwarfare unit of the Israeli military—and offer possibilities for collaboration that may yield significant benefits for both parties.⁴⁷ There are also signs of close bilateral cooperation in cyber counterintelligence. In mid-2011, in connection with an industrial espionage "sting" operation involving an employee at the Israeli-founded computer security firm Akamai in Massachusetts, the FBI acknowledged the cooperation of the government of Israel in the investigation.⁴⁸

One other sign of new possibilities for enhanced U.S.-Israel cooperation in this area is the formal launch of U.S. participation in multilateral cybersecurity drills, which began with a U.S.-NATO cybersecurity exercise in October 2011. U.S. officials privately say that this kind of international cooperation will probably follow the trajectory of existing alliance relationships, beginning with NATO and Australia (with which the United States has signed a formal cybersecurity agreement) and then presumably expanding to encompass other close U.S. partners.⁴⁹ Because Israel (along

with a number of other countries, including regional neighbors Jordan and Kuwait) has long been designated a “major non-NATO ally,” and because Israel possesses recognized cutting-edge cybersecurity capabilities, it would be a logical candidate for inclusion in the next tier of official U.S. multilateral efforts in this domain. The explicit mention of China, Russia, and Iran as potential cybersecurity threats—first in October 2011 FBI and Department of Defense reports to Congress and then in the January 2012 U.S. intelligence community statement to Congress—may be another indicator of the potential for enhancing the official U.S.-Israel cyber partnership.⁵⁰

Water and Food Security

There is a broad consensus among both governmental and nongovernmental specialists that large parts of Africa, the Middle East, and South Asia will likely experience destabilizing water and food shortages in the not-too-distant future, due to rapid population growth, climate change, and economic development, and that these shortages will pose major policy challenges for the developed world.⁵¹ Though not a developing country, the United States itself is hardly immune to these trends. The U.S. southwest has in recent years experienced severe drought conditions that have stressed this already arid region, reducing crop yields and livestock production and contributing to a spate of devastating wildfires; in the first half of 2012 alone, more than half the country experienced drought conditions.⁵² Dealing with these challenges will require new approaches to water management and agriculture.

Israel has been developing innovative solutions to the problems of water scarcity, desertification, and arid region agriculture since its establishment.⁵³ Israel recycles about 80 percent of its wastewater, the highest level in the world, and is actively seeking to share its expertise in this area in international forums. Israel is also a pioneer of drip irrigation for farming in arid regions, with Israeli-developed products capturing 50 percent of global market share for this particular technology.⁵⁴ For instance,

the Israeli drip-irrigation company Netafim, with a presence in more than 100 countries, has established a major manufacturing facility for its products in Fresno, California, generating hundreds of jobs and millions of dollars in revenues.⁵⁵

A recent report by the Cleantech Group and the World Wildlife Fund put Israel in second place, after Denmark, in fostering innovations that help provide environmentally sustainable solutions to global water, food, energy, climate change, and related problems.⁵⁶ Despite Israel’s small domestic market and inconsistent environmental policies, the report rated Israel as “the clear winner” in terms of emerging cleantech innovation. The evidence cited includes the following: “by far the most Global Cleantech 100 companies per GDP, the second highest concentration of cleantech VC [venture capital] activity,” and the sixth highest global rating for “environmental technology patent filing.” Israel, according to this report, “is especially strong in water innovation”—motivated by “the serious water scarcity that affects the region” and by “Mekorot, the highly innovative water utility that regularly partners with local cleantech start-ups.”⁵⁷ A specific example noted is the newly patented TaKaDu water network monitoring service for detecting water loss, which Israel has begun exporting and installing in Europe and elsewhere.

Desalination is another area in which Israel has developed expertise, particularly in the reverse osmosis process. Short of natural freshwater sources, Israel has increased its desalination capacity exponentially in the past half decade, from 20 million cubic meters in 2005 to 300 million cubic meters in 2011—with firm plans to double that number by 2013. It now ranks fourth in the world in freshwater production by reverse osmosis, after Spain, Saudi Arabia, and Algeria (each of which has a population at least three times that of Israel). While reverse osmosis does not produce electricity, as does the more common desalination method—thermal “double process,” or “combined process,” distillation—the osmotic method requires less energy input and may be more suitable in

some circumstances. For instance, reverse osmosis is well suited for desalinating brackish water for agricultural or industrial uses—the major uses of water worldwide—as opposed to desalinating seawater to produce drinking water.

Israel has also succeeded in sharply cutting the costs of desalination. Technical and organizational innovations, including a government guarantee to purchase all desalinated water produced, have reduced the energy input required for each cubic meter of water to just 3.5 kilowatt hours (about 40 cents' worth of electricity at the current average U.S. price). The total cost of Israeli desalinated water is expected to be 55 cents per cubic meter next year—a dramatic drop from two dollars per cubic meter a decade ago. As a result, Israel may be able to increase its exports of desalination equipment and proprietary processes to foreign customers—such as India and China, as well as African and other countries confronting desertification, rapid urbanization, or other water security challenges.⁵⁸

Indeed, one indicator of Israel's niche capabilities in this field is growing Chinese interest in them. At the sixth-annual water technology “WATEC Israel” exhibition in Tel Aviv in November 2011, for instance, prospective buyers from China outnumbered all other individual-country delegations, accounting for more than two hundred people.⁵⁹ Most recently, in early 2012, the Israeli and Chinese finance ministers signed a deal in Beijing for \$300 million in Israeli water technology exports to China.⁶⁰

Israeli researchers have also made breakthroughs that have permitted productivity increases for plant and dairy farmers and aquaculturists. For example, Israel's 100,000 dairy cows are the most productive in the world, due to scientific breeding and feeding techniques.⁶¹ While these innovations may be of limited direct use to U.S. dairy ranchers, who sometimes suffer from overproduction, the Volcani Agricultural Research Center outside Tel Aviv and other Israeli institutions hold international courses to share their advances with hundreds of students from developing countries—and even from

developed countries (such as France).⁶² Similarly, in early 2012, another Israeli agricultural research center reported that it had doubled average milk production per cow at a model farm in China, from 5,000–6,000 liters to 11,500 liters per year.⁶³ And on a larger commercial scale, in Vietnam, ten Israeli companies are managing 30,000 cows in new, scientific dairies slated to produce 300 million liters of milk annually.⁶⁴

In the private sector, Israeli researchers have developed a model that uses satellite imagery to enable farmers to take advantage of microclimates to maximize crop yields.⁶⁵ Likewise, an Israeli software manufacturer has created an internet-based system that advises farmers on optimal planting, irrigation, harvesting, and marketing times, the best feed mix for livestock, and ideal temperature control and storage procedures, depending on local conditions; this manufacturer has joined with IBM to market the product worldwide.⁶⁶ And Israel has developed a reputation for excellence in intensive aquaculture; raising fish in the desert has become an Israeli specialty, and Israel has partnered with Germany and Kenya to create plans for a wastewater treatment and aquaculture program for Lake Victoria—the largest lake in Africa, which provides a livelihood for five million people.⁶⁷

These innovations could enable Israel to help drought-stressed countries (perhaps including neighboring Arab states) build climate-adaptive infrastructures and enhance water management capabilities, making them more resilient in an age of disruptive climate change.⁶⁸ Indeed, in April 2012, the U.S. Agency for International Development (USAID) and MASHAV (Israel's Agency for International Development Cooperation) signed a memorandum of understanding to increase cooperation on food security in four East African countries (Uganda, Ethiopia, Tanzania, and Rwanda), while the next month, MASHAV signed a memorandum of agreement with the UN Industrial Development Organization (UNIDO) to advance, inter alia, water management and

food security goals in Africa and elsewhere in the developing world.⁶⁹ And in June 2012, the Organisation for Economic Co-operation and Development announced its intention to share Israeli water security advances internationally, while the World Food Prize Foundation conferred its annual award to Daniel Hillel, an Israeli American scientist, for his role in conceiving and implementing micro-irrigation, which has revolutionized food production around the world.⁷⁰

Even within the region there are signs of quiet cooperation between Israelis and Arabs on some of these issues. For example, in recent years, Israeli and Jordanian farmers have been cooperating to use barn owls in lieu of toxic pesticides to control the rodent population that threatens croplands in the Jordan River Valley.⁷¹ This kind of collaboration supports the long-term U.S. national security objectives of sustainable development, water and food security, economic growth, and political stability in the developing world. Israel's expertise in this area may also allow for additional collaborative undertakings between USAID and MASHAV in the developing world, and a revival of Israel's foreign aid program, in ways that advance U.S. interests.⁷²

Alternative/Renewable Energy Sources

The recent discovery by the Texas-based firm Noble Energy (in partnership with Israeli firms) of large natural gas deposits off Israel's shores promises to make Israel self-sufficient in energy within a decade—if problems with Turkey and Hizballah can be avoided. If these significant new finds are developed and fully exploited, Israel will also become a net gas exporter, although given the huge costs and long timeframes, probably not on a major scale in this decade. The offshore natural gas fields are expected to start commercial production as early as 2013, and will likely be fully onstream in the coming three to five years. In the longer term, if significant commercial and security issues are resolved, the export potential is likely

to be very substantial.⁷³ The anticipated economic bonanza is probably worth at least \$150 billion, and quite possibly considerably more, perhaps topping the equivalent of one full year of national income over the estimated twenty- to thirty-year production run.⁷⁴

In addition, Israel's possibly substantial onshore oil shale deposits could prove a longer-term energy and financial supplement. This is more uncertain, however, due to a complex combination of technical, economic, and environmental factors. In this connection, processes being tested in Israel—such as improved techniques to recycle, reduce chemical residues, or dispose safely of the huge wastewater by-products of hydraulic fracturing (“fracking”)—could, if successful, facilitate the exploitation of large confirmed oil shale deposits in the United States and elsewhere.⁷⁵

While Israel has lagged in the use of alternative and renewable energy sources, the Israeli government approved a plan in January 2011 to spend \$400 million over ten years to encourage the development of technologies that will reduce global consumption of petroleum-based fuels in transportation through the development of alternative fuels, and to boost knowledge-based industries in this field. It hopes to attract domestic and foreign venture capital to this effort—in much the same way that foreign venture capital and investment have helped make Israel a key player in the IT arena.⁷⁶ And in July 2011, the cabinet approved a plan to produce 10 percent of Israel's electricity using renewable or alternative sources by 2020.⁷⁷ (By contrast, Germany—a world leader—currently produces 17 percent of its electricity from renewable sources and plans to increase this proportion to 35 percent in 2020 and 80 percent by 2050.)⁷⁸ German companies, however, have recognized Israeli potential in this area and are financing Israeli research and cleantech start-ups, bringing their ideas and innovation to the global market. In September 2011, the German patent firm IP Bewertungs AG announced an effort to finance Israeli researchers and cleantech start-ups.⁷⁹

Israel's Arava Power (now 40 percent-owned by German industrial giant Siemens AG) expects to produce 400 megawatts of energy from future solar energy facilities in Israel's Negev desert, with tenders already published.⁸⁰

In terms of direct U.S.-Israel partnerships in energy-related R&D, Congress's passage of the Energy Independence and Security Act of 2007 led to the creation of BIRD Energy, a program funded jointly by the U.S. Department of Energy and Israel's Ministry of National Infrastructures and administered by the BIRD Foundation.⁸¹ Matching U.S. and Israeli companies and providing funding for these joint ventures, BIRD Energy has already invested millions of dollars to facilitate commercially viable joint U.S.-Israel alternative energy projects.⁸²

As a result of these and similar initiatives, Israeli-origin ideas, products, and processes hold promise to help or are already helping U.S. alternative energy companies. Such Israeli innovators include top finishers in recent GE Ecomagination competitions—whose projects include a solar window that will allow office buildings to produce electricity and a design for a lighter, more efficient, and more cost-effective wind turbine rotor, which reduces installation costs by at least 50 percent and shortens the break-even point on investment to three to four years—without subsidies.⁸³ Israeli innovations also underpin the achievements of BrightSource Energy, which is building a plant in California that will double the amount of solar thermal electricity produced in the United States and create more than a thousand new jobs. Though still not turning a profit, this operation has retained its public investment value and is increasingly cost-competitive with fossil-fuel generation, with fewer adverse environmental effects.⁸⁴ A different Israeli technology is represented in efforts by Virent Energy Systems to commercialize biofuels made from cellulose feedstock (derived from grass, crop, or wood residues) in Wisconsin and Mississippi, with hundreds of additional jobs in prospect in each state.⁸⁵ In all these cases, Israeli ideas and

innovations are being used by U.S. companies to provide solutions to American and global problems.

Battery-powered electric cars are one more alternative energy area in which Israeli technologies are beginning to compete globally. The replaceable-battery BetterPlace system pioneered by Israeli inventor and entrepreneur Shai Agassi is debuting in 2012 and 2013 in test markets including Israel, Denmark, and California.⁸⁶ The buzz about battery-powered cars, Israeli or otherwise, has not yet translated into market success, and even optimistic scenarios see electric cars capturing no more than 10 percent of the market in 2020.⁸⁷ Yet any significant progress in this area offers a small first step toward energy diversification and security, and the greening of the energy economy.

Medical R&D/Public Health

Medical R&D is a category that offers direct public health benefits and broad, multiplier effects for the U.S. economy and for societal resilience.

Israel is an international leader in basic research and clinical applications in the medical field. Israel produces the most medical device patents per capita in the world.⁸⁸ Teva Pharmaceuticals is the world's largest generic drug manufacturer and a major investor and employer in the United States. In 2008, for example, Teva paid \$7.5 billion to acquire Duramed Pharmaceuticals in Cincinnati, Ohio.⁸⁹ And as of 2009, the Weizmann Institute of Science had generated thousands of medical products since the founding in 1959 of the Yeda Research and Development Company, which markets these products; it has earned more royalties from these discoveries and inventions than any other academic institution in the world. Not far behind, the Hebrew University ranked twelfth worldwide in biotechnology patents, while Tel Aviv University ranked twenty-first.⁹⁰

U.S.-Israel cooperation in medical R&D and in the various medical disciplines is broad and deep; Israeli-developed techniques, procedures, and products are in widespread use in the United States. Thus, the U.S. military and civilian

emergency services use a novel Israeli bandage that enables more rapid treatment of casualties.⁹¹ Israeli techniques for enhancing warrior resiliency are being used to help U.S. military personnel prepare for multiple combat tours,⁹² as are Israeli techniques for enhancing the resiliency of civilian communities hit by natural or man-made disasters.⁹³ Likewise, techniques developed and tested in Israel are being used by clinical psychologists across the United States and in Veterans Administration (VA) hospitals to treat military service members suffering from post-traumatic stress disorder (PTSD).⁹⁴ And U.S. VA hospitals are evaluating an Israeli-developed exoskeleton that enables paralyzed veterans to walk again.⁹⁵ Finally, for more than thirty years, the IDF Medical Corps and the U.S. Army Medical Research and Materiel Command have held annual joint workshops to coordinate R&D efforts. In a recent workshop, participants discussed Israeli research regarding the use of freeze-dried blood technology for battlefield transfusions, and the diagnosis and treatment of PTSD.⁹⁶

In the civilian medical arena, Israel is a world leader in medical imaging, nuclear medicine, and health care IT, with GE's Israeli subsidiaries contributing to the company's status as a world leader in these areas.⁹⁷ Other Israeli medical innovations include a video camera in a pill for noninvasive gastrointestinal diagnostics,⁹⁸ a cancer vaccine currently in clinical trials,⁹⁹ and a blood test for a variety of cancers that is also undergoing clinical trials.¹⁰⁰ In pharmaceuticals, the first major American "big pharma" acquisition in Israel dates from 2010, when Abbott Laboratories paid \$123 million for the Israeli firm Starlims, a leader in laboratory information management systems. Abbott followed up in early 2012 by signing a three-year collaboration agreement with the Weizmann Institute's Yeda Research and Development Company to examine the possibility of marketing treatments for cancer, Alzheimer's, schizophrenia, and kidney disease, and producing diagnostic instruments and medical devices invented at the

Weizmann Institute. These moves, along with a U.S. Chamber of Commerce private business tour of Israel with twenty-eight leading U.S. biomedical executives at around the same time, signaled a new chapter in commercial partnerships that promises to overcome earlier intellectual property rights concerns in this area.¹⁰¹

The Israeli start-up biomedical firm ElMindA is spending millions of dollars for clinical trials at the university medical centers of Michigan and Pittsburgh of a noninvasive brain diagnostic tool, "brain network activation." By creating images of and analyzing electrical activity in the brain in real time, this tool identifies degrees of common but serious ailments: concussion, depression, Alzheimer's, Parkinson's disease, attention deficit/hyperactivity disorder (ADHD), migraines, and addictions. It may be able to help select the best treatment for each patient based on individual brain behavior.¹⁰²

Beyond basic research and medical technology, public health depends on controlling spiraling medical costs—an ever-increasing part of the U.S. federal budget and a growing economic burden as the population ages. (Health care spending in the United States currently exceeds 17 percent of GDP and is expected to rise even further in the coming years.)¹⁰³ Israel is sharing its experience in this area with U.S. counterparts, beginning with the computerization of patient records and other medical information for more efficient administration.¹⁰⁴ Most recently, Israel hosted fifty leading U.S. hospital administrators for a study tour that led one participant to note the ability of Israeli hospitals to do so much with such small budgets.¹⁰⁵

Finally, U.S.-Israel cooperation is providing public health benefits in the developing world, including a U.S.-UN project in Africa to circumcise 20 million teenagers and men to prevent AIDS. The program is based on Israeli experience in operating mass circumcision clinics in Swaziland and South Africa.¹⁰⁶ In January 2012, the U.S. Food and Drug Administration approved an Israeli invention for use in the United States that may also

be applied internationally against AIDS: a device for nearly painless, bloodless, and inexpensive adult circumcisions.¹⁰⁷ In this and other areas of Israeli expertise, Israeli foreign aid officials are eager for increased partnership with U.S. counterparts operating abroad—in Africa, Asia, Latin America, and elsewhere in the developing world.¹⁰⁸

Societal Resilience

Urbanization, globalization, and the cyber revolution have redefined the nature of security. Advanced industrial societies are densely networked (characterized by social and economic interdependencies) and highly urbanized—and are thus vulnerable to disruption. Moreover, power has become more diffuse, and individuals or small groups now have the ability to do great harm through cyber and mass-casualty terror attacks. Finally, globalization has facilitated the movement of individuals, groups, ideas, and information across borders, creating an increasingly interdependent world in which social and economic stability and physical security at home may be affected by developments abroad. For these reasons, it is necessary to consciously foster societal resilience so that societies that experience massive disruptions due to natural events (droughts, wildfires, floods, or tornadoes) or man-made occurrences (cyber attacks, terrorism, or economic shocks) can quickly recover.¹⁰⁹ Resilience thus relates to a variety of threats and can be enhanced by a variety of means—for instance, rocket, missile, and cyber defenses, homeland security initiatives, economic policies, water and food security measures, diversified energy sources, and public health programs.

As a country that has endured six decades of war and terrorism and still managed to build a flourishing economy and a vibrant democracy, Israel can offer the United States insights into how to enhance its own societal resilience. Of particular note, during the last decade, Israel weathered not just the bursting of the global tech bubble but also the second Palestinian intifada (2000–2005), which led to an unprecedented wave of terrorism

in Israel's cities, and a war with Hizballah in Lebanon (2006), during which rockets fell over all of northern Israel. Yet Israel's share of the global venture capital market doubled during the first half-dozen years of the decade (from 15 to 31 percent), the Tel Aviv stock exchange registered a net gain during the war with Hizballah, and Israel's macroeconomic performance maintained a steady upward trajectory throughout this period, as well as during the nearly month-long war with Hamas in Gaza in December 2008–January 2009.¹¹⁰

In 2011, despite the violent political turmoil of the Arab uprisings, the occasional rocket from Gaza, and the perceived threat of Iran's nuclear progress, Israel welcomed a record number of foreign visitors on business trips, pilgrimages, or sightseeing vacations: more than three million people, two thirds of them non-Jews.¹¹¹ And in early 2012, a top Intel Corporation official publicly noted that he could not recall his firm's significant research and production facilities in Israel ever suffering any disruptions from war, terrorism, boycotts, or political protests throughout their three decades of operation.¹¹²

Given Israel's success in these dimensions of national resilience—notwithstanding its shortcomings in dealing with natural disasters, such as forest fires—U.S. and Israeli experts and officials can benefit from regular exchanges of ideas and information about “best practices” in addressing both kinds of challenges. In particular, the United States has benefited from exchanges among medical practitioners and emergency services personnel regarding emergency response procedures, mass-casualty treatment and management, and public education, all of which contribute to societal resilience.¹¹³ Likewise, the United States has benefited from Israeli lessons learned pertaining to enhancing societal resilience in the face of terrorism, including the need to: involve the public in counterterrorism and national defense efforts; rapidly restore an atmosphere of normality at the sites of terrorist or other attacks; and consider how security policies affect the

public's faith in the government's ability to protect it.¹¹⁴ Conversely, there is no doubt that Israel—which in December 2010 suffered a wildfire in the north that killed forty-two people and caused tens of millions of dollars in damage—can learn much from the United States in emergency services response to natural disasters such as fires.¹¹⁵

Notes

1. Most discussions of the U.S.-Israel security relationship overlook these increasingly important nonmilitary dimensions of security cooperation. This probably reflects a traditional approach that neglects the nonmilitary dimensions of national security—though it may also reflect a desire by some U.S. and Israeli companies to avert anti-Israel boycotts, controversy, sabotage, or terrorism. For an academic reference work that reflects this more expansive approach to security, see Myriam Dunn Cavelty and Victor Mauer (eds.), *The Routledge Handbook of Security Studies* (London: Routledge, 2011). In addition to chapters on terrorism, WMD, and war, this volume features chapters on organized crime, drug trafficking, human trafficking, state failure, cyber threats, energy security, and security and health.
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5 | Future Challenges

ISRAEL IS A SMALL COUNTRY that punches way above its weight in a number of areas that will be key to U.S. national security in the coming years. Achieving the potential for even greater U.S.-Israel cooperation, however, will require the two countries to deal more forthrightly with issues that have hindered closer collaboration in the past, and will require Israel to address a number of challenges to its long-term security, economic well-being, and international standing. Israel's largely successful track record of overcoming challenges in the past (mass immigration, deep social cleavages, economic stringency, war, and terror), however, provides grounds for optimism regarding its ability to meet the challenges of the future.

For Israel, security challenges have long had top priority, and this is likely to remain the case—especially given the region's rapidly shifting strategic environment. Many of these, as discussed above, have traditionally been addressed in partnership with the United States; that can be expected to continue, in view of the shared interests, commitments, and relationships that bind the two sides. But beyond these security challenges, Israel faces political, economic, and demographic challenges that could test the U.S.-Israel relationship.

Peace with the Palestinians

The perception that Israel bears a heavy burden of responsibility for the failure to resolve the conflict with the Palestinians has gained traction in various circles in the United States, including parts of official Washington, and could someday endanger the U.S.-Israel relationship.¹ This is a largely self-inflicted wound; greater restraint with regard to land expropriations, the destruction of illegal Palestinian dwellings (i.e., those built without official permits), and settlement construction would help

avoid unnecessary tensions between Israel and the United States, while keeping the focus on the many common interests the two allies share.²

Moreover, the inertia characterizing relations between Israel and the PA could eventually pose dangers for both. While another intifada seems unlikely, the lack of a viable diplomatic process could lead to a gradual deterioration in the security environment in the West Bank, unraveling the economic gains of recent years and prompting a slow, downward spiral in relations. This could increase tensions between Israel and the PA, and ultimately Israel and the United States.

By avoiding provocative actions and adopting additional measures to improve the quality of life for Palestinians in the West Bank, consistent with its security requirements, Israel could further improve the situation on the ground in the West Bank, and in Washington, and help create more favorable conditions for the resumption of Israeli-Palestinian peace talks. This would mitigate any intangible or perceived costs to the United States associated with Arab criticism of American support for Israel. Conversely, under such circumstances, the continued refusal of the PA to resume negotiations without preconditions, or its insistence on unrealistic demands (such as a “right of return” for the descendants of Palestinian refugees to Israel, rather than to a future Palestinian state), might help clarify which party is responsible for the diplomatic impasse.

The Arab Uprisings

It is still too early to assess the long-term implications for the United States and Israel of the Arab uprisings of the past eighteen months, though a number of scenarios are possible. For instance, should domestic opinion spur the PA, Jordan, or Egypt to become more hostile toward Israel or the United States, this could lead to new U.S.-Israel

tensions, if Washington concluded that Israeli actions had contributed to this turn of events.

The clash on the Egypt-Israel border in August 2011, which occurred when Palestinians from Gaza launched an attack on Israel from the Sinai (leading to the death of several Egyptian soldiers in the ensuing crossfire), and the diplomatic tensions and small popular protests in Egypt that followed, indicated the potential for problems of the kind just suggested.³ Indeed, the Egyptian revolution against former president Hosni Mubarak is the most important case in point regarding possible effects of the Arab uprisings on U.S.-Israel ties. Nevertheless—as shown by Egypt’s latest judicial challenge to parliament, right on the eve of its June 16–17, 2012, presidential election runoff—the course of Egypt’s revolution and possible counterrevolution is highly uncertain. So Egypt will probably be preoccupied with internal affairs, rather than with Israel, for quite some time. Yet if Egypt’s new government adopts policies hostile to Israel, while pursuing an accommodationist approach to the United States, Washington would likely feel compelled to tread carefully in its efforts to balance its relationship with these two traditional allies.

Conversely, Arab political turmoil has the potential to reinforce the U.S. alliance with Israel—even, or perhaps especially, if key Arab countries become more democratic. Because public opinion in those countries is generally anti-American, greater democracy at home could produce a more anti-American policy abroad. In sharp contrast, it is clear that in Israel, already a functioning democracy, public opinion is solidly pro-American. And because Israel is also politically more stable than just about any Arab country today, its friendship with the United States can more readily be counted on to last for the long haul. As one U.S. military officer with long experience across the region told the authors in the first summer after the Arab uprisings, “Looking around the neighborhood, I don’t see any better

ally for the U.S. than Israel. It’s already a democracy, but a strong, stable, and friendly one.”

Reducing Mistrust

While enjoying very close ties in a broad range of areas, U.S.-Israel relations are affected by occasional tensions and an undercurrent of mistrust. This reflects the legacy of Israeli actions that some American officials believe show a lack of consideration for U.S. interests at best, or malevolent intentions at worst, such as the Jonathan Pollard affair (1985), Israeli technology and arms transfers to China in the 1990s, and ongoing construction of Israeli settlements. It also reflects the legacy of U.S. actions that some Israeli officials believe show American naiveté or poor strategic judgment, such as the condemnation of Israel’s 1981 strike on Iraq’s nuclear reactor (for which U.S. officials later thanked Israel), the embrace of democracy through elections (which helped bring Hamas to power in Gaza in 2006), and arms sales to Arab allies that Israelis worry might undermine their qualitative military edge. Recent tensions reflect divergent approaches toward the Israeli-Palestinian peace process, the Arab uprisings, and Iran. Finally, relations are to some extent colored by an Israeli interpersonal and political style that some American officials find off-putting. While differences and misunderstandings between even the closest of allies are inevitable, both sides can do more to avoid unnecessary friction.

Moreover, while popular support for Israel among the general public and Congress remains at all-time highs, the increasingly partisan atmosphere in Washington may strain the historic bipartisan support for the U.S.-Israel relationship—another source of its strength and vitality.⁴ Polling shows that since 2001, in the decade that such data has been collected, more Republicans than Democrats have consistently expressed greater sympathy for Israel than for the Palestinians—and that this gap has grown over time. In the most recent poll, 78 percent of Republicans and 53 percent of

Democrats stated that their sympathy was more with Israel.⁵ Similarly, a recent unscientific “poll” of fifty former senior U.S. foreign policy professionals showed that the Republicans were twice as likely as the Democrats to be favorably disposed toward the U.S.-Israel alliance (100 percent to 45 percent).⁶ Furthermore, the rightward shift in Israeli politics in response to the second Palestinian intifada—manifested most clearly by the decline of the Labor Party in the past decade—has complicated views of Israel among U.S. liberals.⁷

What this all means, in practical terms, is unclear. What is clear is that Israel has traditionally enjoyed overwhelming support from both sides of the aisles in Congress, and from both Democratic and Republican administrations. The polling data does, however, suggest the possibility that U.S. support for Israel could someday become a partisan political issue in the United States, which would not bode well for the long-term health of the relationship.

Diminished Self-Reliance

The U.S.-Israel relationship has thrived, in large part, because Israel has never asked Americans to shed blood on its behalf; it has fought its own wars, only asking the United States to provide the means to do so. That distinction becomes harder to maintain as U.S. and Israeli security interests become more intertwined through coordinated efforts to halt Iran’s nuclear program, while each tries to influence each other’s actions. Stopping Iran’s nuclear program is a matter of great import to the United States, but it is of perceived existential significance for many Israelis. Should Israel conclude at a certain point that diplomacy, sanctions, and covert action have failed to halt Iran’s nuclear program, it might launch a preventive strike. That would be a high-risk move; an unsuccessful strike, or one that brought the United States into a war with Iran, could adversely affect U.S.-Israel relations. Conversely, if Israel concluded that it could no longer do much damage to Iran’s nuclear program on its own, it might press the United States to strike. As President Obama has stated, U.S. policy

is based on Washington’s assessment of America’s interest in preventing a nuclear arms race in a volatile Middle East, and preventing nuclear weapons from falling into the hands of terrorists. Yet were the United States to strike Iran for its own reasons, some Americans would undoubtedly claim that, in so doing, the United States was acting on behalf of Israeli, and not American, interests. Such a perception could undermine a principle that has underpinned the U.S.-Israel relationship for decades.

A possible countervailing trend may be represented by Israel’s forthcoming major natural gas development, which is expected to make the country more self-sufficient in energy and economic terms. Some Israeli experts are open to the prospect of eventually using these new revenues to reduce Israel’s annual requests for U.S. military assistance.⁸ Such a decision would inevitably involve political and economic considerations, and it remains a hypothetical for now. Nevertheless, such a decision could mitigate at least one important aspect of Israel’s economic reliance on the United States.

Economic and Educational Challenges

Israel’s ability to turn around an economy that experienced high unemployment and hyperinflation in the 1980s, and to produce an economy that has enjoyed solid growth and has not been greatly affected by the global recession, is a remarkable achievement.⁹ Despite the overall strength of the economy, however, danger signs must be addressed if Israel is to ensure its economic health. These include the highest poverty level of any of the thirty countries in the Organisation for Economic Co-operation and Development (OECD); dramatic disparities in the distribution of wealth; a public education system that turns out large numbers of students unable to compete in a modern economy; and the growing number of unemployed or nonproductive individuals in the ultraorthodox (*haredi*) Jewish and Arab communities. These two communities could, by 2040, make up as much as half the population of Israel.¹⁰

Israel is taking steps to rectify these problems, such as increasing funding for vocational training and primary, secondary, and higher education; creating business development programs in less advantaged neighborhoods and towns; establishing frameworks for *haredi* men to serve in the military (as a first step toward their integration into Israeli society)¹¹; and increasing budgetary allotments for Arab municipalities—although Israeli officials recognize that significantly greater efforts will eventually be required in all these areas.¹² It remains to be seen to what extent these measures will succeed, though Israel enjoys a critical mass of productive, technologically sophisticated, well-educated, and relatively well-off workers who will continue to ensure that it maintains relatively high overall economic and technological standards for years to come.¹³

A Demographic Bomb?

It is conventional wisdom in some circles that Israel faces a long-term threat of being overwhelmed by its own Arab citizens, who will eventually become a majority in Israel. In fact, however, birthrates of Palestinians in Israel have been declining over the years (as have birthrates of Palestinians living in the West Bank and Gaza) and are converging with those of Israel's Jewish population. According to some estimates, the percentage of Palestinian citizens of Israel (currently some 20 percent of the population) is expected to reach 23 percent by 2020 and will plateau at around 26 percent by 2050 (although demographic forecasts are notoriously unreliable). Thus, the challenge Israel faces is that of accommodating and integrating a large, increasingly ambivalent and alienated minority that suffers discrimination in government budgeting, access to services, and professional opportunities (even if it enjoys many more political freedoms and a higher standard of living than Arabs in neighboring states)—and not an Arab majority that will be able to use its power at the polls to dismantle the Jewish state.¹⁴ By all appearances, this is a manageable problem, if Israel takes commonsense measures to deal with it.¹⁵ Some important first steps

already taken in this regard include the launching of a national service initiative for Arab youth and an increase in budgets for job creation, infrastructure, and housing in Arab municipalities—though more can certainly be done.¹⁶

More problematically, it is widely believed in Israel, and increasingly outside the country, that if Israel continues to hold on to the West Bank, the Jewish and democratic character of the state will be jeopardized—particularly once the Arabs become a majority in the area between the Mediterranean and the Jordan River.¹⁷ While Israel's continued commitment to a two-state solution and its restriction of most formal settlement activity to areas close to the 1967 lines leave open the door to a diplomatic settlement of the conflict, broad segments of international opinion believe Israel is taking steps that will preclude such an outcome, and are turning increasingly unfriendly toward the Jewish state.¹⁸ This could, indirectly, have a long-term impact on the U.S.-Israel relationship. Moreover, the continuation of the status quo is likely to undermine Israel's image as a democracy, and to increase calls for a "one-state solution" to the Israeli-Palestinian conflict, which would make a diplomatic solution even more difficult to achieve.

Delegitimization

Some of those opposed to Israel's continued occupation of the West Bank, and many opposed to Israel's very existence, are increasingly turning to boycott, divestment, and sanctions (BDS) campaigns and the delegitimization of the Jewish state as a means of diplomatically isolating it, limiting its military freedom of action, and pressuring it to unilaterally withdraw from the West Bank. The most extreme members of this movement (a large part of the BDS crowd) conceive of Israel's withdrawal from the West Bank as the first step toward the Jewish state's elimination. While such efforts have not garnered widespread international support and have had only a limited impact thus far, they have the potential to harm investment in and exports from Israel. Should such efforts gain traction, they

could undercut Israel's appeal as a business partner or destination for foreign investment, and thereby undermine its value as a strategic asset for the United States.¹⁹

Due to the depth and breadth of American support for Israel, it seems unlikely that the BDS movement will gain many adherents in the United States. A revived peace process, moreover, would probably deflate the delegitimization challenge. The 1993 Oslo Accords with the Palestinians, for all their faults, produced major tangible dividends for Israel in terms of international diplomatic, economic, and security ties, especially with rising powers like India and China. The Oslo Accords even shifted Arab and Muslim discourse toward acceptance of Israel in principle, eventually producing the Arab Peace Initiative of 2002 that was reaffirmed (and then endorsed by the much broader Organization of the Islamic Conference) in 2007. Some of those gains are currently dissipating, owing to a combination of factors: the lack of a peace process; the rise of Islamist movements like Hizballah, Hamas, the Justice and Development Party (AKP) in Turkey, and the Muslim Brotherhood affiliates in countries most affected by the Arab uprisings; and incitement by Iran and other radical forces. Yet that atmosphere could change for the better, in the case of renewed progress toward an Israeli-Palestinian peace agreement. In dealing with this challenge, however, Israel would probably try to balance the concessions required by the PA to advance the peace process against the practical security arrangements Israelis view as essential to their long-term survival.

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6 | Conclusion

ISRAEL IS A SMALL COUNTRY that contributes disproportionately in a number of areas critical to the security of the United States. It is a valued partner for the U.S. intelligence and counterterrorism communities and for the U.S. military; its capabilities in these areas will remain as important in the future as in the past, and perhaps even more so, due to cuts in the U.S. intelligence and defense budgets. And as long as terrorists target America, Israel will be a source of insights and technologies to help the United States secure the homeland.

Moreover, Israel is a leading innovator in the technologies and concepts that are transforming the face of modern warfare—cyber operations; unmanned vehicles and robotics; battlefield intelligence, surveillance, and reconnaissance sensors and platforms; rocket/missile defenses; and armored-vehicle protection—and will remain a source of high-tech systems and advanced warfighting concepts for the United States and its allies.¹

Finally, Israeli civilian innovations—in information technology, water conservation and management, high-tech agriculture, medical R&D, cleantech/renewable energy, and societal resilience—have the potential to help the United States meet many of the soft security, economic competitiveness, and sustainability challenges of the future. While many U.S. allies contribute to U.S. security in one or more of these areas, few contribute in so many diverse and important areas as does Israel.

This, therefore, is a relationship grounded in mutual interest that clearly benefits both countries. It does not depend solely on intangibles such as shared values, moral obligations, political advocacy, and popular support. This suggests an adjustment in how the essential facts of the U.S.-Israel relationship are conceived and debated: as a two-way partnership whose full potential requires greater recognition that Israel not only benefits immensely

from U.S. support, but also contributes significantly to U.S. interests. Israel's own strength and stability, along with its military, technological, and scientific achievements, enhance America's ability to meet the security, economic, and sustainability challenges of the future, and to preserve American prosperity and leadership.

U.S. officials should acknowledge that Israel is an asset to the United States—as often as they acknowledge the more traditionally invoked common values or common commitment to Middle East peace that also underpin the U.S.-Israel alliance. U.S. commercial, technical, scientific, medical, and international development agencies should seek additional opportunities for bilateral collaboration, and more actively involve Israel where it can contribute to multilateral international partnerships. And the U.S. private-sector business, technological, and scientific communities, which are already deeply invested in practical partnerships with their Israeli counterparts, should be further encouraged to bring home the benefits of these multifaceted and unusually productive bilateral ties. To this end, the United States and Israel should reduce remaining technical barriers to trade, expand the activities of the three binational research foundations that encourage joint R&D, create sector-specific programs to spur collaborative R&D, and encourage further bilateral cooperation between individual American states and Israel.²

Statements by U.S. civilian and military officials should acknowledge that American support for Israel has not hindered U.S.-Arab security cooperation in the areas of counterterrorism, missile defense, or requests for access, basing, and overflight rights, and that a strong and healthy relationship with Israel is necessary if the United States is to play an effective role in the pursuit of Israeli-Palestinian peace. Moreover, to ensure the long-term vitality of U.S.-Israeli relations, the two

sides should continue to decouple mutually beneficial, day-to-day cooperation from the vicissitudes of politics and the ups and downs of the (currently dormant) Israeli-Palestinian peace process.

U.S. leaders should also more actively encourage quiet Arab-Israeli cooperation in water and food security, public health, and other common practical concerns. This would not only advance key U.S. foreign policy objectives related to sustainable development and societal resilience, but also help lay the foundation for broader Israeli-Arab coexistence. And Washington should not allow preconceptions about the limits of the possible to stand in the way of efforts to encourage discreet Israeli-Arab security cooperation where U.S., Israeli, and Arab interests align. Israel has already engaged in intermittent, low-key intelligence and security cooperation with several of its neighbors (Egypt, the PA, Jordan, and a number of Gulf Arab states) on various issues for several decades now. Accordingly, the United States should try to foster conditions for multilateral cooperation in such areas as aiding the Syrian opposition and countering the threat posed by a nuclear Iran—notwithstanding the significant obstacles to joint efforts, even among Arab states, on such sensitive matters.

As a result of the Arab uprisings, Arab policymaking may become more responsive to public opinion—but the United States should not necessarily defer to it. Instead, U.S. officials should compare actions with attitudes: for example, polling data, and what Arab leaders and media say, with what those leaders and publics actually do. Accordingly, the United States should evaluate the health of its relationships with its Arab allies, as with Israel, on the basis of tangible cooperation

(e.g., trade, investment, higher-education enrollments, arms sales, and military cooperation) rooted in shared interests, and a perceived need to ensure U.S. support. U.S. public diplomacy should therefore focus on explaining the shared interests that underpin its relations with both its Arab and Israeli allies.

In sum, while the U.S.-Israel relationship is not symmetrical—the United States provides Israel with indispensable diplomatic, economic, and military support—it is a mutually advantageous alliance whose benefits to the United States have been substantial. Moreover, it is a relationship whose benefits have accrued at little cost to U.S. ties with its Arab and Muslim allies, contrary to the conventional wisdom. And it is a relationship that has great potential for new types of cooperation—bilateral and multilateral—and even more substantial benefits in the future. The U.S.-Israeli alliance offers both parties tangible support in confronting many of their major challenges: both the hard security threats that have provided the rationale for bilateral intelligence and security cooperation for nearly six decades now, and the new “soft security” challenges facing the United States, its allies, and the international community at the outset of the twenty-first century.

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