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Egypt's True Defence Expenditures - 2.7 or 14 Billion Dollars?

Shawn Pine

EGYPT'S DEFENSE EXPENDITURES \$2.7 BILLIONS OR \$14 BILLIONS

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Introduction

The criteria used to determine a strategic threat is assessing the capabilities of the potential threat to achieve its strategic, military and political goals. Historically, strategic planners, recognizing the difficulty in determining a country's intentions, make a worst-case scenario, assuming the worst intentions of a country, and increasingly rely upon their assessment of the country's capabilities as the primary determinate of the probability of hostilities.¹ However, in the case of Egypt, it appears that Israel's strategic planners are making a critical error in their strategic threat assessment of the potential medium and long-term threats that Egypt poses to Israel. Rather than incorporate a worst-case analysis of Egyptian intentions, Israeli strategic analysts have discounted Egypt as a potential threat and have focused their attention on the short and medium-term threats posed by Syria and Iran.

This section examines the capabilities of the Egyptian military and its ability to facilitate achievement of that country's medium and long-term strategic goals. Two essential components are used to assess Egyptian military capabilities. The first component examined is the extent of the Egyptian military build-up.

Egypt, since 1985, has embarked on an unprecedented military build-up. Relying on \$2.1 billion of U.S. aid, including \$1.3 billion in military assistance, Egypt is approaching the qualitative and quantitative levels of the Israeli Defense Forces.

The second component examined is the amount of resources that Egypt is devoting to its military forces. In other words, it is necessary to accurately determine Egypt's defense budget and its yearly military expenditures. Accurately determining and examining Egypt's defense expenditures facilitates accurate assessment of that country's intentions. Indeed, given Egypt's extreme internal social, economic, and political problems, coupled with the relatively small threat posed by its neighbors, we should expect a relatively small amount of its resources to be devoted to its military.

It is important to note that traditional sources of military information have generally published statistics concerning the military expenditures of third-world countries based upon data provided by the countries in question. However, when independent sources conduct detailed analysis of these budgets, they frequently find significant discrepancies which have led to estimations far higher than those officially disclosed.² Unfortunately, for the most part, acknowledged sources for foreign military expenditures, such as: The Military Balance; The Jaffe Center's Middle Eastern Military Balance; and the Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database, continue to publish officially stated figures without independent verification or analysis.

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EGYPT'S MILITARY BUILD-UP

Conventional Build-up

Notwithstanding the 1978 peace treaty, Egypt has undertaken serious efforts to achieve conventional military parity with Israel. Egypt, relying on \$2.1 billion of financial aid from the U.S., \$1.3 billion in the form of military assistance, is in the process of transforming its forces into a modern, Western-based military. It currently fields the 13th largest military in the world.³ In 1994, Egypt surpassed the United States to become the second largest arms importer, behind Saudi Arabia, in the world.⁴ Moreover Egypt, in a region that leads the world in the import of weapons, is the only Middle East country to have increased its arms purchases yearly since 1990.⁵ While the vast majority of Egyptians continue to live in squalor, the Mubarak government has devoted much of the \$28.8 billion in total aid it has received from the United States since 1979, to reconstitute, rebuild, and reorganize Egypt's military to such an extent that it is approaching the qualitative and quantitative levels of the Israeli Defense Forces.⁶

Air Force

Since the early 1980's, Egypt has completed two five-year plans, and has embarked on a third, to build up, modernize, and increase its military capabilities. The first five-year plan, which started in 1983, consisted of rebuilding Egypt's military infrastructure which was destroyed during the 1973 Arab-Israeli War. The primary focus of these efforts was the construction of new bases and communications systems. From 1988 to 1993, Egypt channeled funds into the air force by purchasing American F-16s and upgrading its command and control, and air-defense capabilities.⁷

In the current five-year plan, the air force continues to receive the priority of aid. Egypt spends as much as 80 percent of U.S. military aid on the Air Force. As part of the Peace Vector Program, the Egyptian Air Force has made five orders of F-16s, and will total 190 planes by the time all the aircraft are delivered. About 130 F-16s have already arrived and the last batch, which will be assembled in Turkey, started arriving in 1996.⁸ Additionally, Egypt has received approval for the purchase of 21 F-16C aircraft and for

modification of its existing F-16 C/D's including the installation and integration of Harpoon and GBU-15 weapons capability.⁹ Egypt has equipped its aircraft with relatively modern accessories including AN/ACR-69 radar warning systems, AN/ALE-40V chaff/flair dispensers, and AN/ALQ-131V jamming pods.¹⁰

Moreover, Egypt has requested the purchase of services for the modification and upgrade of F-16 A/B aircraft engines at a cost of \$86 million.¹¹ Today, Egypt can field a modern, sophisticated air force with about 550 airplanes, more than half of Western origin. The Egyptians have also bought advance ordnance, avionics and accessories and is upgrading its aging Soviet aircraft by equipping its MiG-21 fighter aircraft with night vision capabilities.¹² Egypt augmented its air-to-air missile capabilities by requesting the purchase of 271 AIM-7M Sparrow and 314 AIM-9M Sidewinder missiles.¹³ These missiles will supplement its extensive air-to-surface missile inventory that includes AGM-65A/B/D Maverick, Exocet AM-39, and Rockeye missiles.¹⁴

Egypt has been cooperating with the U.S. to develop an advanced C3I system that will assimilate data from air and ground sources into a single network so that aircraft and missile systems can engage multiple targets simultaneously.¹⁵ Egypt has enhanced its airborne early-warning capabilities by taking delivery of 5 Grumman E-2C Hawkeyes, 2 CH-130E's, and 4 Beech 1990's.¹⁶ Moreover, a \$7.5 million contract was rewarded to Orbital Sciences Corporation to provide Egypt with Mission Support Systems (MSS) which included: 16 MSS II + mission planning workstation subsystems and associated data; 1 MSS II database preparation system; and 100 satellite imagery.¹⁷

The Egyptians are also acquiring a modern helicopter fleet. Egypt has already received delivery of 24 Apaches (AH64A), and is expected to take delivery of twelve more.¹⁸ These helicopters possess state-of-the-art night-flying equipment and carry up to 16 Hellfire antitank missiles and 38 rockets.¹⁹ These helicopters will supplement Egypt's existing arsenal of attack helicopters consisting of 74 SA-342L, many of which are armed with HOT air-to-surface missiles and 30mm guns.²⁰

Nor is the improvement limited to equipment acquisition. The Egyptian Air Force has adopted

western command and control, attack techniques, support and aerial combat roles. Many Egyptian pilots are being trained to Western standards, often at U.S. training facilities. Moreover, Egypt is building advance maintenance and training facilities for F-16 repair depots and has expanded their support efforts to provide depot level and other major maintenance.²¹

Air Defense

Egypt has continued the Soviet practice of maintaining separate air-defense command structure. As a consequence, Egypt's air-defense system is one of the largest and most complex systems in the Middle East.²² While Egypt still maintains large stocks of antiquated Soviet systems, it has been steadily improving its air defense capabilities.

Among some of the notable Egyptian acquisitions are 12 Improved Hawk batteries with 72 Improved Hawk launchers and 12 Crotale batteries with 24 to 36 Crotale missile launchers.²³ Egypt's air-defense capabilities were also enhanced by the acquisition of 180 Hawk and 1,000 Hellfire II missiles.²⁴ Additionally, Egypt improved its existing Hawk missile systems through the purchase of Raytheon's Phase III Product Improvement Program. The estimated cost for this program is \$303 million and includes modification kits; systems engineering; remanufacturing of selected hardware and other related items of system support.²⁵ Egypt has also procured British-made Plessey AR-3D and TSR-2100 radars.²⁶

Army

Egypt has also modernized its ground forces. Until the late 1970's, the Egyptian army comprised 10 divisions, only half of them either mechanized or armored. Today, the army has 12 divisions, all but one of them is either mechanized or armored. Egypt plans to field a total mechanized army by 2005.²⁷ The result is that the Egyptian army is now capable of fielding a modern mechanized military that can move with the speed and firepower equal to that of most modern armies. The mechanized divisions revolve around some 4,500 armored personnel carriers, the core of which consists of 2,000 U.S.

M-113's. Egypt, in order to further modernize its infantry ground forces, has contracted for the delivery of 611 Dutch YPR-765 armored infantry fighting vehicles to replace its aging BMP forces.²⁸ Egypt is also upgrading its Fahd-30 AIFV's with BMP-2 turrets.²⁹ Additionally, Egypt has substantially improved its anti-tank capability with the acquisition of 2,372 TOW 2A missiles and its intention to buy 540 TOW launchers.³⁰

The armored corps was also the focus of reform. In the 1970's, the Egyptian armored corps was comprised almost exclusively of Soviet tanks, the best of which was the T-62. Today, Egypt's armored corps is comprised of some of the most modern tanks in the U.S. inventory. Egypt began the transformation of its armored forces by forming two armored divisions following its acquisition of 850 M-60 A3s. Egypt currently has 1,700 M-60's (1,100 M-60A3's), and plans to upgrade all of its M60A1 tanks to A3 standards.³¹ Egypt is also improving its aging Soviet armor by contracting with UK firms to provide those tanks with greater armor-penetrating ammunition.³²

Navy

Despite enormous costs, Egypt has also taken steps to improve its navy. Egypt is focusing on upgrading the Egyptian fleet of eight submarines acquired from China. It has leased two former U.S. Navy Knox class frigates and is expected to receive 10 ex-U.S. Navy Seasprite ASW helicopters upgraded to SH-2G(E) standards.³³ Additionally, Egypt has requested the purchase of two PERRY class frigates (USS GALLERY and DUNCAN FFG10). The ships are equipped with MK-46 MOD 5 torpedoes and PHALANX Close-in-Weapon Systems (CIWS).³⁴

As part of its inculcation of Western technology, the navy holds joint maneuvers with units of the American, French, British and Italian navies. Egypt is also modernizing four Chinese-built Romeo class submarines with improved weapon systems including Harpoon missiles, fire control systems and sonars.³⁵

WEAPONS DEVELOPMENT

Egypt is also expanding its own domestic production of military armaments. The Egyptian government has approximately 20

military arsenals under the Egyptian Military Factories (EMF), which are managed by the Ministry for Defense and Military Production/National Organization for Military Production (NOMP). Some of Egypt's significant weapon development efforts include the following:

Factory 200

After the Gulf War, the Egyptians began to assemble the U.S.-made M1A1, which is widely regarded as one of the finest tanks in the world, under the "Factory 200" program. The M1A1 "Factory 200" program is a major milestone in Egyptian efforts to achieve limited military self-sufficiency. Egypt obtained U.S. approval in 1984 to build a giant factory to produce new tanks. Under the agreement, the Egyptians will assemble 524 M1A1 tanks, and officials hope that the number will eventually rise to 1,500 tanks.³⁶ Six production cycles were established with each increment increasing the level of technology from General Dynamics Land Systems. The cost is estimated at \$3.2 billion. The Egyptians also will produce the 120-mm cannon as well as an increasing number of parts for the tank. Egyptian officials say the goal is to make Cairo self-sufficient in tank production.

Egyptian Infantry Fighting Vehicle Program

Egypt is testing the prototype of the Egyptian Infantry Fighting Vehicle (EIFV). Development is being done by United Defense LP (UDLP) of the U.S. and Egyptian Ministry of Military Production. It is designed to compliment the M1A1 battle tank and is armed with a 25mm M242 chain gun, a 7.7.62mm M240 co-axial machine gun and a twin launch for the TOW anti-tank guided system.³⁷

Sakr Factory

The Sakr Factory for Developed Industries produces artillery and missile systems of several types. Thus far, Sakr had produced three families of 122mm multiple rocket launchers including: the Saqr 36 with a maximum range of 36 kilometers; the Saqr 18; and the Saqr 10.³⁸ Egypt, in addition to its imports, is modifying and experimenting with different systems in an attempt to develop an indigenous production

capacity. The factory also developed the Saqr Eye (an improved version of the SA-7B which is more sensitive and reliable than the original).³⁹

Abu Zaabal Engineering Industries

This arms manufacturer produces automatic guns and artillery pieces with a caliber up to 203mm. Among its projects is the 23mm Nile 23 and Sinai 23 air-defense gun vehicle, and manufacture of 105mm guns for upgrading T-55 tanks. It has also produced an indigenous 23mm weapon system (Ramadan 23), which combines two ZU 23mm fire units with a Contraves Gun King laser/computer firing system.⁴⁰

Heliopolis Company

Heliopolis manufactures the SA-7 warheads as well as 100mm and 115mm tank ammunition, 122mm rockets, 100 AA ammunition, aerial bombs, depth charges, and other associated products.

Arab-American Vehicle Co. (AAVCO)

AAV company is a joint Egyptian and American venture formed in 1977. The company employs over 17,000 workers and produces military jeeps and other light vehicles.

Arab-British Defense Co. (AB-DCO)

Formed in 1978 as a joint Arab-British project, AB-DCO has produced well over 1,000 Swingfire ATGM's under British license. Additionally, the company has produced a modernized Soviet 9M14M Malyutka Sagger ATGM and is developing a new warhead with greater armor-piercing capability. The plant has also been involved in a joint manufacture venture of SA-2 Guideline SM missiles with China or North Korea.

NON-CONVENTIONAL WEAPONS

Nuclear

Egypt was one of the first countries to obtain nuclear capabilities when it purchased a small research reactor from the Soviet Union in the early 1960's. Despite this distinction, it appears that Egypt has made the strategic decision to concentrate its efforts on increasing its conventional forces and non-conventional

chemical and biological capabilities, rather than developing nuclear weapons. However, Egypt is currently building a 300 MW Chinese-made reactor that will have the capacity to manufacture four nuclear warheads a month.⁴¹ Additionally, Egypt is believed to be seeking joint nuclear weapons research with Syria and Saudi Arabia to defray the prohibitive costs and allow Egypt to continue its conventional buildup.⁴²

Chemical/Biological Weapons

Prior to the 1991 Gulf War, Egypt was believed to have been working with Iraq for years on the production and stockpiling of chemical weapons.⁴³ While the size of its arsenal is not known, it is probably similar to that of Iraq prior to the Gulf War. Chemical weapons are part of the Egyptian army's "standard issue" and Egypt operates a chemical plant at Abu Za'abal.⁴⁴

Ballistic Missiles

Egypt has possessed long-range missile capabilities since its acquisition of FROG-7 and Scud B missiles in the 1960's. Today, Egypt has a highly advanced weapons production capacity, trailing only Israel in the region.⁴⁵ Egypt has developed and deployed the Sakr-80 rocket, as well as the Project-T (an enhanced Scud-C) missiles with a range of 450 kilometers and a payload of 985 kg.⁴⁶ The Sakr-80 with a maximum range of 80 kilometers and a payload of 200 kilograms was designed to replace Egypt's aging FROG systems.⁴⁷

Cairo is working with the North Koreans to upgrade the Scud's range and accuracy. The project began as early as 1981, Western intelligence sources say, when Egypt transferred several Scud Bs to Pyongyang, violating the Egyptian treaty with Moscow. The Koreans then used reverse engineering to extend the range and improve the accuracy of the Scud B. The result has been the Scud C and Scud D, with ranges of 600 and 1,000 km. respectively.⁴⁸ North Korea, as part of its agreement, supplied several shipments of Scud C missile materials to Egypt.⁴⁹

The most ambitious Egyptian effort over the past decade has been the Badr/Condor missile project. Conceived by Argentina, developed further by German scientists and financed by

Iraq, the Condor resembled the U.S. Pershing missile. Western intelligence sources say Egypt wanted the Condor to counter Israel's Jericho II missile, with a reported range of up to 1,500 km. The Badr/Condor was designed to be an advanced two-stage, solid-fuel, inertial guided ballistic missile with a 700 kg. payload over 1,000 kilometers and an accuracy to within 100 meters.⁵⁰ However, cooperation of the joint project was terminated in 1989 and the missile was never fielded. However, the collaborate effort provided Egypt with a wealth of missile-related technology that was undoubtedly used in other projects.⁵¹

EGYPT'S DEFENSE EXPENDITURES

A cursory review of the official published figures of Egypt's military expenditures indicate that there exists serious anomalies between the decade-long Egyptian arms buildup and its officially stated annual defense budget.⁵² Official figures of Egyptian defense expenditures have reflected a dramatic decline in its yearly defense budget. However, contemporaneous with its declining expenditures, Egypt has been in the midst of transforming its military from a 1970's Soviet-based military to a modern 1990's Western-based military. For example, in 1985 only 20 percent of Egyptian armor and some 50 percent of Egyptian aircraft were of Western origin. Today, over 85 percent of Egyptian armor and almost 85 percent of Egyptian aircraft are from the West.

This presents a serious anomaly since militaries generally experience increased costs during transition periods, as more funds are needed for training, familiarization, and maintenance costs. In this respect, it is worth noting that Egypt is not only absorbing Western equipment but is also adapting Western war-fighting doctrines and command and control techniques. Consequently, it is incongruous to believe that a country can transform a military consisting of: over 440,000 personnel; 3,500 Main Battle Tanks; and over 550 Combat Aircraft, in so dramatic a fashion, while simultaneously reducing its expenditures by over 60 percent. This is especially true of a third-world country lacking a history of fiducial discipline and one that is hardly imbued

with the traditions of thrift and efficiency when it comes to its bureaucracy.

While ascertaining accurate Egyptian annual defense expenditures is a challenging task, given the unavailability of accurate data from the host country, it is by no means impossible. Given the relative availability of open sources in the West, it is possible to obtain general information on the Operational and Maintenance (O&M) costs incurred in training, fielding, and sustaining various military units.⁵³ From this information, it is possible to extrapolate how much it would cost Egypt to construct, train, field, and sustain its military.

While this analysis is far from precise, given the enormous cultural and political discrepancies that would cause deviations in the amount devoted toward maintenance and training, it is far more accurate than relying on official published figures. This is due to the relative stability in what a supplier or manufacture charges for consummable and repair parts. Indeed, if anything, the cost to a third-world country to maintain its equipment should be incrementally higher since the part in question is subject to a myriad of additional costs associated with importing the component. This chapter analyzes the costs involved to field, train, and maintain a military of the quality, and quantitative size, as that of Egypt, in an attempt to ascertain a more accurate estimate of yearly Egyptian military expenditures.

ARMY

Heavy Divisions

Egypt currently fields and maintains 4 active armored divisions and 8 mechanized divisions. The majority of the hardware of these weapons are U.S. made M-60 A1/3's tanks, M1A1 tanks, and M-113 armored personnel carriers. According to a published Total Force Policy Report To The Congress (December 31, 1990), the annual cost to field and maintain an active U.S. Army Armored/Mechanized division is \$976 million dollars.⁵⁴ Of this amount, yearly operational costs for the armored division are \$146 million and for the mechanized division \$140.3 million.⁵⁵ An additional \$175 million is spent on equipment avg/yr, and the remaining funds are associated personnel costs (military pay, family

housing ,etc.). A more detailed breakdown of the yearly operational costs are as follows:

	<u>Armored Division</u>	<u>Mechanized Division</u>
Consummables	\$48.962	\$47.995
Reparables	\$70.266	\$65.267
POL	\$ 5.651	\$ 5.470
Indirect	\$21.152	\$21.609
	<u>146.031</u>	<u>\$140.341</u>

Source: Department of the Army, Office of the Deputy Chief of Staff for Operations. Cost figures are in millions.

This would put Egypt's yearly operational costs for maintaining its four armored and eight mechanized divisions at \$584.1 million and \$1122.7 million respectively. Consequently, the total yearly operational costs for Egypt to maintain its heavy divisions would be \$1706.8 million or 46.3 percent of Egypt's total officially reported annual defense expenditures. Additionally, the annual cost for equipment avg/yr. per heavy division is \$185 million or a total of \$2220 million for Egypt's 12 heavy divisions.⁵⁶ This puts the total annual costs of maintaining Egypt's twelve heavy divisions at \$3926.8 million (excluding personnel costs) or 133 percent of Egypt's total officially reported annual defense expenditures.

Additionally, Egypt maintains the equivalent of at least one additional armored and mechanized division in the form of independent brigades. These include a Republican Guard armored brigade, 2 armored brigades, and 4 mechanized brigades. Moreover, the overall costs associated with these units are approximately 30 percent higher given their independent command structure.⁵⁷ Consequently, the addition of these two divisions adds approximately \$853 million to the total costs for Egypt to maintain its heavy forces. These additions puts the total annual costs of maintaining Egypt's heavy forces at \$4779.8 million (excluding personnel costs).

Light/Airborne Divisions

In addition to its heavy divisions, Egypt also fields the equivalent of two more divisions in the form of three independent infantry brigades, 2 airmobile brigades and a parachute brigade. According to a March 4, 1997, Department of Defense information paper submitted to the

House National Security Committee, the yearly operating costs for infantry divisions are as follows: Light Infantry Division (\$583 million); Airborne Division (\$733 million); Air Assault Division (\$951 million).

As with the heavy units, the majority of expenditures, approximately 65 percent, are derived from direct personnel (military pay, housing, travel etc.) expenses. After deducting the personnel expenses we are left with the following yearly operating costs: Light Infantry Division (\$204 million); Airborne Division (\$256.5 million); Air Assault Division (\$332.8 million).

However, since Egypt maintains these units in the form of independent brigades, the costs associated in maintaining these units are approximately 30 percent higher than if they were part of a division. This raises the yearly operating costs: \$272 million for the three independent infantry brigades; \$111.5 million for the independent airborne brigade; and \$295 million for the two independent airmobile brigades, thereby putting the total estimated yearly operating costs to maintain its independent light units at \$678.8 million (excluding personnel costs).

Field Artillery

Egypt maintains 15 independent artillery brigades. Its artillery strength consists of: over 1,100 major towed weapons including D-20 152mm, A-19 Model 1931/1937 122mm and M-46 130mm weapons; 150 self-propelled weapons including M109A1 155mm howitzers; 200 multiple rocket launchers; and more than 21 surface-to-surface missile launchers.

A breakdown of the yearly operational costs for an artillery brigade is as follows:

Consummables	\$3.573
Reparables	\$9.633
POL	\$ 311
Indirect	\$1.822
	<u>15.339</u>

Source: Department of the Army, Office of the Deputy Chief of Staff for Operations. Cost figures are in millions and are for a 155SP Bn. These figures exclude personnel and equipment costs avg/year.

If we multiply the 15 brigades by the yearly operational costs of \$15.339 million we arrive at a figure of \$230.08 million. Additionally, since these battalions are constructed in the form of

independent brigades, and have their own command and support structures, an additional \$4.6 million needs to be added to each brigade thereby bringing the annual operational costs per brigade to \$19.93 million and a total annual expenditure rate for Egypt's field artillery assets to \$298.95 million (excluding personnel and equipment costs avg/year).

Air Defense Command

The Egyptian Air Defense Command consists of approximately 80,000 men and is organized into five divisions with over 100 battalions. These forces include over 90 SA-2/3/6 battalions, as well as 12 batteries each of I-HAWK, Chapparal, and Crotales. Additionally, they man a number of fixed-site AA guns including 23mm ZU-23, 57mm S-60, 85mm and 100mm KS-19 guns. A more detailed breakdown of the yearly operational costs for an ADA battalion are as follows:

Consummables	\$1.45
Reparables	\$1.36
POL	\$0.11
Indirect	<u>\$0.77</u>
	\$3.69

Source: Department of the Army, Office of the Deputy Chief of Staff for Operations. Cost figures are in millions and are for a U.S. ADA Avenger Battalion. These figures exclude personnel and equipment costs avg/year.

If we multiply the yearly operational costs of \$3.69 million to Egypt's 100 active duty ADA battalions we arrive at a total figure of \$369 million for the maintenance of Egypt's Air Defense Command (excluding personnel and equipment costs avg/year). While the actual costs of maintaining a lesser quality ADA Battalion may be lower, this estimate is viable, and may be considerably lower in actual estimates, when accounting for the fact that Egypt maintains a totally independent command structure for its ADA assets.

Air Force

The Egyptian Air Force consists of over 550 aircraft comprising 7 squadrons of strike aviation aircraft and a fighter force of 16 squadrons. These forces include some 190 F-16's, 100 Mirages, and over 200 aging Chinese J series and Soviet MiG's. These forces are equipped with a wide variety of

missiles including AA-2 Atoll, AIM-7 Sparrow's, AIM-9 Sidewinders, AM-39 and Excoets. Egypt has a transport force that includes 19 C-130H's, 5 DHC-5D's, and 1 Super King Air. Moreover, Egypt possess over 100 attack helicopters, comprising some 15 squadrons including, 24 AH-64's (with an additional 12 on order), and 74 French Gazelles. Additionally, Egypt has 18 airborne warning and control aircraft as well as a large number of rotary wing transport and support helicopters. A detailed breakdown of the yearly operational costs for a squadron of F-16C/D's is as follows:

Aviation Fuel	\$4.3
Depot Maintenance	\$0.8
Consummable Supplies	\$1.7
Depot Level Repairables	\$6.5
Training Munitions	\$1.1
Rel and Safety Mod Kits	\$1.1
Rel and Safety Mod Install	\$0.2
Training	<u>\$0.5</u>
	16.2

Source: Department of the Air Force, 11th Wing, Freedom of Information Manager. Cost figures are in millions. These figures exclude personnel and equipment costs avg/year.

If we multiply the yearly operational costs by the 23 squadrons in the Egyptian Air Force we arrive at a yearly operational cost of \$372.6 million (excluding personnel and equipment costs avg/year).

A detailed breakdown of the yearly operational costs for a squadron of Ah-64's is as follows:

Consummables	\$ 2.34
Repairables	\$11.02
POL	\$ 0.46
Indirect	<u>\$ 0.36</u>
	\$14.18

Source: Department of the Army, Office of the Deputy Chief of Staff for Operations. Cost figures are in millions. These figures exclude personnel and equipment costs avg/year.

Using the figure or \$14.18 million for the average yearly operating cost per squadron we arrive at a total figure of \$212.7 million for the yearly operational costs for Egypt's 15 attack helicopter squadrons. This brings the total cost for Egypt's attack fighters and helicopters to \$585.3 million (excluding personnel and equipment costs avg/year). While the actual yearly

operational cost may differ due to the fact that not all the squadrons are F-16C/D's and Ah-64's, this discrepancy is adequately compensated by the fact that the analysis is excluding the large number of aircraft including its transportation and training assets.

Navy

Egypt's navy consists of 33 patrol boats, 8 frigates, 9 minesweepers, 8 submarines and one aging destroyer. Its naval aviation assets include 10 Seasprites, 9 Gazelles, and 5 Sea Kings. The Egyptian Coast Guard is part of the navy and operates around 60 small patrol craft, 9 Swiftships, and 12 PCIs.

Data concerning the number of training and operational hours that the ships in the Egyptian navy conduct each year is unavailable. However, the hourly costs to operate naval aircraft and vessels of a similar type found in the Egyptian navy are as follows:

<u>Component</u>	<u>Hourly Cost</u>
FFG-7	\$3039
Minesweeper	\$1036
E-2C	\$2761
SH-2	\$ 830

Source: Department of the Navy, Freedom of Information Office. These figures exclude personnel and equipment costs avg/year.

Given the high hourly cost involved in operating naval vessels, and the size and magnitude of the Egyptian navy, a yearly operational cost (excluding personnel and equipment replacement costs), of \$150 million is a conservative estimate.

Personnel Costs

Thus far, this discussion has not addressed the myriad personnel expenses including salaries, clothing, food, housing, and medical costs involved in maintaining and sustaining a large military. Traditionally, these are the largest expenses that a military incurs. Using the example of the U.S. heavy division, at least \$617 million or 63 percent of its annual budget is devoted to personnel expenses. While recognizing that Egyptian personnel expenses do not approach U.S. levels, the maintenance and sustainment of a large standing army does consume a substantial portion of its officially stated budget.

Egypt has approximately 440,000 men in uniform. Of these approximately 275,000 are conscripts. However, just the basic costs involved in maintaining such a large military consumes a significantly higher amount than Egypt's reported defense expenditures, especially, following the institution of a number of reforms by the military during the 1980's to improve the quality of life of military service, in hopes of making it more appealing and attractive to more volunteers.

These reforms have included: periodic pay raises; reduced prices when purchasing cars; access to better health care; visits to special resort areas; and special commissaries that carried products unavailable to the general civilian populace. However, by far the most ambitious and expensive project was the construction of military cities. Each city is designed to accommodate as many as 150,000 people and includes (in addition to a comfortable apartment) schools, nurseries, supermarkets, banks, water purification systems, and solar heating.⁵⁸ The construction of these cities represents a considerable expenditure and is arguably comparable, in both scope and cost, to the benefits offered active-duty U.S. service members.⁵⁹ While most of these reforms were directed towards career and volunteer soldiers, the quality of life of the Egyptian conscript also improved during this time.

Consequently, considering the direct costs of sustaining a soldier, such as clothing, feeding, housing, health care, etc., coupled with the indirect costs such as benefits payed to retirees, construction and maintenance of the military cities, and dependent care, an average cost of \$25 per day per soldier is rather modest. However, using \$25 as the average cost per soldier and multiplying that amount by the number of personnel in its active forces, we arrive at an annual expenditure rate of \$4.015 million (excluding direct pay).

The average pay for a conscript is about \$10 a month. However, volunteers, career enlisted soldiers, and officers enjoy substantially higher wages that are competitive with the civilian sector. Using the per-capita income of \$689 (FY 94 figure) as the average annual salary for career soldiers and \$120 as the annual salary for a conscript we arrive at a total yearly expenditure for salaries at \$113.685 million for career and

volunteer soldiers and \$33 million for conscripts, for a total annual expenditure of \$146.685 million on salaries. This raises the total yearly personnel expenditure to \$4,161.685 million.

It is important to stress that this is a conservative estimate of personnel expenditures. Normally personnel expenditures constitute the lion's share of a military's budget. Indeed, approximately 65 percent of the yearly operational costs of fielding, maintaining, and sustaining a U.S. unit is devoted to personnel costs. Moreover, U.S. figures exclude all of the collateral costs included in this Egyptian estimate such as civilian construction, retirement pay, etc.

Reserves

In addition to its large standing army, Egypt also sustains a reserve force of over 600,000 soldiers. However, unlike most Western armies, the Egyptian reserve system is thought to be totally dysfunctional with only some 150,000 soldiers receiving any meaningful training.⁶⁰ Taking the 150,000 soldiers and estimating that they receive an average of 30 days training at an average cost of 60 percent of that of an active-duty soldier, we arrive at a total reserve budget of \$187.470 million. Furthermore, assuming that an additional 150,000 receives a total of 15 days training, at a cost of 40 percent of that of an active-duty soldier, we arrive at an additional cost of \$37.6 million for a total annual reserve cost of \$225.5 million. This averages out to a yearly expenditure of \$752 per soldier.

A conservative estimate of the Egyptian military budget is far higher than its official figure of \$2.7 billion. Indeed, as the following table illustrates, Egypt actually spends a minimum of more than 4 times its officially reported figures to maintain, sustain, and operate a military as large and qualitative as it does:

Component	Estimated Yearly Operating Costs
Heavy Divisions	\$ 4,779.8 million
Light/Airborne Divisions	\$ 678.8 million
Air Defense Command	\$ 369.0 million
Artillery	\$ 298.9 million
Air Force	\$ 585.3 million
Navy	\$ 150.0 million
Personnel Costs	\$ 4,161.0 million
Reserves	\$ 225.5 million
Total	\$11,249.0 million

Once again, it needs to be reiterated that these figures are conservative estimates and that the actual figures could be higher (as many smaller components, as well as equipment costs avg/year for many units, were not included in calculating the total annual figures).⁶¹ In this respect, it is worth noting that the U.S. FY97 O&M budget request for its 510,000 troop army is \$21.4 billion and that Egypt fields an army over 60 percent (310,000 troops) the size of that of the United States.⁶² Consequently, a comparable level of spending would put Egyptian O&M expenditures at around \$12.84 billion for just its active duty components. Moreover, the daily logistical costs of doing business, i.e., transporting equipment, import overhead costs related to part and equipment purchases, fuel, oil, etc... tend to be more expensive in third-world countries than in the United States. Consequently, actual expenditures for any given piece of equipment should be higher.

Additionally, three important considerations need to be noted. First, unlike the Egyptian military, U.S. forces logically should not have to devote as much resources (per unit), on training as compared to the Egyptians. This is due to the fact that U.S. training doctrine has not undergone the extensive evolution of changing its war-fighting doctrine to the extent of the Egyptians. Notwithstanding the constant state of transition of the U.S. military, as it integrates particular nuances of its doctrine into the system, it is hardly of the revolutionary nature that is currently taking place within the Egyptian military establishment as it transforms its military from a Soviet-based to a Western-based military.

Second, the Egyptian military, as it adopts and integrates Western war-fighting doctrine, has to reorganize and retrain much of its military. Since sustainment operations are relatively less costly than training costs, it stands to reason that the Egyptian's operation and maintenance (O&M) expenditures (per unit of measure) to train its forces, should not substantially deviate from what it costs the U.S. military to sustain their forces.

A typical U.S. Armored Division trains about 12 to 15 weeks annually. This training includes "train-up" time spent to prepare for, and participate in, one or two major deployments such as to

The National Training Center. Egypt also conducts two or three major deployments annually, such as Bright Star and Badr exercises. Consequently, given the relative small amount of time U.S. forces actually spend training, it is hard to imagine the Egyptians training substantially less.

Finally, U.S. military planners vehemently contend that the current levels of spending are the minimum required to sustain their forces. The Department of Defense has been arguing since the beginning of its drawdown in the late 1980's that any significant reductions would make U.S. forces "hollow" and incapable of fulfilling U.S. national strategic objectives. Consequently, either the Egyptians are spending a similar amount on O&M or they are fielding a very hollow army. Whatever the case, the task of the strategic planner is to assume the worst.

Moreover, this estimate does not even begin to take into consideration the score of civilian administrative and support tasks that are needed to sustain a divisional unit such as: non-divisional training support services; civilian support services; O&M costs for non-divisional support facilities; as well as administrative and staffing costs for the maintenance of Egypt's military schools and institutions.⁶³

Most important, this analysis has excluded three critical and extremely expensive components of the Egyptian military industrial complex. These components are Egypt's defense industry, its non-conventional weapons research and development programs, and its military intelligence network. Traditionally, these components are among the most expensive outlays of military expenditures. While it is not possible to obtain open source data on the cost of these components, a conservative estimate, given the size and magnitude of these programs, is \$4 to \$6 billion. This would put actual annual Egyptian military expenditures at between \$15 and \$17 billion.

In 1994, Egypt surpassed the United States to become the second largest arms importer, behind Saudi Arabia, in the world. Moreover, Egypt, in a region that leads the world in the import of weapons, is the only Middle East country to have increased its arms purchases yearly since 1990. Whatever the actual figures of annual Egyptian military expenditures, it is clear that it is far higher than its reported \$2.7 billion.

Indeed, this analysis is probably significantly underestimating actual Egyptian military expenditures. The Egyptian military industrial complex pervades all aspects of Egyptian society, thereby blurring the distinction between civil and military expenditures.

While most published sources put annual Egyptian military expenditures at 7 to 10 percent of gross national product, this figure is grossly underestimated. Given the size of its active conventional forces, its large non-conventional research and development programs, and its conventional military defense industry, actual annual Egyptian military expenditures is closer 20 to 30 percent of its gross national product (GNP). Historically, only countries engaged in a full-scale war have devoted such a large percentage of their GNP to defense.

Egypt is bordered by Libya, Sudan, and Israel. While Sudan's Islamic regime is potentially ideologically threatening, its 300 main battle tanks (250 of which are T-54/55's), and some 50 combat aircraft pose a negligible threat to Egypt. On paper, Libya's military is far more formidable than Sudan's. However, its forces hardly present a threat to Egypt. Approximately 1,600 of Libya's 2,200 tanks are old Soviet T-54/5's. Moreover, a lack of manpower has forced Libya to place over half of its armor, as well as many of its 400 aircraft, in storage, thereby making Libya little more than a massive arms depot.⁶⁴

It is significant to note that Libya's 80,000 man military is less than 20 percent the size of Egypt's. Finally, despite the triangle of tension that periodically erupts between Egypt and its Islamic neighbors, the three countries have demonstrated a willingness to rally over perceived pan-Islamic issues. For example, notwithstanding the belief that Sudan was behind the June 1995 assassination attempt on Mubarak's life, Egypt opposed attempts by the United States to impose a military embargo on Sudan. Egypt also opposed the U.S. when it threatened to take military action against a suspected Libyan chemical plant. Consequently, Israeli strategic planners should be asking themselves towards whom is the current, Egyptian military build-up directed.

However, this does not suggest that war is imminent or a high probability in the short-term.

Currently, the Egyptians, despite their major modernization efforts, are still incapable of launching a successful and credible military offensive that would pose an existential threat to Israel. Egypt still suffers from a number of qualitative weaknesses that would make an Egyptian attack in the short-term a strategic mistake.⁶⁵ However, Egypt currently possesses a formidable defense capability. This capability affords Egypt greater flexibility as it pursues its strategic goal of achieving regional hegemony.

The quantitative and qualitative size of the Egyptian military would serve as a powerful deterrent in any deterioration of relations between Egypt and Israel, thereby affording Egypt the capability of heightening tensions to the level of those that existed in June 1967. Consequently, given Egypt's strategic interests, an Egyptian remilitarization of the Sinai, in the mid-term, cannot be ruled out. Unlike 1967, Israel would have to absorb such a psychological blow as the balance of forces would preclude Israel from achieving strategic surprise.

CONCLUSIONS

Notwithstanding the enormous military build-up of forces in the region, the IDF still maintains a discernable qualitative advantage over the neighboring Arab forces in weaponry, manpower, and integration of war-fighting technologies. However, the decade-long massive influx of Western weaponry to the Arab countries has seriously eroded Israel's qualitative superiority while simultaneously widening the quantitative gap in favor of the Arabs.

The influx of Western armaments poses at least two significant adverse ramifications for Israel. First, the influx of Western technology will insure that the technological gap between Israel and its neighbors will remain significantly reduced as compared to other periods. The influx of Western technology and the deployment by the Arabs of "smart weapons" has dramatically increased the ability of the common Arab combat soldier. The underlying premise dictating the production of many U.S. weapons is the KISS principle (keep it simple, stupid). Under this principle, weapons are designed to be utilized by soldiers with negligible understanding of how these weapons may work. Today, weapons of

extreme lethality can now effectively be employed by soldiers who traditionally lacked the capability to effectively employ sophisticated equipment.

Consequently, Israel's much heralded human qualitative edge is somewhat neutralized, as many of these weapons have made target acquisition, and therefore target destruction, much simpler. Moreover, the Arabs have closed the human qualitative gap due to a tremendous increase in the number of engineer and natural science graduates from Arab universities in the last two decades.⁶⁶ How this would relate on any future battlefield is open to speculation. However, it probably would significantly increase Israeli losses in any future conflict.

Second, the relative cost for Israel to maintain any qualitative gap is now much greater. Israel has generally maintained a high degree of technological advanced armaments. Consequently, each incremental gain in Israel's qualitative advantage will cost that country substantially more in research and development costs. This will make the relative cost of each new system more expensive and will limit any attempt by Israel to hold, or decrease, the Arab's quantitative advantage.

Technology returns tend towards an S shape: increasing performance for cost in its early growth phase, and diminishing returns during its later phase. As Israel precedes its neighbors along the S curve, Israel's costs will increase faster if it desires to maintain a constant level of technological superiority.⁶⁷ Consequently, Israel can maintain qualitative superiority only by devoting more resources from force structures to technology. Since Israel, as virtually every country, operates within well-defined budget constraints, it can maintain its qualitative advantage only at the expense of allowing the quantitative gap to increase.

Compounding this problem are numerous reports of declining motivation and military preparedness within the IDF.⁶⁸ The roots of this decline can be traced to the political debate during the 1982 Israeli invasion of Lebanon, and the misuse of IDF forces during the Intifada. However, it was the broadening of the ideological schism between supporters and opponents of the peace process, coupled with the unrealistic

expectations concerning the peace process by the previous government, that has exacerbated the morale problem. Should this trend of declining IDF motivation continue, coupled with increasing qualitative capabilities of its Arab neighbors, then the probability of Israel maintaining an overall qualitative edge is in jeopardy.⁶⁹ If Israel loses its discernable qualitative edge, then the prospects for a tactical military defeat in a future war would shift from a negligible to a distinct possibility. It needs to be emphasized that the Arab states do not need to achieve qualitative parity with Israel. They only need to erode the Israeli qualitative advantage enough to allow their quantitative superiority to overwhelm the much smaller IDF.

Consequently, while the IDF still may hold a qualitative advantage over its neighbors, this advantage has been severely eroded when comparing the current correlation of forces to other periods of the Arab-Israeli conflict. This advantage continues to dissipate as weapons flood the region from both the West and East as the collapse of the Soviet Union and the 1991 Gulf War has removed the last restraints regarding such sales.

Unless current trends are reversed, the prospects of a future Arab-Israeli war will increase exponentially as more and more weapons find their way to the Middle East. This will occur regardless of the outcome of the current peace process. It is the consensus opinion of many regional and military experts that deterrence of a future Arab-Israeli war is a direct function of Israel maintaining a perceived superiority in the balance of forces.⁷⁰ Should this perception change then the probability of a future war will be high. Consequently, unless progress in the peace process is accompanied by recognition from the Islamic states that Israel must maintain strategic parity with the collective might of all potential enemies, then the peace process will not succeed. Thus far, the Islamic countries are not willing to concede this issue and current trends do not bode well for the future.

Estimates are that the Middle East will continue to lead the world in arms purchases through the rest of the decade.⁷¹ Saudi Arabia, currently the world's largest arms importer, will continue to lead the world in arms imports and

will import an additional \$32.4 billion in weaponry during the remainder of the decade.⁷² In any future Arab-Israeli war, these weapons will undoubtedly find their way to the battlefield. Given this environment, Israeli military strategic planners would be well advised to pay closer attention to its neighbor in the south. ■

NOTES

1. A case in point was the 1973 Yom Kippur War when Israeli strategic planners appeared to rely heavily on the fact that the Arab states lacked the military capability to defeat Israel when determining the probability of attack.
2. For example, independent analysis of China's defense expenditures have concluded that China spends up to four times more than its officially published estimate.
3. U.S. Arms Control Disarmament Agency (ACDA), 95/13, November 1, 1995.
4. ACDA, 95/13, November 1, 1995.
5. Egypt's 1994 imports were approximately 70 percent higher than its 1990 imports. ACDA, 95/13, November 1, 1995.
6. U.S. aid to Egypt has averaged 2.2 billion annually (\$1.3 billion of that aid in military assistance), since 1979. See Clyde R. Mark, *Egypt-United States Relations*, Federation of American Scientists CRS Issue Brief, 93087, October 31, 1996.
7. *The Jerusalem Post*, March 11, 1994.
8. *Janes Defence Weekly*, February 28, 1996, p. 23.
9. Egypt initially ordered 46 F-16's in 1991, SIPRI 1996 Yearbook. Data for upgrades was taken from *Defense Link*, April 16, 1996, memorandum 067-M.
10. Anthony H. Cordesman, *After the Storm* (Boulder: Westview Press, 1993), p 338-9.
11. *Defense Link*, September 16, 1996, memorandum 210-M.
12. *Arms Transfer News*, #94/8, May 20, 1994.
13. *Defense Link*, September 5 and 16, 1996, memorandums 212-M and 193-M.
14. Cordesman, *After the Storm*, p. 338
15. *Janes Defence Weekly*, February 28, 1996, p. 23.
16. Anthony Cordesman, *Perilous Prospects: The Peace Process and the Arab-Israeli Military Balance*, (Boulder: Westview Press, 1996).
17. News Release from the Office of Assistant Secretary of Defense, Contract Announcement No. 012-96, January 16, 1996.
18. SIPRI 1996 Yearbook.
19. *Janes Defence Weekly*, May 1, 1996, p. 8.
20. Cordesman, *After the Storm*, p. 339.
21. Cordesman, *After the Storm*, p. 340.
22. Cordesman, *After the Storm*, p. 341.
23. Cordesman, *After the Storm*, p. 341.
24. *Defense Link*, April 16, 1996, memorandums 061-M and 071-M.
25. *Defense Link*, September 5, 1996, memorandum 196-M.
26. Cordesman, *After the Storm*, p. 341.
27. *Janes Defence Weekly*, February 28, 1996, p. 22.
28. *Janes Defence Weekly*, March 6, 1996, p. 23.
29. Cordesman, *Perilous Prospects*, p. 205.
30. *Defense Link*, May 10, 1996, memorandum 092-M.
31. *Janes Defence Weekly*, February 28, 1996, p. 23.
32. *Arms Transfer News*, # 94/8, May 20, 1994.
33. *Military and Arms Transfer News*, November 1, 1995.
34. *Defense Link*, July 29 and April 16, 1996, memorandums 170-M and 066-M.
35. *Military and Arms Transfer News*, November 1, 1995.
36. SIPRI 1996 Yearbook data base and *Jane's Defence Weekly*, February 28, 1996. p. 23.
37. *Janes Defence Weekly*, April 9, 1997.
38. Cordesman, *After the Storm*, p. 335.
39. Cordesman, *After the Storm*, p. 336.
40. Cordesman, *After the Storm*, p. 336.
41. *The Jerusalem Post*, March 13, 1989.
42. *The Jerusalem Post*, March 13, 1989.
43. *The Jerusalem Post*, April 12, 1995.
44. *The Jerusalem Post*, March 11, 1994.
45. Federation of American Scientist (FAS), report on Egypt's missile proliferation. September 12, 1996.
46. Federation of American Scientist (FAS), report on Egypt's missile proliferation. September 12, 1996.
47. Cordesman, *After the Storm*, p. 346.
48. *The Jerusalem Post*, March 11, 1994.
49. *The Associated Press*, June 21, 1996.
50. FAS
51. FAS report on Egypt, September 12, 1996.
52. ACDA has reported Egyptian defense expenditures as high as 7.17 billion in 1987 to \$2.71 billion in 1995. Other estimates have noted a far less dramatic drop.
53. O&M costs represents the operating costs of fielding the force. It includes costs for purchasing and distributing spare parts and supplies to support the military members and equipment.
54. A Department of Defense information paper dated March 4, 1997, used a higher figure putting the peace time cost to operate a heavy division at \$1.014 billion.
55. Department of The Army, Office of the Deputy Chief of Staff for Operations and Plans, letter dated July 18, 1997. The Department of Defense information paper dated March 4, 1997 used slightly higher figures of \$617 million on personnel; \$184 million on operations; and \$175 million on equipment avg/yr.
56. A portion of the replacement equipment costs are offset by the \$1.3 billion of annual Foreign Military Assistance from the U.S.
57. The costs of maintaining an independent brigade is usually about 30 percent higher than the costs associated with a brigade in a division. This is because an independent brigade has its own combat support units such as: intelligence detachment; combat engineers; air defense artillery, etc.
58. U.S. Department of the Army, *Army Area Handbook-Egypt*, March 15, 1994.
59. There is no denying that the daily standard of living enjoyed by the American soldier is far superior to that of his Egyptian counterpart. However, considering the relative costs of providing the types of services now offered by the Egyptian military in construction of

- "military cities," the investment, as a percentage of costs related to per-capita income, is comparable.
60. Cordesman, *After the Storm*, p. 332.
 61. While Foreign Military Assistance programs account for a substantial portion of replacement costs, it does not begin to cover the total cost.
 62. Army News Service release, March 4, 1997.
 63. Egypt maintains no less than 5 service academies as well as a General and staff College. U.S. *Department of the Army, Army Area Handbook-Egypt*, March 15, 1994.
 64. Data for the Libyan and Sudanese militaries was taken from the IISS Military Balance for 1995.
 65. For example, Egypt's military infrastructure and logistics capabilities are antiquated and scarcely capable of supporting a major rapid excursion into the Sinai. See Cordesman, *Perilous Prospects*, pp. 209-210.
 67. 'The Impact of Technology,' in *The Impact of New Military Technology*, The Adelphi Library 4, London, 1981, pp. 37-40.
 68. Declining military preparedness on the part of the IDF was most recently noted by Israeli MK Ephraim Sneh, chairman of a subcommittee of the Knesset Foreign and Defense Committee that deals with control and management within the defense establishment. MK Sneh emphasized that this deterioration has been occurring for a number of years. *Ha'aretz*, July 30, 1997.
 69. This concern was raised most recently by OC Air Force Maj-Gen. Eitan Ben-Eliahu, *The Jerusalem Post*, July 4, 1997.
 70. This was the consensus opinion of a group of Israeli scholars in response to a questionnaire put to them by the author.
 71. "World-Wide Conventional Arms Trade (1994-2000): A forecast and Analysis, *Center for Defense Information report*, December 1994.
 73. Estimates were taken for the years 1994-2000. "World-Wide Conventional Arms Trade (1994-2000): A forecast and Analysis, *Center for Defense Information report*, December 1994.

CONCLUSIONS

66. Zeev Bonen, 'The Impact of Technology Developments on the Strategic Balance in the Middle East,' in Jaffee Center for Strategic Studies, *The Middle east Military Balance*, (Boulder, Colorado, 1995), p. 160.

APPENDIX : The Changing Arab-Israeli Balance of Power

TABLE ONE: ARAB-ISRAELI QUANTITATIVE BALANCE OF POWER

Main Battle Tanks

	1967	1973	1985/6	1989/0	1992/3	1995/6
Total Arab	1450	4841	12870	14156	12521	14436
Israel	950	2000	3600	3794	3890	4095
Ratio	1.53	2.42	3.57	3.73	3.22	3.53

Combat Aircraft

	1967	1973	1985/6	1989/0	1992/3	1995/6
Total Arab	580	1038	1988	1940	2109	2190
Israel	288	360	640 (555)	676 (574)	764 (662)	699 (597)
Ratio	2.01	2.88	3.10 (3.58)	3.00 (3.38)	2.76 (3.18)	3.13(3.67)

Total Arab numbers include the countries of Egypt, Jordan, Saudi Arabia, Syria, Iran, and Iraq. Discrepancies in data can be attributed to attrition caused by the Iran-Iraq and Persian Gulf conflicts. Israeli figures include aircraft in storage. Numbers in parentheses represent figures and ratio of aircraft in storage are not included.

Source: IISS Military Balance and ICSS Middle East Military Balance for the appropriate year. Data for 1967 and 1973 was taken from Anthony Cordesman's *After the Storm: Changing Military Balance in the Middle East*, (Boulder: Westview Press, 1993)

TABLE TWO: EGYPT'S WESTERN SHIFT

	1985/6	1989/0	1992/3	1995/6
	Total West %	Total West %	Total West %	Total West %
Main Battle Tanks	1750 350 20	2425 785 32	3167 1527 48	3500 1900 57
Combat Aircraft	504 259 51	517 395 76	492 432 79	564 476 84

Source: IISS Military Balance and ICSS Middle East Military Balance for the appropriate years.

TABLE THREE: THE EGYPTIAN-ISRAELI BALANCE OF POWER

Main Battle Tanks

	1985/6	1989/90	1992/3	1995/6
	Total/ HQ	Total/ HQ	Total/ HQ	Total/ HQ
Egypt	1750 / 350-	2425 / 785	3167 / 785	3500 / 1300
Israel	3600 / 850	3794 / 1200	3890 / 1450	4095 / 1430
Ratio	2.06 / 2.43	1.56 / 1.53	1.26 / 1.85	1.17 / 1.10

Combat Aircraft

	1985/6	1989/90	1992/3	1995/6
	Total/ HQ	Total/ HQ	Total/ HQ	Total/ HQ
Egypt	504 / 50	517 / 83	492 / 89	564 / 159
Israel	640 / 265	676 / 293	764 / 442	699 / 458
Ratio	1.20 / 5.3	1.30 / 3.53	1.55 / 4.97	1.24 / 2.88

Israeli figures include aircraft in storage.

Source: IISS Military Balance and ICSS Middle East Military Balance for the appropriate year.