

Out of Egypt and Pharaoh's Revenge



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Part 2

The long-term agreement recently signed between Russia and Egypt to build a nuclear power plant at El-Dabaa is aimed at improving Egypt's electricity sector and has no direct implications for the development of nuclear weapons. It is, however, likely to legitimize any future attempt by Egypt to build a uranium-enrichment or nuclear-fuel-reprocessing facility. While Egypt has already gained significant experience in the nuclear field, neither its plans to develop a civilian nuclear power plant nor its efforts to develop nuclear weapons have yet borne fruit.

Egypt is taking its nuclear energy effort out of the deep freeze. On December 11, 2017, during Russian President Vladimir Putin's visit to Cairo, the two countries signed a nuclear agreement that reflects a convergence of their interests: Russia would like to return to its position as the dominant power in the Middle East, and Egyptian President Abdel Fattah Sisi wants to rehabilitate his country's economy and once again make Egypt a central actor in the Arab world.

The agreement stipulates that Russia's Rosatom Corporation will build a nuclear power plant at El-Dabaa, about 140 kilometers west of Alexandria. The plant will include four light-water reactors for electricity production, each with a 1,200-megawatt output. Egypt and Rosatom also concluded that a storage depot would be built beside the nuclear plant to hold spent nuclear fuel from the reactors before it is sent to Russia for reprocessing. Test runs of the first reactor are expected in 2022 and its full commissioning is anticipated in 2026. Rosatom estimates that the project will be completed in 2028 or 2029.

Russia will also build factories in Egypt for the domestic manufacture of nuclear plant components, bringing in the required expertise; and Rosatom will service the plant for 60 years. According to reports, the project will cost about \$30 billion, with \$25 billion to be provided by Russia as a loan to be repaid over 35 years.

There are many gas deposits in Egypt as well as oil fields, but the country's faulty pricing policy and economic crisis have caused the energy industries to collapse. With a population now numbering 104 million, Egypt urgently needs nuclear power to improve its energy sector.

Many in Egypt, from disparate parts of the population, oppose building a nuclear plant at El-Dabaa. Business people want to develop tourism in the area, which is on the seacoast; some are concerned about environmental damage; and the Bedouin tribes in the area claim the land has been stolen from them. In February 2012, amid the chaos in Egypt following the revolution, the El-Dabaa site was attacked by thousands of Bedouin; the costs from damage and the looting of equipment were estimated at \$80 million.

Egypt's plans to build a nuclear reactor go back to the days of Nasser. As Egyptian energy expert Ali Saidi, who served as electricity and energy minister from 1999 to 2001, told '*Al-Monitor*' in September 2015: At first, the nuclear project was stopped because of the 1967 war. It was to be implemented with the Soviet Union at that time ... The project was bid upon in the 1970s in a competition between US companies, after US President Richard Nixon promised to provide nuclear plants to both Egypt and Israel. Then a US law was passed obliging countries acquiring nuclear plant technologies to be subject to inspection standards from the country of origin, which was America, so the project stopped.

Saidi added that in the 1980s, during Mubarak's presidency, American and French companies competed over the nuclear plant project. He explained that the project was dropped from the agenda for two reasons: negative public opinion in Egypt after the disaster of the Ukrainian Chernobyl reactor (1986), and the discovery of gas deposits in the 1990s.

Saidi focused solely on the civilian aspect of nuclear energy in Egypt as a source of electricity production. However, Israeli intelligence has suspected for years that Egypt is interested in covertly building a military nuclear potential – from the crisis of the German scientists, who helped Egypt develop ballistic missiles in 1962, through the Mubarak presidency.

Naturally, the issue of Israeli nuclear weapons has had an effect on Egypt's nuclear development efforts. Egypt's entry into the nuclear arena was primarily impelled, however, by Gamal Abdel Nasser's pan-Arab policy and by his view of Egypt as a leading country in the Arab world.

After the founding of the Atomic Energy Establishment (AEE) in 1956, Egypt made impressive progress in building a nuclear infrastructure and developing research in the field. For Nasser, the nuclear endeavor was not solely for "peaceful purposes" but was also a means of developing nuclear weapons. The nuclear activity, which at first only involved research, was concentrated at the Inshas Nuclear Research Center about 40 kilometers northwest of Cairo.

The heart of the Inshas Center was a small, 2-megawatt research reactor that the Soviet Union had provided. It began construction in 1958 and became operational in 1961. But

according to media reports, from 1960 to 1967, Egypt made intensive efforts to obtain “off-the-shelf” nuclear weapons or the means to produce them, turning for this purpose to the Soviet Union, China, and India. Nasser referred to this openly in a speech in 1961, warning that if Israel were to have nuclear weapons “we will secure atomic bombs for ourselves at any price.”

A major figure in the Egyptian nuclear establishment during the Nasser era was Salah Hedayat, who was appointed director-general of the AEE and then served until 1970 as minister of scientific research and as Nasser’s scientific adviser. It appears that Hedayat strove to develop an independent nuclear fuel cycle based on a “plutonium-production reactor” and a facility for reprocessing plutonium from fuel irradiated in the reactor. In this context, in 1964 the Soviet Union helped Egypt set up a radiochemistry department at Inshas that included “hot laboratories” for treating irradiated fuel. Moreover, at the end of 1965 the Egyptian government issued a tender for the construction of a 150-megawatt electricity production reactor at Borg al-Arab on the Mediterranean coast, about 45 kilometers southwest of Alexandria, ostensibly intended for desalination of seawater.

In a 1995 interview, Hedayat confirmed that Egypt had indeed launched a military nuclear program at the beginning of the 1960s that continued until Nasser’s death in 1970.

It is possible that on the eve of the 1967 Six-Day War, one of the Egyptian army’s objectives was to destroy the Israeli nuclear reactor in Dimona, but Egypt’s swift defeat and loss of the Sinai Peninsula disrupted any such plans. After the war, Egypt’s difficult economic situation prevented further efforts towards nuclear development. On top of the loss of transit dues for ships going through the Suez Canal and revenues from the Sinai oil wells, Egypt had to allocate huge sums to the defeated army’s rehabilitation. Thus Egypt decided to shift the struggle against Israel’s nuclear superiority to the diplomatic sphere.

One step it took was to join the Non-Proliferation Treaty (NPT) in 1968, though it had not ratified it. In any case, this was a tactical measure for Egypt since its nuclear program was stagnating because of a lack of financial resources. Egyptian diplomacy began working through various channels – without success – to compel Israel to sign the treaty as well.

Hedayat continued with his nuclear plans, aiming to develop an infrastructure to produce fissile materials for nuclear weapons. In 1965, he established the DCA (Design Consultant Association), which was funded by the Egyptian government and employed a group of nuclear-engineering experts. The DCA functioned independently of the official Egyptian nuclear sector, the framework of which is the AEE.

The DCA’s mission was to help Egypt develop an indigenous nuclear fuel cycle. In 1970 it presented its plan to build a “dual-use nuclear reactor for desalination” near Alexandria with an output of 40 megawatts. The plan was backed by Nasser, who showed great interest in involving Libyan leader Muammar Qaddafi. Qaddafi promised financial support in exchange for conducting the project in Libya.

In 1970, Nasser reached an agreement with Qaddafi on establishing a joint Egyptian-Libyan federation and appointed Hedayat its minister of scientific cooperation. However, because Qaddafi wanted faster results than what Hedayat could provide, the joint venture failed to get off the ground and Libyan financial support evaporated.

The Egyptian-Libyan federation continued under the Sadat regime but finally broke up in 1974 because of Qaddafi's undermining of Sadat. Hedayat was dismissed as the federation's minister of scientific cooperation. In about 1977, the DCA was dismantled. Sadat wanted to put the nuclear establishment on a new path.

Israeli intelligence closely monitored Egypt at the time on suspicion that it was interested in establishing a centrifuge project for enriching uranium, which is much less expensive than plutonium. An attempt was made to uncover ties between Egypt and Western European, especially German, companies that dealt with the development and manufacture of components and equipment for uranium enrichment.

After Nixon's visit to Egypt in 1974, the International Atomic Energy Agency signed a draft agreement in August of 1976 with Egypt and the US to build a nuclear power plant in Sidi Krir near Alexandria that would include two 600-megawatt light-water reactors and was to be manufactured by Westinghouse. The project was not carried out, but the Nuclear Power Plants Authority, which had been set up under the aegis of the Electricity Ministry, opened intensive talks with companies from Germany, France, and Japan on the purchase of a number of power reactors to be placed in El-Dabaa.

Generally speaking, the then-president Hosni Mubarak intended to continue the policies of his predecessor Sadat, which included the safeguarding of close ties with the US, the maintenance of the peace with Israel, and the promotion of an Egyptian nuclear power program. The Chernobyl disaster prompted a suspension of efforts to promote the nuclear program.

However, a visit to Egypt by the Canadian energy minister in May 1982, and his announcement of his country's intention to sign a nuclear cooperation agreement with Egypt with the aim of selling it CANDU power reactors, set off alarm bells in the Israeli intelligence community. Being cooled and fueled with natural uranium, this Canadian-developed type of reactor is heavily water-moderated. Hence, unlike light-water power reactors, it can be used to produce military-grade plutonium.

Egypt's talks on CANDU reactors with the Canadian company AECL (Atomic Energy of Canada Ltd.) continued sluggishly for at least eight years, during which time the Chernobyl disaster transpired. According to a 1989 agreement, about 30% of the reactor's parts were supposed to be manufactured in Egypt, while AECL was supposed to give Egypt technology with which to produce CANDU nuclear fuel. But ultimately, because of funding difficulties, the plan collapsed.

Meanwhile, accelerated development had begun at the Inshas Center. In 1982 the Hot Laboratory and Waste Management Center (HLWMC) was set up there to treat radioactive waste accumulating in Egypt's nuclear facilities. The HLWMC also had a hot-cells complex for research on the use of plutonium, which had been purchased from France. Furthermore, in 1989 work began, with German assistance, on a facility for the domestic production of nuclear fuel. In 1990, the old reactor at Inshas was upgraded and reactivated after having been decommissioned in the 1980s. At the end of 1992, a new 22-megawatt research reactor, purchased from the Argentinian company INVAP, began installation at Inshas. INVAP also built a nuclear fuel production facility for the reactor.

Concurrently, Egyptian defense minister Field Marshall Abdel Halim Abu Ghazala began working in 1984 to renew his country's nuclear weapons program. According to media reports, he did so notwithstanding misgivings on the part of President Mubarak. Abu Ghazala was close to the Muslim Brotherhood in his views and was known to strongly oppose the peace treaty with Israel. In a closed forum in 1987, he stated emphatically, "*Israel is our main and only enemy.*"

Abu Ghazala began to seek channels through which to procure nuclear materials and forged ties with senior Iraqi officials to look into possible nuclear cooperation. (It was also reported that his aide, Brigadier Hossam Khairat Youssef, attempted to buy 100 kilograms of uranium from a French civilian with the aim of enriching it in France, but it is not known whether this initiative led to any results.)

A serious episode connected to Abu Ghazala was the Badr 2000 project, headed by Khairat Youssef, which involved plans for a two-stage, solid-fuel ballistic missile with a range of about 1,000 kilometers. The project, based on German technology, began in 1982 in cooperation with Iraq and Argentina.

However, some of the missile's components were illegally purchased in the US by an Egyptian missile engineer with American citizenship, Abdel-Kader Helmi, whom Abu Ghazala had recruited. The American authorities caught Helmi loading missile materials onto an Egyptian military transport plane, tried him, and sentenced him to 46 months in prison and a \$350,000 fine.

Though there is no proof, Mubarak was probably in the loop about the Badr-2000 project. When the episode was exposed, it caused a severe crisis in US-Egyptian relations. Mubarak had to sacrifice Abu Ghazala, dismissing him as defense minister in April 1989.

In the aftermath, Egypt lost the nuclear arms race. From the 1950s to the mid-1970s, nothing was done to impede its purchase of nuclear facilities for the production of military-grade plutonium and enriched uranium. Reasons included the economic interests of nuclear exporters, as well as a naïve belief that the development of nuclear weapons was beyond the capability of third world countries. Thus, in the Nasser era, Egypt had the chance to start acquiring facilities for plutonium production but did not exploit it. Probable explanations

include failed management of the nuclear sector, the channeling of resources into preparing the Egyptian army for war against Israel, and the Soviet “bear hug,” which was intended to keep Egypt’s nuclear progress on a low flame so Egypt would not grow overly independent.

Though Egyptian industry, including its military industry, has progressed greatly in recent decades, Egypt has not yet tapped its capacity for nuclear development. Sadat, who opened Egypt’s gates to the Americans, did not want to take such a risk. His successor, Mubarak, was skeptical about the potential success of a nuclear weapons development project, particularly after the diplomatic crisis over the Abu Ghazala affair. Egypt also had trouble in those years financing a civilian nuclear program.

The need for nuclear weapons returned to the agenda in Egypt and Saudi Arabia after the Iranian nuclear deal was struck in July 2015, though the Trump administration’s moves to stop Iran from nuclearizing have calmed the situation for now.

As for the nuclear plant at El-Dabaa, ten years will be needed to complete the project – a very long time in the Middle East. It is entirely possible that the project will meet the same fate as Egypt’s past efforts to build nuclear power plants. If the project is carried out, it will be impossible to use it directly for the development of nuclear weapons because of the need to use light-water reactors for ongoing electricity production and because the plutonium in these plants’ spent nuclear fuel will not be of nuclear weapons grade.

In the long term, however, the existence of nuclear power plants in Egypt could give Cairo the legitimacy to build a uranium-enrichment plant at a low enrichment rate for the reactors and the production of nuclear fuel. From there the path to a high rate of military-grade uranium enrichment is short. Operating power plants can also provide legitimacy for the building of a facility for reprocessing the plants’ spent nuclear fuel. If Egypt eventually builds a plutonium production reactor, it will have a new route towards developing nuclear weapons.

Few people today are knowledgeable on the background of historical events since the days of June, 1967. Back then I was a college sophomore history major, only to have been awakened to the prophetic nature of what took place by my elderly church recording secretary. She knew her Bible better than I did at the time. As such, my interest in Bible prophecy was birthed by her questions. Even today, few Bible prophecy scholars ever discuss Egypt’s current role in the Middle East geo-political relations. One day rather unexpectedly, Israel will have to deal with Pharaoh’s Revenge.

When future history books are written, the eight-years of the Barack Hussein Obama administration will show he did more to empower Israel’s adversaries since the State of Israel was created on May 14/15, 1948 than any single political leader in the world.

The rapidly developing relations between Russia and Egypt have been overshadowed by the more prominent relationships between Russia and Syria, as well as Russia and Iran. Nevertheless, the Russia-Egypt relationship deserves closer scrutiny because, unlike the

country's relations with the other two Middle Eastern powers, it concerns a country that until recently appeared to be firmly in Western orbit. The abrupt shift of its geopolitical vector toward Eurasia represents a far bigger change for the region than Russia's successful support of the legitimate Syrian government, or the close relationship with the Islamic Republic of Iran, both of which have been on the Western "enemies list" for decades. The reasons for this shift are twofold, and have to do with the way Western powers interact with Middle Eastern powers in the context of a systemic economic crisis, as well as with Russia's demonstrated attractiveness as an ally.

The West's systemic crisis clearly transformed how Western powers view non-Western ones. Whereas the "end of history" globalist rhetoric suggested a post-sovereignty utopia in which weak and strong powers interact on equal terms in a world without borders, in practice that rhetoric was a ruse to persuade non-Western powers to drop their guard and allow themselves to be penetrated by Western corporations and financial institutions and lose any possibility of charting their own, independent course. Alas, from a Western perspective, assimilating "emerging markets" is still the cornerstone of economic policy, the only program of economic growth. Whereas during the 1990s this assimilation took relatively benign form, 9/11 had the effect of allowing the US initially to adopt a far more aggressive stance, to the point of overt military invasion. While the EU initially did not follow suit, the severity of the EU's own problems prompted it to jump on the bandwagon of "regime change" in the case of Libya, Syria, and the Ukraine.

Since the late 1970s, Egypt was a long-time Western ally but unexpectedly found itself on the receiving end of predatory Western policies which took the form of the Tahrir Square "color revolution". Ultimately, it led to the electoral victory of the Muslim Brotherhood, which in turn fell to a military overthrow once the danger of the country's slide into a civil war became apparent. The fact that the Muslim Brotherhood was financed by the US-allied Persian Gulf states made Egypt aware that it too, was the target of state-sponsored jihadism, and that the US was incapable or unwilling to force its allies in the region to refrain from targeting Egypt. While Syria is only a peripheral concern for Egypt, the civil war in Libya where Islamist formations including ISIS enjoy Gulf Arab support, represents an immediate threat to Egypt for several reasons. The country can be used as a staging ground for launching attacks into Egypt and a sanctuary against retaliation. In the longer term, should its government become a puppet controlled by hostile Gulf powers whose deep-rooted goal is the control of Egypt and the Suez Canal, then this would mean that Cairo is keenly interested in influencing the outcome of that war.

Russia thus became an attractive partner because of its history of non-involvement in the internal politics of its allied states (almost to a fault, as the unilateral restraint led to the Maidan revolution in Ukraine). In this regard, it can fill the security void left by the Western weakness, and, last but not least, because it can physically defend Egypt's political and territorial integrity against every conceivable threat, an ability it is currently demonstrating in Syria. Egypt appears to be taking advantage of these capabilities. Cooperation now includes the possibility of establishing a Russian airbase in Egypt, visits by Russian paratroopers to Egypt,

and special operations troops providing training to their Egyptian counterparts. Egypt is also shifting its military procurement plans toward Russia. The two Mistral-class ships that have been acquired by Egypt will receive the originally planned Russian electronics suite and will carry Russian helicopters. Further, there are discussions of MiG fighter sales to Egypt, and the country received a Molniya-class missile boat.

From a Russian perspective, Egypt represents yet another bulwark of security against Western encroachment, a symmetric response to NATO expansion, "Eastern Partnership", and color revolutions. Combined with the military presence in Syria, Cyprus' general pro-Russian orientation, and the neutralization of Turkey which was also facilitated by an abortive West-promoted coup attempt, Egyptian bases would transform the Eastern Mediterranean into a "Russian lake." Finally, these bases and alliances could serve as a launchpad for power projection into other unstable areas of the Middle East and, if Egypt's control of the Suez Canal is guaranteed by Russian arms, this guarantee endows both countries with a very effective means of pressuring Western and Gulf Arab powers. Vladimir Putin, astutely maneuvers a strategy of wooing Egypt back into the former Soviet bloc through gifts, loans, economic development, security treaty, not to mention the Egyptian hatred for Israel, in exchange for military outposts, and air bases from which it can provide aerial refueling to its long range bombers.

The Egyptian Navy has received delivery of a Russian warship equipped with multiple armament systems intended to significantly boost Egypt's naval fighting power, compliments of Vladimir Putin.

The Russian Navy handed over a Molinya RKA-32-class missile corvette, providing its Middle East ally with one of its most advanced naval vessels. The ship has been provided to Egypt as "a gift" from Russia, according to the Egyptian military. The ship, dubbed *Ahmed Fadel* by the Egyptian Navy, has surface-to-surface missiles that are considered the fastest of their kind, along with modern alarm and an electronic warfare systems.

Egypt and Russia are engaged in ongoing military and security cooperation in the region, based around their goal of eliminating the threats of Islamist terrorism and insurgency.

Speaking at the handing-over ceremony, Admiral Osama Rabie, the commander of the Egyptian navy, said that Russia and Egypt are in agreement politically when it comes to the issues of terrorism and security in the Middle East.

Rabie praised Moscow's keenness in training the Egyptian Navy on the use of the new vessel, transferring the necessary knowledge to the Egyptian personnel in the shortest possible time. He also congratulated the Egyptian Navy and its personnel on their new addition to the fleet.

Under President Abdel Fattah al-Sisi, Egypt has been seeking to expand and update its military capabilities and is placing orders and receiving hardware from diverse sources,

including the United States, France and Russia. Recent deals include: more M1A1 Abrams tanks, Apache helicopters and F16 fighter jets from the US; Rafale fighter jets, Mistral-class helicopter carriers and a FREMM-class frigate from France; and orders for MiG-29 and MiG-35 fighter jets, as well as naval hardware, from Russia.

Egypt has become the world's fourth-biggest weapons importer, spending almost U.S. \$2.3 billion in 2015, according to the '*Global Defence Trade Report*' from consulting firm IHS. Before 2013, Egypt spent \$1 billion or less annually, but "there's been this ramp-up," according to Ben Moores, a senior defense analyst at "IHS Aerospace, Defence & Security", who wrote the report. How will all this fly with the new president of the USA?

According to sources close to Egyptian President Abdel Fattah al-Sisi, next year will be Egypt's year par excellence. They say Egypt will be the only Arab country that will have strategic quasi-alliances with both Putin's Russia and Trump's America. They say in all confidence that Egypt's economy will recover but also its strategic role, to the point that it will stop needing assistance from wealthy Gulf governments. The sources claim that there is a nationalistic and patriotic surge in Egypt coupled with a wager on a special relationship between Trump and Putin, and the belief that the Egyptian leadership has made good use of strategic alliances with powers led by Russia. Many in Egypt are celebrating Donald Trump's victory as though they were American voters. One of the main reasons is the strong dislike towards the Democratic candidate and former Secretary of State Hillary Clinton, whom they accuse, alongside the outgoing President Barack Obama, of endorsing the Muslim Brotherhood and their rise to power in Cairo and beyond.

However, the supposedly cozy relationship between Trump and Putin, as suggested by Trump's campaign remarks, will have a definitive impact on US policy in the Middle East including in the Gulf, the sources argue. They are convinced the biggest winner will be Egypt and the biggest loser will be the Arab Gulf states, and thus Egypt has decided "nationalist pragmatism" requires it to support Russia's efforts in Syria despite war crimes accusations coming from key European powers. Without equivocation, then, it seems the ruling class in Egypt have washed their hands clean of any moral responsibility regarding Syrian civilians. The rulers of Egypt seem to have resolved that the fight against Islamist groups like the Muslim Brotherhood is an absolute priority and have decided to support the efforts led by Russia, Iran and allied proxy militias fighting to keep Assad in power.

Likewise, Germany is also turning a blind eye to Russian-Iranian violations in Syria. Berlin sees itself as the nexus of Western-Russian/Iranian relations and because it played a key role in making the nuclear deal with Iran happen, the ruling class and the elite in Germany are keen to protect the deal, and therefore Iran, from accountability for its actions in Syria. Egypt in the Arab region is similar to Germany in Europe, in terms of the default exoneration of Iran's actions in Syria. The difference, however, is that Germany plays a leading role in influencing US-Russian relations from a strategic standpoint, while Egypt is riding on the coattails of these relations having judged them to be proceeding along a path favorable to Cairo.

Recently an event held by the Körber-Stiftung Institute in Berlin featured a debate on the nuclear deal. The debate asked whether the deal has made the Middle East more or less stable. A pre-debate poll saw 80 percent disagree with its premise, compared to 60 percent following the discussions. The other 40 said the deal emboldened Iran to carry out military interventions in the Arab countries.

Despite hearing evidence of Iran's violations, the number of people agreeing to the premise of the debate question doubled. Therefore, what matters most in this context is the knee-jerk way in which the nuclear deal has come to be defended, coupled with resistance to scrutinizing Iran's practices in Iraq, Syria, Lebanon and Yemen. Such keenness is obvious in discussions with decision makers in Berlin, not just in terms of bilateral relations with Iran but also in terms of what issues will figure in the agenda of prospective talks with the Trump administration.

The top priority in Germany seems to be the Minsk talks with Russia on Ukraine, which German diplomats say they want to keep separate from Syria. Germany does not accept that separating the two issues - something that it will seek to convince Trump of - will have the same effect as the separation of the nuclear deal from regional issues during negotiations with Tehran, which emboldened Iran against Arab countries.

Meanwhile, there is no indication Arab - especially Gulf - governments are thinking about influencing policies being drafted ahead of Trump's inauguration, be they US or European policies. Russia and Iran are both at the heart of these policies and so there is a vital need to think of an Arab approach.

Egypt is no exception. It is taking out bets, not planning. The political class and elite are furious with the Gulf countries, especially Saudi Arabia, and seem to be willing to gamble relations with them despite the implications for the Egyptian economy. Egypt believes its interests require strengthening the strategic relationship with Russia, an important ally to Cairo in the fight against the Muslim Brotherhood. For Egypt's rulers, Obama's departure removes one major foe and obstacle. Donald Trump, they believe, will usher in a new strategic US-Egyptian relationship that will upgrade Egypt's role in the regional balance of power, without the need for Gulf governments. This is what a visitor to Cairo senses these days. Yet despite hopes for Egyptian economic and regional recovery, it is difficult to be reassured by Egypt's nationalist wave marred by extreme detachment from the reality of its internal circumstances and regional ambitions.

Egypt's leadership has made clear its support for the regime army in Syria and decided that its interest lies in becoming the fourth pole of the Russia-Iran-regime axis. Egypt may not be the fourth pole in a military sense, but it will definitely be one in the political and strategic senses. This is a major development, especially as Saudi Arabia and the UAE had rushed to give billions to Egypt to shore up its internal stability and Arab weight in the regional balance of power. But now, things could be altogether different.

The elephant in the room is Donald Trump. Everyone is waiting for the message he will send through his key appointments, led by the state department and the national security advisor posts. Some believe the appointments would determine the trends of Trump's policies. But others believe Trump will personally set the tone for US foreign policy despite being a newcomer. This was evident when President Trump declared Jerusalem was the capital of Israel and followed through with moving the U.S. embassy to Jerusalem.

For its part, Germany is gearing up to influence the Trump administration in a calculated manner, based on policies, relations and strategies. Egypt, however, is betting on changes in the international landscape that it believes would serve its interests, such as the election of Donald Trump and the Russian president's determination to impose his country's role in the Middle East through Syria with Iranian partnership. That will be nothing short of a very Egyptian adventure.

In December of 2017, Arab media reported that Egypt and Russia are on the verge of signing a military cooperation agreement that would allow each side to use the other's airspace and air bases for a period of five years. The agreement when finalized, would give Russia its deepest presence in Egypt since 1973, when Cairo expelled the military of the Soviet Union and instead became Washington's closest Arab ally.

Russian media reported that Prime Minister Dmitry Medvedev has endorsed the draft agreement crafted by the defense ministry. On December 29, 2017, Egypt's red-carpet welcome for visiting Russian Defense Minister Sergei Shoigu has set in motion a military rapprochement between Cairo and Moscow. This will have profound implications for the Trump administration, no thanks to his predecessor.

Russian Prime Minister Dmitry Medvedev signed the draft deal with Egypt, inked by Shoigu, which will allow each side to use the other's military facilities and airspace for a period of five years. According to Arab media, Russian military forces have already reportedly used Egyptian facilities for operations inside Libya in recent months.

Defense Minister Shoigu applauded the warming relations between both countries during his visit to Cairo. He said that efforts are being made to step up military and technical cooperation between Egypt and Russia, bolstering the capabilities of Egypt's armed forces and police, which bear the brunt of the burden in the war against terrorism. He noted that improving relations between the two sides is coupled with an increasing volume of bilateral contracts for Russian defense enterprises.

The warming of military ties between the two countries comes after a spate of terror attacks in Egypt, including a recent gruesome massacre of worshipers in a north Sinai mosque, which left more than 300 people dead. Islamic militants also attacked Egyptian security forces outside Cairo in October, killing and wounding a few dozen.

Egypt's al-Sisi has accused unspecified countries of being behind recent terror attacks both in the Sinai and outside Cairo. He said that outside parties are helping the terrorists, supplying them with arms, money, and fighting men, in an effort to seize control of the country and destroy Egypt's role in the region.

In fact, the news about the recent agreement has been viewed as a "snub" to Washington. The '*New York Times*' considered Egypt's preliminary agreement with Russia, "a snub to the Trump administration" as it described it. During four decades, the United States has provided Egypt more than \$70 billion aid at a rate of more than \$1.3 billion a year in recent years.

The cost is often justified in part by the argument that it secures the use of Egypt's airspace and bases for the American military. Accordingly, "the Egyptian and American analysts called the preliminary deal the latest sign of the waning influence of the United States as President Trump has diminished its military and diplomatic footprint in the region and the world," reported the '*New York Times*'."

"Power abhors a vacuum and when the United States pulls back we can't be under the impression that the world is going to stand by and wait for us," said Matthew Spence, a former deputy assistant secretary of defense for Middle East policy under the Obama administration, which faced similar criticism for its policy toward the region. He added, *"The danger, and the reality is that other countries will take advantage of the opportunity presented when America chooses to pull back."*

"In practical terms, the presence of Russian jets in Egypt would raise concerns about the operational security of American military personnel and require coordinating with American military planes in the same airspace," said the NYT.

"It's a major problem for the United States-Egypt defense relationship," said Andrew Miller, a former senior State Department official who is now at the Project on Middle East Democracy. The NYT said that it was unclear to what extent Washington was informed about the agreement. The Trump administration has not yet replaced the ambassador to Cairo, whose three-year term ended in July, 2017.

Edgar Vasquez, a State Department spokesman, said only, *"We are aware of these reports and are monitoring the situation."* News of the preliminary agreement came as the United States of America diplomatic corps has been severely reduced. The American newspaper said that the American foreign policy is facing challenges from all corners.

It said, *"In the Middle East, the administration has no assistant secretary of state for Near Eastern affairs or ambassadors to Saudi Arabia, Turkey, Jordan, Egypt or Qatar. And on Thursday, a White House plan surfaced to oust Secretary of State Rex W. Tillerson, who had presided over the mass resignations of senior diplomats while watching his authority undermined by repeated contradiction or belittling from the Oval Office."*

It is worth mentioning that the Obama administration had been criticized by allies for retreating from the Middle East, in particular for failing to intervene aggressively enough against the Iranian- and Russian-backed government of Bashar al-Assad of Syria in his civil war against rebels challenging his rule,” said the New York Times.

However, the United States has further reduced its support for Syrian rebels under Trump’s administration, backing off its onetime goal of removing Al-Assad from power and take a back seat to Moscow in the Syrian peace process.

President Vladimir Putin of Russia has stepped in, by expanding Moscow’s prominence in the Middle East and seeking to regain the influence that was lost with the collapse of the Soviet Union, the end of the Cold War and the expansion of America’s military presence around the Persian Gulf and elsewhere.

Russia has carried out an aggressive air campaign in Syria that has fortified Assad, cementing his position as a client of Moscow and protecting a Russian naval base on Syria’s Mediterranean coast.

In addition, Russia has sought to make inroads with American allies as well. In September, it agreed to sell \$2 billion worth of advanced missiles to Turkey, a NATO member that previously clashed with Russia over its Syria policy. As recently as May 23, 2018, Turkey had decided to purchase Russian SU57, fighter-bombers, rather than wait on the delayed delivery of U.S. F35’s. Russia has gone to the nth degree to shore up relations with once shaky allies like Turkey and Lebanon.

In October, 2017, Russia agreed to sell \$3 billion worth of missiles to Saudi Arabia, another close American ally on the other side of the Syrian conflict. Russia is aggressively doing deals that strengthen their buffer states with the west, even at the risk of being undermined by the U.S. and NATO.

Gamal Abdel Gawad Soltan, a scholar at the Al Ahram Center for Political and Strategic Studies, a state-financed research institute in Cairo said that with Washington seemingly in retreat, “*very few, if any, of the states in the region are willing to rely solely on an alliance with the United States and depend on the US as the insurance policy for their security.*” In contrast, he said, “*Russia has proven to be quite effective, and that has been attractive to countries around the region.*”

Under the rule of Gamal Abdel Nasser in the early 1950s, Egypt tried to build counterbalancing alliances with the United States and the Soviet Union. But Washington soon lost patience with Nasser’s nonalignment policy and his anti-colonialist speeches. Consequently, Egypt fell more fully into the camp of the Soviets until the 1970s, when President Anwar Sadat switched his allegiance to the West. Today, Egypt’s al-Sisi (who took power in a

military takeover that ousted Egypt's first democratically elected President Mohamed Morsi in 2013) has been rekindling Cairo's Cold War alliance with Moscow.

American officials believed he may have been trying to press Washington to keep delivering more aid of its own, a variation of Nasser's strategy of playing off global rivals. But American officials have scoffed at the idea that Russia could provide the kind of military support that the Soviet Union once promised, "*much less replace the supplies, training and maintenance that the Egyptians have come to depend on from Washington,*" reported the NYT. "*Egypt would often hold Russia out as an alternative to American cooperation, and our attitude to some degree was, 'Good luck with that!'*" said Mr Spence, the former Defense Department official.

But when the Obama administration temporarily suspended military aid to Egypt in 2013 in response to the government's mass shootings of more than a thousand of his political opponents, al-Sisi visited Moscow and agreed to buy \$3.5 billion in jets, helicopters and missiles from Russia. Last year, the two countries held joint anti-terrorism drills, with Russian paratroopers conducting training exercises in Egypt with Egyptian paratroopers.

Egypt also signed a preliminary agreement for Russia to build nuclear power facilities in Egypt, although there has been no sign of any construction.

Al-Sisi and Putin have collaborated more concretely to support a shared ally in Libya, Gen. Khalifa Haftar, who is based in eastern Libya across the border from Egypt.

Russia has established a small military presence in a remote part of Egypt's western desert to back the general, according to American officials briefed on the situation. In fact, it was not immediately clear what Egypt hoped to receive in return for allowing Russia to use its air bases or airspace. A draft agreement released by Moscow on Thursday gave Egypt only reciprocal rights to use Russian airspace or air bases, suggesting that Russia sought to obtain for free advantages for which the United States has been paying dearly for decades.

Some analysts speculated that Cairo might hope to persuade Moscow to restore tourist flights that it cut off because of security concerns after militants downed a Russian chartered jet leaving the resort of Sharm el-Sheikh two years ago.

Moreover, Egypt may also hope to persuade Russia to move ahead with the preliminary deal to build a nuclear power plant. "*There is a long history of Russian preliminary agreements that take forever or never occur,*" said Mr Miller, the former State Department official. Russian state media suggested that the agreement might help Moscow's military campaign in Syria, another area where Putin and al-Sisi have found common ground.

Egypt's Persian Gulf patrons, Saudi Arabia and the United Arab Emirates, have viewed the fight against the Assad government as a proxy war against its regional ally, Iran. But al-Sisi has sometimes shown sympathy for Assad as a fellow strongman defending the status quo and fighting political Islam.

Vladimir Fitin, head of the Near and Middle East Center at the Russian Institute for Strategic Studies, said that access to Egyptian airports would allow Russian military aircraft to refuel on their way to Syria, according to a report by RIA Novosti, a state-controlled Russian news service.

On the other hand, some analysts believe that the Egyptian Russian rapprochement won't affect Egypt's relations with Washington. Hilal Khashan, who teaches political science at the American University of Beirut, said that al-Sisi is eager to receive Russian help in defeating militants in the Sinai, since his own military has not been extremely successful.

A few months ago, Sisi asked Putin to help him to crush the ISIS uprising in the northern Sinai [based on] the success of the Russian air force in eliminating the radical rebels in Syria, namely ISIS and (Jabhat) al Nusra, and he reiterated his request immediately after the massacre at al Rawdah mosque [in the northern Sinai town of Bir al Abed].

Khashan said that he does not think Israel will object to the deployment of Russian air power in the Sinai, since Israel appears to have good working relations with Russia in Syria. He also said relations between Egypt and the U.S. will not be seriously affected by the developing relations with Russia. But Khashan is naïve to think all of this is not going unnoticed by the Israeli Knesset and the eyes of the IDF!

The rapidly developing relations between Russia and Egypt have been overshadowed by the more prominent relationships between Russia and Syria, as well as Russia and Iran. Nevertheless, the Russia-Egypt relationship deserves closer scrutiny because, unlike the country's relations with the other two Middle Eastern powers, it concerns a country that until recently appeared to be firmly in Western orbit.

The abrupt shift of its geopolitical vector toward Eurasia therefore represents a far bigger change for the region than Russia's successful support of the legitimate Syrian government, or the close relationship with the Islamic Republic of Iran, both of which have been on the Western "enemies list" for decades.

The reasons for this shift are twofold, and have to do with the way Western powers interact with Middle Eastern powers in the context of a systemic economic crisis, as well as with Russia's demonstrated attractiveness as an ally. The West's systemic crisis clearly transformed how Western powers view non-Western ones. Whereas the "end of history" globalist rhetoric suggested a post-sovereignty utopia in which weak and strong powers interact on equal terms in a world without borders. In practice that rhetoric was a ruse to persuade non-Western powers to drop their guard and allow themselves to be penetrated by Western corporations and financial institutions thereby losing any possibility of charting their own independent course. Alas, from a Western perspective, assimilating "emerging markets" is still the cornerstone of economic policy, the only program of economic growth. Whereas during the 1990s this assimilation took relatively benign form and 9/11 had the effect of allowing the US to

initially adopt a far more aggressive stance to the point of overt military invasion. While in the beginning the EU did not follow suit, the severity of the EU's own problems prompted it to jump on the bandwagon of "regime change" in the case of Libya, Syria, and the Ukraine.

Egypt was a long-time Western ally since the late 1970s but unexpectedly found itself on the receiving end of predatory Western policies which took the form of the Tahrir Square "color revolution". This ultimately led to the electoral victory of the Muslim Brotherhood, which in turn fell to a military overthrow once the danger of the country's slide into a civil war became apparent.

The fact that the Muslim Brotherhood was financed by US-allied Persian Gulf states made Egypt aware it too was the target of state-sponsored jihadism, and that the US was incapable or unwilling to force its allies in region to refrain from targeting Egypt. While Syria is only a peripheral concern for Egypt, the civil war in Libya, where Islamist formations including ISIS enjoy Gulf Arab support, represents an immediate threat to Egypt for several reasons. The country can be used as a staging ground for launching attacks into Egypt and a sanctuary against retaliation and, in the longer term, should its government be a puppet controlled by hostile Gulf powers whose long term goal is the control of Egypt and of Suez Canal, which means that Cairo is keenly interested in influencing the outcome of that war.

Russia thus became an attractive partner because of its history of non-involvement in the internal politics of its allied states (almost to a fault, because unilateral restraint led to the Maidan revolution in Ukraine), because it can fill the security void left by the Western weakness, and, last but not least, because it can physically defend Egypt's political and territorial integrity against every conceivable threat, an ability it is currently demonstrating in Syria. Egypt appears to be very happy in taking advantage of these capabilities. Cooperation now includes the possibility of establishing a Russian airbase in Egypt, visits by Russian paratroopers to Egypt, and special operations troops providing training to their Egyptian counterparts. Egypt is also shifting its military procurement plans toward Russia.

From the Russian perspective, Egypt represents yet another bulwark of security against Western encroachment, a symmetric response to NATO expansion, "Eastern Partnership", and color revolutions. Combined with the military presence in Syria, Cyprus' general pro-Russian orientation, and the neutralization of Turkey which was also facilitated by an abortive West-promoted coup attempt, Egyptian bases would transform Eastern Mediterranean into a "Russian lake."

Last but not least, these bases and alliances could serve a launchpad for power projection into other unstable areas of the Middle East and, if Egypt's control of the Suez Canal is guaranteed by Russian arms, this guarantee endows both countries with a very effective means of pressuring Western and Gulf Arab powers.

But back to the question that begs an answer which I have been laying out so far in part 1 and part 2. Who Are Egypt's Allies and Enemies?

Egypt's position geographically causes the country to shift its focus from time to time. The country signed a peace treaty in 1979 with Israel, which served to end decades of fighting between the two countries. Since that time, the countries have been considered strategic partners. Although the U.S. funds Egypt's military efforts and its stance as of 2014, is neutral with respect to its relationship with Egypt.

According to reports by the BBC, Egypt is considered an ally of the West as well as the Middle Eastern countries of Saudi Arabia, Kuwait and the United Arab Emirates. Egyptian leader Abdel Fattah al-Sisi ousted former Egyptian President Mohamed Morsi in 2013, which also reduced the influence and movement of rebel Islamists in the country.

While Egypt has been a central force in the historical development of Islamism, the government has always been opposed by the Muslim Brotherhood which was established in Egypt in 1928 and was founded by Hassan al-Banna, an Egyptian teacher. Since that time, the group has been tolerated despite being outlawed in the country.

As of 2014, Qatar and Turkey, which support the Islamic organization of the Muslim Brotherhood, are considered Egyptian enemies. The Sudan has had border disputes with Egypt as well. As such, Egypt does not have an adversary in the bordering Arab or Moslem states.

In a comprehensive report in January of 2018, Dr. Yagil Henkin, a Military historian, specializing in urban warfare and counterinsurgency suggested the ongoing Egyptian military buildup is an enigma. Dr. Henkin teaches military history at the IDF Command and Staff College, and is a reservist with the IDF history department. He is the author of "Either We Win or We Perish: A History of the First Chechen War, 1994-1996 (Hebrew, 2007)", "The 1956 Suez War and the New World Order in the Middle East: Exodus in Reverse (2015)", and the forthcoming "Like Fish in the Bush: Rhodesia at War, 1965-1980 (Hebrew, 2017)". He also published "Uneasy Red, a guide to the Omaha Beach battle site in Normandy (2014)", and co-authored (with Jacob Saar) the "Israel National Trail Guide (3rd Edition, 2016)".

It is an impressive effort in terms of budget, acquisition of modern weaponry, and training. But why is Egypt investing so heavily in its military? Israel has to be wary, even though a military confrontation with Egypt is not expected.

I share Dr. Yagil Henkin's report published January 7, 2018, and as you will soon see, Egypt's military build-up is indicative of something more than just for self-defense. Dr. Henkin's report is comprehensive, and from a military tactician view, thorough as it possibly could be. It would equal any report the U.S. Army War College could present on Egypt.

Traditionally, Egypt has been one of the most important countries in the Middle East. In ancient times the Egyptian kingdoms played an important role in the history of the region in general and in the history of the Jewish people in particular. In the modern era, after gaining independence from Britain and after the "Free Officers" revolution in 1952, Egypt became a contender for leadership of the Arab world, sometimes competing for the title with Iraq and

Saudi Arabia. In recent decades, however, Egypt's influence has declined greatly. This is due to economic weakness, the price paid by Egypt for its peace treaty with Israel, and Egypt's transition to an American foreign policy orientation.

Although the peace agreement and the American orientation bore many economic advantages, the hostile response to the agreement in the Arab world damaged Egypt's regional standing, especially given the fact that the country did not have large oil reserves.

The peace agreement has proven to be very stable, despite a number of low points in relations between Egypt and Israel over the years. It has remained in effect for more than 35 years, in spite of various crises – from the Israeli attack on the Iraqi nuclear reactor to the Second Intifada. Even the short reign of the Muslim Brotherhood in Egypt did not lead to abolition of the peace accord.

Egypt has never ceased to see itself as an important country. To a certain extent, the current, significant Egyptian military buildup stems from this self-conception. But Egypt has not seen a 'natural' enemy on its borders for years, and the puzzle of 'why Egypt needs this army?' continues to be asked.¹

The purpose of this paper is to describe and analyze Egypt's military buildup over the last decade, particularly since President el-Sisi came into power in July 2013. The objective is not to claim that Egypt is *planning* a confrontation with one country or another, but to review her capabilities, her actions and the possibilities that arise from them.

This paper is divided into several parts. The first covers budgets and the army's place in Egypt's economy. The second part looks at the status of the Egyptian army today. The third section examines the buildup of infrastructures. The fourth section evaluates the training exercises of the Egyptian army. The last section discusses possible explanations for the buildup and considers its implications.

A. Budget and Economy

In many countries, the army becomes an economic 'player'. This is the case in Egypt, where in 2008 the American Embassy defined the army as a "quasi-commercial" enterprise.² One researcher elaborated that the Egyptian army enjoys economic benefits such as "subsidized fuel inputs, control over lucrative real estate [...] preferential access to state contracts, and the use of special permits to exercise extralegal oversight in sectors ranging from petrochemicals to tourism."³ (It should be mentioned that during Mubarak's final years the army's economic situation was neglected, and it appears to have improved under el-Sisi). An example of this is the huge commercial center established by the Egyptian army in 2013 in the Suez region, where it sold products, both imported and Egyptian, at reduced prices.⁴

The Egyptian army's economic power has been restored under el-Sisi. It is hard to tell exactly what part the army plays in the Egyptian economy. The army itself claimed in 2014 that revenues from various military industries accounted for less than one percent of Egypt's GDP.

Various experts have assessed the real portion as between five and sixty percent – a gap which means that it is difficult to formulate precise data on the involvement of the army in the Egyptian economy, apart from the fact that it exists and is recognized.⁵ The army's budget itself is also unclear. For instance, Egypt's defense budget was estimated at \$5.5 billion in 2015, however, Egypt's purchases from France alone in that year amounted to nearly €6.2 billion Euros.⁶ While such procurement is not paid in one year, such huge amounts to *only one* of Egypt's suppliers indicate that the reported defense budget apparently does not include all acquisitions.

In order to better understand the financial meaning of such deals, let's demonstrate this by a comparison to an Israeli deal. The Israeli F-35 purchase of 50 aircraft over a period of several years was estimated at \$7.5 billion⁷ which is approximately half of Israel's estimated defense budget for one year, if we disregard the share of the US aid budget in the deal. The submarine contract (which at the time of writing this article is the focus of a police investigation) is approximately \$1.5 billion. In other words, the payment for both major deals which Israel has signed, whose payments have been distributed over several years, together make up about two thirds of her annual defense budget. In contrast, only *part* of Egypt's acquisitions in 2015 cost more than the country's entire annual defense budget.

It appears that Egypt has additional resources to those specified in the budget. Since Egypt has also succeeded at the same time to expand the "Mohammed Naguib" military base complex near Alexandria and to build various large-scale infrastructure projects (as described below), its economic obligations are indeed unusually large in relation to the official defense budget, indicating that the figures in the official budget are not correct, or that certain factors, such as foreign aid, are ignored. This is also reflected in a statement made by President el-Sisi in 2015 that France loaned Egypt €3.2 billion Euros in order to finance an arms deal between the two countries.⁸

B. The Egyptian Army Today

The Egyptian Army's ground forces are built as a heavy mechanized force, mainly intended for large-scale combat maneuvers and not as expeditionary forces or for fighting with light, mobile forces against irregular enemy.⁹ They are organized in regional headquarters which hold both armored and mechanized divisions.

The Egyptian Army is intended to be a ground force and not an expeditionary force or a force for combat against unorganized forces.

In comparison to 2010, the number and type of its units has not changed significantly. In 2010 and in 2016, Egypt had four armored divisions; in 2016 the number of mechanized divisions grew from seven to eight; the number of artillery regiments remained at 15; the number of airborne brigades has remained at three; special forces have not changed; and so on. The estimated number of its manpower may have even decreased slightly from 468,000 to 438,000, but since more than one estimate was given in 2010, the 2016 estimate may just be more accurate. Alternatively, because there are indications of a different trend (as shown

below), it is possible that the assessments presented are not a true appraisal of the strength of the Egyptian army.¹⁰

Even if we do not have information on new units, we can identify processes of modernization and a significant buildup of Egypt's military forces. While in 2010 it was claimed that the Egyptian army had 973 modern M1 *Abrams* tanks, in 2016, the number mentioned by the same source was approximately 1,360 (almost three times the estimated number of the IDF's regular (non-reserve) tank arsenal at that time).¹¹ In addition, it was reported that Egypt intends to assemble Russian T-90 tanks in a factory to be built in her territory.¹² Earlier reports talked of approximately 400 to 500 such tanks.

In the field of troop carriers, Egypt purchased 762 MRAP (Mine Resistant Ambush Protected armored trucks) from the United States, of the kind that have proven themselves in combat in Iraq and Afghanistan. They have already been used in fighting against ISIS forces in the Sinai, and a rough calculation will show they are capable of carrying the infantry of an entire mechanized division. An unknown number of Egyptian-made *Timsah* MRAPs that have already been observed in the Sinai Peninsula must be added, as well as the purchase of 130 military transport trucks from the Czech company, Tatra. Negotiations are conducted for a further order of 220 trucks.¹³

In addition, Egypt is interested in upgrading or replacing its artillery systems. By mid-2017, it issued a request for proposals for 155 mm artillery systems from Russia, South Africa, South Korea and France.¹⁴

Egypt also purchased S-300VM (Antey-2500) antiaircraft systems from Russia, a downgraded export version with an operational range of at least 200 km and missile interception capabilities (Egypt expressed interest in the newer S-400 systems as well as in the newest generation of the 'BUK' missile systems, but for the moment the cost of the S-400 proved prohibitive). According to Russian sources, the scope of the deal is about \$ 1 billion, and the Egyptians plan to equip three battalions – a full air defense regiment. The first of these systems were supplied to Egypt in the middle of 2017. They joined the short and medium-range BUK-M2E and TOR-1 / TOR-2 missiles purchased by the Egyptians in recent years from Russia,¹⁵ and seventy-five Avenger US-made antiaircraft launchers purchased a decade ago. In 2016-2017, Egypt made an unusual use of the system, which is actually a mobile version of the 'Stinger' shoulder missile: she anchored "Humvee" ("Hummer") vehicles armed with missiles on board the new helicopter carriers that she purchased).¹⁶ However, in Egyptian military exercises one can still see widespread use of outdated anti-aircraft systems.

The Egyptian Army maintains a unique focus, at least for the Middle East, on air defense forces. These constitute a separate arm, and are estimated at 80,000 soldiers and 70,000 reserve soldiers, almost a sixth of the Egyptian regular army and reserves, in all branches (not including paramilitary forces and internal forces).¹⁷ This does not include the anti-aircraft defense that every division has – two air defense battalions. One can guess that the massive

Egyptian reliance on air defense forces is related to the fact that during the 1973 war, the Egyptian Air Defense was more successful than the Egyptian Air Force.

The Egyptian Army continues to maintain a unique focus on air defense forces. If Egypt completes the construction of the planned nuclear reactor at el-Dab'a in the Marsa-Matruh area,¹⁸ it is reasonable to assume that the S-300 missiles will protect it. However, the number of missiles purchased – especially if the missiles are the longer-range models, capable of reaching 350 kilometers or more – provides not only protection of specific critical infrastructure, but also long-range air protection. A battery of the longer-range model can be placed near the Suez Canal, where it can engage targets all over the Sinai Peninsula and even in parts of Israel.

Israel was divided on the S-300 missile deal. An anonymous source expressed concern that these anti-aircraft systems had nothing to do with the fight against terror, but the then-Israel Air Force Commander, Maj. Gen. Amir Eshel, responded to the question regarding this matter: "Are you kidding me? We're at peace with them (the Egyptians)."¹⁹

The modernization is even more pronounced in the air and sea forces. The number of American F-16 aircraft over the past decade has grown from 151 (of which 113 are relatively modern C/D models) to 208 or 220 (of which at least 177 are modern). In addition, Egypt is diversifying its sources of procurement. For example, it purchased some 50 MiG-29s of the advanced M2 model (the deal, worth \$ 2 billion, is expected to be completed by 2020. The first MiGs in the Egyptian Air Force were spotted in April 2017), and at least 24 French Raphael fighters in 2015, the first of which landed in Egypt less than a year after the signing of the deal.²⁰

By the end of this re-equipping, Egypt will retain one of the largest modern air forces in the Middle East, although Israel will still maintain a more advanced air force, including stealth fighters.

Helicopters, too, were on this shopping spree. Forty-six Apache attack helicopters (ten of which are of the advanced Apache Longbow model, were supplied in 2014) are joined by same number of advanced Russian made KA-52 attack helicopters. The first ones were observed in mid 2017 and were delivered to Egypt shortly after.²¹ Egypt also purchased from China an unknown number of Wing Loong armed UAVs, which are very useful for attacks against ISIS in the Sinai and have already seen operational use.²²

Modernization is evident in Egypt's air and sea forces. There have also been significant developments in the naval sector, all after Morsi was ousted and el-Sisi took power: in 2014, Egypt signed a €1 billion contract with France for the construction of four "Gowind-2500" corvettes of about 2,500 tons for Egypt. A year later, it added a contract for a six-thousand-ton frigate (which has already been supplied), and two *Mistral*-class helicopter carriers (see below). They were joined in 2016 by contracts for two more corvettes, two patrol boats (and a communications satellite).²³ In 2016 German 209/1400 submarines (more or less equivalent to Israel's first generation 'Dolphin' submarines) began to replace the aging Chinese-made 'Romeo' submarines. It should be noted that this deal, although supplied during a-Sisi's

presidency, was signed back in 2012. In addition, the Russians supplied a new small 550-ton P-32 missile corvette, armed with supersonic *Moskit* anti-ship missiles, in June 2016.

These ships join a wide range of older but still active ships, such as the four frigates from the American *Oliver Hazard Perry* series (4,200 tons) or four lightweight (600 ton) and speedy (41-knot) ships from the American *Ambassador III* series, which are supposed to have some stealth characteristics.²⁴ As a result, the Egyptian navy is the second largest in the region, after Turkey, and is far removed from its image after the 1973 war, when it was perceived to be the “Achilles’ heel of the Egypt’s military.”²⁵

The most conspicuous acquisition, and some would say the most astonishing, were the two 21,000 ton French *Mistral*-class helicopter carriers, capable of carrying sixteen helicopters, as well as an armored battalion and an infantry battalion. These ships were originally intended for Russia but were frozen due to the latter’s involvement in the Crimea. As a result, the Egyptians bought them at the price of nine hundred and fifty million Euros, or about \$ 1.06 billion at the time of purchase, compared with the \$ 1.53 billion the Russians were ready to pay for them.²⁶

This really is a bargain price, if for a moment one ignores the fact that Egypt is in financial difficulties, or of the fact that these are the largest ships of their kind throughout the Middle East and Africa.²⁷ Before this deal, no one had thought that Egypt needed this kind of ship.

The commander of the Egyptian navy explained that the ships would be used to secure the Egyptian gas fields and to fight terrorism.²⁸ This is quite surprising, to say the least, because it differs radically from concepts, such as the Israeli one, in which gas fields are protected by speedboats and anti-missile systems, and not by attack and reconnaissance helicopters flown from large, lightly armed helicopter carriers that are able to carry hundreds of their soldiers and land them on their enemies’ shores, all of which is not very relevant to protecting gas fields at sea.

The maritime and aircraft acquisitions suggest that the explanation that Egypt is preparing for the scenario of an urban uprising like in Syria,²⁹ is difficult to believe, since it focuses largely on measures that would be useless in the early stages of such an uprising. If Egypt fears an urban insurrection, it would be better to invest a lot more in UAVs and armored light vehicles, and much less in corvettes and helicopter carriers.

Another, more logical option is that the ships were intended to enable Egypt to deploy forces rapidly in the Gulf region, a capability she currently lacks, since almost all of her buildup is unsuitable for rapid deployment by sea or air.

The fact that Egypt is not dependent on a single supplier enhances her status. The Egyptian buildup pattern in recent years adds complexity for Egypt. For example, Egypt needs to maintain new aircrafts produced in the United States, Russia and European countries – each

of course requires different spare parts, different training, and maintenance systems, which poses a considerable burden on the Egyptian army. However, strategically speaking, the fact that Egypt is not committed to a single supplier, but buys from anyone who is willing to sell to her at her terms, strengthens her position. She is not just another client dependent on one supplier, who can dictate conditions or stop the supply of spare parts and ammunition, but rather a customer courted by competing countries for contracts. Diversifying procurement reduces Egypt's dependence on its suppliers and strengthens its ability to adopt an independent policy.

C. Infrastructure

A mere inspection of Egypt's military power is not enough in order to determine her military buildup. Military forces don't just move from one place to another. They need infrastructure; bases, roads (at least to a limited extent) and so on. Egypt has made considerable investments in all these areas over recent years. One of the most ambitious programs is the Sinai Development Plan, which was designed to develop the peninsula and integrate it further into Egypt, after decades of it being a no-man's-land for the most part (and as ISIS's activity in the Sinai proves, it is still one). This plan, which took shape in 2012 during the Muslim Brotherhood period, includes extensive development of the Sinai; construction of many highways; economic development; construction of factories and over a decade the transfer of three million residents to the Sinai.

Naturally, the focus of this plan is civilian, and settlement of many residents in the Sinai is intended for civilian development. Yet highways also ease the movement of forces, and it appears that these roads deep into the Sinai are more extensive than necessary for a civilian purpose. The army is responsible for this plan, and in 2016 el-Sisi announced the allocation of 10 billion Egyptian pounds (over one billion dollars) to the plan.³⁰

In recent years there has been considerable Egyptian investment in infrastructure. Beside these plans, Egypt has more far-reaching development plans, such as plans to triple the capacity of Egypt's ports, especially Port Said at the northern end of the Suez Canal, improvement of the infrastructure of the roads and railways in Egypt as a whole, and especially in the Cairo environs.

One Egyptian plan, bordering on science fiction, calls for the construction of a new city for five million residents between Suez and Cairo, with jobs for everyone and all necessary infrastructures, within just a few years at a cost of £30 billion.³¹ This plan was not left lying on the drawing board, and is being realized.

It is not clear from where the financing for these ambitious plans that cost billions of dollars will come. The "New Suez Canal" was financed by bonds. There are reports of aid from the Gulf States. Nevertheless, the scale of development is huge, and the rulers of Egypt must of course hope that the events that took place in Egypt after the digging of the Suez Canal in the 19th century will not repeat themselves. Then they had to sell their shares to repay debts.

In light of Egypt's success with constructing the new Suez Canal in the record time of a year, doubling its capacity (even if the economic results have so far been disappointing³²) as well as expensive projects such as the expansion of the Mohammed Naguib base near Alexandria, which according to the Egyptians is the largest military base in the Middle East, it is evident that Egypt's engineering capabilities should not be underestimated.³³

In 2017, Egypt's *Al-Ahram* reported about a dozen development programs in Sinai valued at \$ 1.5 billion. In addition, it was reported that with the help of the Engineering Authority of the [Egyptian] Armed Forces progress is being made with construction of seven more tunnels, some for cars and some for trains, under the Suez Canal, in the Port Said and Ismailia areas (in addition to the Ahmed Hamdi tunnel in the south of the Suez Canal), at a cost of \$ 4 billion, planned to be completed by 2020.³⁴ The schedule seems extremely optimistic.

These plans will not only be useful if the Sinai region becomes settled, but will also allow military forces to deploy there much more quickly than before. Some of the canals were apparently intended to solve the problem created by the 'New Suez Canal', which has cut off the el Fierdan bridge, thus disconnecting Port Fuad's container port from mainland Egypt. Another part was apparently intended to provide a solution for the future expansion of the Port Said port.

However, it is still difficult to find a civil reason justifying the construction of all seven different tunnels, when at the moment or in the near future there is not much of an infrastructure in the Sinai that will make their use economically viable. It is difficult to find a civilian explanation justifying the construction of seven tunnels under the Suez Canal.

In contrast to the plans mentioned, part of the development appears to be clearly for military purposes. An examination of satellite imagery shows that Egypt has been building, especially since 2014, extensive warehouses scattered throughout the Cairo-Suez area. Those sites have signs of military installations,³⁵ and when activity is observed – it looks military. In addition, several new military camps able to house more than a brigade, are being built in various parts of Egypt.³⁶

A more prominent example is the development of the Maliz (Bir Gifgafa) Airfield in Sinai. According to the peace treaty with Israel, Egypt is prohibited from placing fighter planes in the Sinai. In the entire "B" Area, which includes the aforementioned airport, Egypt is permitted to hold eight unarmed transport aircraft at the same time.³⁷ Over the years since the peace agreement was signed, Bir Gifgafa has almost been deserted, but in 2015-2017 satellite images show extensive work, some of which is of a strictly military nature. As of now, it's hard to find any large civilian population nearby, which may use its facilities, nor is it a popular tourist destination. Yet, all the runways were made operational again, and new runways were constructed as well as an infrastructure for what looks like a new terminal. Moreover, eight fortified hardened aircraft shelters (HAS) and five clearly military open aircraft parking spaces, protected by earth mounds, are also being built.

Bir Gifgafa is not an exception. Six HASs and two battalion-sized camps were also built at the airport in El Arish and its vicinity. This construction is part of the more extensive construction of military aviation infrastructure. As counted by Lt. Col. (res.) Eli Dekel, former Head of the terrain analysis branch in the IDF's Military Intelligence Corps, in the decade prior to September 2017, the Egyptians built or put into use six runways and 88 HAS's in the Cairo-Sinai area (including the Cairo West airport).³⁸ Of course, outside of the Sinai, there is no legal limit on the Egyptian ability to build military infrastructure. But Egypt is also building them inside the Sinai. The extensions to the airports are built in a standard format (an additional runway and a passenger terminal),³⁹ and indeed Egypt sometimes reported these extensions as being intended for civilian use. However, while at Hurghada Airport we do see the use of civilian terminals, at other airports (such as Cairo West and Katameya) there is no such activity. Although Egypt has many military airports in its territory, the expansions are not divided equally; the building boom has been only in airports from Cairo and eastward to the Sinai.

The building boom has been only in airports from Cairo and eastward. In addition, Egypt built huge fuel reservoirs, some of which are camouflaged, and again this is far beyond the civilian needs in the Sinai. Some of the reservoirs are, according to the photographs, on a scale capable of serving an army, and some of them are strategic reservoirs of many millions of liters. For example, a reservoir was built in Serapeum, that holds an estimated 25 million liters,⁴⁰ which may be an anterior reservoir belonging to the Second Army, which is in charge of this zone. In addition, Egypt is building many strategic fuel reservoirs. As part of her preparations for the Yom Kippur War, Egypt built ten such reservoirs, from Sidi Barrani on the Libyan border to the Suez Canal. From 1973 to 2010, three fuel sites had been added to them, west of the Suez Canal, two of which, according to the same estimate, hold 50 million liters and one is twice that size. Since 2010 construction of at least three even larger reservoirs has begun.

For example, at the western exit of the Egyptian Mitla road, a dozen large reservoir tanks, each about 40 meters in diameter, were dug out in 2015.⁴¹ In North Katameya and Ismailia – a farm with six reservoir tanks each. It is hardly possible that some of the tanks are connected to the production of Egyptian gas. Their location seems too far away for this, they do not resemble liquid gas tanks, and unlike other tanks (such as the huge fuel tanks in the Suez) they are underground. It's also hard to understand why suddenly such large new fuel reserves are needed. This is so especially in Katameya, for example, where there already are two civilian tank farms, or the reservoir near El-Shat, about 2.7 kilometers from the canal, which is about 10 kilometers as the crow flies from the production facilities and the vast tank farm in Suez; too close to justify a separate reservoir, and too distant to be part of the Suez facilities. If this was a civilian installation, it is reasonable to assume that it would be located near the port, and not a few kilometers from it on the other side of the canal.

It is possible that some of the reservoirs are intended for jet fuel, but this is only a guess. It is possible that one day some of the airports and reservoirs will serve a future Russian presence, but this is also speculation. (There are reports that Egypt and Russia are working on a base-sharing agreement.)⁴²

While it is possible to believe that part of the development of the fuel reservoirs is for civilian purposes, even if it seems excessive for Egypt's current needs and for those of the near future, the same can't be said about the stockpiles of ammunition in the Sinai. An examination of satellite images since 2007 shows that all the ammunition depots have grown considerably, and that new and sometimes larger ammunition bunkers have been built.⁴³

Finally, we can point to an increase in the numbers of Egyptian tank transporters and the number of military bases of the tank transport units. Since 2010, three such bases have been built, which together have a capacity of some 720 transporters, although one of them, built in the vast expansion of the 'Mohammed Najib' base near Alexandria, may only be partly occupied, and the second seems to be still unmanned.⁴⁴ It is hard to find a reason for this step, but its military implications are clear: Egypt is significantly improving its ability to mobilize large forces very quickly. For the sake of comparison, it was recently reported that the IDF is buying 90 new tank transporters from Navistar, which join more than 100 Volvo tank transporters that were purchased in 2012.⁴⁵ These will replace the old-fashioned tank transporters that the IDF has been using since the 1970s.

Even if the IDF has additional trucks for other uses, which can serve also as tank transporters in case of an emergency, it is still clear that the Egyptian army has a much greater transport capacity than the IDF, and that Egyptian capacity has increased it recently. Given the fact that armored MRAP trucks are capable of moving on roads like any other vehicle, thus decreasing the use of tank transporters, this capacity enables Egypt to move several divisions at once – considering road limitations. As stated above, the Sinai development plans will greatly ease those limitations.

There is an increase in the number of tanks, and bases used for their storage. In contrast to the investment in airports, storage complexes and ammunition bunkers, it is clear that Egypt is not investing in defensive infrastructure on the Sinai front. The large defense complexes in the Rephidim (Bir Gifgafa) area, which were built after Israel's withdrawal from Sinai, have not been maintained, and some of them have almost disappeared under the sand or disintegrated.⁴⁶ This does not indicate a change in combat doctrine. At the end of 2016 and the beginning of 2017, the Egyptians built a new training area in the area east of Cairo west Airport. This area includes a totally new "steering wheel" outpost, named after its shape, the same kind that was neglected in Rephidim.⁴⁷ Egypt is manning similar outposts on the Libyan border, but it seems that none of its neighbors is using this kind of outposts.

Egypt is not investing in defensive infrastructure in the Sinai. Furthermore, since 2014, Egypt has set up outposts on the Israeli border, in coordination with Israel, to assist with confronting Hamas and ISIS in the Sinai.⁴⁸ However, these outposts are meant to defend troops against irregular forces *coming from Sinai* rather than an organized defense against an army like in Rephidim, and they have no similarity to the "steering wheel" design. Therefore, the establishment of the training post shows the fact that Egypt not only uses the "steering wheel" outposts but plans on doing so in the future; it has no need to train its forces to *attack* such fortification, for almost no one else has them.

In other words, Egypt is not worried that Israel will attack and conquer the Sinai Peninsula. The military infrastructure is not intended for obstructing such a possibility. The newly-constructed Egyptian military infrastructure reinforces the deployment capability, increases the amount of ammunition stored, as well as fuel and other equipment – but it does not see the need to maintain defensive infrastructure.

D. Training

The third link in the puzzle is training and military exercises. Naturally, an unskilled army with sophisticated equipment is less efficient than a skilled army with the same equipment, and usually also less so than a well-trained army with less sophisticated equipment.

The Egyptian army's training has traditionally been viewed as mediocre, even if – as was seen in the Yom Kippur War – it was capable of successful planning and carrying out original and effective operational plans. On the tactical level there was no doubt that after the well-executed combat crossing of the Suez canal, its combat performance was not particularly efficient.⁴⁹ The dismal failures of Egypt's elite Unit 777's attempt to rescue flight 648 in 1985, as well as the botched Larnaca raid in 1978, only reinforced this image.⁵⁰ At the end of the 1990s, an American officer and researcher noted a lack of initiative and motivation, a rigid centralized command structure, poor training, and other problems in the Egyptian Army.⁵¹ Some of this has remained this day. Testimonies still indicate a low level of at least some of the Egyptian forces, and there is evidence of corruption and of recruits who serve in non-military positions, similar to the past.⁵²

However, Egypt has made a considerable effort to improve. In recent years, the Egyptian army has carried out extensive maneuvers, including full-scale division exercises, in which all soldiers in the participating units took part, together with their tanks and vehicles. (The IDF allegedly has not conducted such an exercise for many years). Thus, for example, in the annual 'Raed 27' exercise in May 2017 the entire 9th Armored Division trained with live ammunition.⁵³ In recent years, the Egyptian army has carried out large exercises.

The exercises have been on the rise in recent years. The Badr 2014 exercise was, according to Egypt, the largest since 1996. It was defensive in nature but it included offensive parts, including a combat crossing of the Suez Canal, along with a simultaneous naval exercise that included diverse subjects from combating smugglers and pirates to anti-submarine warfare.⁵⁴ The "Raed 24" exercise of 2015 focused on fighting on the Libyan front.⁵⁵ Even before that, the Egyptians conducted exercises on subjects like crossing the Suez Canal or large live-fire exercises,⁵⁶ but the scope of the exercises seem to have increased, at least according to the media coverage and the huge parades accompanying them, where a full division can be seen standing to attention, with its vehicles and weapons all present.⁵⁷

In addition, Egypt continues its traditional exercises with other countries, and adds some new ones. The biennial joint American-Egyptian military exercise "Bright Star" was held again in 2017, after being cancelled by the Obama administration in 2011, following the

Egyptian revolution. Over the past five years, joint training exercises have been held with Jordan's special forces; Egypt made parachute drops and house-clearing joint exercises with Russian paratroopers and special forces; an Egyptian unit was sent to Russia to train with Russian forces; Egyptian ships trained with Russian ships; the military has trained with forces from the United Arab Emirates and Bahrain, with the Greek Air Force and Navy; and the Greek defense minister recently even declared a joint exercise with the Greek and Israeli air forces.

In any event, it is clear that the Egyptian military is training more than in the past, and with many more countries.⁵⁸ Building large training facilities, including for combat in built up areas, is also an indication of this.⁵⁹

E. Possible Explanations

Piecing together the information about the military buildup, the infrastructure and the training exercises, indicates that the Egyptian army is undergoing considerable reform, and that Egypt is boosting its military capabilities. The military is purchasing newer equipment. The government is building new military infrastructure and dual-use infrastructure, mostly within the area from the Sinai to Cairo. Some of this infrastructure is apparently meant to enable fast deployment of troops to the Sinai, including aircraft, and to supply them without the need for supply convoys having to travel hundreds of kilometers.

Increasing the number of the tank transporters will also enable rapid deployment, as will the hundreds of new mine protected trucks that have joined Egypt's Fahd wheeled armored personnel carriers. The extensive training of the various branches, and in particular, the extensive joint exercises, indicate that the military is determined to preserve significant "conventional" large scale military capability, that is the ability to fight armored battles against other armies.

It's hard to tell what's driving the Egyptian military buildup. The buildup could be a disturbing sign. However, it does not *prove* any certain intention on Egypt's part. There are many possible reasons for a military buildup, including:

- Buildup for the purpose of preserving its status in the Arab world, both as a means of balancing its economic weakness and due to the "arms race" in the Persian Gulf, which was largely caused by the Gulf States' fear of the Iranians⁶⁰ (even though the Saudis purchased less arms in 2016, in contrast to the sharp increase of previous years);⁶¹
- Creating an infrastructure for future Russian deployment;
- Preparations for a conflict with Israel or for the re-militarization of the Sinai;⁶²
- Strengthening the internal status of the government and the ruling class, in a country in which the army is, in many ways, the State itself.

Each thesis is possible, but it is difficult to know which, if any of these explanations, is *the* reason for the Egyptian military buildup. President el-Sisi has stated that he is not afraid of

an invasion because no organized army is threatening Egypt, but that Egypt needs a big army due to the unstable situation and the “vacuum” in the Middle East. According to his statements, the Egyptian buildup partially can be interpreted as a force for the rapid deployment of troops throughout the Middle East. Sisi has indeed declared his support of a united Arab force to deal with problems in the Middle East, and said that Egypt will play a part in this force.⁶³

Acquiring the “Mistral” ships may be part of this, because they provide the ability to deploy a number of battalions to a distant target at short notice, including dozens of armored vehicles.

However, the bulk of the Egyptian army is built as a heavy mechanized and armored army, and will not be able to quickly reach other countries, from Libya to Saudi Arabia.

If, for example, Egypt wishes to intervene in Libya,⁶⁴ she can deploy a light expeditionary force using light infantry units, MRAP trucks, and various types of wheeled armored personnel carriers. After that, on a much longer timetable, it will be able to bring the tank divisions, moved by train (where possible) or by tank transporters⁶⁵ – and the timetable will be extended further, because unlike in the canal area, it does not appear that the Egyptians are preparing reservoirs or supply bases that will support such a move.

In other words, while the Egyptian army can relatively easily (if we ignore the difficulties that they are presently facing with ISIS) transfer large forces deep into the Sinai and toward the Israeli border, an attempt to transfer them to Libya or Sudan will meet with many more logistical difficulties. The new submarines, of course, have multiple uses. They may provide capabilities against any navy, from the Iranian to the Israeli Navy, from commando deployment to anti-ship attacks.

The reasons for the buildup are sometimes related to the role of the army in the country. The reasons for the buildup are often related to the role of the army in the country. Not all armies serve the same purpose.⁶⁶ Sometimes internal reasons (demonstrating power in order to awe opponents, controlling the country, supporting an officer class, etc.) will have a greater influence than the need to contend with an external enemy. Likewise, external reasons are not always “preparations for war.”

Traditionally, the status of a country was measured also by the size of their forces, and regional commitments can also affect the force structure and buildup. Luxembourg, for example, has a battalion-size army that, of course, cannot prevent or delay any invasion by any of its neighbors for more than a few hours, and an air force composed entirely of early warning aircraft – all within the framework of NATO membership.

Acquisition of weapons can also be connected to the army’s status in a society or the ability of its officials to derive a large profit from it, and not necessarily for any sort of operational planning.

Therefore, surveying Egypt's abilities is not sufficient in order to understand her intentions. An analysis of the neighbors' intentions is necessary – but it is not sufficient either. As Major General (res.) Amos Yadlin, former commander of Israel's intelligence branch has said, "If we prepare to confront the enemy's capabilities, the IDF will need double the forces, deployed on high alert 365 days a year along the borders of the State of Israel"⁶⁷ However, since identification of irregular movements is the identification of 'capabilities', it seems that in practice the IDF could make do with smaller forces, but will need a rapid reaction time and total army mobilization whenever such a movement is identified.

Summary

While it is not possible to know at this point what the goal is of Egypt's recent significant military buildup, the buildup itself speaks volumes. A comprehensive military buildup that involves the purchase of equipment, the improvement of infrastructure, and the enhancement of training – creates a new situation and forces neighboring countries to relate.

It is not possible to relate to this solely on the basis of an analysis of Egypt's current leader's intentions. Countries such as Israel must relate to the buildup also on the basis of Egypt's actions and capabilities.

It is also impossible to ignore the influence of one party's policy – deliberate or not – on other players in the international arena. The moment one party aspires to become stronger, the policies of others have to take this into account. Security is always relative. As Henry Kissinger had said, Absolute security for one party means total insecurity for other parties.⁶⁸ In other words, the catch in responding to the military build-up of a neighboring country is that the response itself can create an arms race.

The arms race of the European navies at the end of the 19th century is an excellent example of such dynamics. British policy, which required that its fleet be equal in size to the next two fleets combined together, meant that every time a foreign naval fleet expanded, the British felt compelled to increase their fleet, which threatened foreign fleets, and so forth and so on.

This dynamic holds especially true for Israel, since many parts of Egyptian society have not accepted Israel and/or remain disappointed by the Egypt-Israel peace agreement. To a great degree, the peace remains an agreement between states but not between societies.⁶⁹

If the Muslim Brotherhood had remained in power in Egypt and had succeeded in carrying out an Erdogan-like revolution (that is, the purging of the army and bringing it under Brotherhood control), Israel would have found itself concerned about much more than the army's infrastructure buildup.

The fact that Israel recently permitted Egypt to station significant troops in the Sinai to fight ISIS (– many more troops than allowed under the Egypt-Israel peace agreement!) also requires Israel to pay significant attention to the overall Egyptian buildup. (The Egyptian

president recently announced deployment of 20 battalions in the Sinai, a force that amounts to more than 20,000 thousand soldiers including support units. This is not the *total* force in Sinai, but the newest additions).⁷⁰

This author shares the widespread Israeli assessment that, under al-Sisi, Israel and Egypt have become closer than ever; and therefore, that a military clash between the two countries is unlikely. Nevertheless, the Egyptian army buildup, the improvement of its force deployment capabilities, and the large deployment of Egyptian forces in the Sinai – warrants a great deal of attention and caution. Assessments may be wrong – and even if they are correct at the moment, future unknown changes may change the situation for worse.

The example of Iran, formerly a friend of Israel that has become a bitter enemy, stands as a warning about the type of rapid changes that can occur. (Fortunately, Iran does not directly share a border with Israel, although it is trying to advance towards Israel through Syria).

The 19th century in Europe, as mentioned above, is another example of how the *Belle Époque* (the Beautiful Era) can, in only a few years, be transformed into an era of destructive war.

On the other hand, the twentieth century in Western Europe after the collapse of the Soviet Union presents another possibility: A situation in which every country is so sure that its neighbor will not attack it, so that no country pays much attention to the question of what its neighbor buys for its army (or even complains that its neighbor does NOT buy enough weapons, contrary to its NATO obligations). The fact that most of the Western European countries are members of NATO, with American backing, certainly does not hurt.

A middle path is the example of the Israeli-Arab arms race after the 1973 war, which, as we know, has not lead to another major war.

The Middle East does not resemble Europe after the Cold War. The relations between Israel and its neighbors are far from being similar to the relations between Denmark and Sweden, or between France and Britain. (This is true despite the increased cooperation between Israel and Egypt). Therefore, Israel must be guarded regarding the Egyptian military buildup, and especially leery regarding the possibility of the rise of an Egyptian Erdogan.

The Egyptian army has often carried out exercises that appear to be based on war-with-Israel scenario. Nevertheless, the IDF should not necessarily train directly for an ‘Egyptian contingency,’ since this would exacerbate relations with Egypt. (Although one could ask what kind of a relationship pertains here, when one side can train for the possibility of fighting the other, but not vice versa).

Taking all these delicate concerns into account, the upshot is that Israel must maintain a basic capacity for mechanized warfare against modern armies. It must not assume that the present situation, in which Israel had a crushing material military advantage versus its enemies

(as in the Second Lebanon War and in recent wars against Hamas), will remain the same against other possible adversaries.

Israel must keep a careful eye on the changes in Egypt and their implications; and, at the same time, increase cooperation with Egypt as much as possible. Cooperation does not necessarily prevent future conflict, but it reduces misunderstandings and creates de facto alliances. Such alliances reduce the chances of unintentional escalation.

In other words, Israel's great challenge is to maintain and improve relations with Egypt, and at the same time be prepared, without causing unintended escalation, for a situation in which the optimistic scenarios do not materialize.

* *The author thanks Eli Dekel for his extensive assistance with satellite images of Egypt, and Alex Greenberg for his assistance with Arab sources. The conclusions are the responsibility of the author alone. This study does not represent any official position, and relies only on open sources.*

[1] See, for example, Amnon Barzilai, "Why Does Egypt Need Such a Huge Army?", *Haaretz*, August 26, 2001,

<http://www.haaretz.com/print-edition/features/why-does-egypt-need-such-a-huge-army-1.68010>

[2] US Embassy, Cairo, Cable, 23rd September 2008, *Wikileaks Public Library of US Diplomacy*, https://wikileaks.org/plusd/cables/08CAIRO2091_a.html On the general subject of armies and their involvement in the economy, see, for example, Jörn Brömmelhörster and Wolf-Christian Paes (Eds.), *The Military as an Economic Actor: Soldiers in Business*, New York: Palgrave Macmillan, 2003.

[3] Shana Marshall, *The Egyptian Armed Forces and the Remaking of an Economic Empire*, Washington DC: Carnegie Middle East Center, 2015, p. 5.

[4] *The Marker*, 11 April 2013, <https://www.themarker.com/wallstreet/middle-east/1.1991503>

[5] *Washington Post*, March 16, 2014,
https://www.washingtonpost.com/world/middle_east/egyptian-military-expands-its-economic-control/2014/03/16/39508b52-a554-11e3-b86538b254d92063_story.html?utm_term=.3c88da139d9e

The most comprehensive experience is probably: Zeinab Abul-Magd, *Militarizing the Nation: The Army, Business, and Revolution in Egypt*, New York: Columbia University Press, 2017.

[6] International Institute for Strategic Studies, *The Military Balance*, 2016, p. 324, and also Stockholm International Peace Research Institute (SIPRI), "Military expenditure by country, in constant (2015) US\$ m., 2007-2016", 2017,
<https://www.sipri.org/sites/default/files/Milex-constant-2015-USD.pdf>

Yiftah S. Shapir and Kashish Parpiani, "Egypt Rearms", *Strategic Assessment*, Volume 19, No. 3, 2016, p 55 <http://din-online.info/pdf/ad19-3.pdf>

[7] Ynet, 27 August 2017, <http://www.ynet.co.il/articles/0,7340,L-5008220,00.html>

[8] Reuters, March 1st, 2015, <http://www.reuters.com/article/us-egypt-france-loan/3-2-billion-euros-of-egypt-french-arms-deal-financed-by-loan-from-paris-sisi-idUSKBNOLWOZN20150228>

[9] This is in contrast to the process that almost every Western military force has undergone. See, for example, Yagil Henkin, "Why do we even need an army?" Media, 10 February 2017, <http://bit.ly/2Abuhq2>; Yagil Henkin, "Where did the European armies go?", Media, 3 March 2017,<http://bit.ly/2isneiw>

[10] International Institute for Strategic Studies, *The Military Balance*, 2016, p. 324; — *The Military Balance* 2010, p. 248

[11] The estimates are not necessarily accurate. For example, in 2010, the report claimed that Israel had 3,501 tanks, while in 2016 it estimated that Israel had about 500 tanks (and another 1,000 in storage); since it did not seem as if Israel had dismantled about 10 active or reserve armored divisions in six years, (based on a historical average, a Western Armored Division had 200-350 tanks), it can be assumed that a considerable portion of the tanks in the 2010 report were those that had been removed from active service years ago (and that the active tank force is concerning only conscript units, but not reserve units). For example, the 2010 report contained no fewer than 387 Soviet-made tanks, or an improved version of them, despite the fact that these tanks had been removed from service in a previous generation was not classified at all. It is reasonable to assume that a similar process is true too with regard to the Egyptian army.

It should be noted that the report of 2016 mistakenly stated that the total number fell to 2,710 (compared to 3,723 in 2010), however, a separate calculation of the number of tanks (minus 200 T-62 tanks which were counted twice) shows that this was an error. In light of the fact that four different divisions and another five independent brigades were observed in Google Earth images around the Egyptian military bases on different dates, it is likely that the total number of Abrams tanks is even greater, given the fact that there are also tanks in storage and tanks reserved for basic training. My thanks to Eli Dekel who showed me the locations of the formations.

[12] TASS (English), July 5th, 2017, <http://tass.com/defense/954764>

The report used code numbers to indicate the customers, and it was removed from the net after Russian analysts were able to identify the different countries. Jane's, July 6th, 2017, <http://www.janes.com/article/72090/russia-s-t-90-makes-inroads-in-middle-east-market>

Defense Web, July 7, 2017,

http://www.defenceweb.co.za/index.php?option=com_content&view=article&id=48488:egypt-looking-to-domestically-produce-t-90-tanks&catid=50:Land&Itemid=105

[13] For a picture of the Egyptian MRAP in the Sinai, see,' <https://nzivnet.com/articles/5534>

Al-Ahram Online, "Egypt receives second shipment of MRAP vehicles from US", September 29th, 2016,

<http://english.ahram.org.eg/NewsContent/1/64/244913/Egypt/Politics-/Egypt-receives-second-shipment-of-MRAP-vehicles-fr.aspx>

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Of the 762 MRAP vehicles, 90 are ambulances, 12 rescue vehicles and 660 are armored personnel carriers, each one is capable of carrying ten soldiers, including 2 crew members, Dylan Malyasov, "Egyptian company develops new «Temsah» armored personnel carrier", *Defence Blog*, October 23th, 2016,

<http://defence-blog.com/army/egyptian-company-develops-new-temsa-armored-personnel-carrier.html>

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Defence Web, 29 April 2016,

http://www.defenceweb.co.za/index.php?option=com_content&view=article&id=43308&catid=74&Itemid=30

[14] Israel Defense, July 31st 2017, <http://www.israeldefense.co.il/en/node/30543>

Defenceweb, July 24th, 2017,

http://www.defenceweb.co.za/index.php?option=com_content&view=article&id=48661:egypt-evaluating-new-artillery&catid=50:Land&Itemid=105

[15] Tass (Russian), March 6th, 2015, <http://tass.ru/armiya-i-opk/1812666>

Jeremy Binnie, "Egyptian S-300VM SAM delivery confirmed",

Jane's Defense Weekly, June 6th, 2017,

[16] In July 2017, the Egyptian Ministry of Defense published a video displaying the system <https://youtu.be/JifU42Nj9UY?t=42>

[17] *The Military Balance* 2016, pp. 324-325

[18] See, for example, Shaul Shay, "The Egypt – Russia nuclear deal", *IDC Institute for Policy and Strategy*, November 2015,

[http://www.herzliyaconference.org/_Uploads/dbsAttachedFiles/Egypt_nuclear_plant2015\(1\).pdf](http://www.herzliyaconference.org/_Uploads/dbsAttachedFiles/Egypt_nuclear_plant2015(1).pdf)

Reuters, "Russia to lend Egypt \$25 billion to build nuclear power plant", May 29, 2016, <https://www.reuters.com/article/us-egypt-russia-nuclear/russia-to-lend-egypt-25-billion-to-build-nuclear-power-plant-idUSKCN0YA1G5>

[19] *Times of Israel*, May 28, 2015,

<https://www.timesofisrael.com/israel-said-unfazed-by-sale-of-s-300-missiles-to-egypt/>

[20] *The Military Balance*, 2010 Ibid., 2016 Ibid. ; "Egypt", *F-16.net*,

http://www.f-16.net/f-16_users_article4.html

Bilal Khan, "First Egyptian MiG-29M2 (or MiG-35) Spotted", *Quwa*, April 2, 2017,

<http://quwa.org/2017/04/02/first-egyptian-mig-29m2-mig-35-spotted>

Egypt Independent, October 15th, 2016,

<http://www.egyptindependent.com/egypt-receive-8-more-french-fighter-jets-2017/>

Of the Egyptian aircraft, 20 are from the relatively new Block 52, and most of the others are from the older Block 40; The A / B models are from old-fashioned Block 15, but all aircraft have been or are scheduled to undergo system upgrades. Some sources, such as a Russian RIA /

Novosti report, claimed that Egypt had purchased an even more advanced MiG-35 model – but since the M-35 had just commenced regular production, at the time of writing, this was probably a mistake.

[21] Defense Blog, June 8th, 2017, <http://defence-blog.com/news/fisrt-egypts-ka-52-aligator-attack-helicopter-spotted-in-russia.html>

Reuters, December 21, 2014,

<http://www.businessinsider.com/r-egypt-receives-10-apache-helicopters-from-us-sources-2014-12>

TASS, July 18, 2017, <http://tass.com/defense/956802>

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<https://www.facebook.com/EGYDEFPORTAL/photos/a.354222674690208.1073741828.353276948118114/1362698237175975/?type=3&permPage=1> December 31st, 2017.

[22] A photograph of an Egyptian UAV operator with the unit's emblem, as well as a picture taken in an Egyptian UAV hangar, was uploaded to a forum dealing with African armies in September 2017. <http://www.nairaland.com/1386870/african-militaries-security-services-strictly/1393>

[23] Al-Ahram (English), May 7, 2016,

<http://english.ahram.org.eg/NewsContent/1/64/208260/Egypt/Politics-/Egypt-to-purchase-French-military-satellite-on-Tue.aspx>

Michel Cabirol, "Armement: la France va signer de nouveaux contrats en Egypte", *La Tribune*, April 15th, 2016,

<http://www.latribune.fr/entreprises-finance/industrie/aeronautique-defense/armement-la-france-va-signer-de-nouveaux-contrats-en-egypte-564682.html>

For comparison, the Israeli 'Saar 5' ships have a maximum weight of 1,200 tons, and the future 'Saar 6' ships will weigh about 2,000 tons. Of course weight is a 'rule of thumb' and does not prove the capabilities of any ship.

[24] Shaul Shay, "Egypt's New Modern Submarine Fleet", *Israel Defense*, December 13th, 2015, <http://www.israeldefense.co.il/en/content/egypts-new-modern-submarine-fleet>

Al-Ahram (English), August 8th, 2017,

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<https://sputniknews.com/world/201606251041953909-russia-egypt-corvette>

"USA Delivered the Last Two Ambassador MK III Fast Missile Craft (Ezzat Class) to Egyptian Navy", *Navy Recognition*, June 25th, 2015, <http://bit.ly/2jBgyr>

[25] Hillel Frisch, "Guns and Butter in the Egyptian Army", in Barry Rubin and Thomas E. Keany (Eds.), *Armed Forces in the Middle East: Politics and Strategy*, London: Frank Cass, 2002, p. 99.

[26] US Naval Institute News, December 8th, 2014,

<https://news.usni.org/2014/12/08/russia-france-give-us-mistral-refund>

Reuters, September 23rd, 2015,

<http://www.reuters.com/article/us-france-egypt-mistral/france-egypt-agree-950-million-euro-mistral-warship-deal-idUSKCN0RN18Z20150923>

[27] Algeria has an amphibious assault ship, *the Ba'al Abbas*, which can carry about the same number of marines but much less tanks and helicopters, and its thrust is 8,800 tons; Turkey also has smaller LST's (Landing Ship, Tank) and amphibious assault ships.

[28] *Egypt Daily News*, October 8th, 2016,

<https://dailynewsegyp.com/2016/10/08/egypt-middle-east-country-mistral-helicopter-carriers-navy-commander/>

[29] See, for example, Naeel Shama, "Egypt's Power Game: Why Cairo is Boosting its Military Power", *Jadaliyya*, September 6th, 2017,

http://www.jadaliyya.com/pages/index/27111/egypt%E2%80%99s-power-game_why-cairo-is-boosting-its-milit

[30] Haaretz, 22 August 2012, <https://www.haaretz.co.il/news/world/1.1806711>

Khalid Khassan, "Will Sisi fulfill his 'Sinai promise'?", *Al-Monitor*, April 24th, 2016,

<http://www.al-monitor.com/pulse/originals/2016/04/egypt-sinai-development-plan-sisi-failure-promise.html>

Al-Masry Al-Youm, (English), March 8th 2016,

<http://www.egyptindependent.com/sisi-unveils-le10bn-development-plan-sinai/>

[31] For an official review of Egyptian national projects, see, for example, Ahmad Abu El Hassan Zarad, "The Mega National Projects... A Locomotive of Development", *Egypt State Information Service*, n.d. (October 2016), <http://www.sis.gov.eg/section/337/4683?lang=en-us>

Oxford Business Group, "Egypt addresses major transport infrastructure projects", n.d. (2016), <https://www.oxfordbusinessgroup.com/overview/top-speed-addressing-bottlenecks-through-major-infrastructure-projects>

World Highways website, "Egypt's road programme is now restarting", February 2014, <http://www.worldhighways.com/sections/emergent/features/egypts-road-programme-is-now-restarting>

Egypt Daily News, May 1st, 2017,

<https://dailynewsegyp.com/2017/05/01/transportation-ministry-begins-two-road-railway-development-projects-july>

The Guardian, March 16th, 2015,

<https://www.theguardian.com/cities/2015/mar/16/new-cairo-egypt-plans-capital-city-desert;>

[32] In effect, a bypass of several dozen kilometers, not an entire canal. Work on the bypass expansion began on August 5, 2014, and on August 6, 2015, the first ship passed. In regard to economic results, see for example, Michel Giorgio, "El-Sisi's ambitions sinking in the Suez Canal", *Il Manifesto*, March 30th, 2016, <https://global.ilmanifesto.it/suez-canal-expansion-bust-egyptian-regime>

Khalid Khassan, "New Suez Canal income slowly sinking", *Al Monitor*, September 11th, 2017, <https://www.al-monitor.com/pulse/originals/2017/09/egypt-new-suez-canal-revenues-drop-trade-giant-project.html>

[33] Globes, 28 July 2017,
<http://www.globes.co.il/news/article.aspx?did=1001199046>
<https://nzivnet.com/articles/10518>

For the broadcasts from the opening ceremony, which show the enormous size of the base, see, for example, Russia Today (Arabic), July 22nd, 2017,

<https://www.youtube.com/watch?v=QYzw34zOFDo> as well as,

<https://www.youtube.com/watch?v=zT3a3yJ83No>

For a tour of the base and some of its compound and characteristics, see, Masr Online, 22 July (Arabic), 2017, <https://www.youtube.com/watch?v=HpT3PrN-J2I>

It is possible however to make reservations and to say that the Egyptian claims are quite exaggerated. Although extensive construction has been carried out in the camp, the base itself is not new, and it has existed in a somewhat different format since the early 1980s. The Egyptians' claims regarding a new and extensive camp were apparently intended for internal propaganda purposes. My thanks to Eli Dekel for this comment.

[34] Al Ahram (English), January 26th, 2017,
<http://english.ahram.org.eg/NewsContent/1/64/256919/Egypt/Politics-/Sisi-ratifies-Saudi-Sinai-development-programme.aspx>

"New Infrastructure Project at Suez Canal Takes Shape", *Dredging Today*, February 9th, 2017, <http://www.dredgingtoday.com/2017/02/09/new-infrastructure-project-at-suez-canal-takes-shape/>

"Egypt – Tunnels under the Suez Canal", *Systra*, n.d.,
<https://www.systra.com/en-project/egypt-tunnels-under-the-suez-canal>

"Contributing to the development of the Suez Canal area", *Arcadis Design*, N.D.,
<https://www.arcadis.com/en/global/what-we-do/our-projects/europe/netherlands/a-tunnel-under-the-suez-canal/>

[35] For example, located in the area of 30 degrees, 30 minutes 18 seconds north by 32 degrees, 21 minutes, 42 seconds east (about 2 kilometers east of the Suez Canal and about 11 kilometers north of the Great Bitter Lake) was a small base with nine bunkers, and next to it is an installation with hangars for vehicles. Starting in 2016, 11 60 x 40 m hangars were built there (another is currently under construction), 10 three-story barracks, two mosques and dozens of other structures and sheds which required drying up part of the nearby swamp. Guard towers and fences around the bases can be identified clearly.

However, there are also some atypical sites: for example, a site near Bader City in the Cairo area, located at 30 degrees, 10 minutes, 43.68 seconds north by 31 degrees, 45 minutes, 46.08 seconds east, which shares some features with other military sites, however at the moment it does not appear to be under military use and does not even have a fence around the complex.

[36] For example, an existing camp near Bader City (30 degrees, 11 minutes, 35 seconds north by 31 degrees, 47 minutes) was greatly expanded in two stages. In the first stage, between 2005 and 2010, a camp was set up for the forces of a mechanized brigade, at least (on April 2, 2010, at least 200 vehicles could be counted, most of them armored vehicles), and between 2010 and 2017 an additional, even bigger, compound was set up, and to the north is a training area with tents that are erected and dismantled as needed (for example, in August 2016 there were dozens of tents and dozens of armored vehicles in the training area, but in April 2017 there was not a single tent or vehicle).

[37] "Peace Treaty between the State of Israel and the Arab Republic of Egypt", March-April 1979, Appendix 1, Section 2-3, Knesset Website, <http://www.knesset.gov.il/process/docs/egypt.htm>

[38] Letter from Eli Dekel, 5 September 2017

[39] See, for example, the expansion of Katameya Airport, southeast of Bader City, located at 30 degrees, 4 minutes, 30 seconds north, 31 degrees, 50 minutes, 6 seconds east, which had been neglected for years. In 2014-2017 its runways were repainted and covered with new Asphalt, new hardened aircraft shelters were built, as well as a runway and terminal. However, as of the time of writing this article, not one civil flight has been observed, nor are they likely to be necessary. Cairo International Airport is only about three quarters of an hour away from the aforementioned military airport.

[40] A rule of thumb states that the height of each storage tank will be a third of its diameter. There are occasional deviations, but on average the rule is a good way to estimate the capacity of upright tanks (this rule does not apply to horizontal tanks).

[41] The reservoirs are near the Croatian memorial monument at the former El-Shatt refugee camp. The camp existed between 1944-1946, it held refugees from the Dalmatia region who had been evacuated following a German attack on Dalmatia in 1944. The tanks are located at 30 degrees, one minute, 59.40 seconds north by 32 degrees, 36 minutes, 23.40 seconds east.

[42] This was speculated years ago; For example, on the *Sunday Times* in October 27th, 2013, <https://www.thetimes.co.uk/article/putin-cosies-up-to-cairo-as-us-cools-5btwbfvfpt>

For the base-sharing agreement negotiations see *The New York Times*, November 30th, 2017, <https://www.nytimes.com/2017/11/30/world/middleeast/russia-egypt-air-bases.html>

It is impossible to know yet if the possible agreement was the reason for this construction – if so, it would imply that Egypt and Russia had secret talks years ago.

[43] My thanks to Eli Dekel for drawing my attention to this. See, for example, in the ammunition base located 13 km south west of Ismailia, on the eastern side of the Suez Canal, at 30 degrees 30 minutes 48 seconds north 32 degrees, 24 minutes, 4.80 seconds east. In an aerial photograph from the end of September 2004 there were 16 bunkers, it was the same in 2010. Since then there has been a construction boom, and as of the last photograph, from April 2016, there were 41 bunkers there.

[44] On most bases, we can count the tank transporter capacity in the hangars by comparing Google Earth images. For example, a study of the tank transporter base near the Cairo-Sweis road, located at 30 degrees, 6 minutes, 56.67 seconds North by 31 degrees, 29 minutes, 47.04

seconds, shows us dozens of transporters entering and leaving the sheds over time, and once – in February – March 2016 – a formation of no less than sixty five trucks with transporters and many dozens of separate trucks and transporters – this is in addition to the few dozen additional trucks and carriers seen peeping out of the sheds. A transporter base was built in the new Mohammed Naguib base, and in a Google Earth image from 2015 no activity was observed. However, in an Egyptian Defense Ministry film of July 2017 dedicated to the base, other than the new buildings, we also see the transporter sheds and in them about a dozen Renault Tank transporters <https://www.youtube.com/watch?v=HpT3PrN-J2I> probably out of 15 purchased by the Egyptians in 2011, Defense Web, “Egypt buys 15 Kerax”, January 3rd, 2011, <http://bit.ly/2hB1Gsb>

An Egyptian website claimed that at the Mohammed Najib base there will be 450 carriers at any given moment (quoted from *Globes*, 28 July 2017, <http://www.globes.co.il/news/article.aspx?did=1001199046>) and this estimate seems reliable, since it fits with the size of the sheds.

[45] Ministry of Defense, 29 August 2017,
<http://www.mod.gov.il/Defence-and-Security/articles/Pages/29.8.17.aspx>

Yediot Ahronot, 14 May, 2015, https://www.yediot.co.il/articles/0_7340_L-4657321,00.html
The technical term is “drag head”, but the term “semi trailer” is much more well-known.

[46] See, defense complexes about 6 kilometers north-west-west of the Meliz airport, located at 30 degrees, 25 minutes, 17.35 seconds north, by 33 degrees, 4 minutes, 48 seconds east. Already in 2012 in the Third Army’s exercise in the Sinai it was possible to see that the trenches in the outpost that was filmed were so full of sand that the upper part of the soldiers kneeling down in them stuck out. *Channel 2*, 24 April 2012,
<https://www.youtube.com/watch?v=aPyY09BeXMQ>

[47] Waypoint 30 degrees, 6 minutes, 9.15 seconds north by 31 degrees, 31 minutes, 25.25 seconds east. A ‘steering wheel’ outpost is a round post, with an inner protection ring and partitions between the sections of the post – reminiscent of a steering wheel in its shape.

[48] See, for example, *Ynet*, 18 February 2014,
http://www.ynet.co.il/articles/0_7340_L-4489030,00.html

[49] See, for example, Kenneth M. Pollack, *Arabs at War: Military Effectiveness, 1948-1991*, Lincoln: University of Nebraska Press, 2002, pp. 126-131

[50] See BBC, “On This Day”, November 24, 2005,
http://news.bbc.co.uk/onthisday/hi/dates/stories/november/24/newsid_4356000/4356024.stm

Panagiotis Dimitrakis, “The 1978 Battle of Larnaca Airport, Cyprus, and UK Diplomacy”, *Middle East Review of International Affairs*, June 7th, 2009,
<http://www.rubincenter.org/2009/06/dimitrakis-2009-06-07/>

[51] Norvell B. De Atkine, “Why Arabs Lose Wars”, *Middle East Quarterly*, December 1999,
<http://www.meforum.org/441/why-arabs-lose-wars>

[52] For example, in 2015 an Egyptian Army deserter claimed that many soldiers only receive basic training. Emily Crane Linn, "After Fleeing the Army, One Egyptian Soldier Witnessed a Massacre", *War is Boring* website, August 24th, 2015, <http://warisboring.com/after-fleeing-the-army-one-egyptian-soldier-witnessed-a-massacre/>

Egypt Daily News, November 26th, 2016, <https://dailynewsegypt.com/2016/11/26/601291>

Aziz al-Afandi, "Conscripts with connections get easy military service in Egypt", *The New Arab*, April 6th, 2015,

<https://www.alaraby.co.uk/english/features/2015/4/6/conscripts-with-connections-get-easy-military-service-in-egypt/>

Although some of the sources are biased, the similarity between phenomena described above by De Atkine and the above descriptions hint at a continuation of the phenomena.

[53] Egyptian Ministry of Defense, May 17th 2017, <https://youtu.be/IuHtGtL9OgE> Even though the captions accompanying the films released by the Egyptian Ministry of Defense said that the Defense Minister had reviewed the division after its capabilities and equipment were upgraded, in the video itself one can see outdated vehicles next to the 'Abrams tanks' , including *Chaparral* antiaircraft launchers which were removed from US military service two decades ago.

[54] Al-Ahram (English), October 20th, 2014,

<http://english.ahram.org.eg/NewsContent/1/64/113537/Egypt/Politics-/Egypt-s-army-prepares-for-major-Badr-exercise.aspx>

Shaul Shay, "Egypt: The "Badr 2014" Military Exercise", December 5th, 2014,

<http://www.israeldefense.co.il/en/content/egypt-badr-2014-military-exercise>

Al-Ahram (English), October 29th, 2014, <http://bit.ly/2j4CyRS>

[55] Shaul Shay, " Egypt's Annual Exercise and the Libyan Border", *Israel Defense*, November 8th, 2015, <http://www.israeldefense.co.il/en/content/egypts-annual-exercise-and-libyan-border>

[56] See, for example, Channel 2, 24 April 2012,

<https://www.youtube.com/watch?v=aPyY09BeXMQ>

[57] Egypt's official news service claimed that "Ra'ed 27" was the "largest" exercise, but did not elaborate. It seems that this is more about the public relations version of "very big" than directly comparing it to other Egypt, State Information Service, May 12th, 2017, <http://www.sis.gov.eg/Story/110038>

[58] Michael Battles, "U.S., Egypt kick off Exercise Bright Star 2017", U.S. Air Forces Central Command Public Affairs, September 13th, 2017,

<http://www.centcom.mil/MEDIA/NEWS-ARTICLES/News-Article-View/Article/1308877/us-egypt-kick-off-exercise-bright-star-2017>

Ynet, 24 October 2016, <http://www.ynet.co.il/articles/0,7340,L-4869670,00.html>

Ami Rochas Domba, "Joint Russian-Egyptian exercise on Egyptian soil", *Israel Defense*, 16 October 2016, <http://bit.ly/2ATg2To>

Al Ahram (English), October 12th, 2016,

<http://english.ahram.org.eg/NewsContentP/1/245635/Egypt/Egypt,-Russias-firstever-joint-military-drills-to-.aspx>

Shaul Shay, Exercise “Protectors of Friendship 2” And the Egyptian-Russian Strategic Relations”, *Israel Defense*, September 26th, 2017, <http://www.israeldefense.co.il/en/node/31239>

Egypt Daily News, June 25th, 2016, <https://dailynewsegypt.com/2016/06/25/russia-announces-2nd-round-naval-exercises-egypt>

Arab Sensor, August 3, 2017, <http://www.ynet.co.il/articles/0,7340,L-4869670,00.html>

Egypt, Ministry of Defense, August 1st, 2017, <https://www.youtube.com/watch?v=nscx8pdgx3M>

Ami Rochas Domba, “Report: Israel , Egypt, Greece to conduct joint drill”, *Israel Defense*, 3 October 2017, <http://www.israeldefense.co.il/he/node/31306>

[59] For example, a new training facility was built in mid 2013, a few kilometers north of the remains of the Dahar-el-Baida Palace and Katameya Airport, located at 30 degrees, 10 minutes, 42.55 seconds north, 31 degrees, 51 minutes, 48 seconds east. Before this construction there were tank covered fighting positions, perhaps for live-fire training, but there were no permanent buildings. A permanent camp was greatly expanded about seven kilometers west of it.

[60] See, for example, Naeel Shama, “Egypt’s Power Game: Why Cairo is Boosting its Military Power”, *Jadaliyya*, September 6th, 2017, http://www.jadaliyya.com/pages/index/27111/egypt%E2%80%99s-power-game_why-cairo-is-boosting-its-milit

Richard Spencer, “Gulf arms race triggered by Iranian aggression”, *The Telegraph*, 22 November 2009,

<http://www.telegraph.co.uk/news/worldnews/middleeast/unitedarabemirates/6630729/Gulf-arms-race-triggered-by-Iranian-aggression.html>

[61] See, Nan Tian et. Al, *Trends in World Military Expenditure, 2016*, SIPRI, April 2017, <https://www.sipri.org/sites/default/files/Trends-world-military-expenditure-2016.pdf>

The Military Balance, 2016, p. 317 Map 6.

[62] The supporters of this theory include Lt. Col. (res.) Eli Dekel, in a conversation with the author, and Ehud Eilam, whose book, *The Next War between Israel and Egypt: Examining a High-intensity War between Two of the Strongest Militaries in the Middle East* (London, Valentine Mitchell, 2014), describes a scenario of high-intensity fighting between Israel and Egypt, and claims that Israel will encounter many difficulties in the event of such a war, despite its technological superiority. Also see, Uri Milstein, “40 Years Since Sadat’s Visit: Will Common Interests Keep Peace?”, Ma’ariv, 17 November 2017, <http://www.maariv.co.il/news/politics/Article-609158>

[63] Alhaya (Arabic), April 26th, 2017, <https://www.youtube.com/watch?v=i2Oww5GNqBE>

The Guardian, March 28th, 2015,

<https://www.theguardian.com/world/2015/mar/28/egypts-president-backs-united-arab-force-to-tackle-regional-security-threats>

[64] Egypt has conducted airstrikes in Libya in the past, and during the course of 2017, reports of Egyptian destruction of smuggled arms convoys from Libya were published on various occasions.

The New Arab, May 9th, 2017,

<https://www.alaraby.co.uk/english/news/2017/5/9/egyptian-planes-destroy-arms-convoy-coming-from-libya>

AP, October 23rd, 2017, <http://www.nydailynews.com/newswires/news/world/egypt-destroys-arms-convoy-crossing-border-libya-article-1.3582698>

[65] The roads that connect Egypt with Libya are two-way roads and it is possible to transfer on them deliveries of a large amount of supplies for large units without running into any special problems. The rail line from Cairo to Mersa-Metrouh can of course transport large military forces.

[66] See, for example, Elizabeth Kier, "Culture and the French Military Doctrine Before WWII", in Peter Katzenstein (Ed.), "The Culture of National Security: Norms and Identity in World Politics", New York: Columbia University Press, 1996

[67] Amos Yadlin, "Preface," from Yigal Sheffy's, *Early Warning Countdown: The "Rotem" Affair and the Israeli Security Perception, 1957-1960*, Tel Aviv: Ma'arachot, 2008: p. 8

[68] Henry Kissinger, *A World Restored: Metternich, Castlereagh, and the Problems of Peace, 1812-22*, 1957, Re-Print: Echo books, 2013, pp. 144-145

[69] For example, in 2012, a survey found that about three-quarters of respondents supported the cancellation of the peace agreement between Israel and Egypt (Globes, 21 October 2012) <http://www.globes.co.il/news/article.aspx?did=1000791440>

And in September 2015 it was found that most Egyptians consider Israel to be the most hostile country, <http://www.jpost.com/Arab-Israeli-Conflict/Poll-shows-Egyptians-view-Israel-as-most-hostile-state-419403>

In October 2017, a poll found that 29% of Egyptians supported the idea that Arab countries should cooperate with Israel on issues such as technology, counter-terrorism and the containment of Iran, still a small number but more than previously. Washington Institute for Near East Policy Poll, October 12th, 2017,

<http://www.washingtoninstitute.org/policy-analysis/view/egyptians-surprisingly-open-to-key-trump-policies-new-poll-shows>

It is difficult to know what influence the policy of el-Sisi, who supports cooperation with Israel more than any of his predecessors and enjoys great popularity, will have – will he try and succeed in changing public opinion in relation to Israel in Egypt?

[70] *The Arab Weekly*, September 17th, 2017,

<http://www.thearabweekly.com/Opinion/9249/Cairo-facing-calls-to-increase-Sinai-military-presence>

Some estimate the number deployed in the Sinai today as higher than that. For example, Eli Dekel, "The Military Infrastructure in Sinai," lecture, 23 September 2015,

<https://www.youtube.com/watch?v=wGdNR3a1tnA>

As Dr. Yagil Henkin calls Egypt's military build-up an enigma, it remains to be seen as to the outcome of its plans, investments, and objective. Suffice it to say, Israel is not asleep as so many others are in the world when it come to the Revenge of Pharoah.