"Israeli Nuclear Deterrence: The Failure of a Concept"

"How did the Change in Israel's Strategic Context Affect the Usefulness of the Israeli Nuclear Deterrent?"

By

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Introduction:

This research will attempt to examine how the changes in Israel’s security environment have affected the strategic usefulness of its nuclear weapons. Those changes can be summed up as: the fall of state-centered security threats and the rise, instead, of security threats stemming from Non-State Actors (NSAs) using asymmetric forms of warfare. A complex set of often interrelated political and strategic factors that were not confined to Middle Eastern political setting alone but extended to the rest of the world initiated these two simultaneous processes.

Historically, the Israeli nuclear deterrent was developed during the 1950s and 1960s when Israel’s strategic setting was mainly dominated by state-centered security threats. Consequently, Israel was mainly concerned, at the time, with the threat of possible symmetrical military confrontations with its Arab neighbors – something that created a strategic value for its nuclear deterrent.

Yet, a closer examination of the evolution of the Israeli security environment since 1982 will reveal that Non-State Actors (NSAs) that use asymmetrical forms of warfare, slowly but surely, came to dominate the Israeli security setting. Since then, Israel’s major security threats originated from NSAs operating in neighboring states (as in the case of Hezbollah in Lebanon) or from the Arab territories occupied in 1967, mainly the West Bank and the Gaza Strip, or from Israel's proper.

The new types of security threats facing Israel was clearly manifested in the successful campaign launched by Hezbollah, throughout the 1980s and 1990s, against the Israeli occupation of Southern Lebanon, which eventually led to the withdrawal of the Israeli Defense Forces (IDF) in 2000. In this campaign Hezbollah depended on asymmetrical forms of warfare with the result that the IDF became entangled in a long and fruitless war of attrition. Asymmetrical forms of warfare were also effectively
used by the Palestinians in their first and second Intifadas, and particularly in the second, and proved hard to break using conventional military means.

The choice of the year 1982 as the beginning of the evolution of Israel’s security environment was determined by the fact that it witnessed the Lebanon War, which marked the last major military confrontation between Israel and another state, namely Syria, in a symmetrical form of warfare\(^1\).

In this respect, the Iraqi missile campaign against Israel during the 1990-1991 Second Gulf War should, by no means, be counted as part of the Arab military effort against Israel for two reasons:

- **First:** this missile campaign was part of a larger bombing campaign launched by Iraq against Israel and the Arab Gulf States and was, therefore, not directed solely against Israel and/or aimed at countering any of its actions and,

- **Second:** this campaign was not countered by Israel. In fact, it could be claimed that it is the only case in which Israel was presented with a security threat and refrained from countering it. This was a direct result of the American political pressure and the deployment of American MIM-104 Patriot ABM missile batteries to counter the Iraqi Scud threat\(^2\).

The research will first discuss the theoretical background of the concept of deterrence. This in necessitated by the fact that deterrence has been the guiding concept in the development of Israel's military doctrine and, by default, the main factor in Israel's decision to develop its nuclear deterrent. The rest of the dissertation will be divided into two parts; the first will examine Israel's geo-strategic situation

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\(^1\) In the 1982 Lebanon War the Israeli and Syrian forces clashed heavily as both sides tried to achieve different political and strategic targets. The air war between the two states (and especially Israel's successful campaign against the Syrian SAM network in the Bekaa Valley) received great deal of publicity that, often, overshadowed other parts of the war that included heavy tank and infantry battles between the IDF and the Syrian army in which both parties suffered heavy losses.

\(^2\) The United States pressured Israel not to intervene militarily, fearing that such an intervention could lead to the disintegration of the international coalition against Iraq.
and how it influenced the formulation of its military doctrine and necessitated, from the Israeli point of view, the development of nuclear weapons. This part will also describe the history of Israel's nuclear efforts, the way it deploys its nuclear arsenal, and the operational concepts that guides its use. The second part will tackle the various political and strategic factors that led to the decline of the state-centered security threats and the simultaneous rise of NSAs instead - as Israel’s main security threat. Finally, the effect of these changes in Israel's threat map on the usefulness of its nuclear deterrent will be examined. It should be mentioned that the 2006 War between Israel and Hezbollah and current security standoff between Israel and the Islamic Resistance Movement (better known for its acronym Hamas) in Gaza will be the two main case studies tackled in this research.

In this way, the research will be able to cover following issues:

I. The Israeli security environment and the various threats present in it.

II. The development trajectory of the security threats faced by Israel, tracing, in the process, how NSAs rose to prominence while state-centered threats declined.

III. The operational doctrine for the Israeli nuclear arsenal, highlighting, in the process, the operational concepts that guide the deployment and possible courses of usage for Israeli nuclear weapons.

This research gains special importance in light of several factors. The first of them is the very special nature of the Israeli nuclear program and its history of development. In fact, Israel was, and still remains, a special case in the history of international nuclear proliferation. This is due to the fact that Israel, either through
deception, or cooperating with other states, or due to faulty intelligence estimates and/or pure negligence, was able to pursue its nuclear program almost unhindered. Secondly, though much has been written on Israel's nuclear weapons and their mission as a deterrent against Arab states, little attention has been devoted to the effect of the changes in Israel's security environment on the usefulness of such weapons.
Chapter 1

Deterrence: The Evolution and Characteristics of a Theory
Introduction:

The realist school in international system tends to describe the international system as anarchic. In this respect, the different units of the international system, (states, according to realists) are often willing to use every possible means at their disposal to defend their national interests and achieve their political-strategic objectives. This, of course, includes resorting to force. Although the use of violence is generally viewed as morally indefensible by many historians, academics and philosophers\(^3\), their calls were seldom translated into effective means to prevent/constraint states from resorting to force when conducting their foreign policy. Consequently, the international system does not impose any tangible restrictions or constraints on the use of force – which has led states to resort to the use of force whenever necessary\(^4\).

In short, the use of force is an instrument of national policy. Its main purpose is to achieve and/or defend the goals of a state by influencing the orientations, roles, objectives, and actions of other states - and even Non-State Actors (NSAs) - in the international system\(^5\). In fact, it could be claimed that resorting to the use of force as a means to settle disputes and advance foreign policy goals was, historically, the rule rather than the exception in international politics; and the Middle East was never the exception to that rule. The region witnessed (and in fact still witnessing) several armed conflicts (whether inter- or intra- states, the latter taking the form of civil war, separatist movements, etc…) – not to mention the various hotspots that could easily turn into armed conflicts.

\(^4\) Ibid., 308.
\(^5\) Ibid.
Historically, major conflicts in the Middle East took place within two distinct, yet only tenuously related political contexts: that of the Gulf and that of the Arab-Israeli conflict. As a result, the Middle East was a scene of numerous conflicts, often gaining international attention and, sometimes, intervention, over the past half-century.

In this conflict-laden environment, no state (in the Middle East) has used force to further its foreign policy goals more than Israel. The Israeli use of force (both overtly and covertly) was often Israel’s main technique to achieve its foreign policy goals in the Middle East. History is full of examples that support this assumption. For example, in the early 1950s Israel was worried about the imminent British withdrawal from its Suez Canal base, in accordance with the Anglo-Egyptian treaty signed in 1954, and the possibility of an Egyptian-American rapprochement: consequently, it did not hesitate to conduct a covert operation (Operation Susannah) in an effort to sabotage these worrying developments. Further more, Israel took part in most of the major wars taking place in the Middle East since 1948 and being, in most of the cases, the initiator of hostilities (regardless of the reasons forwarded by Israel to justify its actions).

In this respect, it could be safely said that Israel fought, at least, one major war in every decade since its creation; the 1956 Suez War in the 1950s, the 1967 Six-Day War and the 1969-1970 War of attrition in the 1960s, the 1973 War in the 1970s and, finally, the 1982 War in Lebanon with the subsequent two decades of, almost,

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6 Operation Susannah was conducted by the Israeli military intelligence with aim of bombing American and British interests in Cairo and Alexandria with the ultimate aim of sabotaging the Egyptian-American relations. The operation was directed by Israeli officers and executed by 9 Egyptian Jewish agents. They were caught, and later trialed, when one of the bombs exploded immaturity when it was still carried by one of the executers. Upon its discovery, a huge political crisis (known as Lavon affair) erupted in Israel which led to the resignation of the Israeli defense minister Pinhas Lavon. It was recently revealed that Moshe Dayen, then chief of staff of the Israeli Defense Forces, was the one who ordered executing the operation without informing the defense minister.
continues warfare there. Not to mention, the numerous cross-border incursions and air campaigns/strikes against perceived and/or real threats.

Additionally, its well-equipped military force has played a major role in shaping the region via conducting military operations and extending Israeli control over the occupied territories. As such, it may not be an exaggeration to claim that the use of force was – at certain stages – Israel's sole means for achieving its foreign policy objectives in the Middle East. Consequently, it becomes of utmost importance for anyone interested in Middle Eastern history and politics to study in detail the role played by the Israeli Defense Forces (IDF) in shaping the modern Middle East.

In the Israeli military thinking, the concept of deterrence played a central (if not a dominating) role. This was translated into effective operational tactics within the Israeli military doctrine that were not only taught and practiced in military maneuvers but effectively executed during the numerous military operations conducted by Israel throughout its 60 years of existence, which will be discussed in more detail in the next chapter. Additionally, that abstract notion of deterrence played a major role in prompting Israel to develop its nuclear arsenal and in devising an operational doctrine for its usage. Consequently, it becomes a necessity to provide an all-encompassing theoretical background for that important concept that dominated the Israeli strategic thinking: deterrence. The next few pages will be dedicated to accomplishing this task.

Deterrence: The Theory:

As a research paper falling under the rubric of international relations in general and international security in particular, this study’s theoretical framework will be mainly based on various theories related to the use of force in general and the concept of deterrence in particular. In view of the topic at hand, nuclear deterrence will be the main focus in the theoretical segment.
It seems fairly clear at this point that the concept of nuclear deterrence is the most suitable theoretical framework to deal with the subject of this study. In this respect, it is important to provide an introduction to the concept of deterrence (in the general sense of the word and not only nuclear deterrence in particular) and the theoretical framework that developed in association with it.

Deterrence as a concept has been defined as "the policy of attempting to control the behavior of other actors by the use of threats. The deterrer tries to convince the deterree that the costs incurred by the latter’s actions will substantially outweigh any potential gains." K.J. Holsti provides us with another similar, albeit shorter and clearer, definition of the concept of deterrence. According to him, it is a means "by which decision makers in one nation seek to prevent certain actions by potential adversaries by threatening them with military retaliation." To the same effect, Charles W. Kegley and Eugene R. Wittkopf define deterrence as the prevention from action by fear of the consequence. Additionally, the United States Department of Defense defines deterrence as: "The prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction."

In this sense, deterrence (in its various forms: conventional or nuclear) is a process in which a state tries to influence the decision of another state, and as such – a belief affirmed by Jeffery Record – this process may be described as primarily psychological in nature.

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Types of Deterrence:

The idea of deterrence is as old as war itself. It involves two main concepts, conventional and nuclear deterrence. The first is conventional deterrence, which evolved with the evolution of the art of war over the years and became the basis of the concept of nuclear deterrence developed later on.

Conventional deterrence deals with various tools (political, economic and military) used by states, either separately or in a complementary form, to deter other states and influence their course of action. The variety of tools at a state’s disposal notwithstanding, it must be said that deterrence as a concept has generally been linked to the military capability of a given state.

Similarly, the concept of nuclear deterrence rested on the idea that possessing enough destructive capability would deter an enemy from attacking. It followed that the sheer number of nuclear warheads and the availability of credible means of delivery were the main factors to be taken into account when tackling the concept of deterrence. Consequently, the concept remained closely linked to the existence of massive nuclear arsenals and the associated means of delivery, such as long-range intercontinental ballistic missiles and/or long-range strategic bombers.

Historically, the concept of nuclear deterrence was originally developed in the Cold War context to address the unique case of the US-Soviet rivalry at the time. Given that deterrence is a strategic posture which a state uses to prevent another state from harming its interests by indirectly influencing its decision-making process, the best criterion for the success of a deterrence-based strategy is its ability to prevent the opponent from initiating aggressive action in the first place. The advent of the nuclear age by the end of World War II heavily affected this paradigm of deterrence.

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Before the invention of nuclear weapons, deterrence was mainly based on the ability of one nation to amass larger number of weapons and military equipment superior to that possessed by its adversaries.

Nuclear weapons added a new dimension to deterrence, as a result of the unique nature of these weapons. A nuclear device, even in its crudest and simplest form, is far more destructive than all kinds of conventional explosives available. For example, the "Little Boy" and the "Fat Man", used to wipe out the ill-fated cities of Hiroshima and Nagasaki (as part of the highly controversial American effort to force Japan to surrender), each had an explosive power of 20 kilotons (20,000 tons of TNT). Yet this seemingly huge destructive power is nothing compared to the more powerful nuclear weapons developed less than a decade after the end of the war; for example, the former Soviet Union was able to test and field a 61 megaton rated nuclear device, which means that its destructive power exceeded the combined explosive power of all weapons fired during the six years of World War II in its entirety. Nowadays, these numbers of kilotons constitute less than a fraction of the destructive power of the new more advanced and lethal nuclear weapons fielded today. Moreover, new derivatives were developed, leading the original nuclear weapon to be simply part of a wide spectrum of thermonuclear devices that include hydrogen and neutron bombs that are even more destructive and lethal.

These great leaps in military technology had a great effect on the theoretical framework dealing with the concept of deterrence. Thus, two types of deterrence strategies were developed: deterrence by punishment and deterrence by denial. The
two concepts were closely related to the US-Soviet conflict during the Cold War years\(^\text{17}\), yet they equally apply to nuclear as well as conventional based deterrence.

On one hand, deterrence by punishment is based on the concept that a state would possess enough military resources to allow for a second strike capability, being able to inflict unacceptable damage on the attacker. On the other hand, deterrence by denial is based on the ability of a state to deny its enemy the ability of conducting a first strike in the first place\(^\text{18}\).

Generally, states tend to favor deterrence by punishment when an opponent undertakes an action that the deterring party is unable to prevent\(^\text{19}\). On the other, deterrence by denial is based on the idea of denying the enemy the opportunity to conduct a successful attack in the first place. In the Cold War context, deterrence by denial is achieved by deploying Anti-Ballistic Missile (ABM) defensive systems that could thwart a missile attack. Yet, deterrence by denial could be achieved by a variety of means other than the complicated and technically daunting scheme of setting up Anti-Missile Defenses. The North Atlantic Treaty Organization (NATO) website states that decontamination equipment, suits, and gas masks (for example) could be considered means for a successful deterrence by denial strategy\(^\text{20}\).

The prevalence of this theory during the Cold War years led to a massive quantitative and qualitative arms race between the US and its allies on one side and the defunct Soviet Union and its allies on the other. This hectic arms race led to the creation of a unique situation in international military relations in which both

\(^{17}\) Oxford Concise Dictionary of Politics, 2\(^{nd}\) ed., s.v. "Deterrence."


adversaries had the capability to wipe out each other - a situation that was better known as Mutual Assured Destruction (MAD).

As it may yet be seen, while nuclear weapons are important and central to any nuclear deterrence strategy, great caution should be exercised when extrapolating the concept outside the context of the Cold War. However, it should be noted that the theory of nuclear deterrence has been frequently used to explain certain types of military relations throughout modern international military history (as was the case in the prolonged Indo-Pakistani conflict\textsuperscript{21}).

**Characteristics of a Successful Deterrent:**

Based on the above, for a deterrent to be successful and effective it must possess some characteristics allowing it to achieve the desired psychological effect. These are credibility and stability\textsuperscript{22}.

Credibility is an essential attribute to any successful form of deterrence. As mentioned before, deterrence is a psychological process, and thus the ability of a state to convince its enemy of its ability to inflict an unexpected level of damage is the key to the success of deterrence.

In general, it is perceived that on the military level, credibility can be easily established. According to K.J. Holsti, "Communicating to potential adversaries about one's strategic capabilities is usually relatively easy. Because weapons and military personnel are tangible objects and their attributes (speed, range, destructive capacity,

\textsuperscript{21} The case of Indo-Pakistani conflict was always used as a textbook example for nuclear deterrence outside the Cold War arena. Yet, this case is unique, as both Pakistan and India represent (to each other) a state-centered form of security threat. This is highly different from the current situation in the Middle East in which most – if not all – of the viable security threats are coming from non-state actors. Nevertheless, it could be even further assumed that even in the Indo-Pakistani case state centered security threats are waning in favor of threats coming from non-state actors.

number, accuracy, and the like) are relatively easy to measure... Also, there are usually ample opportunities for communicating about military capabilities."

K.J. Holsti refers to the May Day military parade in the former Soviet Union as a clear example of a state trying to communicate its military capability as part of its effort to establish the credibility of its military deterrent. In the Middle East, as in other parts of the world, military parades and maneuvers were often used as means of communicating military capabilities, thus establishing the needed credibility for states’ military power.

In the Middle East, as in the rest in the world, this tactic was widely used. Egypt, for example, used during the 1960s to show off its homegrown Surface-to-Surface Missiles (SSMs) El-Kaher, El-Zafer and El-Ra'ed, as well as other advanced weapons in its arsenal, during the 23rd of July military parade in an effort to communicate the credibility of the Egyptian deterrence capability. Other states in the Middle East applied the same tactics in an effort to communicate their military capabilities for various reasons.

It should be also mentioned that the concept of credible deterrence applies equally to conventional and nuclear deterrents. However, the means of asserting their credibility is inherently different: as a result of the difference between conventional and nuclear weapons in terms of their destructive power and forms of utilization. To establish the credibility of a conventional deterrent, a state can simply show off the latest additions to its arsenal in military parades and/or demonstrate their effectiveness in maneuvers. Yet the situation is different in the case of a nuclear deterrent; though some may claim that that the mere nature of nuclear weapons automatically confers their credibility as a deterrent.

24 Ibid.
The uniqueness of nuclear deterrent credibility arises from two facts. First: no state would dare to experience the destruction caused by a nuclear weapon in order to test the credibility of the nuclear deterrent of its adversary. Second: when a state announces that it possesses a nuclear weapon, it usually does that by directly testing a device and developing an appropriate delivery system: this has been pretty much the norm for states acquiring nuclear weapons over the past 60 years\(^25\). Though, in Israel’s case it is a bit different as it did not publicly test its nuclear weapons. Yet, various reports mention that Israel did test a nuclear devise, with South African help, in the South of the Indian Ocean in the late 1970s\(^26\).

The second attribute of a successful deterrent is stability. A successful deterrent should be stable as well as credible. This means that a successful deterrent should be always able to convince an adversary of the futility of launching an attack. In this respect, the deterrent (whether conventional or nuclear) should be always stable and, relatively, not susceptible to external factors that affect its ability to fulfill its mission as a deterrent. Thus, an effective deterrent must be both threatening (sufficiently credible that adversaries are not tempted to undertake prohibited actions), and stable (reassuring enough to reduce any incentives to launch a preemptive strike out of fear)\(^27\).

**The Israeli Concept of Deterrence:**

This section will aim at discussing in brief, (1) the various strategic factors that led Israel to adopt a deterrence-based military doctrine and, (2) how did Israel

\(^{25}\) On the 29\(^{th}\) of August 1949 the Soviet Union declared that it tested a nuclear bomb and thus confirming its status as a nuclear power. This was coupled by the introduction of its first strategic bomber (the Tu-4) into service - thus proving the credibility of the Soviet nuclear deterrent. Similar actions (testing a devise and developing a delivery system) were taken by the United Kingdom in 1952, France in 1960, China in 1964, India in 1974, and Pakistan in 1998 and allegedly North Korea in 2006 as a means of establishing the credibility of their nuclear deterrents.


develop its own concept of deterrence to suit its unique security needs. Yet, it should be mentioned that a more detailed discussion on how the concept of deterrence was translated into an effective military doctrine, taking into consideration the various operational constraints (strategic vulnerability, quantitative inferiority, etc…) will be presented in chapter two.

Upon its creation in 1948, Israel faced a peculiar strategic setting from a geo-strategic perspective. This peculiar strategic setting was a result of Israel's vulnerable geographical setting and its apparent quantitative inferiority.28 This militarily-inferior geographical setting was highly apparent in two main issues.

The first of them is the lack of the militarily-necessary strategic depth as Israel was, at some points, a mere 16 kilometers wide and, second, was the fact that its declared capital (West Jerusalem) was connected to the rest of the country by a sole route that was surrounded by the Jordanian-controlled West Bank from both sides.29 Moreover, the West Bank was topographically higher than the Israeli controlled coastal plains – which contained Israel's main industrial and population centers.30

Beside geography, Israel's quantitative inferiority was the second main factor in its decision to adopt a deterrence-based military posture. Israel's small population, compared to other Arab states, meant that it could not maintain a large standing army.

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28 It should be always taken into consideration that though suffering from several geographical and quantitative disadvantages, Israel, in many cases, enjoyed qualitative (and even, some cases, quantitative) superiority over the Arab states. Israel used, in almost all the cases including the 1948 War, more advanced weapons than that of its adversaries, while its (Israel) manpower was generally more well-trained and had greater combat experience. This led Benny Morris (one of the leading figures in the new historians movement in Israel) to argue that even in 1948 Israel was not outnumbered by the Arabs as it is generally claimed in the official Israeli historical narrative.

29 Martin Van Creveld, *Defending Israel: A Controversial Plan Toward Peace* (New York: Thomas Dunne Books, 2004), Map 2. All the distances were mentioned in miles and for the sake of clarity I converted them into kilometers.

30 Ibid., 7.
Additionally, its ability to absorb losses (especially in troops) was far more inferior to that of the Arab states\textsuperscript{31}.

To overcome the above mentioned liabilities, Israel believed that it had to, (1) fight its wars on enemy territory (sparring that of Israel from the scourges of war) and, (2) to be always on the offensive\textsuperscript{32}. Additionally, Israel sought to develop its ability to influence the decision making process in the Arab states to be able to dissuade them from launching a surprise attack (i.e. create a status of deterrence). To achieve that status and communicate the Israeli new posture to its adversaries Israel adopts two approaches.

1. Israel was very much keen on achieving decisive and overwhelming military victories against its enemies during various engagements. This depended on inflicting excessive damage on the opposing forces and using excessive fire power in an effort to install the idea of the invincible Israeli forces.

2. Additionally, Israel planned to retaliate to every attack on its territory in excessive force. The idea was to convince the Arab states that whenever they take the initiative to mount a military operation against Israel they will be rebuffed with unacceptable levels of losses in both equipment and manpower.

By adopting such scheme, Israel sought (and eventually succeeded) in influencing the Arab decision making process (in regards to mounting military operations against Israel). Thus, Israel was able to communicate its deterrent-based military posture. As a result, and over the first 25 years of existence (till 1973), the


Arab states did not launch a credible or a wide scale attack against Israel – and even in the 1973 War, the Arab military plans were very limited and not life threatening to Israel. This passive Arab military behavior against Israel since 1948 could be attributed to a wide multitude of factors and, surely, one of them is the success of the Israeli deterrence-based military posture\textsuperscript{33}.

Nevertheless, it should be said that the success of the Israeli deterrence posture was aided by the unwillingness of the Arab states to fight Israel. This unwillingness is evident from the lack of any determined and organized Arab offensive military effort against Israel throughout the history of the Arab-Israeli conflict; except for the Egyptian initiated War of Attrition (1969-1970) and the joint Egyptian-Syrian attack in 1973. Moreover, the Arab states, especially those who were carrying the banner of Arab nationalism (such as Egypt, Syria and Iraq) were either heavily involved in their inter-Arab feuds (Egypt's involvement in Yemen as an example) and/or consumed by their internals troubles (as in the case of Iraq in the 1960s). Unfortunately, the various factors contributing to the general Arab military passiveness against Israel are beyond the scope of this paper.

**Literature Review:**

The topic of nuclear proliferation in the Middle East and the Israeli nuclear arsenal and strategy has received a great attention from various academic, political and journalistic circles. Moreover, other issues tackled in this research - such as Israel's strategic context and Israel's military doctrine - have also been extensively studied and covered. This great interest yielded a huge body of literature, documentaries and government documents in both Arabic and English (the two

\textsuperscript{33} Mohamed Abd El-Salam, "Al-Thadidat Al-Nauayia wa Harb Al-Sades mn October – The Nuclear Threats and the 6\textsuperscript{th} of October War," \textit{El-Siyasa El-Dawliya} 134, October Issue (1998): 83-86.
languages used in this). Yet, several problems could be identified with the literature available.

A large number of the Arabic sources available tend to be journalistic in nature and lack proper scholarly insight. Some, however, tend to be highly sophisticated and tackle the issues at hand with great depth and in line with highest scholarly standards; not to mention providing the reader with a valuable insight into the Arab approach to these issues. One of the clearest example would be Mohammed Abd El-Salam’s Hodod El-Kowa (literally The Limits of Power) published in Cairo by Al-Ahram Center for Political and Strategic Studies.

The situation is much better in the English literature available, as many of the sources follow academic standards. Yet, many books, especially those tackling the history of the Israeli nuclear program and that of the IDF, tend to present the Israeli point of view and discard that of the Arabs. This problem, partially, stems from the lack of many credible Arabic sources and if they are available they are not well publicized in Europe and North America.

The situation is further aggravated worsen by the, almost automatic, acceptance of Israeli stands and points of view without examining them. The clearest example would be Eyal Zisser's claim (written in 2002) that both Syria and Iraq are on the brink of obtaining nuclear weapons\(^34\) - a pathetic claim that proved to be completely false.

Further more, some of the books and articles are written in a journalistic style that tend to over exaggerate Israel's success and/or present its actions out of its political and historical context. For example: Ronen Bergman devotes a large part of chapter 15 of his book, The Secret War with Iran: The 30-Year Clandestine Struggle


Against the World’s Most Dangerous Terrorist Power, to describe what he labels "terrorist acts" by Hezbollah against Israel in South Lebanon, while failing to mention that it was instigated, in the first place, by the Israeli occupation of Southern Lebanon

The above mentioned shortcomings equally apply to resources available on the internet. Nevertheless, it should mentioned that the internet provide access to valuable resources that range from disclosed government documents to updated research papers and policy briefings. Therefore, a selected group of credible websites will consulted; these will include, but not limited to, the websites of the Federation of American Scientists, The Nuclear Threat Initiative and GlobalSecurity.org.

In organizing the literature consulted, it was categorized into three main clusters: 1) literature related to the evolution of the Middle Eastern security environment in general and that of Israel in particular, 2) literature devoted to the Israeli military doctrine and its evolution and, 3) literature dedicated to the Israeli nuclear arsenal, how was it developed and the operational concepts guiding its deployment.

In regard to the first cluster (that related to the Middle East strategic context and that of Israel), there is a general trend that believes that the Middle Eastern security environment in general and that of Israel in particular is being transformed. This is a result of the rise of new types of security threats which differ considerably from those that were prevailing during the Cold War era. Accordingly, the term "new forms of security threats" is used in this research to denote the new types of military

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threats emerging in the region (or in other words threats that come under the category of hard politics) such as terrorist attacks and so forth\textsuperscript{36}.

In fact, there is a sort of general agreement within the literature that the Israeli security environment has been transformed, over the past two decades, and is now dominated by Non-State Actors (NSAs) that depend on asymmetrical methods of war – for example Stuart A. Cohen describes the changes in Israel's strategic environment as radical in nature\textsuperscript{37}. In this context, the event of the 2006 33-Day War in Lebanon between Israel and Hezbollah is generally refereed to as the prime manifestation of this dramatic shift in Israel's security environment.

The second cluster tackles the Israeli military doctrine and how it evolved over the years. In this respect, the Israeli military doctrine is seen as an offensive-based one that sees offense as the best means of defense. This offensive doctrine is generally viewed as a natural result of Israel's peculiar strategic situation (from a geo-strategic perspective). In fact, a major part of the literature is devoted to explain the factors that shaped Israel's strategic posture including its geographical predicament and the layout of its borders which Martin Van Creveld described as highly vulnerable\textsuperscript{38}.

The third cluster, which tackles the Israeli nuclear arsenal, covers the history, development and deployment of Israeli nuclear weapons. For sure Israel was able, throughout its history, to keep a great deal of ambiguity about its nuclear weapons and

\textsuperscript{36} The end of the Cold War unleashed a huge debate within the paradigm of security studies about what constitutes a threat to international security in the post Cold War era. As a result, there is an increasing body of literature that advocates the idea that environmental degradation and other similar problems are now the main sources of threat. Yet, this research will focus on hard politics in which the distinction between the old and the new forms of threats will be used to differentiate between state centered (old) and non-state centered (new) security threats which stems mainly from non-state actors.


development. Yet, this ambiguity failed to hide the fact that Israel is a nuclear power\textsuperscript{39}. In other words no one thinks of Israel as a non nuclear state.

In regards to the mission of the Israeli nuclear weapons, there is a wide consensus within the literature that they are used to deter the Arab states from conducting an all out assault against Israel. This theme is repeated over and over in many studies and books to the extent that Alan Dowty says that it is the most convincing motivation for nuclear development in Israel\textsuperscript{40}. Yet deterrence was not the only explanation presented for Israel's efforts to develop nuclear weapons. In fact, Frank Barnaby claims that political rationale dictated Israel's desire to have a nuclear deterrent as it provided it (Israel) with a valuable political bargaining chip\textsuperscript{41}.

Finally, it should be mentioned that the sources consulted will not be limited to a set time frame. In fact many of the books and articles written many years ago are still of a great value. This is due to two main reasons. The first is that some of the most relevant books on nuclear proliferation and the Israeli nuclear arsenal have become classics on the subject and, thus, using them becomes a necessity (the works of Alan Dowty are a prime example). The second reason is that the Israeli military doctrine (including that related to its nuclear weapons) has not changed in its essence or core features since its early days, which justifies using some old sources which may contain very valuable information.

\textsuperscript{40} Ibid.
Part 1: Israel’s Military Doctrine and Nuclear Deterrent
Introduction:

As mentioned before, this research will be organized into two main parts. The first tackles Israel's strategic setting and its influence on Israel's military doctrine (including the development of a nuclear deterrent) and the historical trajectory of Israel's nuclear program. The second deals with the two simultaneous processes that led to the fall of the state as Israel's main security threat and the rise, instead, of non-state actors.

The following part (part 1) tackles Israel's strategic setting in the aftermath of the 1948 War and various vulnerabilities (geographic and quantitative) it, allegedly, suffered from. Additionally, the effects of this unique strategic setting on Israel's military thought will be thoroughly examined. Especially, if we take into consideration, that this unique strategic setting prompted Israel to develop a deterrence-based military posture and, eventually, influenced its decision to develop its nuclear arsenal.

Finally, this part will discuss the development trajectory of the Israeli nuclear arsenal, its current status and its operational/deployment posture. In short, this part presents the Israeli military doctrine (including that related to its nuclear arsenal) and the development trajectory of its nuclear arsenal: constructing the context in which the fall of the state (as Israel's main security threat) and the rise non-state actors instead occurred. Thus, this part will act as a coupler between theoretical background (presented in chapter 1) and the rest of this research.
Chapter 2

The Israeli Military Doctrine: A Changing Doctrine in an Era of Change
Introduction:

This chapter will deal with a number of interrelated points: First, it tackles the general concept of military doctrine and its various types. Second, the chapter discusses the various constraints and geo-strategic circumstances that have influenced Israel's strategic thinking and guided the development of the Israeli military doctrine - leading Israel to, ultimately, adopt a deterrence-based military posture. Third, the chapter dwells upon the concept of deterrence and how it has developed within the Israeli strategic line of thought. Finally, the role of Israel's nuclear weapons within Israel's general strategy of deterrence will be discussed.

In this way, the chapter aims at combining the general theoretical concepts guiding the concept of military doctrine and the paradigm of deterrence with Israel's with operational facts and constraints – exploring, in the process, how these theoretical concepts were were translated into an effective operational deterrence-based military doctrine.

In this sense, the chapter acts as a link between the theoretical background (presented in the first chapter) and the actual operational patterns of the Israeli military doctrine on the ground.

The Definition of "Military Doctrine":

The history of military doctrines is closely related to that of armies and warfare. A military doctrine is often generally described as a way in which an army is organized and trained with the aim of achieving a certain set of objectives. In this sense, military doctrines could be said to have existed from the beginning of history and warfare since armies have always been organized and structured in accordance with certain military plans in order to achieve certain political-strategic objectives.
Yet, in the past, military doctrines in this sense were often haphazard and did not depend on a robust and comprehensive theoretical body of knowledge. In this context, the writings of the Sun Tzu and Clausewitz occupy a special place since they are generally believed to represent the first efforts to create a theoretical body of literature that aimed at creating a real military science; something that would, eventually, lead to the conceptualization and development of the term military doctrine.

Nowadays, military doctrines play a major role in the structuring of modern armed forces. Their role as a guiding mechanism in the process of organization, training and the execution of military operations can neither be denied nor underestimated. It is, therefore, of outmost importance to define what we mean when we use the term "military doctrine".

In a comprehensive study entitled *Offense and Defense in Israeli Military Doctrine*, Ariel Levite defines a military doctrine as the "fundamental principles by which military forces or elements thereof guide their actions in support of objectives. It is authoritative but requires judgment in its application". The United States Department of Defense defines military doctrine as "Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives".

In other words, a military doctrine is the textbook that dictates how a military force should be structured, organized, staffed, armed and trained. Moreover, this doctrine should state the objectives that should be attained by a military and the most effective and suitable means to achieve them. It is, thus, a guide for an armed force to what targets should it aim at and the best means of attaining them. In this respect, a

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military doctrine is supposed to deal with various levels of organizational and operational matters on both the strategic and the tactical levels.\footnote{Ariel Levite, 	extit{Offense and Defense in Israeli Military Doctrine} (Boulder: Westview Press, 1990), 9.}

It should be mentioned that a military doctrine is formulated within a grand framework of national politics and is subordinated to it. Yet, national objectives are, by no means the sole factor guiding the adoption of a certain approach to a national military doctrine. In fact, the choice of which military doctrine to be adopted by a state is often influenced by various factors. These factors could be divided into three categories that are related to:

1- The nature of the state: its political system, geographical location, perceptions of its national elites and the role it plays/wishes to play within the regional and international political setting.

2- The regional setting: a category which include, for example, the state's involvement in regional conflicts, the type of its strategic setting and the security threats facing it.

3- The international political system: This broad category includes the degree of involvement of international powers in the national and regional politics.

The above-mentioned sets of factors play a major role in defining which approach a state should adopt for its military doctrine. This means that embracing a certain approach to military doctrine is often shaped by various and, sometimes, contradicting factors. Furthermore, the different approaches to military doctrine available carry various attributes and this further complicates the process of choosing a favorable military doctrine.
It goes without saying that various approaches to military doctrines do exist. There are offensive, defensive and deterrence-based military doctrines\textsuperscript{45}. Every approach embodies a distinct set of attributes. An offensive military doctrine, on one hand, will aim at enabling a state and its military establishment to conduct offensive military operations in support of its national objectives. Such objectives notably include, \textit{inter alia}, territorial expansion (that could be motivated/advocated by wide range of national, religious and/or strategic purposes), demonstrating power and/or the attaining of prestige\textsuperscript{46}. On a more substantial level, an offensive military doctrine will serve well states that suffer from geographic vulnerabilities and/or an unfavorable balance of power vis-à-vis its enemies and/or are faced by multiple threats. Additionally, an offensive military doctrine has the inherent benefit of limiting the civilian and military losses of the attacker as it entails transferring the war to the enemy's territory\textsuperscript{47}.

A defensive military doctrine, on the other hand, would work well for states that enjoy large natural defensive barriers along its territories. It will be also favored by states that have the ability to sustain larger losses on the military and/or civilian fronts. Additionally, it will serve well states that have to concentrate on one single form of threat, as it will allow for troop concentration in certain specified sectors.

The third deterrence-based military doctrine will best suite states that aim at preserving the status quo. It will be a favorable choice to opponents who have comparable capabilities that is in cases where a balance of power exists. In such cases, a deterrence-based military doctrine will aim at avoiding a military confrontation via maintaining a state of constant threat between the two or more warring parties.

\textsuperscript{45} Ibid., 10.
\textsuperscript{46} Ibid., 11.
\textsuperscript{47} Ibid., 11-12.
The Israeli Military Doctrine:

When discussing the Israeli military doctrine, several issues should be addressed. The first of these should, obviously, be the strategic setting facing Israel and how has it affected the evolution of its military doctrine. The second is the objectives of the Israeli military doctrine. The third is the unique status of deterrence within the Israeli strategic thought and, finally, the guiding principles for the development and deployment of Israel's nuclear deterrent.

Israel's Strategic Setting:

The establishment of Israel in 1948 marked the beginning of a new era in the Middle East. In the pre-1948 years, the Middle East was mainly composed of a homogenous set of states. This state of homogeneity that characterized the region stemmed from two factors. First: none of the Middle Eastern states disputed the right of the other to exist; and even in the Syrian-Lebanese case, which was the one the exception, it is worth noting that Syria neither thought of using its military might to crush the Lebanese state nor openly questioned its right to exist. Second: the Middle Eastern security environment was relatively calm. This resulted from the fact that most of the Middle Eastern states were focused on getting rid of the colonial dominance present - whether in the from of direct colonial rule (as was the case of the Gulf sheikdoms), or in the form of highly restrictive legal arrangements that drastically curtailed the sovereignty and freedom of Middle Eastern states (as in the cases of Egypt, Iraq and Jordan).

Additionally, even if border disputes did exist between neighboring countries, they were not a cause of major security concern. This was the result of, (1) the limited capabilities present in the region and, (2) the peripheral nature of these disputes. In short, the Middle East security environment during the pre-1948 era was generally
calm and free of the kind of major conflicts that could engender an arms race or major political tensions.

This situation was drastically altered by the establishment of the state of Israel in 1948. The newly established state was labeled as illegitimate by the Arab states; despite the fact that King Abludallah of Transjordan secretly contacted the leaders of the newly-established state of Israel to secure his control over the West Bank. Yet, the fact remains that the creation of Israel ushered a new era of war and conflict in the Middle East.

From that point onwards, the Middle East would be a site for armed skirmishes and frequent wars. In fact, between 1948 and 1982, the Arab-Israeli conflict has featured a major war in almost every decade; wars took place in 1948, 1956, 1967, 1973 and 1982, at the rate of a major war every 10 to 11 years, not to mention the numerous border clashes and other forms of armed skirmishes, including the long and bloody War of Attrition in the years 1969-1970.

This very difficult, dangerous and conflict-laden security setting presented, from a geo-strategic point of view, a great threat to Israel. In fact, this created a great deal of anxiety and fear that had an overriding influence on the Israeli strategic thinking, reinforcing, in the process, the Jewish deep-rooted sense of existential threat. Yet, the sense of existential threat that lingers over Israel till now (as it was back then in 1948) had other sources beside the difficult security environment facing it.

Historically, Israel was created in 1948 - after only three years of the end of World War II with the associated horrors of the Holocaust - and the memory of the atrocities committed in the German concentration camps were very still vivid in the

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Israeli societal memory. Moreover, most of the members of the Israeli leadership were brought up in Europe and had witnessed the various forms of persecution (such as the Russian Pogroms) suffered by the Jews there during the second half of the 19th century and the first half of the 20th. This naturally made them feel that the very existence of Jews was deeply threatened: something that was further enforced by the actual strategic crisis faced by their newly established state due to its peculiar geo-strategic position vis-à-vis its neighbors.

From the Israeli point of view, Israel faced great strategic hurdles after its creation in 1948. This Israeli perception was based on: (1) deep rooted sense of extensional threat resulting from various historical and social circumstances (as explained in the previous paragraphs) and, (2) Israel's geographic layout and its quantitative disadvantage (in terms of population) vis-à-vis the Arab states. In fact, and from a geo-strategic point of view, Israel was in a strategically peculiar position due to its highly vulnerable territorial layout after the end of the 1948-49 hostilities.

A quick look at the geographical layout of Israel, at the time, will reveal several interesting facts. In the West, Israel had a long coastal line on the Mediterranean – its sole route to access Europe and North America and, consequently, the only route to receive imported arms and ammunition. To the North and the North East, Israel shared borders with both Lebanon and Syria respectively. To the East, it shared borders with both Jordan and the West Bank.

Moreover, at the time, and as it is the case today, most of Israel's population agglomerations and its economic and military nerve centers are mainly concentrated

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49 Israel's population was always numerically inferior to the Arab states in general and the ring states in particular. The smaller population meant that Israel's ability to maintain a large standing army and/or absorb human losses was far less than its Arab neighbors.
in central Israel\textsuperscript{50}, the area that roughly extends from Tel Aviv in the South West to the port city of Haifa in the north and Jerusalem in the East. The four \textit{Mehozot} (the local administrative units in Israel) that cover that area (Haifa, Central Tel Aviv and Jerusalem) were then and still are among the most prosperous and populated in Israel, as almost one-quarter of the population live in Haifa, Tel Aviv and Jerusalem\textsuperscript{51}.

This pivotal area is (as it was almost 60 years ago) in an acute strategic situation. In fact, the 1948 armistice line was almost 22.5 Kilometers from Tel Aviv, while Haifa was a mere 35 kilometers away from it and West Jerusalem was surrounded from three sides by Arab held territories while the Jordanian-controlled West Bank overlooked the sole route connecting it to the rest of Israel\textsuperscript{52}. In its narrowest point Israel's width was no more than 16 kilometers, which was the distance between Netanya on the Mediterranean coast and Tul-Karem in the West Bank\textsuperscript{53}.

This geographic proximity is further complicated by the fact that the coastal plains are topographically lower than the West Bank (controlled back then by Jordan); something that could have easily threatened Israel to be cut into two parts in the event of a determined and effective Arab military effort. Israel's eastern frontier was, therefore, from a geo-strategic point of view the most militarily vulnerable.

The fact that the West Bank is higher than the coastal plains gives great advantage in military confrontations to whoever controls it. In defense, the party in control of this high ground could easily defend his various positions while having a


\textsuperscript{52} Martin Van Creveld, \textit{Defending Israel: A Controversial Plan Toward Peace} (New York: Thomas Dunne Books, 2004), Map 2. All the distances were mentioned in miles and for the sake of clarity I converted them into kilometers.

\textsuperscript{53} Ibid.
full view of the battlefield; and in the case of launching an offensive, it enables the attacker to conceal troop preparations and, in actual combat, easily dominate the battlefield.

Israel's acute strategic situation was further exacerbated by its apparent quantitative inferiority. Israel's small population, compared to other Arab states, had two main effects:

1- It limited Israel's ability to maintain a large standing army.

2- It greatly curtailed Israel's ability to absorb losses (especially in troops)

In fact, these two liabilities were well recognized by the Arabs and they greatly influenced the Egyptian and Syrian war plans in 1973 – leading both states to plan for a long war.

This very difficult strategic setting had diverse effects on the Israeli military doctrine. Because of this strategic inferiority, the Israeli military thinking concentrated on offense rather than defense as it had a clear advantages from the military perspective. Focusing on offense meant that Israel would be able to choose the place and the timing of the battles it fights and, moreover, to fight them on the enemy's territories. Thus, saving Israel's limited land and population from the destruction that inevitably results from war

The development of an Israeli nuclear program oriented towards military ends was spurred by this kind of military thinking and as response to Israel's sense of existential threat. Yet, Israel's fears, which fed its sense of existential threat, have not materialized and were not, in fact, well founded. Compared to Arab countries, Israel

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55 Ibid.
was, and still is, better armed. Not to mention, that it always enjoyed a far better-trained fighting force. Additionally, and as history has proved, most of the Arab states have lacked the political will to engage Israel militarily despite claiming the opposite.

Despite the fact that Israel has occupied the West Bank since 1967, thus significantly enhancing its strategic situation, it is quite plausible to claim that up till now the same strategic limitations that faced Israel in 1948 still haunt the Jewish state and affect its strategic posture. Despite its military conquests, Israel is still a small country compared to the Arab states surrounding it and still lacks the needed strategic depth they enjoy. Israel stretches 424 kilometers from north to south and is only 114 kilometers wide, which puts it at a clear disadvantage in terms of strategic depth.\(^\text{57}\)

**The Strategic Objectives of the Israeli Military Doctrine:**

Based on the strategic facts mentioned above, the Israeli defense establishment developed its military doctrine with a set of defined strategic objectives. These could be summarized as follows:

**First:** to safeguard the existence of the state of Israel and its borders against any Arab attack. In fact, during the 1948 War and the first years of Israeli statehood, the Israeli military doctrine was heavily preoccupied with the possibility of an all out Arab attack that could lead to the destruction of Israel\(^\text{58}\); a fear that eventually proved groundless as the much feared Arab attack never materialized.

**Second:** To create a credible a deterrent against any possible Arab attack. The need to create that deterrence was particularly important since Israel lacked strategic depth and its main population centers (especially in the period between 1948 and 1967) were very near to demarcation lines, which meant that they are highly

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vulnerable to any form of military attacks (in the form of air raids, border infiltrations or massive highly coordinated invasions\textsuperscript{59}).

In fact, the Israeli perception was that any Arab military attack in any form could inflict huge damage on both the infrastructure of the Israeli state and its small population. Subsequently, Israel opted for a deterrence-based military posture coupled with an offensive military doctrine. This offensive stand dictated that the Israeli army should carry out operations on the enemies' ground and totally disregard the possibility of fighting a defensive war. Essentially, the IDF adopted a set of principles regarding the waging of war; they can be listed as follows:

1- Short and fast wars that inflict heavy losses on the enemy and cause minimal ones to the attacking forces,

2- Always initiating the war at the most favorable time for Israel and always conducting it on the enemy's territory,

3- Always retaliating to any attack in a more aggressive manner with excessive use of force,

4- Quick pre-emptive strikes against possible sources of danger to Israel's security\textsuperscript{60}.

**The Israeli Concept of Deterrence and its Means of Achievement:**

It could be claimed that Israel's deterrence posture is in line with the deterrence by denial concept. In this respect, Israel aimed at ensuring that its enemies will not initiate an attack in the first place. This could be concluded from tracing Israel's armament efforts and military operations.


Since its early years, Israel had embarked on a massive armament program to create a highly advanced, well equipped, well organized and well trained professional army. The idea was to create a very powerful force to compel the Arabs to accept the de facto situation and not to attack the new state. The aim of protecting the new state through deterrence was also connected with the aim of forcing the Arabs to de facto recognize the existence of the state of Israel\textsuperscript{61}.

The Israeli Defense Forces (IDF) opted for acquiring advanced weapons systems since its early days and embarked on massive conventional and unconventional armament programs\textsuperscript{62}. The outcome of this policy was highly visible in the quality of the weapons that Israel possessed throughout all the phases of its history\textsuperscript{63}. These weapons were highly superior in quality over those owned and used by the Arabs. In addition, Israel worked hard on possessing weapons of mass destruction in their chemical, biological and nuclear forms.

Since its early days, the Israeli military doctrine recognized the inability of Israel to compete numerically with the surrounding Arab countries and, consequently, had to focus on achieving a qualitative, rather than quantitative, edge. The qualitative edge strategy had two major prongs: first, to create highly sophisticated and advanced training programs to maintain a professional military manpower and second, to acquire advanced conventional and unconventional weapons\textsuperscript{64}.

The Israeli efforts proved successful and Israel was able to create a powerful army that enabled it to achieve quick and decisive military victories on several occasions. The spectacular Israeli military buildup turned this small country into a

military superpower in the Middle East. Moreover, the Israeli military buildup included an equally massive, yet covert, program to develop unconventional weapons (i.e. Weapons of Mass Destruction (WMDs))\(^{65}\). At the core of this military buildup was a highly controversial and ambiguous program to develop a military nuclear capability.

Eventually, Israel was able to develop a highly advanced nuclear arsenal and acquire/develop the needed means of delivery. This advanced, unconventional capability was aimed at intimidating neighboring Arab countries and deterring them from attacking Israel and/or threatening its existence. Therefore, it could be said that the idea of creating an Israeli nuclear deterrent was mainly developed to counter the kind of conventional threats, mainly state-centered, which Israel faced in the early years of its statehood.

And, indeed, since 1948, Israel has successfully applied its concept of deterrence using conventional forces. The IDF was generally more powerful than the armies of the various Arab ring states - a fact that contributed in the Arab's reluctance to initiate military operations against Israel. Israel exploited this advantage to apply the various principles of its military doctrine (mentioned above). Throughout its 60 years of existence Israel was practically the initiator of almost all the wars that rocked the Middle East; the exceptions being the 1969-1970 War of Attrition and the 1973 October War. Additionally, Israel tended to fight very short wars and use excessive force in all of its military campaigns. In short, Israel was able to skillfully use its conventional power to become regional military superpower\(^{66}\).

\(^{65}\) According to the website of the Nuclear Threat Initiative (NTI), Israel possesses the capability to produce chemical and biological weapons.

Nuclear Weapons in the Israeli Deterrence Strategy:

This section will aim at discussing: (1) the various scholarly debates regarding the role of Israeli nuclear weapons, (2) the role played by nuclear weapons as a means of achieving deterrence within the Israeli military doctrine and, (3) the various trends within Israel regarding the role and future of the Israeli nuclear deterrent.

The great ambiguity surrounding the Israeli nuclear program led to an intense debate regarding the nature and role played by the Israeli nuclear weapons. As a result, various explanations regarding the role of nuclear weapons in Israel's defense policy emerged. And subsequently different possible patterns of employment emerged. In fact, it is interesting that some even believed that nuclear weapons played a political rather than a military role, while others believed that they play a mixed political/military one.

Among the various rationales presented to explain Israel's desire to develop nuclear weapons is the political one. Some tend to view the Israeli nuclear arsenal as a bargaining chip with the Arabs and others major powers. Those who support that argument tend to substantiate their argument by referring to Israel's decision to put its nuclear arsenal on high alert during the 1973 War. A decision which they believe to be no more than a political gambit to pressure the United States to start conducting Operation Nickel Grass (the codename for the operation of airlifting thousands of tons of weapons and ammunition that we badly needed by Israel during the 1973 war). Additionally, it was thought, at one time, that nuclear weapons would provide Israel

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67 During the 1973 War, the Israel placed its nuclear force on high alert. Therefore, various aerial bombs equipped with nuclear warheads were loaded on F-4E fighter-bombers and many nuclear tipped Jericho missiles were prepared for use. This incident was the subject of intense debate about its nature and true aims. It is plausible to claim that the move was politically motivated rather than arising from an actual military need as Israel was not in an acute military situation due to the nature of the Arab military plans and its overall military superiority.

with a powerful asset that would enable it to withstand any pressures or threats that might come from other states (such as the defunct Soviet Union)\textsuperscript{69}.

Others believed that the introduction of chemical and biological weapons in the Middle East was one of the factors that Israel led Israel to develop nuclear weapons. In this sense the Israeli nuclear weapons were seen as a means to balance the Arab capabilities in the area of chemical and biological weapons. This seems irrelevant, as it is inconceivable that Israel would retaliate for a chemical and/or biological attack with a nuclear one\textsuperscript{70}. Moreover, this line of thought greatly overestimates the Arab capabilities in producing and fielding chemical and biological weapons and overlooks the fact that Israel, itself, has the necessary capabilities and infrastructure to develop, field and use such weapons.

It is of no doubt that nuclear weapons have an undisputed political utility. Yet, it should be noted that Israel focused on the military utility of nuclear weapons rather than its political one when developing its nuclear weapons (as it will be explained in the next chapter). Israel was mainly motivated by its desire to overcome its strategic liabilities and enforce its deterrence posture.

In this sense, it is believed that Israel developed the so-called Option Samson. Option Samson stipulates that in the hypothetical case of a well coordinated Arab attack that would bring Israel to the verge of annihilation, Israel would use its nuclear arsenal to destroy main population centers in the Arab states\textsuperscript{71}. In this respect, it was thought (from an Israeli perspective) that such a massive retaliation would be more than enough to deter the Arab states from initiating hostilities (and in specific an all out attack) against Israel.

\textsuperscript{69} Mohammed Abd El-Salam, \textit{Hodod El-Kowa - Limits of Power} (Cairo: Al-Ahram Center for Strategic Studies, 1996), 208.
\textsuperscript{71} Hosni Ibrahim Haik, \textit{Intihar Shamshom - The Suicide of Samson} (Beirut: Dar El-Nafaes, 1993).
It is interesting to note, in this respect, that Israel never declared that it possesses nuclear weapons: preferring to adopt a policy of silence that neither admits nor denies possessing military nuclear capabilities. This policy was dubbed by many as the policy of the "bomb in the basement". Yet, it should be noted that Israel was always keen to covertly communicate its deterrence to the Arab states. This was done via leaking various reports about the Israeli nuclear activities either officially or unofficially.

The most famous example is Ehud Olmert's famous "nuclear hint" during an interview with the German in 2006 when he said: "Can you say that this is the same level, when they [Iran] are aspiring to have nuclear weapons, as America, France, Israel, Russia?". Moreover, it is now known that during their famous May 30th 1961 meeting in New York, Ben-Gurion and Kennedy agreed upon sharing the results of the US inspection visit to the Dimona reactor with the Arab states (namely Egypt). It is not known whether the United States did inform Egypt about the results of its inspection visits or not. Not to mention that the United States was unable to create a comprehensive and precise image about the nature of the Israeli till the late 1960s due to various factors that include, but not limited to, successful Israeli deception efforts.

Yet, the fact remains that Israel was willing to let other parties share their information about the Israeli nuclear program with Arab countries. A move that could be best explained by Israel's desire to, indirectly, communicate its nuclear deterrent capability. Additionally, it is of doubt that various Arab states were informed in a way or another about Israel's nuclear efforts.

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74 It is not known when the Arab states in general and Egypt in particular knew about Israel's nuclear efforts. Yet, various sources indicate that during the late 1950s the Egyptian Air Force (EAF) flew various photo–reconnaissance missions over Israel's nuclear site in Dimona. Additionally, it is known
The 1973 War had a great effect on Israel's strategic posture and military doctrine. This equally applies to Israel's conventional and nuclear deterrents. This change resulted from two main factors. The first of them is the fact that the Arab states, and almost for the first time in their long conflict with Israel, launched a coordinated large scale military operation against on Israel. The second is that Israel suffered huge losses, especially during the first days of combat, on the hands of Arab anti-air and anti-armor defenses. In fact, it could be claimed that, during the first days of the conflict, the Arabs (especially the Egyptians) were able to greatly neutralize the famed Israeli Air Force (IAF) and the Israeli armor formations.

This new challenge added new dimension to the Israeli nuclear deterrent (i.e. tactical role). As it will be further dwelled upon in the coming chapter, Israel aimed at developing tactical low-yield nuclear warheads and developing/purchasing adequate delivery systems (such as nuclear shells for its artillery and importing Lance tactical Surface-to-Surface (SSM) missiles) to be used on the battlefield level as a means of countering such cases when Israel's conventional forces are paralyzed.

The Debate about Israel's Nuclear Weapons:

The Israeli nuclear program was the focus of an intense debate inside and outside Israel. Interestingly enough, the first of these debates was within Israel itself during the first years of its nuclear program. This debate was among those who advocated the nuclear program (headed by Ben-Gurion) and those (especially in the military establishment) who perceived that this program as a waste of valuable financial resources that could be used to finance badly-needed conventional arms purchases.

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that Egypt conducted several covert activities to collect information about Israel's nuclear efforts; though their exact results are not known.
Later on, the famous 1986 detailed revelation by Mordechai Vanunu instigated a huge public uproar in Israel. Consequently, various books and articles started to surface about Israel's nuclear program and arsenal including Avner Cohen's highly detailed book *Israel and the Bomb* that was published in 1998\(^75\). This intense internal debate culminated in the Knesset's decision (based on the Arab MP Issam Maku's request) in 2000 to hold its first public discussion about Israel's nuclear weapons\(^76\). During the discussion, which lasted for only 52 minutes, Chaim Ramon (the representative of the Israeli government) reiterated the official Israeli stands that Israel will not be the first to introduce nuclear weapons to the Middle East. In addition, most of the Knesset members aggressively objected (including those of the labor party and other parties that are of leftist orientation) to Issam Maku's presentation about Israel's nuclear arsenal\(^77\).

In fact, it could be claimed from the above-mentioned event and the problems that face anyone who tackles the nuclear issue in Israel (such as Avner Cohen and Vanunu) that the Israeli state is still very much committed to the policy of ambiguity (in regards to its nuclear arsenal). Moreover, it could be generally believed that the Israeli society accepts (due to a wide variety of factors that includes its deep-rooted existential threat) Israel’s as a nuclear power. This was manifested in poll that revealed that around 63.7% from the age of 18 to 34 and around 66% from the age of 35 to 54 supports the notion that nuclear weapons gives Israel a special status and it is not in its interest to eliminate them\(^78\). This reveals that security is still one of the main

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75 Avner Cohen faced several legal difficulties after publishing his book *Israel and the Bomb* which led him in 2000 to appeal for the Knesset to present his case.
77 Ibid.
issues for the Israeli society and it is one the issues that the Israeli society cannot compromise on.
Chapter 3

The Israeli Nuclear Deterrent: Development, Deployment and Strategy
Introduction:

The history and the status of the Israeli nuclear program are unique compared to those of other nuclear programs worldwide. The uniqueness of the Israeli nuclear program stems from two interrelated factors: the level of secrecy and ambiguity surrounding it.

The first of these intriguing and unique features is the heavy cloud of secrecy that casts the program’s development process. In fact, during the development process of the Israeli nuclear deterrent no other country - except for France which was providing Israel with the needed expertise and equipment - was able to establish accurate estimates regarding the status and the nature of Israel's nuclear effort. This equally applies to the United States which failed, throughout the 1950s and 60s, to formulate a clear and accurate picture about Israel's nuclear efforts despite sending inspection teams, reconnaissance flights and various intelligence efforts. This was a result of different factors that included, but by no means limited to, benign neglect, erroneous analysis and successful Israeli deception. In fact, it was not until 1968 that the Central Intelligence Agency (CIA) was able to produce a report concluding that Israel has started producing nuclear warheads. Finally, and in 1969, the United States was able to confirm the existence of an Israeli nuclear deterrent when Golda Meir visited Washington with the aim of providing the United States with a clear picture of the nature and achievements of the Israeli nuclear program.

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81 Michael Karpin, *The Bomb in the Basement: How Israel Went Nuclear and What that Means for the World* (New York: Simon and Schuster Paperback, 2007), 315. Meir's desire to inform the United States about the true nature of the Israeli nuclear program is embedded in her view that it was not possible or useful to hide the nature of the program from one of Israel's closed allies. She advocated this point view since the early 1960s; Karpin provides a comprehensive of Meir’s point of view in chapter 6.

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In fact, the veil of secrecy surrounding the Israeli nuclear program was progressively cracked over the years. This was a result of various events that included, *inter alia*, statements by Israeli politicians, disclosure of various government documents and media reports (including the famous 1986 detailed revelation by Mordechai Vanunu which revealed much information about the nature of the Israeli nuclear program\(^\text{82}\)).

The second interesting feature of the Israeli nuclear program is the level of ambiguity surrounding it. This high level of ambiguity is evident in Israel's unwillingness to admit or deny its nuclear status; something that, eventually, led to a fierce debate within academic, military and political circles about Israel's nuclear status and whether it is a nuclear power or a mere threshold state\(^\text{83}\). This was a direct result of Israel's intentional policy of ambiguity and the consequent lack of any concrete evidence (such as known tests of nuclear devices) that could reveal the nature of Israel's nuclear efforts\(^\text{84}\).

Both of the above mentioned factors place the Israeli nuclear program in a very unique status, compared to other nuclear programs worldwide, and create lingering atmosphere of doubt about its true nature.

**The Origins of the Israeli Nuclear Program:**

The desire of the Israeli leadership to acquire nuclear weapons, as ultimate means of deterrence, could be traced back to the pre-1948 years. Michael Karpin in

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\(^{83}\) Nuclear threshold is the point in which a state acquires the needed knowledge and material to develop a nuclear weapon. A threshold state may be used to describe a state that has the required knowledge and material to produce a nuclear weapon but did not do so. Adopted from Anshel Pfeffer, “Israel is a Nuclear Threshold State,” *Jerusalem Post*, January 22, 2007, http://www.jpost.com/servlet/Satellite?pagename=JPost%2FJPArticle%2FShowFull&cid=1167467784060.

\(^{84}\) Testing nuclear devices is often used as the most concrete method to prove the existence of a military-oriented nuclear program. This method was, for example, frequently used to assess the nuclear statuses of the former Soviet Union, China, India, Pakistan and even North Korea.
his - very interesting - book *The Bomb in the Basement* asserts that developing nuclear weapons was a logical and natural step from the point of the leader of the Zionist movement in general and that of David Ben-Gurion in particular. For them, the *Yishuv* (the Jewish community living in Palestine before 1948) was threatened by the Arabs' national fervor and the inability, and sometimes unwillingness, of the British authorities to properly defend the Jews; something that was manifested in the various clashes that took place during the 1920s and 1930s and especially that of the Walling Wall (1929) and the 1936 Arab Revolt\(^\text{85}\). This sense of danger and the need to be militarily self-reliant was, even, further enforced by the events of the Holocaust\(^\text{86}\).

In this respect, it could be claimed that Ben-Gurion's conviction that the *Yishuv* should be armed to the teeth, so it would be able to withstand the so-called Arab-originated security threats, is in line with the ideas propagated by Vladimir Jabotinsky (1880-1940). Jabotinsky's Revisionist Zionism called, *inter alia* other things, for the Jewish community to be heavily armed so it could withstand and, eventually, survive the eventual conflict with the surrounding Arab population\(^\text{87}\). In this respect, it could be claimed that Ben-Gurion, though not himself a supporter of Vladimir Jabotinsky, believed in his conceptions of the *Yishuv's* need to be heavily armed.

In fact, Ben-Gurion's support to Israel's nuclear program was instrumental, especially in its early years, in fending off many efforts to stall the project. These efforts were, interestingly enough, led by the Israeli Defense Forces (IDF) which believed that funds would be better allocated if used to procure conventional military

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\(^{85}\) Both the 1929 Walling Wall Riots and the 1936 Arab Revolt are considered to be major events in the history of the Arab-Jewish conflict in the pre-1948 years because of their magnitude and duration.


capabilities. Ben-Gurion, and his supporters, believed that developing a nuclear weapon would be the ultimate solution to Israel's security predicament and, ultimately, the means to overcome its strategic inferiority.

Thus, in 1948, and while Israel was still fighting its first war, a research and planning branch was set up under the auspices of newly established Israeli Ministry of Defense with the aim for surveying possible Uranium deposits in the Negev desert. The newly established Unit C of the IDF Science Corps – better known for its Hebrew acronym HEMED GIMMEL – soon sent a survey mission, headed by its chief Israel Dostrovsky, to the Negev with the aim of exploring the possible Uranium deposits. Interestingly enough, the mission’s work was delayed and obstructed several times by the presence of Egyptian troops in the area. The survey mission lasted almost two years and was able to allocate recoverable amounts of Uranium in the Phosphate deposits.

Later on, various government structures were established and/or entrusted to oversee and manage the Israeli nuclear program. These bodies included the HEMED GIMMEL (the special unit of the IDF’s science corps responsible for nuclear research), a department for isotope research within the Weizmann Institute and the Israeli Atomic Energy Commission (IAEC) which was established in 1952 (first under jurisdiction of the Ministry of Defense and from 1966 onwards under the direct

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92 Ibid., 38.

control of the Prime Minister Office\(^4\)). These organizations combined constituted the scientific and organizational base needed for the development of the Israeli nuclear program\(^5\).

At the time, Israel was bogged down by its relative lack of know-how (represented in the limited number of trained scientists and the inability to access the most up-to-date research) and the lack of the required equipment (e.g. nuclear reactors, Uranium separation facilities, etc…). Nevertheless, it should be mentioned that Israel’s limited scientific know-how was relative in nature. In fact, many of those employed by the Israeli government were renowned scientists who obtained their degrees from many famous universities worldwide; the list included names such as Israel Dostrovsky, a Russian-born researcher who obtained his degree in physical chemistry from University College in London and the German-born Ernst David Bergmann who obtained his doctoral degree in chemistry from the University of Berlin\(^6\).

Therefore, the establishment of various structures and organizations was just a mere first step that was followed by major effort to acquire the needed scientific know-how and the necessary equipment. To overcome the first obstacle, the relative lack of scientific know-how, Israel sent many young Israeli scientists to the United Kingdom, The Netherlands, Italy, Switzerland and the United States to continue their studies in fields related to/or beneficial to the Israeli nuclear effort\(^7\).


\(^7\) Ibid., 48.
In addition, Israel invited several high profile nuclear scientists to visit Israel to take part in various lectures and conferences with the aim of gaining access to the most up-to-date research. The list included famous scientists such as Robert Oppenheimer the chief scientist of the Manhattan Project and Edward Teller the father of the Hydrogen bomb, to visit Israel to take part in various lectures and conferences.\(^98\)

To overcome the second obstacle (the lack of necessary equipment and facilities) Israel worked on establishing formal forms of cooperation with other states. As a result, Israel participated in the Atoms for Peace program and on the 18\(^{th}\) of May 1955 an agreement was signed between the United States and Israel in which the Israel was set to receive an experiential, low powered reactor of up to 5,000 kilowatts. This reactor (known as The Nahal-Soreq reactor) was completed in 1960 and it served as a training platform for Israeli scientists and as a production facility to produce radioactive isotopes to be used in medicine and industry. As part of the agreement the United States pledged to finance the construction of the reactor.\(^99\)

Israel was quick to ask the United States to upgrade the reactor so it could produce Plutonium; something that the United States feverishly opposed.\(^100\) The American opposition may sound strange in light of the current status of the American-Israeli relations. Yet, two factors could be cited as the reasons for the American position. The first of them is related to American policy towards the Middle East at the time. In fact, the American decision could not be de-coupled from the general American political approach towards the Middle East as the United States was...

\(^{98}\) Ibid., 52.
working on luring Middle Eastern states in general and the Arab ones in particular into its own sphere of influence. This policy was dictated by the United States' Cold War considerations which aimed at establishing the United States as the dominant power in the Middle East, replacing the United Kingdom in the process, and by virtue countering the Soviet Union.

To that end, the Untied States weighted, to a significant extent, its policies towards Israel from the perceptive of its relations with the Arab states. That was manifested in the US refusal to supply Israel with significant amount of weapons (hence, the French role as main arms supplier to Israel up until 1967) and its pressure on Israel to withdraw from Sinai in the aftermath of the 1956 War. This was coupled with the American efforts - regardless of their effectiveness - to attract the support of the Arab states. These efforts included extending aid to various Arab states, including those who were already pursuing policies that were inline with that of the Untied States; for example: Egypt benefited from generous US aid under the famous PL-430 scheme.

It is even interesting that during the May 30th 1961 meeting between Kennedy and Ben-Gurion, the first asked the latter if he would accept if the United States would provide the Arab states (and namely Egypt) with the results of the inspection visit conducted by American experts, earlier that month, to the Dimona reactor; something that Ben-Gurion agreed upon\textsuperscript{101}.

The second factor is the American approach to the issue of nuclear proliferation. The general belief was that as more countries get nuclear weapons then the chances for a nuclear war would greatly increase. This policy is best described by Paul C. Warnke words (served as chief arms negotiator and represented the US

\textsuperscript{101} Ibid., 194.
government in negotiations with Israel over the supervision over Dimona) who said: “The more nuclear proliferation there was, the greater chance there was for a nuclear war, and if more and more countries, particularly in sensitive areas like the Middle East, developed nuclear weapons, there was a chance they might be used.”

Moreover, the United States was concerned about the possible courses of action that could be taken by the Soviet Union in reaction to an American support to Israel's nuclear efforts. The United States mistakenly thought that the former Soviet Union would support and/or provide the Arab states (namely Egypt and Syria) with a nuclear capability.

**The French Connection:**

It is now well known that France played a key role in Israel's nuclear program. The Israeli decision to depend solely on France was caused by several factors. The first of them is the American refusal to upgrade the Nahal-Soreq reactor. This refusal implied the American unwillingness to support the Israeli nuclear effort. Additionally, the already flourishing Franco-Israeli nuclear cooperation seemed to hold great possibilities. In fact, the Franco-Israeli nuclear cooperation started in 1953 when France agreed on providing Israeli scientists with training and, even, the participation in the French nuclear program; culminating in their participation in the first French nuclear test in the Algerian desert.

Consequently, many of the (first generation) Israeli nuclear scientists were trained and got their expertise from France; for example, Dror Sadeh studied at the Saclay Nuclear Research Center near Paris. Later on, the events of the 1956 Suez War

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102 Ibid., 181.
would lend a great boost to the Franco-Israeli nuclear cooperation. This boost was motivated by two factors. First: France lured Israel to participate in the military campaign against Egypt by pledging to support it in the nuclear field; yet, it should be noted that Israel's participation was also motivated by other factors that regrettably lay beyond the scope of this research.

Second: the results of the Suez War necessitated accelerating the French efforts to acquire its own nuclear weapons. In fact, to be able to well understand the full effect of the Suez War on France's own nuclear program, the general results of the war should be taken into consideration. In his comprehensive research about the Israeli nuclear program, Warner D. Farr argues that the French suffered a deep sense of embracement in the wake of the 1956 war due to their inability to withstand the American and Soviet pressure and their failure to support Israel politically after the cease-fire\textsuperscript{104}. It is of no doubt that the 1956 Suez War was a turning in the international political setting in which both France and the Untied Kingdom lost their international standing and became second-class world powers. In this respect, it is of no doubt that the French were able to recognize their inability to withstand pressure from the two major nuclear power (the United States and the USSR); something that led France to recognize its deep need to develop its nuclear capability as a means of persevering and enhancing its international standing.

And since the Franco-Israeli nuclear cooperation was a two-way venture in which both nations benefited, as Israel provided France with the necessary know-how in certain fields (such as heavy-water production\textsuperscript{105}), the French needed to accelerate


\textsuperscript{105} Frank Barnaby, How Nuclear Weapons Spread: Nuclear-Weapon Proliferation in the 1990s (London: Routledge, 1993), 70.
and expand the process of cooperation. And thus, the French cooperation with Israel was a means for them to overcome the several technical problems facing them.

In short, the French need to accelerate the development of their nuclear bomb prompted them to increase their level of cooperation with Israel with the aim of overcoming the scientific hurdles facing them. In addition to that it could be claimed that the French had a deep sense of humiliation from their inability to fulfill its commitments towards Israel as they failed to shelter Israel effectively, which, in turn, led many French officials to feel a sense of obligation towards the Israeli nuclear program; it is even said that the French Prime Minister Guy Mollet said that “France "owed" the bomb to Israel”: as a result of France’s failure to support Israel during the conflict\textsuperscript{106}.

Subsequently, the Franco-Israeli nuclear cooperation was institutionalized on the 3\textsuperscript{rd} of October 1957 when a bilateral deal, stipulating the various forms of cooperation, was signed. This deal consisted of two sets of agreements that, interestingly enough, their details are not known until that day\textsuperscript{107}. It is generally believed that the first agreement was political in nature containing general clauses that did not deal with the nuclear matter, while the second was more technical and outlining the commitments by each side in field of nuclear cooperation\textsuperscript{108}. The agreement stipulated that France would supply Israel with a PL-2 reactor with a 26-Megawatts (MW) output (the reactor cooling and waste management systems were built to handle a much more powerful reactor indicating Israel’s intention to upgrade

\textsuperscript{106} Nuclear Weapons – Israel, \textit{Federation of American Scientists (FAS)}, \url{http://www.fas.org/nuke/guide/israel/nuke/}.


the reactor at a later stage\textsuperscript{109}, in addition to a plutonium separation facility. This meant amending the original understanding (reached in 1956) between the two states that stipulated that France would supply Israel with an 18-Megawatts (MW) research reactor of the EL-3 type\textsuperscript{110}. Construction work started in 1958\textsuperscript{111}. Additionally, both states started an expanded cooperation in the nuclear field that included exchanging various technical data and conducting common research.

Many in the Arab World tend to view Western support to Israel from the prism of conspiracy theory; this was extrapolated to explain the French support for the Israeli nuclear program. According to that line of thought, the West supported Israel as part of its efforts to divide the Arab states. This great oversimplification overlooks the fact that many Western states do benefit from cooperating with Israel in various fields. In the case of the Franco-Israeli nuclear cooperation, its is even said that the combined research efforts and the Israeli knowledge, in certain areas, led to great strides in the French nuclear program; it is that level of cooperation that led Michael Karpin to claim that the French nuclear bomb progressed in parallel to the progress of the Franco-Israeli nuclear cooperation.

It is now known that, at the time, the French nuclear project faced many problems such as the inability of the French scientists to calculate correctly the critical mass\textsuperscript{112}. Furthermore, the United States had embargoed certain nuclear enabling

\textsuperscript{109} Nuclear Weapons – Israel, \textit{Federation of American Scientists (FAS)}, \url{http://www.fas.org/nuke/guide/israel/nuke/}.


computer technology from France, which the French were able to procure, indirectly, via Israel\textsuperscript{113}.

Moreover, the close Franco-Israeli nuclear cooperation should be viewed as a part of the larger Franco-Israeli cooperation scheme; a cooperation that placed France as Israel's main arms supplier throughout the 1950s and the first half of the 1960s. This cooperation was necessitated by the French geo-strategic vision of the world and its role in the Middle East and North Africa. In fact, this French vision was one of the factors that prompted the French to lend Israel the much needed support in various fields.

In this respect, it should be noted that the French did not only support the Israeli nuclear effort but also were Israel’s primary source of arms. The IDF depended mainly on French supplied weapons during the 1950s and 60s; these weapons ranged from AMX-13 tanks to the Sud Aviation (SNCASO) S.O. 4050 Vautour II bombers and the Dassault Mirage III fighters. For France, Israel represented a great strategic asset as it represented a, much needed, counter weight to Egypt which, at the time, supported the Algerian National Liberation Front (Front de Libération Nationale, hence FLN) against the French colonial rule. In this respect, the French defense establishment perceived Israel (and its Defense Forces in particular) as an instrument for remote control in the Middle East\textsuperscript{114}.

Additionally, it is now known, that Israel used Jews living in Algeria to provide France with, much needed, information about the Algerian resistance and the


Egyptian support to the National Liberation Front (FLN)\textsuperscript{115}. Besides benefiting from the information provided by Israel, the French hoped to copy the Israeli Kibbutz model as part of their efforts to pacify Algeria\textsuperscript{116}. Moreover, Israel, on the other hand, was very much interested in the French use of helicopters in Counter-Insurgency Operations (COIN); something that prompted Yitzhak Rabin and Haim Herzog to visit Algeria to observe the French \textit{modus operandi}\textsuperscript{117}.

Further more, a deep feel of sympathy urged many of the French officials to, feverishly, help Israel in its nuclear program. They were mainly stimulated by their inability to help the European Jewry during World War II and, thus, felt deep sense of sympathy towards Israel and an urge to provide it with all the available means to defend itself and prevent, what they thought would be, another Holocaust-type event from taking place again. One of the famous examples for that case was Abel Thomas the \textit{chef de bureau} of the French minister of interior in 1955; he was one of the masterminds of the Franco-Israeli strategic cooperation that ranged from selling arms to cooperating in developing nuclear weapon\textsuperscript{118}. Additionally, Warner D. Farr claims, in his well-researched study about the Israeli nuclear program, that the continued presence of former Nazi collaborators in French intelligence provided the Israeli intelligence service with ample blackmailing opportunities\textsuperscript{119}.

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\textsuperscript{117} Ibid., 45.
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The Franco-Israeli cooperation was negatively affected by the rise of the French fourth Republic and De-Gaulle's rise to power. De-Gaulle's vision for a new French political posture partially rested on abandoning its colonial legacy and, by virtue, its efforts to keep Algeria within the French domain. Additionally, De-Gaulle was motivated by his desire to pursue an independent political path than that of the United States. De-Gaulle's also opted for better relations with the Arab states.

These factors meant that Israel was no more the centerpiece in the French strategic outlook towards the Middle East. There was no more a need for Israel as counter weight to Egypt and the Israeli information about the Egyptian support to the FLN. All these factors prompted De-Gaulle to abruptly decide to end the Franco-Israeli nuclear cooperation.

De-Gaulle's decision was not executed immediately, as many, French officials who were sympathetic to Israel, worked hard to delay severing the relations as long as they can. In addition, the decision to halt further cooperation between Israel and France did not entail that France would not continue the previously agreed upon work; especially that related to the Dimona reactor. As a result, Israel received its reactor as planned and it went critical in 1964. By then, Israel had the entire necessary infrastructure to build its own nuclear bomb and what remained was completing the required research and producing the needed amount plutonium.

Nonetheless, it should be mentioned that the increasingly unfavorable situation of Israel in France did not lead to a complete halt in the mutual military cooperation. France continued delivering advanced weapons (such as Mirage III fighters deal in

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1963) and extending technical assistance to Israeli military projects (such as the development in the Jericho SSM which was based on the French MD-660 SSM\textsuperscript{122}).

From the above mentioned information, it could be deducted that the French were, on one hand, eager to limit their nuclear cooperation with Israel but on the other, willing to continue supporting it militarily. In this respect, the level of cooperation between the two countries in the field of conventional arms did not change, while, on the nuclear front, France curtailed its support to the Israeli program. Various factors could be cited to explain this interesting phenomenon.

The first of them is the economic rational. Israel represented a very lucrative arms market to the French defense industry. The continued sale of French-built fighters, tanks, self-propelled artillery pieces and various types of other weapons and support systems meant that the French defense industry could secure many profitable orders which could be easily translated into huge profits. In fact, this gains special importance in light of the international political setting and, by virtue, the status of the international arms market during the heyday of the Cold War. At the time, the United States and the former Soviet Union held almost complete monopoly in the international weapons market, with each of them supplying their respective allies with almost all sort of weapons; and thus, leaving other states (such as France and the United Kingdom) with a very small market to compete for.

This was further aggravated by the fact that both of the former colonial powers lost control over their past colonies which, for all practical reasons, went on to create new alliances with either the Soviet Union or the United States; And, thus, depriving France from, what would have been, a potential lucrative market for its weapons. In this respect, it is interesting to note that the growing American involvement in

Vietnam, from the 1960s onwards, and the, subsequent, pressure on the American arms manufacturers to meet the growing demand by the US forces, presented a golden opportunity for the French Arms industry to increase its share in the international weapons market\(^{123}\).

**Passing the Nuclear Threshold:**

Once the main facilities of the Dimona reactor were completed, Israel achieved great strides in its nuclear program. Yet, it is neither known when did Israel, precisely, pass the nuclear threshold, nor when did it attain its first nuclear device. In fact, estimates do vary when it comes to that point.

The website of the Federation of American Scientists (FAS), for example, mentions that the CIA concluded that by 1968 Israel has attained a nuclear capability, while that of the Nuclear Threat Initiative (NTI) claims that by 1966 Israel has completed the research and development phase of its first nuclear devise\(^{124}\). Others estimate that Israel was able to produce a rudimentary nuclear bomb by May 1967\(^{125}\).

Regardless of the precise date of the development of Israel's first nuclear bomb, most of the literature claims that Israel developed its first nuclear devise in the second half of the 1960s and more precisely prior to the 1967 Six-Day War. Consequently, it possessed one or two nuclear bombs by the beginning of hostilities. This estimate is based on calculating the approximate date of Dimona's entry into service and its calculated annual plutonium output\(^{126}\).

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The Bomb and Beyond:

When the 1960s ended, Israel was a confirmed nuclear power. The United States position towards the Israeli nuclear development is extremely baffling. It is now known that in 1958 an American U-2 spy plane overflying Israel detected a large construction site in the South of Israel which appeared like a nuclear reactor\textsuperscript{127}. The United States was soon to investigate the nature of the unknown building.

At first, the Israeli government tended to explain the facility as a textile plant and, later on, Ben-Gurion informed the Knesset that Israel was building a 24-megawatt (MW) research geared towards civil proposes\textsuperscript{128}. Yet, the United States was so misinformed about the nature of the Israeli nuclear program that it was unable and unwilling to do anything to stop it. This was a result of various combined factors that included, but by no means limited to, benign neglect, erroneous analysis and successful Israeli deception\textsuperscript{129}. The United States was only able to know the full extent of the Israeli nuclear program in late 1969 during Golda Meir's visit to Washington\textsuperscript{130}.

By the 1970s, it was widely agreed upon by several Western officials, military analysts, journalists and researchers that Israel possessed a highly advanced nuclear program. Yet, the nature of this nuclear program and its level of development remained ambiguous, leading some to claim that Israel was a nuclear threshold state, while others believed that Israel already had nuclear weapons. These estimates were based partially on leaked intelligence reports and estimates of Israel’s military and scientific capabilities.

\textsuperscript{128} Avner Cohen, \textit{Israel and the Bomb} (New York: Colombia University Press, 1998), 79.
This was further enforced by the disclosure of various reports coming from different sources. This included surprising revelations in 1974 by the Time magazine about the Israeli nuclear program which revealed in detail the nature of the Israeli nuclear program and Israel's nuclear arsenal. By 1976, it is believed that the Central Intelligence Agency (CIA) estimated that Israel had a nuclear arsenal of 10 to 20 bombs\textsuperscript{131}. Finally, it should be mentioned that it is widely believed that Israel and South Africa jointly conducted a nuclear test in 1979\textsuperscript{132}.

In fact, various means were used to assess the status of the Israeli nuclear program. One of the most obvious and easy methods was to review Israel’s military capabilities. This method depended on paying special attention to Israel’s special weapons programs (especially Surface-to-Surface Missiles (SSM), since they are closely linked to weapons of mass destruction in general and nuclear weapons in particular: as they are an easy and effective delivery system.

In this regards, the efforts by Israel’s weapons development organization (better known as RAFAEL) to field and develop a viable and effective SSM was a clear indicator of the nature of Israel's nuclear program\textsuperscript{133}. The Israeli efforts in the field of rocketry started by the early 1960s due to the need to develop a viable and effective means of delivery for its nuclear option (and partially as a response of Egypt’s efforts in that field), which resulted in the Jericho missile.

This first generation of Israeli (SSM)s - represented by the Jericho I missiles - were generally believed to have entered service in the early 1970s and, yet, they lacked the needed accuracy (suffering from a large radius Circular Error Probable (CEP)). The problems with the guidance continued with the second generation of the

\textsuperscript{131} Ibid., 80.
missiles. It is even said that Israel acquired the American-built Lance SSM, as part of its military buildup program in the aftermath of the 1973 October War (Yom Kippur War), to overcome these problems\textsuperscript{134}.

These dedicated efforts by the Israeli Defense Forces (IDF) to acquire and field an SSM capability was taken, by many military analysts, as an indicator of Israel possession of nuclear weapons. This stemmed from the fact that the Israeli developed Jericho (SSM)s were equipped with very small warheads (in terms of their explosives power) that were, when equipped with conventional TNT (or other types of high explosives) warheads, of negligible destructive power. When this is coupled by the major problems concerning guidance and accuracy then the missiles are of negligible military value.

Consequently, using these (SSM)s with conventional warheads would be unrealistic as they would not be able to strike and adequately destroy targets of military value. Additionally, the small warheads would not be of a considerable value to conduct area bombing to force concentrations and/or major cities\textsuperscript{135}. Thus, the only plausible explanation would be using these missiles as carriers (means of delivery) to a nuclear warhead; in which the high destructive power would compensate for the great inaccuracy of the missiles\textsuperscript{136}.

Additionally, the scientific capabilities (represented in two nuclear reactors and several other research facilities) were used as a means of verifying Israel nuclear


\textsuperscript{135} Area bombing: the usage of a heavy barrage of artillery, missiles and/or aerial bombs to bomb a specific area with aim of causing considerable levels of destruction; The most famous example of the allied bombings to German cities and industrial areas during World War II.

progress; as Alan Dowty points out: “the technological and scientific infrastructure necessary for a weapons program is present.”

**The Nuclear Arsenal and the Military Doctrine: Plausible Operational Methods:**

Maintaining a heavy cast of secrecy over its nuclear program and its status, it is extremely hard to find concrete information about the current status of the Israeli nuclear program and arsenal. Yet, and according to most of the available sources, Israel has an arsenal of around 200 nuclear warheads.

Yet, a nuclear warhead in its rudimentary form is by no means a viable weapon system. A nuclear warhead in its most rudimentary form is no more than a nuclear device which cannot be used and/or delivered to its intended target; thus it is of no military value. Consequently, a viable and credible nuclear weapon needs a nuclear warhead, a workable delivery system and an efficient command and control regime.

Further more, it should be mentioned that nuclear warheads could be categorized into two main categories, and these are:

1- Tactical Warheads: small warheads with limited destructive capacity that could be fitted to weapons systems used on the tactical level (e.g. battlefields) or against specific targets. This category includes nuclear landmines, artillery and tank shells and small guided or unguided aerial bombs.

2- Strategic Warheads: larger warheads that enjoy more destructive capacity (compared to tactical ones) and could be easily used in conjunction with weapons of strategic nature. This category includes

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137 Ibid., 81.
large guided or unguided aerial bombs, Air-Launched Cruise Missiles (ALCM), Inter-Continental Ballistic Missiles (ICBMs) and Submarine Launched Ballistic Missiles (SLBMs).

As mentioned earlier the type of nuclear warhead dictates, largely, its usage and how could it be delivered. In the Israeli case, it is generally assumed that its arsenal is made up of various tactical and strategic warheads that are used in conjunction with the various means of delivery available in its arsenal.

Most of the literature written about the means of delivery available to Israel focus on the role of the Israeli Air Force (IAF), which is understandable taking into consideration the potency of the force and the major role it plays in the Israeli military doctrine. Historically, this may be correct, as the IAF was the only means available for Israel to deliver its nuclear arsenal over large distances; especially in the 1960s and the early 1970s when the Israeli missile force was still under development.

Yet, it could be said that now the Israeli doctrine depends on, what could be described as, a three pillar strategy for delivering its nuclear warheads. The IAF certainly plays a central role in that strategy. This stems from the fact that the IAF is not only a highly advanced and modern force that use advanced weapons and ammunition, but also have a modern force structure and training programs; making the force comparable to the most advanced air forces in the world.

In the Middle East, the IAF is unique. Unlike, its Gulf counterparts that have advanced weapons, yet lack the needed human resources to properly maintain and use them, the IAF has the advanced weapons and the needed infrastructure to maintain, support and even upgrade them. Additionally, the IAF equipment is comparably more advanced than that of other Arab states. For example, the Israeli F-16I are considered
the most advanced F-16s in the world and considerably superiorly to any other model in service with Arab countries.

In addition, the Israeli Air Force enjoys high serviceability rate; generally assumed to be around 90%. Additionally, the IAF is well known for initiating its own upgrade programs that are executed locally. For example the Israel installed many of its indigenously developed electronic warfare systems and weapons on the latest fighters it acquired such the F-15I and the F-16I\(^\text{139}\).

Moreover, the IAF possess a large number of advanced jets that are capable of delivering tactical or strategic warheads using guided or unguided bombs and/or air-to-ground missiles over very long distances which could be further extended using its in-flight refueling capabilities. Currently, the Israeli Air Force has around 100 F-15I and 102 F-16I and a large number of earlier models F-4s, F-15s and F-16s which could be all used to deliver nuclear weapons\(^\text{140}\).

In addition to the IAF, Israel was able to indigenously develop a whole series of advanced surface-to-surface missiles – the second pillar in its strategy for delivering its nuclear weapons. The Israeli missile program started in the mid 1960s with the aim of developing a viable missiles arsenal that could be used to deliver nuclear weapons (still under development at the time). In 1965, the Israeli Arms Development Agency (Rafaal) was able to test launch the Shavet: a single-stage solid fuel missile. The missile was partially based on the French MD-660 missile developed by the French aerospace giant Dassult\(^\text{141}\).


It is even now known that the French were contracted in the 1960s to develop a surface-to-surface missile for Israel, which was, later on, named Jericho-I. According to the Nuclear Threat Initiative (NTI) website, the French flight-tested the missile for almost 20 times at a French airbase and that by the early 1970s Israel took over the production and development of the missile\footnote{Israel Missile Overview, Nuclear Threat Initiative (NTI) Website, http://www.nti.org/e_research/profiles/Israel/Missile/index.html.}

Later on, Israel worked on modernizing its missile force via developing the more advanced Jericho-II missile. The Jericho-II represent a potent deterrence weapon; it is a 2-stage missile with a solid fuel rocket motor with a range estimated to be between 1500 and 4000 Kilometers and it has single 1,000 Kilogram warhead which could be armed High Explosive (HE) conventional warhead or 1 Mega Tone (ME) nuclear warhead\footnote{Missile Index Website, http://missile.index.ne.jp/cgi/misearch.cgi.}. The Jericho-II, later on, served as the base for developing the Shavet (comet) Space Launching Vehicle (SLV) - used to launch the Israeli Ofeq series of reconnaissance satellites\footnote{Israel Special Weapons - Jericho-II, Federation of American Scientists (FAS) Website, http://www.fas.org/nuke/guide/israel/ missile/jericho-2.htm}. Finally, it is believed, yet not confirmed, that Israel developed and deployed the Jericho-III missile, which is believed to be the ultimate evolution, up until now, for the Jericho missile series. The three-stage missile has an estimated of 4800 Kilometers and warhead estimated to be around 1000 to 1300 Kilograms\footnote{Israel Missile Update – 2005, The Risk Report, Volume 11 Number 6 (November-December 2005), http://www.wisconsinproject.org/countries/israel/IsraelMissile2005.html}.

Interestingly enough, Israel purchased the American-made MGM-52 Lance SSM in the mid 1970s. The missile has an estimated range of 130 Kilometers and a 450 Kilogram warhead\footnote{Israel Special Weapons - Lance, Federation of American Scientists (FAS) Website, http://www.fas.org/nuke/guide/israel/missile/lance.htm}. It is capable of carrying a conventional or a nuclear warhead. The purchase of the MGM-52 Lance is a highly interesting case in the
history of Israel’s development for its delivery systems arsenal. The missile is unique within the Israeli SSM inventory. Compared to Israel’s other SSMs, the Lance has a relatively very short range (130 Kilometers only) compared to for 500 to 750 Kilometers the Jericho-I and between 1500 and 4000 Kilometers for the Jericho-II and almost 4800 Kilometers for the Jericho-III.\textsuperscript{147}

In addition to the limited range, the Lance is a highly mobile missile system. It depends on the M-667 mobile launching vehicle (a variant form the famous M-113 APC) while both the Jericho-I, Jericho-II and the Jericho-III are reported to be, generally, large missile that require fixed launching pads. It is even reported that these missiles have their launching pads housed in large concrete silos buried deep under the ground.

These facts and the sale, in itself, were highly interesting and led to many speculations within the literature. The most widely presented and accepted explanation was that Israel opted for buying an American-built SSM as a means for overcoming the difficulties it was facing developing and deploying its own SSM (the Jericho-I) especially that the French have ended their technical support.\textsuperscript{148} Yet, this seems implausible as newly published information reveal that Israel was able to continue developing the missile and deploying it by 1971.\textsuperscript{149}

It could be claimed that the Lance purchase was greatly influenced by the course of the 1973 War. During the war, Israel faced a dramatic situation in which its forces were, especially during the first days of the war, overwhelmed by


\textsuperscript{149} Israel’s Missile Chronology, Nuclear Threat Initiative (NTI) Website, http://www.nti.org/e_research/profiles/Israel/Missile/3571_6330.html
quantitatively superior forces. The IDF was unable, for a while, to dominate the battlefield using its usual combination of armor and airpower. The Israeli armed formation were kept at bay, at least at the early stage of the war, by the heavy use of Anti-Tank Guided Missiles (ATGM)s, while the IAF was partially neutralized by the effective SAM and AAA networks present in the battlefield and around the main targets; and in the case of Egypt all along the Suez Canal and, thus, covering the whole front. Ultimately, the IDF was able to break this tactical impasse and recover large tracts of the Golan Heights in the North and crossing the Suez Canal and encircling, in the process, the Egyptian 3rd Army in the South, but these successes were at a great cost for the IDF as it sustained heavy losses both in personnel and equipment.

Thus, it is plausible to believe that Israel thought of developing a tactical nuclear capability as a means of stopping large masses of armor on the tactical level as a last resort if its conventional forces fail to keep the enemy at bay. In this case, the Lance missile, that were only capable of carrying tactical nuclear warheads, was sought to act as a tactical mean for creating a tactical nuclear shield against an overwhelming conventional attack. This represents a dramatic development in the history of the development of the Israeli nuclear strategy. As, from that time on, the Israeli nuclear deterrent acquired a tactical role in the battlefield (as a last resort weapon) beside its role as a strategic deterrent and as a last resort weapon to defend Israel against an all-out Arab attack.

What enforce this conviction are the characteristics of the Lance system. As mentioned earlier the warhead is relatively small (450 Kilogram) and the range is limited to 130 Kilometers which clearly puts the weapon in the tactical category. It will be best suited to deal with large force concentrations, rear logistical support areas
and battlefield command centers rather than mounting long rang strategic strikes against large population centers; making the system very similar to the ex-Soviet built FROG-7 missiles (which was used by the Syrians, albeit with conventional explosives, during the October War for pounding several Israeli targets).

It is of no doubt that Israel believed that the Lance could serve as a dual purpose weapon capable that could be used as a long range tactical missile (employing it in fashion similar to that of the Syrian and Egyptians using their FROG-7 and R-17E (SS-1 SCUD) missiles respectively) and/or a means to bombard large troop concentrations; when fending-off an attack conventionally fail.

To conclude, it could be said that the tactical role of the Israeli nuclear weapons is a natural evolution of the Israeli nuclear strategy in light of the events of the 1973 October War and the general trend by the world’s major nuclear powers (at the time) to employ nuclear weapons on the tactical level.

**The Submarine: The Ultimate Addition:**

By the end of the 1990s, Israel ordered three 1,925 ton Type 800 Dolphin class submarines from Germany and by mid the year 2000 all of the three submarines were delivered to Israel. Later on and in 2006 Israel ordered another two submarines from the same class. These represent the state-of-the-art in diesel-powered submarines.

Using a highly advanced propulsion system that combines a conventional diesel lead-acid battery system and an air-independent propulsion system used for slow, silent cruising, with a fuel cell equipped with oxygen and hydrogen storage, the submarine can remain submerged for a very long time without the need to surface to re-charge them its batteries.150

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Additionally, the new submarines, which are larger than the old Gal class submarines previously operated by the Israeli Navy, have a very long range which allows them to operate at great distances from their home ports; and thus only limited by the supply of food needed for the crew. Furthermore, the submarines enjoy a vastly improved set of weapons to be used in combat. This includes six 533-millimeter torpedo tubes suitable for the 21-inch torpedoes that are normally used on most submarines. It even believed that the submarines are equipped with a total of ten torpedo tubes (six 533-millimeters and four 650-millimeters)\(^1\). This is augmented by the capability of launching the sub-surface-to-surface version of the famous US-built Harpoon missile. This version is capable of traveling at a very high subsonic speed of up to 130 Kilometers carrying a 227 Kilogram warhead that could be used against vessels and/or different surface targets\(^2\).

Most importantly, the submarines are capable of carrying and launching the 1500 Kilometers Popeye Turbo Submarine Launched Cruise Missile (SCLM). And though not enough information is present in the open literature about the specific performance of missile and/or its capabilities, it is generally believed that Israel that the missile is an offshoot of the famous AGM-142 Popeye Air Launched Cruise Missile (ALCM) developed by the Israeli arms industry for the IAF. The missile is said to have been tested by Israel in May 2000 in the Indian Ocean off the Indian Coast\(^3\).

Though it is never possible to verify the information present in open sources, it could be said that Israel’s capabilities in developing and deploying advanced cruise missiles could not be doubted. Israel is known to have an advanced infrastructure in


\(^{152}\) Israel – Submarines, GlobalSecurity.org, [http://www.globalsecurity.org/wmd/world/israel/sub.htm](http://www.globalsecurity.org/wmd/world/israel/sub.htm).

the field of developing and building advanced weapon systems. Consequently, it could be generally assumed that Israel enjoys the capability of deploying advanced such an advanced SLCMs and using it conjunction with its submarine force; creating, what could be labeled, as a roaming nuclear deterrent. It was even suggested on the website of the Federation of American Scientists (FAS) that the Israeli Navy adopts a unique system of rotation that entails keeping two of the vessels at sea (one in the Red Sea and Persian Gulf and the other in the Mediterranean), while the rest remain in the submarines' homeport on standby\textsuperscript{154}.

This submarine based nuclear deterrent resembles, albeit on a smaller scale, the American and the former Soviet seaborne nuclear deterrent used extensively during the Cold War years. This similarity is based on using the similar operational concepts. Both the United States and the former Soviet Union, as Israel at the moment, believed that a roaming a nuclear deterrent would be, to a great extent, immune from a preemptive strike.

**Combining Delivery Systems:**

Robert E. Harkavy wrote in 1977 that the development of a viable delivery system, capable of survival, penetration and with a sufficient range is a critical factor in the Israeli nuclear program\textsuperscript{155}. This still holds till that day. Israel sees its nuclear weapon as a last resort weapon and, thus, is greatly occupied by its ability to preserve it. For that, Israel, currently, depends on a highly sophisticated three tier delivery system that resembles that deployed by the Superpowers during the heyday of the Cold War.


This three tier system is based on: 1- the IAF, 2- the Israeli missile force, and 3- its Dolphin Class submarines. For the first: the IAF depends on its large arsenal of advanced fighters and fighter-bombers, the second consists of the Israeli missile force, which is composed of the Jericho missiles family (Jericho-I, Jericho-II and the Jericho-III) and the Lance missiles, and, third and foremost, the combination of Dolphin Class submarine and Popeye Turbo SLCMs.

Originally, Israel relied on its formidable air force as its primary mean for delivery its nuclear deterrent; relaying on the American-built F-4E Phantoms, A-4 Skyhawks and the indigenously built Kfirs. This continued even as Israel developed its missile force and augmented it with the Lance missiles. At the time, it was thought that the missile force will complement the Israeli Air Force and, even, replacing it when the IAF is unable to penetrate the enemy airspace (as shown during the 1973 October War) to conduct a nuclear strike.

The concept further evolved during the late 1990s for two reasons. First, Israel, as it is today, feared the possibility of facing a nuclear Iran and second, the danger of facing preemptive strikes that would wipe out Israel’s missile and air forces. The rationale was based on the fact that Israel’s limited area provides little space of deception and concealment. The Israeli missile bases could be easily located via active and effective reconnaissance and spying operations, while the IAF inventory is housed in relatively small number of fairly known airbases. These (missile storage and launching sites and airbases) are not immune from obliteration even if active and passive defensive measures are widely used. And if this happens, Israel will be unable to conduct a nuclear retaliation.

This scenario led to the introduction of the sea deterrent. It is believed that a submarine equipped with sufficient number SLCMs and roaming out in the open
waters would be safe back-up for Israeli nuclear deterrent. The submarines, according to that doctrine, will be able to act as a mobile launching pad that could launch its missiles away from the forces of the potential enemies and/or their defensive shields. Additionally, the submarines will be able to grant Israel the ability to strike very faraway targets that lay way beyond the range of its missiles and/or aircraft, while being relatively secure from crippling preemptive strikes.

In this respect, the Israeli three tier delivery system is designed to be immune from most of the possible scenarios for a preemptive strike. It is designed to keep Israel’s Samson option credible and effective in most of the cases and capable of withstanding any possible strikes. This concept of combining various delivery systems and keeping them in active military duty is similar to the concept developed and used by other nuclear powers. It is known that nuclear armed states tend to combine various delivery systems to preserve their nuclear deterrent. This stands true both for lower tier nuclear powers, such as India and Pakistan which depends on their air forces and missile capabilities, and upper tier nuclear powers, such as the United States which depends on a combination of submarine and land based missiles.
Part 2: Israel’s Changing Strategic Environment and the Utility of its Nuclear Deterrent
Introduction:

An analysis of the Israeli strategic environment will reveal that it is currently dominated by threats originating from Non-State Actors (NSA)s, which tend to depend on asymmetrical forms of warfare. This is evident from the fact that most, if not all, of the recent Israeli efforts (either overt or covert and by political or security means) are directed towards combating the security threats originating from movements such as Hezbollah, the Islamic resistance movement (Hamas) and a large spectrum of Palestinian armed groups working from the occupied Palestinian territories and/or neighboring states; this fact was manifested in the 2006 War in Lebanon in which Israel went to war against Hezbollah (a non-state actor par excellence) and in the military operations against Hamas in the Gaza Strip, which, ultimately cumulated in Operation Cast Lead.

This sort of dominance, of NSAs using asymmetrical forms of warfare on Israel's security environment, is enforced by the relative absence of state-centered security threats. However, it should be mentioned that state-centered security threats should not be totally discounted, but rather dealt with in the appropriate context that takes into consideration the political, strategic and economic changes that took place in the Middle East: changes that placed NSAs, using asymmetrical forms of warfare, as Israel's main security threat and placed states in a secondary, less threatening, status.

In fact, the rise of the non-state actors was a product of a two complicated and simultaneous processes. The first of them is related to the relative decline, in importance and potency, of state-centered security threats. This decline was a result of various interrelated political, strategic and economic factors; something that will be treated in more length in the coming part.
The second process is, basically, the rise of non-state actors, depending on asymmetrical forms of warfare, to be Israel's main security concern. This process was, in itself, a byproduct of the, relative, fall of state-centered security threats. Actually, as states grew more incapable, and in some cases unwilling, to face Israel in regular symmetrical combat, non-state actors, using asymmetrical warfare methods, took the burden of fighting Israel; something that led some Arab states (namely Syria) and Iran to support non-state actors as a means to fight Israel in an indirect way\textsuperscript{156}. This is well illustrated by the case of Hezbollah which started as a movement aiming at fighting the Israeli occupation of Southern Lebanon and, in the process, received generous Syrian and Iranian support as a means to fight Israel in an indirect way.

The next part (chapters 4 and 5) will be devoted to describing these two processes in detail. The first part (chapter 4) will deal with the demise of the state-centered security threats (including a discussion of the so-called Iranian threat) and investigate the reasons behind that and whether it was due to various national, regional and international factors or, as Max Boot, claims solely rests on Israel's superior organizational and bureaucratic skills\textsuperscript{157}. The second part (chapter 5) will deal with the rise of non-state actors as Israel's main security concern and how did that render the Israeli nuclear arsenal and its associated operational doctrine of diminutive strategic usefulness.

\textsuperscript{156} It should be mentioned that Iran represents a very special case in the current Israeli security environment as it is a state that tends to confront Israel indirectly via supporting non-state actors.

Chapter 4

Israel’s New Strategic Setting: The Fall of State-Centered Security

Threats
Introduction:

Historically, states were the primary – if not, in some cases, the sole – threat facing Israel. This could be easily illustrated by the role the states played in the armed conflicts that raged between the Arab states and Israel between 1948 and 1982. The Arab states (namely Egypt, Syria, Iraq and to a much lesser extent Jordan\textsuperscript{158}) constituted the bulwark against Israel till, roughly, 1982. And thus Israel's security efforts were, mainly, directed to counter this state-centered security threats.

This was evident in Israel's efforts to develop a nuclear weapon and the associated means of delivery as a means to deter the Arab states. Additionally, Israel's armament efforts, whether in form of purchasing weaponry, creating new units and devising new tactics, were conducted with the aim of waging a symmetrical-kind of warfare against a state-originated security threat.

Moreover, the main military endeavors of Israel were regular symmetric military activities against the surrounding Arab states; best demonstrated by the five major wars between the Arab states and Israel in the years 1948, 1956, 1967, 1973 and finally in 1982. Not to mention the many border clashes and various semi-wars; this specifically applies to the cross border raids conducted directly or indirectly by Arab states between 1948 and 1955 and to the military operations on the Egyptian front between 1967 and 1970 (including the famous War of Attrition in the years 1969-1970). In all of these wars, the definition of symmetric warfare could be easily qualified as it was a clash between the different Arab armies and the Israeli Defense Forces (IDF); similar armies (in terms of force structure, weaponry and tactics) facing each other in a conventional combat environment. In this respect, symmetric warfare could be viewed as the clash between two conventional adversaries in intense and

\textsuperscript{158} It should be also mentioned that other Arab states (such as Algeria) contributed on sporadic, less systematic and dedicated bases to the Arab military effort against Israel.
violent battles\textsuperscript{159}. Additionally, symmetric operations involve the engagement of similar military forces in force-on-force warfare\textsuperscript{160}.

Based on the above mentioned description of symmetrical warfare, it could be fairly claimed the 1982 War in Lebanon (Israeli codename Operation Peace in the Galilee) was the last real symmetrical conformation between Israel and an Arab state (Syria in that case). It was a conflict in which the Syrian Armed Forces faced the IDF in intense symmetric battle that saw the usage of similar types of weapons (i.e. tanks, jet fighters, anti-tank and anti-aircraft weapons) depending on similar patterns of deployment and combat tactics. It was the last dedicated, state-executed, Arab military effort aimed at countering Israel's policies and actions.

In the aftermath of the of the 1982 War, the Arab states ceased to constitute a credible threat against Israel as their military activities reached a grinding halt. This said, it should be mentioned that the Iraqi missile campaign against Israel during the 1990-1991 Second Gulf War should, by no means, counted as part of the Arab military effort against Israel. This stems from two factors. The first of them is that the missile campaign was a mere part of a larger bombing campaign launched by Iraq against Israel and the Arab Gulf States. Thus, it was not, by any means, directed solely against Israel and/or aimed at countering any of its actions. Second: the campaign was not countered by Israel which refrained from conducting any military actions; though this was a direct result of the political pressure exerted by the United States and the deployment of American MIM-104 Patriot ABM missile batteries to counter the Iraqi Scud missiles.


\textsuperscript{160} Ibid.
Finally, it should be said that Iran represents a very special case in Israel's current security environment. The uniqueness of the Iranian case stems from the fact that it is not a regular kind of state-centered security threat. This is based on two factors: (1) Iran's geographically distant location from Israel which limits its ability to confront Israel directly and influence the type of conflict between them and, (2) Iran's unique strategy in confronting Israel (proxy war strategy). Therefore, it could be claimed that the Iran does not fit in the category of regular state-centered security threats.

The Decline of the State-Centered Security Threats:

The state-centered security threats, that were facing Israel, mainly stemmed from the major Arab ring states (namely Egypt and Syria), and to a lesser extent Jordan, and from the contributions of other Arab states, such as Iraq which had a long history, though not always effective, of involvement in the Arab-Israeli conflict via committing large numbers of troops and military assets.

In fact, and in light of the historical experience of the Arab-Israeli wars, it is plausible to claim that Egypt, Syria and Iraq were the most involved in the conflict in its military side. Historically, these three states were involved in almost every war taking place between the Arab states and Israel; Egypt participated in every military confrontation since 1948, except for the 1982 War in Lebanon, and Syria took part in every war except for the 1956 Suez War and, finally, Iraq sent large armored and air assets to support the Arab military efforts in the wars of 1948, 1967 and 1973.

Moreover, these states bore most of the casualties in manpower and losses in equipment during the Arab-Israeli wars. Consequently, it could be fairly claimed that, the state-centered security threat facing Israel mainly originated from the above mentioned states; and thus when we talk about the demise of the state-centered threat
facing Israel then we are talking about the decline of threat stemming from these states. Finally, it should be said that the so-called Iranian security threat is not the kind of regular state-centered security Israel used to face due to various factors that will be explored in this chapter.

**The Rise and the Fall of the Egyptian Threat:**

For almost 30 years, between 1948 and 1978, Egypt constituted a major security threat to Israel; the first date marking the Egyptian participation in the first Arab-Israeli war and the second marking the signing of the Camp David Accords.

The Egyptian intervention in the Arab-Israeli conflict was kicked off when a large Egyptian a large expeditionary force entered, what was back then known as, mandated Palestine. The reasons for the early Egyptian involvement are varied. Yet, it is of no doubt that the Egyptian monarchial regime recognized the geo-strategic threat facing Egypt with the creation of a new hostile state on Egypt's Eastern frontier. Nevertheless, it should be mentioned that, at the time, there were sharp disagreements within the Egyptian regime about the most suitable means to counter the emerging Israeli threat: either via a direct military intervention or indirectly by supporting the Palestinians military effort. Further more, the Egyptian monarchy perceived the war as a special opportunity to enhance its Arab credentials\(^{161}\).

Egypt initially sent around 10,000 troops to take part in the military campaign in Palestine. Later on, the Egyptian forces were boosted to 20,000 soldiers. During the early stages of the conflict, the Egyptian army was able to score some success, yet, by the end of it the Egyptian forces were encircled in three separate and unconnected positions: including the famous Faluja pocket\(^{162}\).

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\(^{162}\) Ibid., 163 and 164.
The Egyptian military participation in the conflict officially ended with the signing of the Egyptian-Israeli Armistices Agreement on the 9th of January 1949; which came as a part of the several similar agreements signed between the different belligerents (with the exception of Iraq). Though being a complete military failure, the Egyptian military participation in the 1948 War baptized Egypt's long and bloody commitment to the Arab-Israeli conflict.

The signing of the Egyptian-Israeli Armistice Agreement did formally end the 1948 War for Egypt, but it did not entail that the demarcation line ceased to be a site for various border incidents. In fact, and roughly till 1955, the border areas, especially near the Gaza Strip, were a scene of numerous cross-border incidents in which Arab infiltrators crossed the borders and attacked targets inside Israel. In it is interesting to note, however, that these incidents were motivated by a variety of reasons that ranged from the desire of some Palestinians to re-appropriate their belongings and/or taking revenge. Additionally, many clashes resulted from the terms of the Armistice Agreement which identified De-Militarized Zones (DMZ) but failed to identify who would be the sovereign on them.\(^{163}\)

The consequent Egyptian military build up, that was symbolized by Czech arms, deal represented (from the Israeli point of view) a great security threat that it had to work hard to neutralize; it should be mentioned that the Czech arms deal provided the Egyptian army with relatively advanced weapons by the Middle Eastern standards at the time.\(^ {164}\) In fact, Israel's desire to carry out a devastating blow to the Egyptian armament efforts was one of the factors that motivated it to participate in the

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164 The deal provided Egypt with 100 MiG-15s and MiG-17s, which were considered to by one of the top notch Soviet fighters at the time. In addition, to the Il-28 jet light bombers which were a great leap forward to the Egyptian bomber force which depended, at the time, on second hand and obsolete World War II vintage Lancaster bombers. Moreover, Egypt received T-34-85 tanks, BTR-152 APCs and torpedo boats.
1956 Suez War; beside, of course, the French promise of nuclear technology as mentioned earlier in chapter 3.

The Israeli concern about the perceived Egyptian military power was, again, proved in the 1967 Six-Day War. The Israeli was plans were centered on Operation Mocked, which mainly aimed at destroying the Egyptian Air Force. Later on during the conflict, the Israeli forces gave great priority to military operation on the Egyptian front. The disastrous Egyptian defeat did not completely end the Egyptian military threat to Israel. Between 1967 and 1970 the Egyptian front was Israel's most violent borders; though perceived by the IDF as most secure due to the presence of the Suez Canal and, later on, the Bar Lev defensive line. The dedicated and long term Egyptian military effort to harass the Israeli military presence in Sinai in covert and overt manner proved costly for Israel as it lost roughly 1,424 soldiers and hundreds of pieces of equipment; making the Egyptian front the bloodiest for Israel.

Again in 1973 Egypt would prove to be a major security hassle for Israel. For the Israeli defense planners, a Syrian attack on the Golan Heights may have been probable, yet an Egyptian attack across the Suez Canal was deemed impossible due to the presence of the Suez Canal and the Bar Lev defensive line. Thus, when the Egyptian army was able to cross the Suez Canal and advanced into Sinai, the Israeli command was in a state of complete confusion. And though the war was conceived, by some, as a partial move within a grand Egyptian strategy to regain Sinai, it presented Israel with the most serious military threat it faced since its creation in

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166 The term defensive line is used to keynote the type of the well-connected and, almost, continuous line of fortifications Israel constructed on the Eastern shore of the Suez Canal.
1948; a fact represented in the level of human and material losses incurred by the IDF. This was best expressed by Martin Van Creveld when he described the October 1973 War as the "most difficult and costliest ever fought by the IDF\textsuperscript{169}\textsuperscript{n}. Afterwards, and up until the signing of the Egyptian-Israeli Peace Treaty in 1979, a large portion of IDF troops, especially its elite armor and infantry units, were reserved to face any possible Egyptian attack\textsuperscript{170}.

The 1979 Egyptian-Israeli Peace Treaty set in motion several factors that effectively ended the Egyptian threat to Israel. In fact, the treaty greatly curtailed the Egyptian military freedom of action in Sinai via placing a progressive system of demilitarization and security measures. Additionally, and via indirectly opening the way for Egypt to receive a substantial annual military aid form the United States, the Egyptian Armed Forces, and to an extent Egypt as a whole, became highly dependent on the United States.

Further more, it is not plausible under the prevailing conditions in the Middle East to see war between Egypt and Israel. This stems from the fact that the current Egyptian regime perceives the Egyptian-Israeli peace as an important strategic asset. It acts as the main raison d'être for the annual US military and dwindling economic aid to Egypt. The annual aid package is of prime importance for the Egyptian regime as it is one of the most important sources for financing the Egyptian military; one of the main bastions and supporters of the Egyptian regime. Additionally, the Egyptian-Israeli peace allows the Egyptian regime to direct most of its focus, efforts and resources to the various pressing domestic challenges, either economic and/or security-related.

\textsuperscript{170} Ibid.
Additionally, it is obvious that there is no national urgency for Egypt to fight Israel; such as an Israeli attack on the Egyptian territory. This is a remote possibility in the current prevailing political circumstances and when Israel regards the peace with Egypt as one of its strategic assets; this could be illustrated by the words of the current Israeli defense minister Ehud Barak who said in an interview that "the peace with Egypt is a strategic asset for Israel." \(^{171}\)

Even if we went on with the assumption that Egypt would be willing to sacrifice the benefits of the current state of peace and go to war (as a result of a regime change and/or political orientation), then Israel would be better equipped, more than anytime before, to face an Egyptian assault. This stems from two main factors. The first of them is related to the current security arrangements in the Sinai Peninsula. The second article of the first annex (dealing with security arrangements) of the Egyptian-Israeli Peace Treaty signed in March 1979 stipulates that Sinai will be partially demilitarized. This is ensured via dividing the Peninsula into three separate zones: A, B and C. The three zones are designated from West to East with progressive levels of demilitarization.

Zone A is bounded on the East by the so-called Red Line and on the West with the Suez Canal and the Gulf of Suez. In this area the Egyptian army is allowed to station one mechanized infantry division so that the main elements of this division will consist of three mechanized infantry brigades, one armed bridge, seven artillery battalions (including up to 126 artillery pieces) and seven Anti-Aircraft Artillery (AAA) battalions including individual surface-to-air missiles and up to 126 anti-aircraft guns. Additionally, Egypt is allowed to station 230 Main Battle Tanks

(MBTs) and 480 Armored Personnel Carriers (APCs). The total force structure should not be more than 22 thousands personal.

Zone B would lay between the Red Line on the West and the Green Line on the East. Egypt is allowed to station 4 battalions equipped with light weapons and wheeled vehicles and the total force structure would not exceed 4 thousand personal. The Multinational Force and Observes (MFO) and the Egyptian civil police are the only forces present in Zone C which is totally demilitarized. In addition, and in accordance with the 2005 Agreement (signed on September 1st in the wake of the Israeli withdrawal from the Gaza Strip), Egypt stations 750 border guard troops armed with light weapons along its 14-kilometers border line with Gaza. Moreover, Egypt is not allowed to station any of its combat aircraft in Sinai and is only allowed to conduct flights with armed aircraft over Zone A.

The above-mentioned conditions mean that the main bulk of the Egyptian army is stationed to the West of the Suez Canal almost 300 kilometers from the Israeli border. This hinders Egypt's ability to build and/or maintain the needed military infrastructure to deploy the Egyptian army into the heart of the Sinai Peninsula. The physical barrier that Sinai constitutes gives Israel an ample early warning time to prepare itself before encountering an Egyptian attack. Moreover, the large tracts of open desert, which the Egyptian forces have to transit before being able to mount an attack on the Israeli hinterland, could be easily turned into a killing ground by the IAF especially that it lacks any sort of air defense capabilities.

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Moreover, it is known that the Egyptian army depends mainly on wheeled support vehicles that are of limited cross country capability, meaning that the bulk of the Egyptian ground forces will have to move via well known routes that could be easily blocked if Israel decides to launch a systemic and high rate interdiction operations; using its air and/or missile capabilities to accomplish that mission. This kind of operation would be even easier in the light of the fact that Egypt's lacks any air defense capability in the Sinai Peninsula. Egypt's formidable air defense network is, at it was during the 1973 War, mainly situated to the West of the Suez Canal.

In regards to nuclear weapons, it is obvious - from the above-mentioned facts - that they would be of little or no use in combat under the prevailing circumstances. Israel is no more under the threat of total obliteration by an Egyptian attack (or an Arab one) that would necessitate resorting to Option Samson. Additionally, and even if a confrontation takes place, Israel's conventional military capabilities would be more than capable of blocking any Egyptian military effort – assuming that would take place in the first place. Not to mention that facing an attack conventionally will bear less political consequences than using nuclear weapons: even if they were equipped with low yield tactical warheads.

Further more, launching a nuclear attack on Egypt's main population centers and/or strategic targets (such as the Aswan High Dam) would not be of a military value since Israel, at the case of war, would be interested in neutralizing the Egyptian military capabilities rather than annihilating a whole country; taking into consideration that if Israel will be able to neutralize the Egyptian military then it would be able to achieve its aim of safeguarding its existence. Finally, and even if Israel plans to attack Egypt's strategic targets (such as the High Dam), this kind of

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missions would be better accomplished using advanced conventional weapons: such as bunker buster bombs\textsuperscript{176}.

The horrendous task of moving a huge land force across the Suez Canal and then to transverse the open Sinai desert, under the threat of aerial interdiction missions, will not be the only obstacles facing any Egyptian military effort against Israel. In fact, the Egyptian armed forces went through a major modernization program which saw its main force structure giving up its old, and now obsolete, Soviet/Russian-made weapons to European and American-built ones.

Now, the Egyptian Air Force (EAF) is no longer dependent on the vintage MiG-21 fighters but rather on the more advanced F-16s, while the Egyptian army has long abandoned old T-54/55s and T-62s as its main combat assets for the more modern M-60s and M1A1s\textsuperscript{177}. The same goes for the Egyptian navy which now depends on the Knox and Perry Class missile frigates and Ambassador MK-III Class missile attack boats. Even older Chinese and Soviet/Russian-built equipment were modernized and equipped with Western, and especially American, made weaponry and electronics: the most prominent example being the Chinese-built Romeo attack submarines which were fitted with the American MGM-84 Harpoon sub-surface-to-surface missiles as its main armament\textsuperscript{178}.

The main exception is the Egyptian Air Defense Forces (EADF) which still depends on old Soviet/Russian weaponry (such as the SA-2, SA-3 and SA-6). The Air Defense Forces received relatively small number of advanced European and American-built weapons (compared to the general number of weapons in its

\textsuperscript{176} The Israeli Air Force (IAF) uses advanced Israeli and American bunker buster bombs with various destruction power; the most famous example being the American–built Guided Bomb Unit-39 (GBU-39).
inventory). And even these weapons are not highly advanced and are of limited capability when facing determined SEAD/DEAD efforts\(^{179}\).

Furthermore, it is known that the Egyptian armed forces still retain large number of older Soviet/Russian, European and American-built weapons within its force structure. This includes around 1000 old T-54/55s and T-62s MBTs, various types of old Armored Personal Carriers (APC)s (such as the BTR-50s and OT-62s) and around 100 MiG-21/J-7s and 100 Mirage-5s fighters and even the antiquated American-built F-4E Phantom II fighter-bombers. Most of the recent assessments tend to view these weapons as a burden for the over whole Egyptian force structure as they are, generally believed, to be unable to face modern threats as they lack needed upgrades in weaponry and electronics. Yet, these weapons may be of a value when facing lesser potent threats that may come from Libya and/or Sudan (despite the inconceivability of these threats at the prevailing political circumstances), but they will be unable to effectively face the modern weapons available in the Israeli arsenal\(^{180}\).

Beside the above mentioned factors, it is of no doubt that in case of an Egyptian-Israeli war, the United States, currently Egypt's main arms supplier, will cease supplying Egypt with ammunition and spare parts. In fact, it could be claimed that in case of an Egyptian-Israeli war, the experience of the post-1979 Iran, when the operational and readiness levels of its American-built weapons fell drastically, will be replicated in Egypt; turning its arsenal of fairly advanced American weapons in inoperable heaps of metal.

\(^{179}\) SEAD/DEAD: Search for Enemy Air Defense and Destroy Enemy Air Defense; are the acronyms given to aerial operations conducted by an air force to wipe out and neutralize the air defense forces of an enemy. Israel is known to have a great experience in such operations and it has conducted, what could be described as, a model operation in 1982 to destroy the Syrian air defense network in the Bekaa valley in Lebanon.

In short, it could be said that the current political and strategic situation puts Egypt out of the list of immediate threats to Israel. In this respect, Egypt is no more a military threat for Israel on both the short and medium terms. Moreover, the demilitarization of Sinai could now be regarded as the best means for defending Israel against any possible Egyptian military attack. This stems from the lack of military infrastructure (including air defense assets) to support and/or defend the deployment of a large military force in the Peninsula.

Additionally, the modernization of the Egyptian army (by introducing American and European weapons) made it more dependent than ever on foreign support to maintain its advanced maintenance-incentive weapons. In this respect, it could be said that even if Egypt decides, in odds to all the prevailing political logic, to launch a military operation against Israel, then it would not be militarily capable of doing so.

In short, the so-called Egyptian threat to Israel was effectively neutralized for various political and military factors that affected Egypt and its armed forces over the past 30 years. The restrain applied on the Egyptian military freewill, due to the above mentioned factors, is Israel's best security measure. Additionally, and as mentioned before, the Israeli conventional edge over Egypt, especially in the quality of its weapons and their, traditionally, high severability rate, ensures that it could bring any Egyptian effort to mobilize and deploy a large military force in Sinai to a grinding halt; steps that constitutes a main prerequisite for any attack on the Israeli hinterland.

**Syria: The Cycle of Military Decline:**

Within the Arab core states, Syria represented the second major state-centered military threat facing Israel. The Syrian involvement in the Arab-Israeli conflict is the longest (compared to other Arab states) as it started in 1948 and lasts, officially, till
the present day; though Syria's last actual military confrontation with Israel took place in 1982\textsuperscript{181}. Additionally, the Syrian army, within those of the Arab core states, was for many years the second most powerful army (in terms of size and types of equipment used).

After the 1948 War (the so-called Israel’s war of independence), The Syrian Armed Forces embarked on a massive arms buildup process. This buildup gained even more momentum as the nationalist tide spread all over the Middle East by the early 1950s, as it opened new sources for arms (e.g. the former Soviet Union).

Naturally, and following the trend set by the famous 1955 Czech arms deal, Syria went along to purchase its needed weapons and military equipment from the former Soviet Union. The former Soviet Union supplied Syria with large quantities of advanced weapons with highly favorable payment conditions. Consequently, Syria was able to accumulate large amounts of weapons in a very short time; for example: by 1958 when Syria and Egypt formed the United Arab Republic (UAR), it possessed around 80 MiG-17 fighters and no less than 200 T-34 tanks, hundreds of Armored Personal Carriers and SU-100 assault guns – very large numbers according to Middle Eastern standards at the time.

By the early 1960s, the Syrian arsenal was even more strengthened by the addition of the more advanced T-54 tanks (around 80) and the mach-2 capable MiG-21F-13 supersonic fighters (around 36); which was, at the time, the most advanced Soviet interceptor in service\textsuperscript{182}. The first batch of these advanced MiG fighters was

\textsuperscript{181} It should be mentioned that over the past three decades Israel conducted several, almost one-sided, attacks against various Syrian targets (such as air defense radars in Lebanon and the famous attack on an alleged nuclear facility). Syria seldom was able to counter these attacks and failed, almost in every case, to respond in kind.

received in 1961, immediately after the dissolution of the ill-fated United Arab Republic (UAR). Comparatively, Syria, as well as other Arab countries, would not have been able to get such large number, of relatively advanced, weapons with such favorable payment conditions from European countries and/or the United States for various reasons that are regrettably beyond the scope of this research.

The Syrian menace to Israel was not only stemming from the large size of the Syrian armed forces and its, relatively, advanced equipment, but also from several strategic factors that enhanced Syria's military position vis-à-vis Israel. The first of them was Syria's geographic location relative to Israel. The Syrian Golan Heights controlled the Feeder Rivers that feed the Jordan River and the Sea of Galilee: both are considered as Israel's main source for fresh water.

As a result, several clashes took place, throughout the 1950s and 1960s, as Israel worked on its project to divert the Jordan River's water as part of building its National Water Carrier: a project that was centered on digging a canal that would transfer water to the Negev Desert with the aim of reclaiming large parts of it. This led the Syrian-Israeli borders to be highly volatile during the 1950s and 1960s - compared to those of Egypt and Jordan - as they witnessed more borders incidents\(^\text{183}\). These included very high profile ones, such as the April 1967 air battle, often cited as the beginning of the escalation cycle that led to the 1967 Six-Day War, which ended with humiliating defeat for the Syrian Arab Air Force (SyAAF) as it lost 6 MiG-21 fighters for shooting a lone Israeli Mirage-III jet.

Second: the Golan Heights are, from a topographic point of view, much higher than the Israeli coastal plains, which contains the highly important port of Haifa with its important naval base and bustling industrial complex; giving Syria, from a military

point of view, a huge strategic advantage. For example: in the case of fighting a
defensive battle (defending the Golan against a possible Israeli attack) the IDF would
have been forced to attack the Syrian army which would be then stationed in its
fortifications on a much higher ground. Moreover, the Syrians could have easily
commanded the whole battlefield (with their artillery) and would have had a full and
unhindered view of it. Nevertheless, and despite these strategic advantages, the
Syrians failed to properly exploit them as they failed to defend the Golan Heights
during the 1967 Six-Day War.

After the 1967 War, Syria, depending on the former Soviet Union, was able to
replace its lost equipment. In fact, the Soviet Union set a pattern in which it would
replace the losses of its allies in the Middle East (Syria included). During the 1973
October War, Syria was able to mount a partially successful attack on the Golan;
inflicting heavy damage upon the IDF before being re-buffed in the second half of the
conflict. Again, Syria was able to easily replace its lost equipment from the Soviet
Union; something that would be repeated again after the Syrian-Israeli encounter in
Lebanon in 1982.

Syria's strategic position entered a slow cycle of decline as Egypt signed its
peace treaty with Israel. This political development ended the prospect of a 2-front
war against Israel and, thus, placed a huge burden on the Syrian military capabilities,
which was then expected to solely face the concentrated efforts of the IDF in any
future conflict. Further more, the decline of the Soviet Union and its ultimate
dissolution, deprived Syria from its sole source of cheap and relatively advanced
weapons. It should be also mentioned the Syria's economic problems prevent it from
buying its needs from the international markets. And as a direct result of these factors,
the Syrian Armed Forces currently suffer from chronic weakness.
Syria's current weakness is well exhibited by the quality of weapons it uses. According to Cordsman, Syria still depends on the quantity of its weapons as a means to offset their low quality. Nowadays, the Syrian arsenal includes around 500 combat aircraft (fighters and fighter-bombers), around 4600 Main Battle Tanks (MBT)s and more than 4000 Armored Fighting Vehicles (AFV)s; the category of the AFVs includes around 700 armored reconnaissance vehicles (such as BRDM-1 and 2) and around 1500 Armored Personal Carries (APC)s (such as the BTR-40, BTR-5, BTR-60 and BTR-152) and, finally, around 2250 Armored Infantry Fighting Vehicle (AIFV)s (such as the BMP-1 and BMP-2).

The above mentioned numbers of weapons may seem to constitute a very powerful fighting force: which it is indeed according to the developing world standards. Yet, a deeper look beyond that paper strength will reveal that the Syrian Armed Forces uses large number of weapon systems that are obsolete. And though these weapons may be of extreme effectiveness when fighting another developing country and/or a country of a small and ineffective military (such as Lebanon), they will be unable to hold on in front of a modern fighting force equipped with top-notch weapon systems (such as Israel).

This is not to say that the Soviet/Russian-built are of deplorable quality, but rather to highlight the fact that Syria is not, for various political and economic reasons, capable of upgrading its arsenal. For example, the Syrian Arab Air Force (SyAAF) still retains around 150 MiG-21s, 80 MiG-23s and around 30 MiG-25s fighters, while its strike squadrons depends on obsolete ground-attack versions of the MiG-23s, Su-20/22s and the relatively advanced Su-24. These combat aircraft are obsolete. Yet, a deeper look beyond that paper strength will reveal that the Syrian Armed Forces uses large number of weapon systems that are obsolete. And though these weapons may be of extreme effectiveness when fighting another developing country and/or a country of a small and ineffective military (such as Lebanon), they will be unable to hold on in front of a modern fighting force equipped with top-notch weapon systems (such as Israel).

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more than three generations old as they were developed during the 1960s and 1970s and lack modern avionics, target acquisition systems and weaponry.\textsuperscript{186}

Even the relatively advanced MiG-29 fighters (around 20 in total), which constitute the modern core of the SyAAF fighter squadrons, are a 1980s vintage down-graded export version of the famous Soviet/Russian fighter. They lack advanced electronics and weapons to make them capable of countering the IAF’s modern F-15s and F-16s\textsuperscript{187}. This was proved, when, in 2001, 2 IAF F-16s shot down 2 Syrian MiG-29s over the Mediterranean\textsuperscript{188}. Not to mention the appalling record of Iraqi MiG-29s (which are similar to these supplied to Syria) against the USAF fighters (which are similar to that used by the IAF) during the Second Gulf War 1991-91\textsuperscript{189}.

The same could be said about the various branches of the Syrian Armed Forces, the Syrians still depend on large number of older models of Soviet/Russian tanks. Their most advanced, the T-72, is now relatively obsolete as it was proved in various conflicts, including the 1982 War in Lebanon and the Second Gulf War, in which the T-72s were easily knocked out by more modern tanks that were equipped with more advanced target acquisition system and longer range cannons\textsuperscript{190}.

The lack of advanced weaponry is not the only reason behind Syria's apparent military weakness. In fact, a closer look at the structure of the Syrian Armed Forces will reveal that it suffers, as it is the case with most of the other Arab armies, of high


degree of politicization. The level of politicization varied in accordance to the level of threat facing Syria by which the pre-1973 War phase witnessed the least level of politicization which started to rise again especially after the 1982 War in Lebanon.

More importantly, the Syrians greatly lag behind their main foe (Israel) in the field of training. In his comprehensive study about the modern Arab armies, Pollack states that Syria's military training is not up to the standard as it emphasizes set-piece operations. He, also, points out that Syria lacks the number of qualified personal to man and well maintain all its weapons: citing that the SyAAF suffers from the lack of qualified pilots which puts the pilot-to-aircraft ratio at 1 to 2: meaning 1 pilot for every 2 combat jets.

The above mentioned facts clearly reveal that Israel enjoys a great qualitative superiority over Syria. This current qualitative edge is further enforced by the Syrian inability to embark on a massive program to modernize its army due to its economic difficulties. These economic difficulties hinder Syria's ability to purchase the needed weaponry to modernize its army and replace the large number ageing weapons in its arsenal. It is estimated that Syria needs to replace/modernize around 500 aircraft and 4,000 tanks.

Further more, it should be noted that after the demise of the former Soviet Union (and with it the generous Soviet military aid to Syria), Syria was not able to sign any major arms deals with Russia – still its principle arms supplier. In fact, Syria signed very small number of arms deals that did not feature the sale of any main

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191 Politicization means that promotions are done on the bases of loyalty to the regime rather than actual competence.


193 Ibid.

194 Ibid.

weapon system, but were rather focused on supplying Syria with 9K115-2 Metis-M (AT-13) and 9M133 Kornet-E (AT-14) Anti-Tank Guided Missiles (ATGMs) and other types of light weaponry\textsuperscript{196}. Even when both Russia and Syria were discussing the possible sale of more advanced weapons and a wide-ranging upgrade of the Syrian armor, air defense and air assets, the talks failed due to disagreements over the prices and payment schemes: with the most famous example being the 1996 draft agreement for the sale of $2 billion of arms\textsuperscript{197}.

In it is even interesting to note that Moshe Arens, who served as the Israeli ambassador to the United States and, later on, as a minister of defense, advocated in 1998 the notion that the Syrian army had ceased to pose a serious threat to Israel as Syria's economic woes prevent it from undertaking the necessary upgrade programs to keep its army as a credible fighting force\textsuperscript{198}.

Therefore, Syria's conventional military weakness works as a security measure for Israel. In addition, Israel has the capability of quelling any Syrian attack to conquer the Golan using its conventional army - as it did in 1973 when its forces were able stop the Syrian advance and counter-attack taking even larger tracts of land. Contrary to 1973, Israel now is much better equipped that it was back then. Furthermore, and as shown earlier, the possibility of facing a 2-front war is nullified as a result of the Egyptian-Israeli Peace Treaty, which means that Israel will be able to concentrate its forces on just one front. Thus, Israel's superior conventional capability coupled by the inherent structural weakness of the Syrian military and the economic woes facing Syria, which are not foreseen to change in the coming years, are the ultimate guarantee for Israel's security vis-à-vis Syria.

\textsuperscript{196} Ibid., 81.
\textsuperscript{197} Ibid., 80.
\textsuperscript{198} Ibid., 124.
This Syrian inferiority is well recognized by the Syrians and it is evident from the lack of any military activity on the Golan front over the past 30 years. Finally, it would be safe to claim that one of the main reasons promoting Syria to support Hezbollah is its desire to face Israel in an indirect and an asymmetrical form that would save it the consequences of facing Israel in a direct confrontation\textsuperscript{199}.

It should be also mentioned that Syria is working on developing a large arsenal of SSMs (such as the Scud C and D), complete with a wide array of chemical and biological warheads. Syria believes that these missiles would be the most suitable means to penetrate the advanced Israeli air defense network and inflict damage on Israel's hinterland; eventually, creating, the long needed, military balance between the two adversaries. Yet, it should be mentioned that SSMs are by no means a substitute to conventional military power as they cannot, solely, compensate for Syrian's chronic military weakness\textsuperscript{200}. This stems from the fact that Syrian SSMs are believed to be of deplorable accuracy as they are based on old Soviet technology (that of Scud missiles and its offshoots). Moreover, these SSMs could be easily countered via Anti-Ballistic Missile (ABM) defense network; something that Israel already developed via fielding a defensive shield based on combination of the American-built MIM-104 Patriot missiles and the Israeli-built Arrow (ABM) missiles.

**The End of the Iraqi Threat:**

The 2003 war on Iraq was a great turning point for Israel’s security posture. This stemmed from two interrelated factors. The first of them is the total destruction of the Iraqi military power or actually its total annihilation in 2003. The second is the demise of the former Iraqi regime and its political order. The two above-mentioned factors are greatly interrelated. The former Iraqi regime was keen on developing Iraq's

\textsuperscript{199} Ibid., 125.
military power and it had the ideological motivation and the political will to actively employ it against Israel.

The former Iraqi political regime was one that forwarded the cause of Arab nationalism and vocally listed Israel as one of its greatest enemies. The regime's *Bathist* doctrine, which was secular in nature, perceived Israel as a mortal danger to the Arab states and one of the major roadblocks facing the cause of Arab nationalism and, on the long term, forming a union between various Arab states. This ideological base affected the regime's rhetoric and, often, formed the bases of its foreign policy towards Israel and its allies.

This is not to say that the Iraqi regime was not willing at some points of forgo its ideological rhetoric to achieve specific foreign policy goals. This was evident during its long and destructive war with Iran. The Iraqi regime overlooked its feverish opposition to Egypt (in the aftermath of signing the Egyptian-Israeli peace treaty) to get ammunition, spare parts and weapons that it terribly needed. Moreover, it (the Iraqi regime) disregarded its anti-American stances and established a highly beneficial relation with the United States; as the United States provided Iraq with, much needed, assistance to quell the Iranian military attacks.

Yet, and despite these very short periods of *realpolitik*, the Iraqi regime remained committed to its anti-Israeli stands. For Israel, Iraq represented a very special case. Its regime did not only use political rhetoric and take foreign policy stands that were feverishly against it (Israel), but was also willing to commit its military assets to the Arab-Israeli conflict. This Iraqi military commitment – and in contrast to that of other non-confrontation Arab states – was far from symbolic as Iraq
sent, at times, almost one-third of its armed forces to the front\(^\text{201}\). More importantly, these forces were not only large in numbers but also played a significant role in combat; the most prominent example being Iraq's intervention on the Syrian front during the 1973 War which helped relieving the battered Syrian army.

This Iraqi commitment was repeatedly demonstrated in almost every major armed conflict between the Arab states and Israel between 1948 and 1973. In the 1948, Iraq sent a large expeditionary force to fight in the West Bank with the Jordanian Arab Legion. Though their record was generally mixed, their actual participation lent a great service to the overstretched Arab Legion as it helped it control the vast areas of the West Bank which threatened by the IDF\(^\text{202}\). Interestingly, it should be also mentioned that Iraq, among the Arab states that participated in the 1948 War, was the only one not to sign a truce agreement after the end of hostilities in early 1949.

This fact is easily explained by Iraq's geographical position. Iraq is situated on the far Eastern end of the Arab World with no direct borders with Israel. Therefore, Iraq simply ended its participation in the conflict by simply withdrawing its forces from the front. Moreover, having no direct contact with Israel, Iraq enjoyed taking radical stands without fearing from an Israeli reaction\(^\text{203}\). On the other hand, it should be mentioned that, this geographical farness meant that Iraq's military actions were, to a great extent, dependent on the willingness of core Arab states to provide it with the support needed to engage Israel militarily.

\(^{203}\) It should be said that Iraq's relative immunity - due to its geographical location - from Israel's military actions have greatly diminished over time, as Israel developed its air and missiles capabilities via acquiring advanced long range fighters, air-to-air refueling capability and fielded long range surface-to-surface missiles.
Iraq's participation in 1967 Six-Day War was limited: compared to its role in the 1948 conflict. This was evident from the fact that Iraq did not participate in the ground fighting and its contribution was, mainly, limited to scattered and uncoordinated operations by its air force. Pollack argues that the failure of Iraq to actively participate in the fighting, though its 3rd Armored Division was deployed to Eastern Jordan, is due to the rapidity of the Israeli offensive and Iraq's severe readiness problems 204.

The Iraqi contribution to the Arab war efforts was, thus, limited to minor air operations that could not be accounted for as a dedicated air campaign. On the 5th of June 1967, Iraqi Tu-16 heavy bombers (NATO codename Badger) penetrated the Israeli air space and conducted a fruitless bomb run 205. It is claimed that at least one of the bombers were shot down by Israeli Anti-Aircraft Artillery (AAA) over Afula 206. In reaction to that attack, the Israeli Air Force (IAF) conducted a long-range raid against the H-3 airbase in Iraq; the base the Western foremost airbase in Iraq and is the nearest to Israel and was the launching pad for the Iraqi Tu-16 bombers that attacked Israel. The aerial attack soon developed into a full-fledged air battle in which the Iraqi Air Force (IrAF) is believed to have lost around 21 fighters (destroyed on the ground and/or shot down) for shooting down two or three Israeli Mirage III fighters 207.

The 1973 October War (Yum Kippur War) witnessed an upsurge in Iraq’s military activity against Israel. Iraq participated in the conflict on both the Egyptian and the Syrian fronts. In Egypt, the IrAF deployed its 1st squadron (made up of

205 Ibid.
Hawker Hunter F.Mk.59 ground attack fighters) which flew numerous ground-attack and close air support missions; this unit proved to be extremely potent due to its high serviceability rates and the skill of its pilots\textsuperscript{208}. It is believed that Iraq lost in the process a dozen of its deployed fighters\textsuperscript{209}.

On the Syrian front, Iraq sent a large contingent of its ground forces to support the Syrian war effort. It is estimated that by the end of the conflict the Iraqi expeditionary force consisted of 60,000 men, 700 tanks, 500 APCs and over 200 artillery pieces\textsuperscript{210}. Additionally, Iraq sent some of its Su-7, Hunter F.Mk.59 and MiG-21 units to Syria to support the SyAAF/ADF\textsuperscript{211}. The Iraqi units held the brunt of the military operations in the second half of the war; especially after the Syrian forces incurred heavy casualties in the Israeli counter-offensive. The Iraqis were able to fend off some of the Israeli attacks - sustaining, as a result, heavy losses\textsuperscript{212}. This military activity was of a great help to the Syrian army that suffered major setbacks because of the Israeli counter-offensive that started on the 9\textsuperscript{th} of October 1973.

Iraq's was then consumed in its efforts to counter the Kurdish rebellion and its long and destructive war with Iran. This meant that military confrontations between the two states were almost non-existent throughout the 1980; except for a single high profile incident: the Israeli bombing of the Iraqi nuclear reactor in 1981. Israel's attack on the Iraqi nuclear reactor was intended to bring, what was then a fast moving Iraqi nuclear program, to grinding halt; something that is consistent with Israel's strategy of monopolizing nuclear weapons in the Middle East (as explained before in chapter 3).

The attack was a complete success as the IAF was able to knock-out the reactor and destroyed its facilities completely. It should be also mentioned that it is alleged that Israel secretly provided Iran with detailed information about the Iraqi nuclear reactor with the intention of prompting it (Iran) to knock-out the facility; something that Iran eventually tried but failed to achieve\textsuperscript{213}. This information and the eventual Israeli attack highlight not only Israel's policy of monopolizing nuclear weapons in the region, but also its willingness to employ its military capabilities to halt Iraq's military development – which, in return, highlight the level of threat Iraq used to present for Israel.

Fast forward and in the 1990-1991 Second Gulf War, Iraq launched around 39 indigenously upgraded Scud missiles on Israel. In fact, the Iraqi Scuds were of meager destructive power and caused little damage. The original Scud missiles delivered to Iraq were of very short range and were highly inaccurate. To be able to strike the Iranian cities during its long eight-years with Iran, Iraq embarked on massive and highly ambitious project to modernize and upgrade its Scud missiles. The main aim was to increase the range of the missiles to be able to reach the Iranian main population centers. As a result, the Iraqis worked on developing smaller warheads to increase the capacity of the missile fuel tanks, and thus its range\textsuperscript{214}. Therefore, the Iraqi missiles were able to reach Iran and Israel, yet unable to achieve any significant damage that could be of military value.

Yet, the significance of these missile attacks were not in the amount of actual damage that they could cause but of in its physiological effect. These attacks symbolized Iraq’s willingness to use its outmost military capabilities against Israel. Additionally, it was the first time, roughly since 1948, for Israeli civilians to witness a

\textsuperscript{214} Ibid.
wide scale attack on their major population and economic centers. That was a brutal reminder that the Iraqi regime was always ready to use the Israeli card as a barging chip in its international crises and the security threat, it thus, presented to Israel.

As such, it could be claimed that Iraq's military capabilities presented a major security threat hassle to Israel. In fact, the Iraqi army on the eve of the Second Gulf War was the second most powerful army in the Middle East (after Israel) and had a wide range of weapon that varied in the level of their technological advancement. Yet, they presented a major security hazard especially if they were deployed in a concreted manner to serve a well-conceived plan – as clearly shown during the latter stages of the Iran-Iraq war\(^\text{215}\).

The Second Gulf War presented a major turning point in the development trajectory of the Iraqi military threat to Israel. The war resulted in the destruction of the major components of the once mighty Iraqi army and dealt a heavy blow to its rapidly developing military industries. Yet, these developments were temporary in nature. It was believed that as soon as the sanctions regime ends, the Iraqi regime will be able to rebuild its military capabilities; especially that it had the manpower and the political will to do accomplish that task.

The Iraqi military establishment was hard hit by the United Nations sanctions regime. Nevertheless, the Iraqi regime was still interested in maintaining a powerful military establishment even if it did not have financial capabilities or resources to do that. As a result, the defunct Iraqi regime was willing to reinstate its military power by all possible means; this included secretly purchasing an advanced fiber optics communication network from former Yugoslavia in an effort to enhance the

communication between the various air defense units. Additionally, the former Iraqi regime worked hard on maintaining its comparatively large standing army.

Yet, it should be said, that these minor efforts were by no means part of major rearmament program as the Iraqi regime was under the heavy hand of the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC) and deprived from fully controlling its annual income. For the former Iraqi regime the army was seen as the regime's guardian against any possible revolts; such as the one which occurred in the South of Iraq in the immediate aftermath of the Second Gulf War.

Further more, the Iraqi army was seen as the base from which Iraq could rebuild its military power once the sanctions regime crumbles and/or end. In this context, the destruction of the former Iraqi regime and the subsequent creation of a new political order in 2003 entailed that the Iraqi threat to Israel is, at least on the short term, non-existent.

This stems from various facts. The first of them is related to the nature of the new Iraqi regime which does not perceive Israel as its enemy. Additionally, the new Iraqi regime is a close ally to the United States and heavily dependent on it. The Iraqi dependence on the United States is unique in its nature, and this is a result of:

1. The role played by the United States in ending the semi-civil war that was raging in Iraq since 2003.

2. Iraq's heavy dependence on the United States in rebuilding its security apparatus in general and the army in particular.

Moreover, the new Iraqi army is mainly geared towards being a powerful anti-insurgency force – this is evident from the types of arms and weapons purchased.

which totally lack heavy weapons that could be used in inter-state conflicts (such as jet fighters, tanks and/or artillery pieces). In fact, Iraq, up till now, have focused on purchasing weapons and equipment that are suitable for Counter-Insurgency Operations (COIN) such as its recent tender to purchase a light armed aircraft to be used in COIN operations\textsuperscript{217}. And even if the current plan by the Iraqi government to purchase 36 F-16 fighters materialize, then it would take years for Iraq to rebuild its military strength to its former levels\textsuperscript{218}. Not to mention that being armed by the United States puts a restrain on Iraq’s freedom in using its military assets; due to the dependence on the United States for spares and ammunition – in a fashion similar to that of Egypt.

As such, it could be said that Iraq, at least for the short term, ceased to be a threat to Israel due to various political and strategic reasons. Therefore, Iraq could not lend military support to Arab counties confronting Israel in a fashion similar to what it used to do during the 1950s, 60s and 70s; ending, in the process, any possibility for creating the so-called Arab Eastern Front against Israel.

**Iran: A New Threat from the East?**

Over the past few years, Iran started to loom as Israel's new main security threat. The perceived Iranian threat was manifested in:

1- An intense political and media exchanges between the two states.

2- An increasing level of political tension between Iran and Israel about Iran's nuclear and missile development programs that led many to speculate that Israel would execute a preemptive strike against Iran's nuclear facilities.


\textsuperscript{218} Tom Cooper and Farzad Bishop, "Second Death of the IrAF," *ACIG - Air Combat Information Group Journal* (2003), \url{http://www.acig.org/artman/publish/article_375.shtml}.
3- Finally and most importantly, Iran heavily supports Hezbollah and Hamas (Israel's most sworn enemies), while Israel is known to be conducting a wide-ranging and aggressive secret war against Iran.

Unfortunately, the nature of the conflict and its deep-rooted reasons are beyond the scope of this research. Yet, it goes without saying that the conflict between the two is slowly but surely becoming the Middle East's most prominent conflict.

Yet, the so-called Iranian threat to Israel is very unique in its nature which makes it far from the regular state-centered security threats presented above. This is due to two main factors: (1) Iran's geographically distant location from Israel which limits its ability to confront Israel directly and influence the type of conflict between them and, (2) Iran's unique strategy in confronting Israel (proxy war strategy). Therefore, it could be claimed that the Iran does not fit in the category of regular state-centered security threats.

Iran's (as it was the case with Iraq) is geographically distant from Israel and have no common borders between them. And as it was the case with Iraq, Iran's hostility to Israel is, partially, based on ideological reasons. Yet, it should be said that both countries used to enjoy very close relations during the Shah's years that were manifested in various aspects including the sale of Israeli arms to Iran and the initiation of joint arms production programs\textsuperscript{219}. Moreover, it is known that Israel secretly sold thousand of tons to weapons, spare parts and ammunition to Iran during it 8-years with Iraq\textsuperscript{220}.

This geographical predicament entails that Iran has to either confront Israel via directly supporting a state in war with Israel (as Iraq did from 1948 till 1973) and/or to depend on a third party (proxy war). The first option is not applicable in the current Middle Eastern strategic and political context. Syria, Iran's closest ally and the sole remaining possible front for a regular symmetrical war with Israel (theoretically), is militarily so weak that it could not risk initiating a war – as explained above. Moreover, and even if a war between Syria and Israel broke out, Iran could not militarily lend a major support to Syria. This is dictated by two facts.

The first of them is the very limited strategic transportation assets owned by Iran. According to most estimates, the Islamic Iranian Islamic Republic of Iran Air Force (IRIAF) owns roughly 39 heavy lift aircraft\(^{221}\). Moreover Iran's naval transportation assets are of meager quality and capacity. Not to mention that they would be vulnerable to Israeli aerial and naval interception operations. Second, the Iranian army is inferior in both the quality and quantity of its arms to the IDF.

The once all powerful Iranian army (during the Shah's years) was greatly degraded over the past four decades due to the Iran-Iraq War and the American arms embargo. To replace its dwindling inventory of US-made weapons, Iran went on purchasing large numbers of Main Battle Tanks (MBT) from Russia, the former Soviet republics, China and the Democratic People's Republic of Korea (DPRK), better known as North Korea. This included purchasing around 400 T-72 tanks, worth around $720 million and around 500 BMP-2 armored fighting vehicles. Additionally, Iran bought large numbers (around 1,500 in total) of old T-55 tanks from Poland\(^{222}\).

\(^{221}\) This includes around 10 Boing 707s, 5 Boing 747, 15 Il-76 and 9 C-130s. The combined capacities of these aircraft are very limited that renders them useless in deploying and/or supporting a meaningful armored or mechanized infantry forces far from their bases in the absence of a ground transportation network.

The large numbers of armored equipment were supplemented by large numbers of 122 mm howitzers, 130 mm guns and short-range tactical rocket launchers (reaching around 15,000 pieces according to one source)\textsuperscript{223}. Moreover, Iran received around 72 F-7 fighters from China and around 30 MiG-29s and 25 Su-24 bombers from Russia\textsuperscript{224}. These weapons are generally similar to those used by Syria, are a vintage of the 1980s. Thus, they are not comparable to the quality of the weapons in the Israeli arsenal. Moreover, Iran was not able totally replace its US-made hardware. Therefore, it still owns a large number of old US-made weapons that suffer from very low serviceability rates – not to mention that they generally belong to the 1960s and 70s generation which is greatly inferior to the more advanced weapons available to Israel and even some of the Arab Gulf countries\textsuperscript{225}.

As for Iran's frantic and famed efforts to develop surface-to-surface missiles, it should be well noted that these missiles are of deplorable quality in terms of accuracy which renders them of no military value. The Iranian SSM program (as it is the case with the Syrian counterpart) is based on reverse-engineering first generation Soviet/Russian and North Korean missiles which are known to lack modern guidance systems. Therefore, they are not capable of conducting pin-point strikes against specific designated targets – a prerequisite for creating a credible and effective missile force of meaningful military value. The capabilities of the Iranian SSMs is further curtailed by the presence of an effective Israeli Anti-Missile Defense (ABM) network which is made up of American-built MIM-104 Patriot missiles and the Israeli-built Arrow (ABM) missiles coupled with an advanced early warning radar network.

\textsuperscript{223} Ibid.
\textsuperscript{225} For example, Iran's most advanced US-made fighter (the F-14), is generations away, in terms of electronics and weapon systems, to the latest weapons developed and sold by the United States to its allies in the Middle East (such as the F-16I sold to Israel and the F-16E Block 60 sold to the United Arab Emirates).
Therefore, it could be easily claimed that Iran is conventionally weaker than Israel – and therefore it could be said Israel could conventionally face any direct Iranian military effort conducted via directly supporting Syria and/or conducting missile strikes. As for Iran's nuclear program, its nature, purpose or level of development is not well known; something that deem assessing its potential strategic value a daunting task.

Due to its conventional weakness (and a variety of other reasons that are beyond the scope of this research), Iran tended to confront Israel using a proxy war strategy. This is done via supporting Hezbollah in Lebanon and, recently, Hamas in Gaza. The Iranian support is done via providing arms, ammunition and training. In fact, the Iranian support to Hezbollah led many to believe that the 2006 Lebanon War was a proxy Iranian demonstration of force. Yet, it should be mentioned that detailed information about the nature of the Iranian support to both Hezbollah and Hamas are sketchy and are often presented in a subjective manner (to support a certain point of view or political claim); as it was the case when the Israeli Defense Forces (IDF) published photos of Iranian weapons that were in the possession of Hezbollah.

In short, it could be said that Iran's armed forces exhibit some of the limitation that the conventional forces of other Middle Eastern states (such as Egypt and Syria) suffers from (such as the lack of advanced weapons). This places Iran in a highly inferior military position vis-à-vis Israel. Moreover, Iran's geographical predicament limits its ability to directly confront Israel militarily and/or lend support to Syria in case of symmetrical confrontation with Israel. The above mentioned factors, led Iran to adopt a proxy war strategy (using Hezbollah and Hamas) to confront Israel.

Conclusion:

It is of no doubt that Israel's strategic setting has witnessed great changes over last two decades of the 20th century. The most important of them is the fall of the state as Israel most important source of threat. This was a result of various, and often interrelated, internal, regional and international political factors.

The chapter mainly focused on Egypt, Syria and Iraq as they played a major role (militarily) in the Arab-Israeli conflict. In addition, most of the state-centered security threats that used to threaten Israel stemmed from these states. Over the last two decades of the 20th century various factors contributed to the neutralization of Egypt, a drastic decline in Syria's military capabilities and the annihilation of that of Iraq.

As for Iran, it could not be by counted as a regular state-centered security threat. This stems from its conventional military weakness vis-à-vis Israel and its distant geographical location. Realizing this two factors (in addition to other factors that are beyond the scope of this research), Iran tends to face Israel via supporting Hezbollah and Hamas (two non-state actors) – this effectively places Iran in a special category that is not related to the normal state-centered security threats that used to face Israel.

Finally, it should be said that the decline of state-centered security threats paved the way for Non-State Actors (NSAs) to, slowly but surely, dominate Israel's security agenda. This is demonstrated by the current statuses of both Hezbollah and the Islamic Resistance Movement (HAMAS) as Israel's main security threats; something that will be thoroughly dwelled upon in the next chapter.
Chapter 5

The Rise of Non-State Actors and the Transformation of the Israeli Security Landscape
Introduction:

As mentioned earlier, the Israeli security environment has greatly changed over the past few decades as a result of a complicated process that was set in-motion by various regional and international political factors. The replacement process resulted in the gradual decline of threats from states depending on symmetrical means of warfare, to be gradually replaced by Non-State Actors (NSAs) depending on asymmetrical means of warfare.

In this respect, it should be mentioned that asymmetry is defined as the absence of common bases of comparison. Thus, asymmetrical warfare is a broad category in which two opponents who are not equal, and in which one of the opponents is generally inferior compared to the other, fight. Often, the weaker opponent would resort to non-conventional manners to overcome the strengths of the other.

This far-reaching development (rise of NSAs depending on asymmetrical means of warfare), rendered the Israeli nuclear deterrent irrelevant to the current security threats facing Israel. This chapter will aim at dwelling upon the rise of NSAs and explaining the structure of the Israel's new strategic context via studying both the 2006 33-Day Lebanon War and the current security dilemma facing Israel in Gaza Strip.

The Relevance of the Israeli Nuclear Deterrent:

Based on the above mentioned assumption, it could be claimed that the Israeli nuclear deterrent is, to a great extent, of no significant military value for Israel. This stems from two, partially interrelated, factors. The first of them is its relevance, as a weapon system, to the current strategic and security situation facing Israel:

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228 Ibid.
includes the types of threats facing Israel and the most suitable means for countering them efficiently and successfully. And second its ability to accomplish the aims it was developed for: i.e. deterrence.

In regards to the first factor, and as it was mentioned earlier, the Israeli strategic context is now mainly dominated by NSAs and, currently, Israel's most immediate security threats are Hezbollah and the Islamic Resistance Movement (Hamas). Both movements are typical NSAs which pose an asymmetrical form of security threat to Israel. In this case, facing them by conventional military methods seems impossible as proved during the various military encounters between them and Israel; not to mention combating them with nuclear weapons which would be extremely extraneous.

This is well illustrated by the events of the 2006 33-Day Lebanon War and the current security dilemma facing Israel in the Gaza Strip. In both cases, Israel faced an inferior enemy (in terms of balance of power) who depends on asymmetrical means of warfare. Consequently, Israel was unable to achieve the kind of decisive military victories it is used to achieve against states using symmetrical means of warfare. Moreover, both conflicts illustrated the futility of using conventional means of warfare when fighting an NSA. In this respect, it is not conceivable to use nuclear weapons in fighting an NSA. This is a result of the various combat conditions present and the nature of the enemy. Nuclear weapons, even in their tactical form, would not a feasible method to attack NSAs and this stems from various reasons:

1. An NSA would not usually have well defined facilities and, even, if it does (as it was the case with Hezbollah's command and control facilities in the South), it will be supplemented by various hidden facilities that would be used in case of an emergency; not to mention that in most of
the cases NSAs tend to disperse their facilities within civilian areas and/or use civilian infrastructure for their benefit in emergencies (as it was the case with Hezbollah during the 2006 War). Therefore, increasing the number of potential targets to be hit.

2. The types of tactics and the weapons used entail that NSAs do not need massive ammunition depots and/or logistical facilities as it is the case with regular armies, as they depend, instead, on hidden weapons caches (often housed in civilian facilities) which are extremely hard to detect and/or destroy by regular military means.

3. Generally, NSA members/fighters will tend to move and fight in small groups. Consequently, when engaging them in combat, it would not be possible to use tactical nuclear weapons.

The above mentioned combat conditions entail that using nuclear weapons, even very low yield tactical warheads, would not achieve the necessary objectives and wreck huge havoc and unprecedented levels of collateral damage. In this respect, using nuclear weapons, even in their tactical forms, would defy the simple military rule of "weapon-to-target matching", which dictates using weapon systems that create the needed amount of damage needed to destroy a specific target without collateral damage.\(^{229}\)

And for the second factor - the ability of the Israeli nuclear deterrent to achieve its designated mission (i.e. deterrence) - it is obvious that it is no more working. NSAs are, generally, not deterred by the fact that Israel is a nuclear power. For example, and since its creation in the early 1980s, Hezbollah has repeatedly attacked the Israeli Defense Forces (IDF) and Israel proper - in ground operations and

rocketry attacks respectively - as part of its effort to end the Israeli occupation to Southern Lebanon. Moreover, the Israeli nuclear deterrent did not prevent Hezbollah from attacking the Israeli borders in 2006 in a daring operation to take Israeli soldiers as war prisoners; and thus triggering the 2006 War.

The situation is replicated in the South of Israel where Hamas continues to bombard Israeli towns and settlements with short-range unguided rockets even after the massive destruction caused by Operation Cast Lead. This phenomenon could be best explained by the nature of NSAs; especially those fired by religious zeal. In fact, this led some scholars to claim that the ideological tenets of an NSA are a central force in resisting deterrent signals.

Additionally, the inability of the regular deterrence paradigm (conventional or non-conventional) to deter NSAs, led many to argue that the best means to deter an NSA is by deterring their patron states. In this case, a state wishing to deter an NSA, should direct its efforts to deter the NSA's patron state, which will in turn (upon being deterred) will stop supporting the NSA. It should be mentioned that this form of in-direct deterrence has failed in Israel's case; for example: Syria, though deterred from at attacking Israel in symmetrical state-to-state conflict, is feverishly supporting Hezbollah.

The upcoming section will focus on the cases of Hezbollah and Hamas as examples of the new types of asymmetrical security threats facing Israel. Both of the 2006 33-Day War on Lebanon and the recent Israeli military operations in the Gaza

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Strip, will be examined in detail as they represent the futility of nuclear weapons in Israel's current strategic context.

**Lebanon 2006: The Crowning of Non-State Actors:**

The 2006 Lebanon War could be said to be the war that crowned Non-State Actors (NSAs) as the primary threat to Israel. This stems from the fact that during the war Israel was fighting Hezbollah and not the Lebanese state and, thus, creating a classic example for a war between a state and an NSA; having said that, it should be mentioned that the 2006 War was inherently different from the previous Israeli military operations against Hezbollah (such as the 1996 Grapes of Wrath Operation\(^{233}\)) in terms of scope and duration. The 2006 War lasted 33 days, which is the longest duration of continuous military operations, compared to a mere 16 days for Operation Grapes of Wrath and almost a week for Operation Accountability\(^{234}\).

In addition to its long duration, the scope of the 2006 War was greatly expanded compared to the previous confrontations. It is estimated that during the 2006 War Hezbollah launched around 4,228 rockets against Israel compared to around 639 during the 1996 Operation Grapes of Wrath\(^{235}\). In addition to the large number of rockets launched, the scope of their deployment was greatly expanded. Before the 2006 33-Day War, Hezbollah generally concentrated its rocket attacks on the Northern Israeli settlements (such as Kiryat Shmona); something that spared the main population and economic centers in Israel from feeling the brunt of war. The situation was soon to change in 2006, as Hezbollah widened the scope of its rocket

\(^{233}\) Between the 11\(^{th}\) and the 27\(^{th}\) of April 1996, Israel launched Operation Grapes of Wrath which aimed at ending Hezbollah's bombardment of the Northern Israeli settlements. The 16-day operation featured heavy use of air power against various facilities that were believed to be part of Hezbollah's military infrastructure. This massive, and often indiscriminate bombing, led to the Qana massacre in which the IDF bombed a UN facility killing in the process 106 civilians.

\(^{234}\) The IDF commenced Operation Accountability on the 25\(^{th}\) of July 1993 with the aim of crippling Hezbollah's military capabilities. The operation lasted for a week and resulted in the killing of 120 Lebanese civilians.

attacks to reach more distant areas; for example, Haifa - one of Israel's major industrial centers and the main base for the Israeli navy - was heavily bombarded during the war leading to several fatalities and the cessation of all economic activities in the bustling city.

Furthermore, the Israeli society had, for almost the first time since the 1948 War, suffered from the brunt of war on its hinterland. In fact, numbers would be the most suitable means for conveying the effect of war on Israel. During what could be labeled as Hezbollah rocket campaign, around 53 Israelis were killed, 250 severely wounded and 2,000 lightly wounded, while more than 1 million Israelis had to live in shelters and 250,000 evacuated from the Northern parts of the country. These numbers may be small compared to those of who lost their lives in the Israeli air strikes on Lebanon during the same period. Yet, to properly judge the impact of these attacks on Israel three factors should be taken into consideration:

(1) The lack of any comparable experience in the history of Arab-Israeli Wars.

(2) The amount of disruption suffered by the Israeli society and economy due to these attacks.

\[236\] Ibid.
(3) The types of weapons used by Hezbollah during the War;

Hezbollah depended on rockets, rather than missiles, and yet was able to extract a heavy toll on Israel\textsuperscript{237}.

The significance of this rocket campaign is rested in the fact that Hezbollah (a Non-State Actor) was able to pin down the Israeli society and economy and extract a relatively high toll on it. In this process, Hezbollah created a major security threat to Israel and shattered one of the main principles of its military doctrine: fighting wars on the enemy territory and sparing that of Israel.

To counter this massive rocket campaign, Israel resorted to air strikes against potential and known rockets depots and/or launching sites. This heavy reliance on airpower was unable to disrupt Hezbollah's attacks. In fact, these aerial strikes were able, at best, to deflect the attacks from certain areas and/or lightly affected the accuracy of them, while failing to have significant effect on Hezbollah’s ability to maintain its heavy barrage of rockets\textsuperscript{238}.

In fact, Hezbollah was able to maintain a daily rate of fire that fluctuated between 100 to 200 rockets per day\textsuperscript{239}. The feeble performance of the IAF in stopping the attacks, especially if we take into consideration its complete air dominance, led Former Israel Defense Forces chief of staff Moshe Ya'alon to severely criticize the air force's operations and describe it as a complete failure\textsuperscript{240}. Additionally, the IDF

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{237} It should be mentioned that the main difference between a missile and a rocket is the presence of a guidance system. Rockets lack guidance systems and, thus, are notoriously inaccurate. To be able to create a wide-ranging damage using rockets, they should be used in accordance to area bombing tactics; tactics that stipulate heavily bombarding a specific areas indiscriminately.
\item \textsuperscript{238} Uzi Rubin, "Hizballah's Rocket Campaign against Northern Israel: A Preliminary Report," Jerusalem Issue Brief, Jerusalem Center for Public Affairs, \url{http://www.jcpa.org/brief/brief006-10.htm}.
\item \textsuperscript{239} Ibid.
\end{itemize}
\end{footnotesize}
command decided to commence ground operations, partially, due to the IAF's failure241.

The inability of the IAF to curtail Hezbollah's rocket barrage was not the only feature of the Israeli air campaign during the 2006 War. The IAF embarked on massive bombing campaign to destroy Hezbollah's military infrastructure and its ability to move supplies and troops and/or create a deep sense of tension between the various sects of the Lebanese mosaic. This is clearly visible from the Israeli decision to focus most of their aerial bombing on Shiite areas and/or Hezbollah strongholds (especially in the South) and refraining and/or limiting their bombing of areas dominated by other sects (see map)242. This strategy of semi-selective bombing aimed at establishing the impression that Israel targeted only Hezbollah and its supporters and not the whole Lebanese population.

It is of no doubt that the War (and the resulting destruction) led to several sectarian tensions in Lebanon. Nevertheless, Israel's objective of indirectly upsetting the Lebanese political equation (by affecting Hezbollah's political status) by military means proved to be an utter failure. This could be demonstrated by Hezbollah's active


In short, it could be claimed that Israel failed to decisively end the 2006 War due to the various failures of the IDF on the strategic, operational and tactical levels.\footnote{Efraim Inbar, *Israel’s National Security: Issues and Challenges since the Yom Kippur War* (New York: Routledge, 2008), 224.} In addition, Hezbollah’s nature (as an NSA) and its innovative tactics greatly contributed to Israel’s failures, which will be discussed thoroughly in the next part.

**Hezbollah's Strategy during the War:**

During the 33-days confrontation Hezbollah's strategy aimed at: 1) surviving the conflict (as in preserving its command and control structure and the core of its military apparatus) and, 2) inflicting (relatively) heavy damage on Israel (in terms of manpower and material losses).

The first aim was based on two interrelated factors. Hezbollah worked on preserving most of its military capabilities intact throughout the conflict. This depended on denying Israel the ability to inflict any substantial damage on Hezbollah's military capabilities, whether in the form of its core fighting units or its rocket arsenal. This survival-based strategy could be labeled as the strategy of "Escaping Damage".

The strategy of escaping damage had important dividends. First, it allowed Hezbollah to retain its core fighting units and rockets arsenal for using them in well chosen sectors of the front in well-planned and executed operations (such as the battle of Bint Jbeil\footnote{On the 27th of July Hezbollah fighters ambushed the Israeli forces in the village of Bint Jbeil and killed around 8 Israeli soldiers.}); something that would guarantee military successes against the IDF.
and synchronized bombardment, using its rockets arsenal, of the Israeli territories. Second, preserving the military capabilities of Hezbollah (especially its rockets) would mean preventing Israel from achieving any substantial military success and/or psychological gains; thus, denying Israel the ability to achieve its military goals and, accordingly, denying it the ability to claim victory; a rather important factor on the psychological level.

The second war objective (inflicting heavy damage upon Israel) was dependent on Hezbollah’s ability to preserve its military power unscathed or, at least, with minimum losses. By preserving its military power, Hezbollah could count on its ability to inflict heavy damage on the Israeli ground troops and launching salvos of rockets against Israeli cities, thus, causing widespread panic and destruction in the Israeli hinterland. This, Hezbollah rightfully believed, would prevent Israel from claiming victory.

Moreover, it is important to note that in fighting a non-state actor the essence and meaning of victory is very different than that when a state is fighting another state. In the 1950s, 60s and 70s the IDF would have been able to easily claim victory by counting the losses of its enemies (in terms of manpower and equipment) and/or the areas subjected to its rule. The situation is utterly different when a state is fighting an NSA. In this case, a state, fighting using conventional tactics, will never be able to correctly assess the amount of damage it caused to its enemy (an NSA); as clearly demonstrated in the case of Hezbollah.

This is rooted into the nature of the organizational structure of NSAs and their deception tactics in which every civilian could be a fighter and vise versa. Additionally, non-state actors greatly depend on dispersing their assets in civilian areas; something that facilitate hiding them.
Nuclear Weapons and the 2006 War:

The 2006 War was a clear and undisputable proof of the fact that NSAs are now Israel’s main security threat. Additionally, it was an indirect testimony of the futility of the Israeli nuclear deterrent. The two factors of assessment, as mentioned before, are:

(1) The relevance of nuclear weapons as a weapon system, to Israel's current strategic setting and,

(2) Their ability to create a state of deterrence.

Regarding the first point, the nuclear deterrent should be first perceived as a complete weapon system - not just a mere nuclear devise. In this respect, the Israeli nuclear deterrent is the nuclear warhead, the associated means of delivery (aircraft and/or various types of missiles) and the relevant command and control structure. In the current strategic environment facing Israel, the Israeli nuclear deterrent is completely futile as a weapons system.

Nuclear weapons, even in their tactical low-yield form, are by no means suitable to knock out the facilities of a non-state actor as most, if not all of them, are concentrated in heavy built areas and/or housed inside civilian buildings. Consequently, it would not have been possible for the IAF to use nuclear weapons to bomb and destroy Hezbollah’s facilities in Southern Beirut and/or the various Shi’ii villages in the South of Lebanon. This would have wiped out whole areas and created heavy and unnecessary collateral damage. Not to mention creating an international uproar against, what would be then, Israel unnecessary and unjustified use of nuclear weapons; assuming that there is something called justified use of nuclear weapons in the first place.
These kinds of targets would be best knocked out by either using dedicated aerial attacks (in which the attacker depends on highly reliable and accurate information and low yield ammunition\textsuperscript{246}), or using ground forces to locate and destroy them. Moreover, locating and destroying rocket launchers is best accomplished via the usage of conventional air assets. A combination of reconnaissance planes (whether manned or unmanned) that provide timely and accurate information to strike groups (composed of fighters and/or attack helicopters), that would then strike the intended targets, is the best combination to accomplish the above-mentioned mission.

In this respect, it should be mentioned that the failure of the IAF to effectively disrupt Hezbollah’s rocket attacks could be attributed to many factors - such as the lack of accurate and timely intelligence regarding the location of the rocket launchers\textsuperscript{247}. The above mentioned points clearly reveal that nuclear weapons, even in their tactical form, are by no means suitable means to deal with the current security threats that face Israel.

Additionally, it is obvious that Israel's nuclear weapons are no longer able to fulfill their mission as a deterrent. As mentioned before, the Israeli nuclear deterrent aimed at dissuading Israel's enemies from conducting a first strike against it; in other words a means to apply Israel's concept of deterrence. It is obvious from Hezbollah's case that the Israeli nuclear deterrent clearly failed to deter it neither from conducting its attack to capture the Israeli soldiers nor to launch and, later on, widen its rocket bombardment to Israel's hinterland.

\textsuperscript{246} Especially designed ammunition that has small warheads that create small damage, the aim of this kind of ammunition is to minimize collateral damage as much as possible.  
Hamas and the Gaza Dilemma:

In the South, as it is the case in the North, Israel is facing what it perceives as a major security threat. From the Israeli point of view, this security threat is emerging from the fact that a substantial portion of the Israeli population (around 700 thousand) is living under the constant threat of rocket bombardment. In fact, and from the Israeli point of view, it could be claimed that a great portion of the Israeli population is increasingly becoming a hostage to the critical and volatile security situation in the Gaza Strip and Hamas's military actions.

In this respect, it should be mentioned that the Palestinian rocket attacks started in 2001 and since then more than 8,600 rockets have hit Israel (the majority of them (around 6,000) since Israel withdrew from the Gaza Strip in 2005). These attacks have killed 28 persons, injured hundreds more and caused many to leave the settlements in Southern Israel. From the Israeli perception, these losses were a sign of a dangerous security threat that cannot be tolerated.

The Nature of Hamas Security Threat:

By pure military standards, the so-called Hamas security threat is minimal. In fact, Hamas's arsenal is composed of light weapons, mortars, and light – and often

249 Ibid.
250 Nevertheless, it should be mentioned that Israel have caused tremendous levels of human as well as material damage in the Gaza Strip in its frequent air strikes and incursions.
obsolete – anti-tank weapons. Its most potent weapons is its, relatively, simple and rather obsolete rockets\(^{251}\), which are, either manufactured locally or smuggled from abroad. They are no more than reverse-engineered and/or slightly modified Katyusha rockets; something that entails that the missiles are of deplorable quality.

Historically, the original Katyushas (known as the BM-13) were developed by the former Soviet Union as a simple battlefield rocket system. Designed to be launched in large salvos to cover as broad a front as possible and generate high firepower, it functioned as a means to support field artillery in area-type artillery bombardment. This unique mission was dictated by the nature and topography of Soviet front. The front lines between the German and Soviet forces extended over large areas of wide open plains and consequently the Soviet tactics necessitated a strong dependence on artillery barrages as a means of softening enemy defensive lines as a prerequisite to launching any ground offensives. Baring this in mind, the Katyusha was designed to be easily built and used in mass. Therefore, they lacked any sort of guidance, as they were supposed to conduct indiscriminate area bombing against areas dotted with large number of enemy targets.

Consequently, these rockets are by no means militarily useful under the modus operandi currently employed by Hamas. Hamas, as well as other armed factions in Gaza, tend to use their rockets (either original and/or modified Katyushas or locally built offshoots such as the Qassam-1, Qassam-2 and the Qassam-3\(^{252}\)) in very small salvos that include 5 to 10 rockets. And up till now, Hamas has generally refrained

\(^{251}\) Hamas's arsenal is not composed of missiles but rather of rockets. The main difference stems from the fact that missiles are equipped with guidance systems (regardless of their sophistication and/or efficiency), while rockets are more simple weapons that are simply guided by firing them in the general direction of their intended target.

from using its rockets in larger numbers. This in itself could be explained by various factors:

(1) The technical difficulties involved in setting up and launching a large number of rockets simultaneously,

(2) Trying to prepare a large number of launching pads will entail exposing them to Israeli aerial reconnaissance and, thus, promoting Israel to launch a preemptive strike that will then deal a great blow to Hamas's limited arsenal.

Thus, Hamas tend to use its rockets on individual bases and/or via launching them in small salvos. This explains why Hamas rocket attacks fail to achieve any substantial results either in form of martial or human losses (on the Israeli side). For example, during the first two days of the most recent Israeli military operation in the Gaza Strip (Operation Cast Lead), Hamas launched around 80 rockets which killed only 1 person and did very light material damage253.

As for the other weapons used by Hamas (such rocket propelled grenades, anti-tank missiles and other light weapons) they are, mainly, useful in close quarter battles and are of an insignificant value for the overall military balance between Israel and Hamas; if we even assume that there could be any sort of a military balance between the two. Hamas may use such light weapons in fighting the Israeli Defense Forces (IDF) in close quarter battles in heavily populated areas (such as cities, villages and refuge camps) which the Gaza Strip is already cramped with.

For all the above mentioned reasons the Hamas security threat is minimal by pure military standards. Yet, it goes without saying that security threats are not always only based on pure military standards. The concept of a security threat entails the

ability of one party (in this case Hamas) to disrupt the normal life of the Israelis by threatening them and putting the Israeli hinterland under the constant threat of being bombarded. Thus, it creates a great psychological threat for the Israeli population that never really witnessed or felt the brunt of war on its own territory and, for various social and historical reasons, suffers from a high level of existential anxiety.

In short, the Hamas security threat to Israel is not, by any means, as grave as Israel is trying to project. Yet, it is a clear representation of the new types of security threats facing Israel and the associated asymmetrical warfare it is currently facing.

**Israel’s Nuclear Deterrent and the Gaza Dilemma:**

Gaza is now one of Israel's main security dilemmas. As in the case of Hezbollah, Hamas is a typical NSA that adopts and applies the concepts of asymmetrical warfare. Thus, it renders conventional military means useless in dealing with it. This was well illustrated during the recent Israeli military operation in Gaza: Operation Cast Lead. Operation Cast Lead, as it was the case with other Israeli military campaigns against the Hamas-ruled Gaza Strip, demonstrates the IDF’s inability to eliminate/neutralize the security threat stemming from Hamas.

In fact, and despite using its overwhelming airpower and massive ground operations to heavily damage Gaza and Hamas's military capacity, the IDF was unable to score a complete and decisive military victory. This was apparent from the fact that by the end of the operations Hamas was still able to sustain a launch rate of around 15 rockets per day (compared to around 40 in the first day of the operation)²⁵⁴.

The failure of the IDF’s conventional fighting methods and tactics in dealing with new non-state centered security threats could be extrapolated to evaluate the utility of Israel's nuclear arsenal. As in the case of Hezbollah, the security hassle of

²⁵⁴ Ibid.
Hamas became, generally, embodied into its ability to launch successive salvos of rockets on Israeli communities and, to a lesser extent, launch attacks against Israeli troops and/or communities.

These attacks resemble the kind of security threats stemming from the current setting of the Israeli security environment. In fact, these attacks expose the limitations that the Israeli Defense Forces suffer from in facing non-state actors. These limitations are not unique to the IDF but are a rather characteristic of regular armies fighting non-state actors in asymmetrical conflicts. These limitations could be equally identified in the performance of the US army in Vietnam and Iraq and even that of the Egyptian army in Yemen in the 1960s. Nevertheless, it should be mentioned that the ability of each of these armies (including the IDF) to develop and devise new tactics and means to deal with these security situation varied and, by default, their record of success was greatly diverse.

These limitations reveal the futility of conventional fighting methods and strategies and, even more, nuclear weapons in dealing with security environments dominated by non-state actors.

In this respect, the nuclear weapons would not be, by any means, the weapon of choice in dealing with Hamas. It would not be possible to use nuclear bombs, even in their tactical low yield version, to knock out the launching pads and/or storage/manufacturing facilities of Hamas's rockets. It would be better knocked out by dedicated air strikes and/or the extensive use of special search and hunt groups armed with light weapons and explosive materials and supported by armored fighting vehicles in well planned operations that are based on accurate and timely intelligence. Additionally, Hamas facilities are well entrenched into civilian areas. Not to mention the fact that being an NSA entails that Hamas members (including those who form the
core of its fighting units) are well dispersed within the Gaza population; adding further operational constraints to the use of any kind of nuclear weapons. These operational constraints are not the only factors that contribute to the futility of Israel's nuclear deterrent. In fact, it should be said that the main reason is related to the inability of nuclear weapons to deter NSAs; something that could be equally said about Hamas and Hezbollah. In fact, Hamas realizes quite well the various operational constraints that prevent Israel from threatening and/or using its nuclear capabilities against it. Additionally, Hamas, which is mainly fired by religious zeal, has the ability and willingness to accept high level of losses within the Palestinian population that could result from massive retaliatory and/or preemptive strikes. This willingness was demonstrated in the statements of top Hamas officials who always stress that Hamas will keep fighting Israel without taking into consideration the amount of damage Israel inflicts on Gaza.\footnote{255}

**Conclusion:**

To conclude, it could be said that the nuclear deterrent Israel worked on developing and deploying during the first two decades of its existence as means to support its strategy of deterrence, became of utter strategic futility. This is a direct result from the deep changes that took place in the Israeli security environment over the past two decades. These changes are a direct result of two simultaneous, yet opposite, movements; the first witnessed the fall of the state as a main security threat to Israel while the second entailed the rise of NSAs as a main player in Israel’s strategic environment.

\footnote{255}Ibid.
On one hand, the fall of the state-centered security threat was a direct result of a complicated military and political process that was not only related to developments in the Middle Eastern political arena but also those taking place on the international scene. These changes placed Egypt out of the "Arab military equation", while effectively initiating an irreversible cycle of decline in the Syrian military capabilities and, finally, ending the looming threat of an Iraqi attack on Israel.

On the other hand, non-state actors, such as Hezbollah and Hamas (to name just a few of them), now constitute Israel’s main security threat. These organizations depend on asymmetrical forms of warfare that render nuclear weapons useless and unable to serve their purpose, neither as means of deterrence nor as a functioning weapon system that could be used in extreme cases.

This new strategic environment was first confirmed in the 2006 33-day War on Lebanon and then, again, in the Gaza Strip (which cumulated in Israel's Operation Cast Lead). Both of these events manifested the current security dilemmas facing Israel. The large, well-armed and highly powerful IDF is no more capable of striking clear-cut victories in a fashion similar to its victories during its heydays in the 1950s, 60s and 70s. In the North, Israel remains bogged down unable to get rid of the threat of Hezbollah's attacks, while in the South the IDF - despite its overwhelming superiority in weapons, training and firepower - was unable to totally obliterate the threat of the Palestinians rockets.

And as a matter of fact, Israel had to depend on the international political machinery in an effort to achieve its objectives, which it failed to accomplish via military power. This was obvious from both the United Nations Security Council Resolutions 1559 and 1701, which called for the disarmament of Lebanese militias (in
reference to Hezbollah). The cycle is again repeated in its current efforts to seal a new political arrangement to deal with the Hamas security threat.

These facts clearly demonstrate futility of conventional methods of warfare in facing NSAs. In addition, they clearly demonstrate, even more, that the Israeli nuclear deterrent is not of strategic utility in a strategic environment dominated by non-state-centered security threats.

In short, when talking about threats facing Israel, stemming from the South and the North, we no more talk about Egypt and Syria, but rather about Hamas and Hezbollah. And in this situation it is futile to think of nuclear weapons as a credible means of deterrence or a weapon of choice in extreme cases of danger.
Conclusion:

This research aimed at examining the effects of the changes taking place in Israel’s strategic context on the military usefulness of its nuclear weapons. To achieve that aim the research aimed at tackling various interrelated issues that included:

1. The development of the Israeli military doctrine in light of the various strategic constraints that faced Israel since its creation in 1948.
2. The Israeli concept of deterrence and how did it lead to the development of the Israeli nuclear deterrent.
3. The history of the Israeli nuclear program and its current status (arsenal, means of delivery and possible employment tactics).
4. The development of the Israeli strategic context and how did it change since the 1982 Lebanon War – charting, in the process, the fall of state-centered security threats and the rise, instead, of threats stemming from non-state actors.
5. The unique status of the Iranian case and how does it affect Israel’s current strategic setting.
6. Israel’s current security environment and the role of non-state actors with special focus on Hezbollah’s 2006 Lebanon War with Israel and the 2008-2009 military operations in the Gaza Strip between Hamas and Israel.

It should be said that the lack of Arabic sources was the major problem identified during the research phase. There is a relative lack of Arabic sources dealing with the transformation of Israel’s security environment, its nuclear weapons program and/or Israel’s nuclear strategy and the rise of asymmetrical forms of warfare in the Middle East. Additionally, it was noted that the nuclear issue remains to be a major
taboo in the Israeli society; something that limited the sources available on the internal debate within Israel in regards to nuclear weapons and their possible uses.

In fact, the topic of nuclear proliferation in the Middle East and the transformation of its security environment are highly vivid – especially with the many speculations about Iran’s nuclear program. This leads to a wide variety of topics that could be further dwelled upon and were unfortunately beyond the scope of this research. These include, but by no means limited to, the possible effect of a nuclear Iran on Israel’s strategic setting and the role of its nuclear weapons, the nature of the Israeli-Iranian conflict and its possible courses of development, how could a state deal with the military threats stemming from non-state actors using asymmetrical means of warfare, how could non-state actors be deterred and, finally, the future possibilities for nuclear proliferation in the Middle East and its effect on the general balance of power in the region.

Originally, Israel developed its nuclear deterrent during its first two decades of its existence. Israel’s efforts aimed at developing and deploying a small nuclear arsenal as a means of supporting its deterrence strategy. This deterrence strategy, which was dictated by Israel's special geo-strategic needs, was the main factor that led many in Israel to support the idea of developing an Israeli nuclear power. From their point of view, a nuclear weapon was the ultimate deterrent and the most suitable method to enhance Israel's deterrence posture vis-à-vis the neighboring Arab states.

The Israeli quest for nuclear weapons seemed a logical development of its military buildup efforts during its early years of existence as its security environment was mainly dominated by symmetrical state-centered security threats. But while nuclear weapons can serve as a credible deterrent in the face of state-centered security threats in a symmetrical warfare environment, such as that facing Israel from 1948
till, roughly, the early 1980s, they are utterly useless in combating NSAs using asymmetrical means of warfare.

The change in Israel's security environment, evident in the rise of threats stemming from non-state actors (such as Hezbollah and Hamas), has rendered its strategic setting quite different from the one that prevailed during the 1950s, 60s and 70s. This change was a result of two simultaneous, yet opposite, processes. The first was the fall of the state as Israel's main security threat; and the second was the rise of NSAs as its main security threat. The two processes were a direct result of a mix of interrelated military and political factors that did not only relate to changes in the Middle East, but also to changes in the international arena.

These changes placed Egypt out of, the so-called, "Arab military equation", effectively initiating an irreversible cycle of decline in the Syrian military capabilities and, finally, ending the looming threat of an Iraqi effort against Israel. As for the case of Iran, it should be mentioned that Iran is conventionally weaker than Israel and geographically distant. These two factors greatly limit Iran’s ability to threaten Israel militarily (in a direct manner). Therefore, Iran prefers to confront Israel using proxy war strategy (using Hezbollah and Hamas for that aim).

On the other hand, non-state actors, such as Hezbollah and Hamas (to name just two of them), now constitute Israel's main security threat. These organizations depend on asymmetrical forms of warfare that render nuclear weapons useless either as means of deterrence, or as a functioning weapon system that can be used in combat. In other word, nuclear weapons can neither deter non-state actors, nor have, even in their tactical form, any military value against them.

Israel's new strategic setting was clearly manifested in the 2006 33-Day War on Lebanon and then, again, in the prevailing security situation in the Gaza Strip.
(which culminated in Israel's Operation Cast Lead). Both of these events clearly illustrate Israel's current security dilemma. The highly professional and well armed IDF is no more capable of scoring clear-cut victories such as the ones it achieved during its heyday, in the 1950s, 60s and 70s.

In the North, Israel remains bogged down, unable to get rid of the threat of Hezbollah's rockets, while in the South, the IDF - despite its overwhelming superiority in terms of weapons, training and firepower – is still unable to totally obliterate the threat of Hamas rockets.

As a matter of fact, Israel had to depend on the international political machinery in an effort to achieve the objectives it failed to accomplish by military means. Two obvious examples were the United Nations Security Council Resolutions 1559 and 1701, which called for the disarmament of Lebanese militias - in reference to Hezbollah. Another, more recent example is Israel’s current attempt to rally international support and political effort in order to create a new political and security arrangement that can counter the security threats posed by Hamas.

These facts clearly demonstrate the futility of conventional methods of warfare in facing NSAs. They also amply prove that the Israeli nuclear deterrent is of no strategic utility in Israel's current security environment.

In short, when we talk nowadays of the threats facing Israel on the Northern and Southern fronts, we no longer mean threats posed by Syria and Egypt, but, rather, ones posed by Hezbollah and Hamas. In such a security environment, it is futile to think of nuclear weapons as a credible means of deterrence and/or a weapon of choice in extreme cases of combat.
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