PREVENTIVE STRIKES ON NUCLEAR FACILITIES:
AN ANALYTICAL FRAMEWORK

by

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ABSTRACT

Preventive strikes on nuclear facilities have been considered in perhaps ten cases since World War II. The continued proliferation of nuclear weapons means that there remains a variety of potential targets for preventive strikes, including countries such as Iran and Libya, launched by countries like the United States and Israel; this paper explores whether such military action against new weapons programs is in fact probable.

The answer to this question is pursued through a comparison of the past cases where preventive strikes were under discussion. All share certain common features, but eight factors tend to distinguish instances where preventive strikes were carried out from the majority in which they were rejected. Significant support and little protest were expected when preventive strikes were engaged in. In turn, the prospect of operational success, defined in terms of destroying all relevant nuclear facilities in the target, was predictably worst where military action was not carried out. The degree and immediacy of threat were also depicted as more pronounced in the case of realized preventive strikes. Of course, perceptions of this kind are malleable; additional factors came into play. States which launched preventive strikes had few other options for dealing with the unwanted proliferator, and had the opportunity to destroy its nuclear facilities while they were still under construction (or, for other reasons, not in operation). With their eye on these kinds of factors, countries seemed to be deterred from undertaking military action when it would blatantly infringe upon international law. Furthermore, states were less inclined to act when faced with military retaliation by the target, and when, correspondingly, domestic public opinion promised to be unfavorable. Using this list of criteria for guidance, it will be concluded that preventive strikes are unlikely to occur in the near future.
# TABLE OF CONTENTS

Abstract  
Table of Contents  
List of Tables  

| Chapter One | An Introduction to Preventive Strikes | 1  |
|             | Preventive Strikes in Theory          | 3  |
| Chapter Two | Chelyabinsk to Yongbyon               | 8  |
|             | The United States vs. the Soviet Union: 1945-1954 | 8  |
|             | The United States (and the Soviet Union) vs. China: 1963-1965 | 11 |
|             | Egypt vs. Israel: 1960-1967            | 14 |
|             | Israel vs. Iraq: 1981                 | 16 |
|             | Iraq vs. Iran: 1984-1988              | 18 |
|             | The United States, India and Israel vs. Pakistan: 1979-1988 | 19 |
|             | The United States/United Nations vs. Iraq: 1991 | 22 |
|             | The United States and South Korea vs. North Korea: 1990-1994 | 24 |
| Chapter Three | Decision-Making Criteria in Preventive Strikes | 26 |
|             | General Characteristics of Proposed Strikes | 26 |
|             | Differentiating Characteristics: Factors | 29 |
|             | Distinguishing Realized Strikes        | 29 |
|             | Friends and Detractors                | 29 |
|             | Likelihood of Operational Success      | 36 |
|             | Threat Perceptions                    | 42 |
|             | One Option among Many?                | 52 |
|             | "Hot" Facilities                     | 59 |
|             | International Law                     | 63 |
|             | Military Retaliation                  | 67 |
|             | Domestic Public Opinion               | 72 |
|             | Summary                               | 75 |
| Chapter Four | Conclusions                           | 79 |
|             | Preventive Strikes: Inefficient and Implausible | 84 |

Endnotes  
Bibliography  

- iii -
LIST OF TABLES

Table 1 How the Ten Realized/Proposed Strike Plans met the Suggested Criteria for Engagement 76
CHAPTER ONE: AN INTRODUCTION TO PREVENTIVE STRIKES

The names are exotic but otherwise unremarkable: Lanzhou, Yongbyon, Osiraq. Every name, however, is or was attached to a nuclear power station, enrichment facility or reprocessing plant with some role in an emergent nuclear weapons program. Each of these installations, in turn, faced destruction by a foreign power before a nuclear threat could materialize.

Preventive strikes against nuclear facilities seem the stuff of fiction; this image may explain their limited role in nuclear literature. The cast of characters is dominated by daring pilots and sinister national leaders; the plot is murky, climaxing in an aerial raid or descending to an anti-climax where military action is rejected. Nevertheless, preventive strikes are very much part of reality and, as such, deserve serious attention. Since the Allies attacked German and Japanese nuclear facilities during World War II, three (sets of) preventive strikes have occurred. Best documented was the Israeli raid on Iraq's Osiraq reactor in 1981. However, Iraq itself repeatedly struck Iran's construction site at Bushehr-al Bandahr, and again faced an assault on its own nuclear installations during and after the 1991 Gulf War. The United States, Egypt, Israel, India and South Korea have each considered other targets as well: proposed victims were the Soviet Union, China, Israel, Pakistan and North Korea. With this in mind, the prospect of new strike plans cannot immediately be excluded.

This study establishes a framework within which to examine the probability of preventive strikes against fledgling proliferators in the future. Of great importance to this framework is the colorful past sketched out above. The historical synthesis and analysis attempted in this thesis are distinctive, for the past is rarely probed in the preventive strike context. Scholars like Leonard S. Spector, Herbert Krosney and Steve Weissman, and
Randall L. Schweller distinguish themselves simply by discussing, within a single work, two or three of the ten past strike proposals at more than sentence-length, with the cases still treated independently. This study therefore brings together information mentioned, but no further analyzed, by a range of disparate sources. Building on available data, the thesis will compare the circumstances surrounding each realized preventive strike to those prevalent when governments decided against such direct action. Similarities between all cases should highlight the general characteristics of scenarios where strike planning can be expected at all. Differences will suggest which factors promote, and which ones discourage, the actual resort to preventive strikes as a policy instrument. In fact, eight central criteria for engagement will emerge. The framework set out will then be applied to the cases of contemporary proliferators and their potential attackers, to assess the likelihood of any future round of preventive strikes.

This assessment is important; preventive strikes can have wide repercussions. Whether effective or not, military action intended to slow or stop a nuclear weapons program might be environmentally damaging, or prompt military retaliation that could embroil entire regions in conflict. It could also spur new efforts at nuclear proliferation by a defiant victim or its allies. Conversely, if successful in destroying a state's nuclear potential, a preventive strike would deny a region the deterrence benefits of proliferation that are championed by realist scholars like Kenneth Waltz. This school's opponents too would feel the effects of military action, but as advocates of non-proliferation might well be pleased instead of disappointed by an attacker's triumph. Both sides would have to admit, however, that resources which new proliferators had devoted to nuclear programs had ultimately, and unfortunately, been wasted. In sum, a high probability of preventive strikes may give pause to the proliferator and force other states...
to re-examine whether or how non-proliferation goals should be advanced.

PREVENTIVE STRIKES IN THEORY

Before further pursuit of the topic, the "preventive strike" concept must be defined. In this thesis, such a strike involves military action by one or more states for the purpose of destroying supposed nuclear weapons facilities in a suspected nuclear proliferator. The overall goal of these actions is to prevent the achievement of a credible nuclear capability by a country which is not yet a nuclear power; to use the Clinton Administration's terminology, this means that the target does not yet possess several deliverable weapons. Although the distinction is not always clear-cut, it is important to point out that this study does not focus on preventive strikes as the term is more widely employed, to label unprovoked first strikes against existing but vulnerable nuclear arsenals. In this thesis, preventive counter-proliferation is central; research and production facilities, rather than airfields and silos, are key strike targets.

The definition of preventive strikes used here requires four qualifications. First, discussion will be confined to attacks considered by states. Non-state actors have also targeted nuclear installations: local Shi'ites reportedly attempted to sabotage the Osiraq reactor in January and April 1980, and the African National Congress struck South Africa's Koeberg nuclear power station in December 1982. However, such attacks would need separate investigation, because terrorist groups and states calculate different odds. For example, terrorists may count on anonymity or, if publicity-seeking, on physical concealment, to protect them from retaliation for an attack; unless confident of engaging in a covert raid, a state must rely on having a poorly armed or isolated target for the same reassurance. Independently, the range of targets for non-state groups appears to be much larger.
as well. Electricité de France's efforts to protect its SuperPhénix fast breeder reactor from terrorists in the late 1970s suggest that more than new nuclear proliferators are at risk. The aims of non-state groups may be manifold, having less to do with nuclear weapons than with environmental or anti-governmental protest. Of course, states too may on occasion attack neighbors' nuclear facilities for reasons other than their weapons potential; these cases must be weeded out.

Second, then, a preventive strike must be both deliberate and specifically directed against weaponization. Excluded from consideration in this study, as a result, is a September 30, 1980 incident where two Iranian F-4 Phantoms fired their rockets and guns at the Tuwaitha Atomic Centre in Iraq, damaging Osiraq's water cooling system and storage facilities. Iranian President Abolhassan Bani-Sadr backed eye-witness reports that the raid had only been an afterthought on the part of the pilots; they were returning from a raid on a nearby Iraqi power plant and may not have even realized that their second target was a nuclear, much less a prospective weapons, facility. Another attack that fails to qualify as a preventive strike was North Korean commandos' botched raid on South Korea's Wolsong nuclear power plant in August 1983. The plant itself was apparently unrelated to weapons development; US pressure had dissuaded South Korea from weapons efforts by the late 1970s, arguably lessening those particular North Korean fears. North Korea may have actually been aiming for a nuclear accident to turn public opinion against the American nuclear presence in the South.

A third concern pertains to the extent of a preventive strike. In this thesis, such a strike targets only nuclear facilities, in order to prevent weaponization. In contrast, a preventive war involves a wider attack on a rival's "overall military power." However, the concepts overlap. Preventive strikes may be part of any conflict, including preventive war, as long
as nuclear installations are singled out not to inflict economic or environ­
mental damage, but to destroy an emergent weapons program. Both preventive
strikes and preventive war are, furthermore, "motivated by long-term fore­
casting." They each "take advantage of a closing window of opportunity or...prevent the opening of a window of vulnerability," and are thus intend­
ed to stop "attackers' security from being compromised at some later date." 8

The fourth issue to consider in defining a preventive strike, corre­
spondingly, is timing. On the one hand, the victim of a pre-emptive attack
is assumed to be on the verge of aggression. Its nuclear facilities may
remain on the list of targets; regular (and, as far as General Curtis LeMay
was concerned, pre-emptive) US war plans in 1955, for example, devoted
twenty-five nuclear weapons to Soviet atomic energy installations. 9 Still,
a pre-emptive strike's priority is to destroy deployed weapons ready for use
against foreign soil. On the other hand, a preventive strike takes place
while the targeted state poses no immediate nuclear threat. The variety of
preventive strikes with which this thesis does not deal may again be
intended to remove existing, exposed weapons, but not because the target was
known to have plans for war; as indicated earlier, preventive action
addresses dangers feared to emerge in the long term. For their part, the
preventive strikes discussed in this thesis take an even longer-term perspec­
tive, singling out research and production facilities before or shortly
after a first nuclear test. 10 Their natural boundary, in fact, is the
proposed target's deployment of deliverable nuclear weapons in significant
quantities; an attack on the sites where weapons had been developed and
built would then be too late. This was the case when Iraq fired three Scud
missiles at Israel's Dimona complex, where two hundred nuclear weapons may
have already been assembled, in February 1991. The Iraqi action was not
intended as a preventive strike according to this study's definition, and,
incidentally, would not have succeeded as one in practice: Scuds are not accurate enough to target a reactor containment vessel, and each one landed harmlessly in the Negev Desert.\textsuperscript{11}

States deciding whether to engage in a military operation which meets preventive strike criteria face an array of costs and benefits, both practical and principled. In theory, preventive strikes have numerous disadvantages. National leaders know that military action will put combatants at risk. At the same time, setting off an explosive charge near nuclear material may endanger foreign technicians and even local residents. The concomitant challenge to nuclear taboos and threat of popular disapproval may be forbidding. Furthermore, governments contemplating a preventive strike must confront the possibility that the victim will retaliate militarily. The victim's allies and sympathizers may do likewise; economic or diplomatic sanctions are also hazards, with some degree of international disapproval being likely in view of the fact that preventive strikes generally violate international law. Finally, of course, the strike itself may fail on its own terms, and, instead of hampering or stopping proliferation, provide the angered target with an incentive to accelerate its nuclear program.

A state must weigh related costs against a range of benefits before making its decision in favor or against military action. If the target is particularly hostile, eliminating its nuclear weapons program might be seen as a means of self-preservation. Less urgent but still welcome is the opportunity to undermine the attacked proliferator's threat to or prior dominance of the regional balance of power, both military and political, through a successful strike which advertised the attacker's own military might. Concurrently, the attacker might safeguard the prestige accompanying a regional nuclear monopoly, while other neighbors considering nuclear weapons development could be deterred. The cause of non-proliferation advanced, the
aggressor government might even win domestic or international applause.

Each of these benefits and costs is not applicable or of interest to all states. Some governments can foresee greater benefits stemming from a preventive strike in terms of state survival, and fewer costs with respect to retaliation or domestic protest. For others, the situation is reversed. A review of the empirical evidence, in the form of past cases where preventive strikes were discussed, may suggest which combination of factors is most inimical, and which combination most conducive, to military action.

This review will be undertaken in the next two chapters. First, ten cases in which preventive strikes are known to have been considered will be described; aside from Israel's 1981 attack on Iraq, few have received consistent scholarly attention. Second, the similarities and differences among these cases will be drawn out. The most important product of this analysis will be a list of eight factors distinctive of past resorts to military action; governments have preferred to act under a special set of conditions. The preventive strikes that have occurred were expected to be widely condoned, even legal, actions which would destroy cold facilities in a menacing new proliferator. Neither military reprisal nor a domestic outcry were, furthermore, supposed to mar the operational success achieved here after a range of non-violent strategies had already been attempted or discounted. Guided by this suggested checklist, predictions about the likelihood of future preventive strikes will be ventured in the concluding chapter.
CHAPTER TWO: CHELYABINSK TO YONGBYON

Ten preventive strikes are known to have been pondered or attempted over the past fifty years, and will be examined in this chapter. These cases involve American planning against the Soviet Union, China, Pakistan, Iraq and, in collaboration with Seoul, North Korea; Israeli designs against Iraq and Pakistan; periodic Indian resolve to attack the again exposed Pakistan; Egyptian threats against Israel; and Iraqi raids on Iran.

In reality, of course, more than ten sets of strike plans have likely been formulated. Unfortunately, the public record is not extensive enough to be sure of otherwise not implausible scenarios such as China or Pakistan plotting against India, suspicious neighbors eyeing a confrontation with a proliferating South Africa, or machinations by both Argentina and Brazil against the other. Selectivity also has a part in limiting the number of cases to be explored here, for additional, recorded discussions appear to have been confined to the level of idle threat. In this vein, after the Osiraq raid and before Mordechai Vanunu had confirmed Israel's nuclear status, Libyan leader Muammar Qaddafi pronounced an attack on Dimona to be legitimate; he suggested that his ambassador to Jordan smuggle a Syrian rocket within range of the Israeli facility. However, the idea was rather fantastic; Saddam Hussein reportedly told Qaddafi that he would restrict Iraqi support to a feasible plan, which was not forthcoming.12 This chapter will thus chronicle only the apparently more serious threats since 1945, about which information was available in newspaper reports and country studies.

THE UNITED STATES vs. THE SOVIET UNION: 1945-1954

Notorious during this period was American contemplation of preventive war. Nuclear-capable or not, the Soviet Union's relative military and
political power was supposedly rising, and Cold War episodes such as the Berlin Crisis seemed to indicate its willingness to use this power in an aggressive or provocative fashion. After some debate, of course, President Harry Truman formally set aside preventive (although not preemptive) war in 1950's NSC-68, and Dwight D. Eisenhower did the same in 1954's NSC-5440; both documents concluded that "the United States and its allies must reject the concept of preventive war or acts intended to provoke war." Of interest, however, is that a preventive strike to be directed specifically at Soviet nuclear facilities at times figured in American strategic discussion.

In 1942, the Soviet government decided to pursue a uranium bomb, and work on nuclear weapons more generally intensified after American nuclear prowess was demonstrated in August 1945. A site for large-scale plutonium production was chosen in 1946, near Chelyabinsk in the Ural Mountains; the nuclear complex there eventually included several reactors and a plutonium-separation plant, Chelyabinsk-65. Design work on nuclear weapons took place at the same time near what is now Nizhniy-Novgorod.

As its own actions demonstrated, the Soviet Union was certainly worried about the prospect of a preventive strike against such facilities. In building nuclear installations, for example, Stalin sought both to conceal their location and to harden them in case of a bombing raid by American B-29s. (These precautions were also hoped to come in useful should a nuclear accident or explosion occur; it could be better concealed or contained.) Some of Chelyabinsk-65 was allegedly built up to forty metres below the surface of Lake Irtyash, and parts of the facility were covered by "steel-reinforced concrete roofs" up to seven metres thick. A smokestack was apparently the only indication of its existence. Similar precautions were taken at a second set of facilities in Siberia, near Zhelenogorsk, where an estimated 65,000 prisoners and 100,000 soldiers buried plutonium-producing
reactors "deep underground."\textsuperscript{15} Soviet unease persisted until at least 1951; the government became concerned about the Americans finding Chelyabinsk-65 (and presumably making worrisome use of this information) by tracing the radioactive waste that had surfaced in the Arctic Ocean back to the Techa River into which it had been dumped. Indeed, the US government eventually did locate the nuclear complex through techniques developed at Hanford.\textsuperscript{16}

Actual American mention of a preventive strike (as opposed to preventive war) was made by General Leslie R. Groves, who had headed the Manhattan Project and became the military’s liaison with the Atomic Energy Commission. The September 22, 1945 \textit{New York Times} described him as saying that "if the Soviets rejected...international control of atomic weapons, the United States should consider a preventive attack against Soviet atomic research facilities."\textsuperscript{17} Referring to the need to retain a US nuclear monopoly at a November 1945 press conference, Groves added, "We may never get another chance. We must make the most of this one." Likewise, a January 1946 memorandum to Congress expressed his desire to launch a nuclear attack against "aggressor nations" on the verge of their own nuclear capability.\textsuperscript{18} Although not surprisingly in an era of anti-communist bluster, American civilians also joined the fray. Virgil Jordan, the president of the National Industrial Conference Board, spoke in February 1946 about how the United States should advance "world disarmament" and, implicitly, prevent other countries from arming themselves with nuclear weapons at all.

\textit{Let us make, keep, and improve our atomic bombs...and let us suspend them in principle over every place in the world, where we have any reason to suspect evasion or conspiracy against this purpose; and let us drop them in fact promptly and without compunction whenever it is defied.}\textsuperscript{19}

Ultimately, however, Soviet "defiance" of US non-proliferation (i.e., horizontal proliferation) goals was not met with military action; no strike plans may have ever been formulated, in spite of US rhetoric. The Soviet
Union tested its first nuclear device on August 29, 1949, and by 1953, when it exploded a thermonuclear bomb, NSC 140/1 warned that it had "over one thousand bombers capable of delivering at least 120 atomic bombs to American targets." The time for a preventive strike had passed.

THE UNITED STATES (AND THE SOVIET UNION) vs. CHINA: 1963-1965

Ironically, the next case where a preventive strike was entertained rested on cooperation between the United States and the country that was earlier to have been its target, the Soviet Union. The new target was Mainland China; already fearing American nuclear attack, China decided to join the nuclear club in January 1955. China's early weapons development occurred with Soviet aid. On October 15, 1957 the two countries signed their New Defense Technical Accord, where the Soviets committed themselves to providing a prototype atomic bomb. Soviet technicians did, in fact, then help China to construct a gaseous diffusion plant at Lanzhou, and to design a plutonium-producing reactor for the Jiuquan Atomic Energy Complex in the Gobi Desert. Although Nikita Khrushchev reneged on more substantial promises and Soviet specialists were withdrawn by August 1960, China continued with its nuclear program and successfully tested an enriched uranium bomb on October 16, 1964.

The strongest reaction to China's weapons goals appeared to come from the United States; Chinese officials may have considered the possibility of an American preventive raid as early as 1955. President John F. Kennedy was particularly anxious to stop the Chinese nuclear program, with preventive strikes being one option that he raised. Speaking on January 22, 1963 at a meeting of the National Security Council (NSC), Kennedy hinted at his "willingness to consider politically dangerous moves against China." Plainer indications of his state of mind emerged as the Administration
prepared for talks with the Soviet Union on the Partial Test Ban Treaty in July 1963. Briefing books proposed "radical steps...to prevent the further proliferation of nuclear capabilities," including the "Soviet, or possibly joint US-USSR, use of military force" against China. Kennedy duly assured US Ambassador W. Averell Harriman, on his way to meet Khrushchev, that he "could go as far as he wished in exploring the possibility of a Soviet-American understanding with regard to China." On July 15, he sent further instructions to Harriman, by then in Moscow. This time, Kennedy said, "You should try to elicit Khrushchev's view of means of limiting or preventing Chinese nuclear development and his willingness either to take Soviet action or to accept US action aimed in this direction."

How far planning for a preventive strike advanced is unclear. Harriman did speak to Khrushchev about the Chinese nuclear program, but was apparently rebuffed. Certainly when Harriman asked whether the Soviets could "deliver" Chinese agreement to the test ban treaty, Khrushchev replied, "That's your problem." The Soviet leader ignored Harriman's follow-up question: "Suppose their rockets are targeted against you?" Indeed, what exactly US leaders themselves envisioned in terms of a preventive strike is open to debate; likewise uncertain is whether a preferred scheme would have been implemented, for Strategic Air Command (SAC) was sure to protest the oft-mentioned cooperative aerial raid. In this respect, one "former high-level official in the Kennedy Administration" revealed that it had pondered having "a Soviet and an American bomber fly over the facilities at Lop Nor, with each dropping a bomb, only one of which would be set to go off." American journalists and academics made suggestions other than a joint nuclear strike which may also have been canvassed in government circles. One idea was to entrust Chiang Kai-shek with the operation, giving him some American B-52s for the purpose; another was to have National-
Calls for a preventive strike persisted under President Lyndon B. Johnson. On September 15, 1964, Johnson and his advisers discussed the issue and, according to Special Assistant for National Security Affairs McGeorge Bundy, came to the following conclusions:

1. We are not in favor of unprovoked unilateral US military action against Chinese nuclear installations at this time...If for other reasons we should find ourselves in military hostilities at any level with the Chinese Communists, we would expect to give very close attention to the possibility of an appropriate military action against Chinese nuclear facilities.

2. We believe that there are many possibilities for joint action with the Soviet Government...even a possible agreement to cooperate in preventive military action. We therefore agreed that it would be most desirable for the Secretary of State to explore this matter very privately with Ambassador Dobrynin...

Although Khrushchev's overthrow and the accession of an unfamiliar Soviet leadership dampened enthusiasm for cooperative action, a preventive strike was not yet ruled out completely. Perhaps somewhat capriciously, L. Mendel Rivers, the chairman of the House Armed Services Committee, responded to the Chinese nuclear test by urging a US air strike. On November 1, 1964, Johnson himself nominated former Under-Secretary of Defense Roswell Gilpatric to head a panel investigating American options for countering nuclear proliferation; those options included a "surgical strike" against China. Later that month, a Department of Defense Working Group concluded that there might be a "defensible case" for attacking Chinese "nuclear production" facilities during the Vietnam War. In the end, however, Johnson refrained from taking action. China proceeded to test the 1450-kilometre Dongfeng-2 missile, equipped with a twenty kiloton warhead, in October 1966; by 1968, the year in which it tested a thermonuclear device, it had B-5 Hong bombers each able to carry a one megaton bomb over 6400 kilometres.

China remained in danger during this time, but now from a pre-emptive or more widely defined preventive Soviet strike on its constructed arsenal.
In 1968 and 1969, the Soviets raised the possibility of destroying assembled Chinese weapons with their European allies and, allegedly, even with US President Richard Nixon. However, the United States was no longer in favor; finally ready to act militarily, the Soviets were refused outside support.

EGYPT vs. ISRAEL: 1960–1967

More rarely mentioned, at least outside work on Arab-Israeli relations, is the military threat posed to Israeli nuclear facilities by Egypt during the 1960s. This obscurity may partly be attributed to the likelihood that Egyptian threats were not made with particular conviction. Still, the frequency with which they were repeated means that they cannot be ignored: a preventive strike was clearly on the mind of President Gamal Abdel Nasser.

France secretly agreed in 1956 to build Israel's nuclear complex at Dimona. An American U-2 spy plane noticed a reactor dome at the site in December 1960, prompting Prime Minister David Ben-Gurion to tell the Knesset that a twenty-four megawatt (MW) reactor was being constructed there. He denied press reports citing American and British intelligence sources, who claimed that Israel's aim was to develop nuclear weapons and that it could do so within five years. Instead, he insisted that Dimona was needed to train Israeli scientists in agricultural, medical, and other peaceful uses of nuclear technology. Of course, his denials were not entirely credible. Ben-Gurion had earlier maintained that Dimona was a textile plant, while Deputy Defense Minister Shimon Peres asserted even in 1963 that it housed a water desalination project which would "turn the Negev into a garden." That Israel would then seek to conceal weaponization was no surprise.

When charges against Israel surfaced, Nasser turned his thoughts to a preventive strike. Early in 1961, he arranged a meeting of the Arab Advisory Commission of Military Affairs, and apparently demanded that the Arab
chiefs of staff involved plan a military attack on Dimona. Work in this forum was not long pursued, presumably because of discouraging technical deficiencies and in-fighting among member regimes, but the Arab press had by then seized upon the preventive strike option. Even journalist Muhamed Hassenin Haykal, one of Nasser's chief confidants, raised the possibility of military action against Dimona in 1965. Nasser himself periodically went public with his reflections. In December 1960, he declared, "[we] cannot permit Israel to manufacture an atom bomb. It is inevitable that we should attack." Similarly, he announced in February 1966 that "if Israel produces the atomic bomb...[t]he Arab states would have to take immediate action and liquidate everything that will enable Israel to produce the atom bomb." By some accounts, only quick Israeli action foiled an Egyptian preventive strike. One explanation of the Egyptian military build-up prior to the 1967 Six-Day War posits the elimination of Israeli nuclear installations as one of its goals. However, this study assumes that it was Nasser who finally decided against a preventive strike. Israeli nuclear development did not figure at all in Egyptian propaganda by May 1967, perhaps indicating that Nasser had earlier concluded his deliberations and was not interested in prolonging the issue. After all, he had already linked a preventive strike to distant or unattainable prerequisites such as "meaningful Arab unity." Otherwise, a relationship between Egyptian hostility toward Israel and Israeli nuclear goals might have been emphasized to win Nasser sympathy from Western non-proliferation advocates as well as from fellow Arabs.

In any event, Dimona remained untouched. Israel may have been able to consider brandishing, if not using, deliverable nuclear weapons during the Yom Kippur War in 1973; certainly by 1976, the CIA believed that Israel had "developed ten to twenty bombs of the size used at Hiroshima." Of course, Israel did not make its nuclear progress public, and an Arab opponent may
have felt justified in describing any proposed military attack on Dimona as a preventive strike until Mordechai Vanunu's 1987 revelations.

**ISRAEL vs. IRAQ: 1981**

Egypt's proposed target did not shy away from its own preventive strike little more than a decade later. Israel's concern in this respect was not Egypt but Iraq. An early cause for alarm was Iraqi interest in a five hundred megawatt gas-graphite reactor from France, with which Iraq had signed a nuclear cooperation agreement in 1974. The strength of this reactor was plutonium production (perhaps enough for eight bombs annually) instead of electrical output, which was oil-rich Iraq's dubious public rationale for nuclear development. France pointed out that production of the gas-graphite model had been discontinued, and offered Iraq a US-designed pressurized water reactor, which produced electricity using uranium enriched only to between two and three percent, far below weapons-grade. Iraq refused this model, and instead chose France's own, forty to seventy megawatt Osiris.

Renamed Osiraq for its recipient, this material testing reactor was normally used in building power reactors; Iraq had no such industry. Research aside, Osiraq's attraction seemed its ability to produce perhaps ten kilograms of plutonium yearly if its core were fitted with a blanket of natural or depleted uranium. Notably, Iraq purchased around 250 tons of natural uranium in 1980 and 1981, and placed an order for depleted uranium-metal fuel pins. At the same time, it refused France's offer of a new type of fuel for the reactor; although less costly, "Caramel" was enriched only to between seven and ten percent. Osiraq's original requirement, the first shipment of which arrived in late June 1980, was weapons-grade, enriched to ninety-two or ninety-three percent. With the seventy kilograms that France had promised to supply, Iraq was felt able to produce "at least three"
nuclear bombs even if its longer-term plutonium extraction option failed.\textsuperscript{47}

Indications of Iraq's weapons aims mounted. The country purchased a complex consisting of three hot cell laboratories, in which plutonium could be reprocessed on a small scale. This Italian facility could serve as a model for a larger reprocessing plant; it was otherwise far beyond Iraq's needs and research capabilities. Iraq also began negotiating in 1981 for another source of plutonium to reprocess: a forty megawatt Italian heavy water reactor out of place in its modest energy program.\textsuperscript{48} Duly unconvincing was Iraq's March 1980 pronouncement that it "strongly oppose\[d]\ the introduction of nuclear weapons in the area."\textsuperscript{49} Israeli analysts looked instead to a more ominous statement made by Saddam Hussein in September 1975: "[Franco-Iraqi nuclear cooperation] was the first actual step in the production of an Arab atomic weapon, despite the fact that the declared purpose for the establishment of [Osiraq] is not the production of atomic weapons."\textsuperscript{50}

Israeli plans to destroy Osiraq emerged in November 1979 within the General Staff, under Commander-in-Chief Raphael Eytan. The preventive strike option reached the Cabinet in late October 1980; Prime Minister Menachim Begin already favored military action, and it won Cabinet approval.\textsuperscript{51} After several postponements, the raid was set for June 7, 1981, and from an operational standpoint was an immense success. Eight Israeli F-16 fighter-bombers, escorted by six F-15 Eagles, dropped sixteen 2000 pound MK.84 iron bombs on Osiraq. The damage prompted reports that saboteurs had worked on the ground as well: in the space of eighty seconds, the reactor dome collapsed, its foundations toppled, water flooded the facility, and electrical and control systems were disabled. A second French reactor at the site, the smaller Isis, was also shaken, and although the nearby hot cells and an older Soviet reactor escaped damage, Italian and French offices were swept by fire.\textsuperscript{52} Triumphant, all the Israeli planes
returned home safely within three hours of their departure.

**IRAQ vs. IRAN: 1984-1988**

The victim of a preventive strike in 1981, Iraq was soon to launch its own raids on its eastern neighbor. Iran's nuclear weapons program began under the Shah, with work on laser-based uranium enrichment, plutonium extraction and weapons design occurring at the Teheran Nuclear Research Centre. Despite national oil resources, the Atomic Energy Organization of Iran (AEOI) also planned for at least twenty nuclear power stations to be in operation by 1992. Work on nuclear weapons stopped briefly after the accession of the Ayatollah Ruhollah Khomeini, who preferred more spiritual endeavors; however, the continuation of the Iran-Iraq War, which had started in September 1981, apparently persuaded his government to reconsider its nuclear option. In 1984, a new nuclear research centre was opened in Isfahan, and at Bushehr, construction resumed on two 1200 MW power reactors which would, it was believed, eventually yield "significant quantities" of plutonium for reprocessing. West Germany, Spain and Argentina were each approached with contracts to complete Bushehr after President Ali Khameini's February 1987 speech to the AEOI: "Regarding atomic energy, we need it now...Our nation has always been threatened from outside. The least we can do to face this danger is to let our enemies know that we can defend ourselves." Later that year, British television also reported that Iran had sought enriched uranium from Sudanese dealers; although unconfirmed and possibly falsified, the report may have increased neighbors' anxiety.

Iranian weapons efforts did not go unnoticed, accordingly, in Iraq. In fact, that country launched at least seven aerial raids on Bushehr in March 1984, February and March 1985, November 1987 and July 1988. The last attack, on July 19, 1988, occurred the day after a UN ceasefire had been
agreed to by Iraq, although fighting was still in progress. Of course, to what extent Bushehr was targeted specifically because of its nuclear weapons potential is not entirely clear. Iran and Iraq routinely attacked each other's electrical generating stations and oil refineries; in this category of wartime economic targets, Bushehr may have been especially attractive because Iran had spent over one billion dollars in its development. However, a "prominent civilian defense adviser to the Iraqi government," interviewed in October 1989, suggested that Iraqi attacks could indeed be classified as preventive strikes: "misgivings" about Iranian nuclear intentions were what had motivated Iraq to act, using the "cover of war" to do so.

THE UNITED STATES, INDIA AND ISRAEL vs. PAKISTAN: 1979–1988

Compared to the Iranian case, the Pakistani one is complicated. No less than three countries have, at separate times, contemplated a preventive strike on Pakistani nuclear facilities, and at least one has sought outside help in accomplishing its mission.

Pakistan first became interested in nuclear weapons under Zulfikar Ali Bhutto, who in 1965 declared, "If India builds the bomb, we will eat grass or leaves, even go hungry. But we will get one of our own." He further pronounced the need for a Pakistani "nuclear deterrent" in his 1969 book, The Myth of Independence. As president in January 1972, Bhutto confirmed his nuclear desires while addressing the scientific elite assembled at Multan, and practical measures were soon taken. Negotiations began in 1973 on the purchase of a French facility able to reprocess 150 kilograms of plutonium annually; it had no obvious role in Pakistan's nuclear energy program. Reportedly, ground was also broken in late 1974 on the "New Labs"; this smaller facility was supposedly capable of separating enough
plutonium for between two and four nuclear weapons yearly, and the International Atomic Energy Agency's (IAEA) director-general admitted in October 1981 that plutonium may have been diverted for separation there from the Karachi Nuclear Power Project. Shepherded by Dr. Abdul Qadir Khan, who had gained experience at the Urenco enrichment project in the Netherlands, Pakistan ventured into uranium enrichment as well; construction began on a large enrichment facility at Kahuta in 1978. Also commencing in October of that year were reports that Pakistan was preparing a nuclear test site.

Rather surprisingly, the first country publicly rumoured to have considered a preventive strike in face of this evidence was the United States. The August 12, 1979 New York Times reported the formation of an interagency task force under State Department official Gerard C. Smith. The group was allegedly weighing a variety of options for constrainning Pakistani nuclear development; one such option was a covert, paramilitary raid to destroy enrichment equipment at Kahuta. The US government denied that this possibility was under consideration, but Pakistan took the threat seriously enough to complain to the American ambassador and to improve Kahuta's defenses. Adding weight to what was perhaps an otherwise dubious scenario were more general suggestions that US "institutions" or the "West" would later go on to encourage a proxy raid on Pakistan by India. Of course, if kindled at all, official US interest would have waned once the Soviet Union had invaded Pakistan's neighbor, Afghanistan.

A second and more persistent set of allegations centered on India. Indian Prime Minister Morarji Desai (1977-1979) later claimed to have told Pakistani President Zia ul-Haq that India would attack his nuclear installations in case of a Pakistani nuclear test. The Washington Post further reported in December 1982 that, according to American intelligence sources, a preventive strike against Kahuta and the New Labs had been planned and
proposed to Prime Minister Indira Gandhi by her military earlier that year. India maintained its innocence, with the Indian ambassador to Washington dismissing rumours of an impending raid as a "figment of the imagination," but Zia told journalists that his government "naturally had a concern" about the possibility of Indian attack. Proposals for military action may have resurfaced in 1984, the year in which Indian authors themselves had earlier predicted that the strike would occur; ABC News alleged that Mrs. Gandhi was again being pressured to attack Kahuta. Finally, September 1985 witnessed the rise of Pakistani fears that an Indian preventive strike plan, postponed because of Mrs. Gandhi's death, was about to be reactivated.

That preventive strikes were seriously considered is supported by the emphasis put on prohibiting them as a bilateral confidence-building measure. In December 1985, Zia and Indian Prime Minister Rajiv Gandhi verbally agreed not to attack each other's nuclear installations. In December 1988, furthermore, a written agreement against preventive strikes was signed by Gandhi and Pakistani Prime Minister Benazir Bhutto. Each side must now "refrain from undertaking, encouraging, or participating indirectly or directly in any action aimed at causing the destruction of or damage to any nuclear installations or facilities in the other country." Incredibly, however, Pakistan's nuclear program remained in jeopardy. The country eyeing the preventive strike option in 1988 was Israel, perhaps for the third time on its own part. The Observer reported in March that Israeli officials had asked Indian diplomats in Paris about the possibility of using refuelling facilities at Jamnagar, an Indian Air Force base near the Indo-Pakistani frontier, to stage an attack on Kahuta. After India refused, Israel urged an Indian raid with Israeli-supplied "advanced high explosive bombs." Several meetings were held, but India again declined. Indeed, the CIA suggested that Pakistan had assembled three nuclear bombs by
some time in 1988. The country has since affirmed its nuclear status, and it has the aircraft to deliver a nuclear weapon to India, at least.73

THE UNITED STATES/UNITED NATIONS vs. IRAQ: 1991

While Pakistan had a series of escapes, Iraq was not so fortunate when it attempted to rebuild its nuclear weapons program. Israel's bombing of Osirak had not deterred Saddam Hussein from nuclear development. He called on June 21, 1981 for Arabs "in one way or another to obtain a nuclear bomb," and in 1982, his military was already interested in the 33.9 kilograms of plutonium offered by Italian smugglers.74 Iraq's subsequent efforts centered on uranium enrichment, through calutron, gas centrifuge, and electromagnetic isotope separation (EMIS) programs. Although the full extent of Iraqi advances had not become known before Operation Desert Storm, the March 28, 1990 arrest of five people attempting to smuggle forty krytons (nuclear triggers) to Iraq through Heathrow was highly publicized.

Preventive strikes were part of the Gulf War. Of course, the declared priority of Operation Desert Storm was removing Iraqi troops from Kuwait, which they had occupied and annexed in August 1990; an Iraqi withdrawal before the January 15, 1991 deadline would have presumably left its nuclear facilities intact.75 Nevertheless, the nuclear issue gained stature through the autumn of 1990. Iraq itself had suspected Israel of planning a preventive strike after August 1988, which unusually quick and public Israeli denials suggested was not the case;76 it was, instead, the United States that assumed this kind of belligerent posture. At Thanksgiving, President George Bush told US forces in Saudi Arabia, "Every day that passes brings Saddam Hussein one step closer to realizing his goal of a nuclear weapons arsenal." Iraqi nuclear development gave a "real sense of urgency" to their mission.77 Military planning proceeded accordingly, with Bush be-
coming more blunt in his January 16, 1991 address. "We are determined to knock out Saddam Hussein's nuclear potential," he said. 78

Iraqi nuclear installations were high-priority targets during the war, although attacks on nuclear, chemical and missile development facilities constituted only five percent of Coalition sorties. 79 Three days after the war began, US briefings pronounced Iraqi nuclear facilities to have been "gravely damaged," and by January 23, Iraq's two reactors (at the old Osiraq site) were supposedly "inoperative." 80 Indeed, the enrichment facility at Tarmiya, the uranium extraction and yellowcake production facilities at Qa'im, and the Taji military factory were all eventually bombed. Also targeted was Al Atheer, later revealed to be the "Iraqi equivalent of the Los Alamos National Laboratory," although only the cafeteria was actually hit. 81 Reflecting the strength of nuclear-related concerns, UN Security Council Resolution 687 then called on Iraq to allow UN inspectors to investigate its nuclear facilities; a full disclosure and repudiation of nuclear weapons activities was demanded again in August 1991's Resolution 707.

Post-war inspections by the UN Special Commission (UNSCOM) found the Iraqi nuclear program to have been much larger than suspected. The IAEA and UNSCOM were entrusted with the "destruction, removal or rendering harmless as appropriate of Iraq's nuclear capabilities," and nuclear installations which survived the war, such as Al Atheer, were dynamited or filled with concrete. 82 Although under duress, Iraqi engineers participated in these operations; intended to fulfill a ceasefire agreement, the actions were not preventive strikes. Noteworthy, however, is that in March 1992, US officials proposed explicitly military action against nuclear facilities in view of Iraqi obstructionism. On January 17, 1993, forty-five US cruise missiles were used against a Zaarfarniya factory, where White House spokesman Marlin Fitzwater claimed that Iraq was storing nuclear components. 83
The United States and its likely strike partner, South Korea, exercised more restraint in dealing with North Korea's nuclear program. Apparently, President Kim Il Sung launched Northern weapons efforts in the late 1970s. Between 1980 and 1987, North Korea built a thirty megawatt research reactor, of a gas-graphite variety able to produce between seven and eight kilograms of plutonium annually, at Yongbyon. American satellite photographs taken in late 1988 and early 1989 subsequently indicated that a plutonium extraction plant, in addition to a new reactor which would operate at between fifty and two hundred megawatts, was perhaps being built at the site. Also highlighting North Korea's weapons goals was the country's resistance to a thorough IAEA inspection of its nuclear facilities, and its March 12, 1993 announcement of plans to withdraw from the Nuclear Non-Proliferation Treaty (NPT). Although Kim Il Sung was still claiming in April 1994 that his country had only peaceful intentions, he was not believed; remembered were North Korea's hints late in 1990 that "it might...have to develop certain weapons which it had once relied on its allies to provide." Also highlighting North Korea's weapons goals was the country's resistance to a thorough IAEA inspection of its nuclear facilities, and its March 12, 1993 announcement of plans to withdraw from the Nuclear Non-Proliferation Treaty (NPT). Although Kim Il Sung was still claiming in April 1994 that his country had only peaceful intentions, he was not believed; remembered were North Korea's hints late in 1990 that "it might...have to develop certain weapons which it had once relied on its allies to provide."85

Suggestions that a preventive strike on Northern nuclear facilities was under consideration emerged in both South Korea and the United States; collaboration seemed understood. In 1991, South Korean Defense Minister Lee Jong Ku twice made reference to the possibility of an "Entebbe-style" raid on the North, presumably thinking not of Entebbe but rather of Osiraq.86 A US State Department source echoed the message in November 1991: "[if North Korea] missed Desert Storm, this is a chance to catch a rerun."87 Two years later, on November 10, 1993, South Korean President Kim Yong Sam repeated that "North Korea's nuclear development should be stopped by all means." This statement came only days after reports that the Pentagon was readying plans to destroy Yongbyon in a cruise missile strike.88
tions to the "Team Spirit" exercises conducted by the United States and its South Korean ally in 1993 were an American B-1B bomber and F-117 Stealth fighter; this deployment may have been "a signal to the North that the nuclear complex in Yongbyon...could be reached in minutes if necessary." Of course, no preventive strike has taken place to date, and the Los Angeles Times reported in March 1994 that Washington had, in fact, decided against the option. Both the Clinton Administration and South Korean government have taken pains to point out, however, that North Korea is not yet a nuclear power, and they have even begun to downplay earlier contentions that the country had assembled one or two nuclear weapons. In the eyes of Washington and Seoul, a preventive strike may, by definition, still be feasible.

In sum, ten preventive strike proposals, both famous and relatively obscure, have been outlined. As noted earlier, this list may not be exhaustive, but additional scenarios were not raised, much less confirmed, by either the general or country-specific sources consulted for this study. At any rate, a comparison among known cases remains to be made; this task will be undertaken in the next chapter.
CHAPTER THREE: DECISION-MAKING CRITERIA IN PREVENTIVE STRIKES

Ten instances have been described where preventive strikes came under consideration. This chapter will analyze the factors apparently involved in deciding whether to use this particular option, attempting to confine itself to tangible decision-making criteria which may mediate vaguer and relatively elusive background conditions like personality and leadership style. A brief examination of five commonalities among the ten cases (i.e., factors which, judging by past experience, have tended to inspire any discussion of the preventive strike option at all) will be succeeded by a review of differences among them. Eight major criteria will emerge to distinguish the attacks which did occur from those which remained in the planning stage.92

GENERAL CHARACTERISTICS OF PROPOSED STRIKES

The seven strike plans which were rejected had certain features in common with the three which were carried out; these characteristics set all ten apart from cases where preventive strikes were not considered to be an option. The United States did not look at Chinese weaponization, for example, in the same way that it saw an always secure British nuclear program, despite the fact that no military action came to be taken in either instance. Of course, the five characteristics shared by both potential and actual preventive strikes will not seem particularly unusual, even in combination. With more pairs of countries than are known to have been proposed attackers and targets fitting the mold, it again appears probable that military action has been discussed more widely than the public record would show.

The first characteristic shared by the potential targets of preventive strikes was that, armed with nuclear weapons, they were each viewed as some
kind of threat to the prospective aggressor. This threat clearly varied in intensity. The danger from the proposed target may have been to the attacker's actual survival; this degree of perceived threat will later be important in distinguishing realized strike plans. The danger may also have been restricted to the attacker's successful pursuit of foreign policy goals such as non-proliferation or enhanced national prestige. Still, in all cases, the fates of target and aggressor were somehow intertwined, with nuclear development by the former seen to affect the latter unfavorably.

Second, each pair of attackers and targets recently had been, was or appeared soon likely to be, fighting a conventional war for reasons unrelated to nuclear development. An already tense climate (often but not necessarily fostered by an enduring rivalry) with strong military overtones made such development seem more ominous, and military attacks on rival nuclear facilities the obvious means of addressing the consequent fears. In the mid- to late 1940s, a hot war between the United States and the supposedly expansionist Soviet Union was thought to be imminent; Secretary of Commerce Henry Wallace thus wrote in July 1946 that "we are preparing ourselves to win the war which we regard as inevitable." In turn, the United States (with South Korea) battled two of its later proposed targets, China and North Korea, during the Korean War; war with China loomed again during the Taiwan Straits Crises of 1954 and 1958. By the time that Egypt, for its part, was contemplating a preventive strike against Israel, it had fought two wars against the country, in 1948 and 1956. Following this pattern, Israel struck an Iraq which had been its opponent in three military conflicts, in 1948, 1967 and 1973. Facing Pakistan, India was also plagued by the remembrance of three past wars, in 1948, 1965 and 1971, in addition to militarized disputes like their 1984 clash over the Siachen Glacier. During the 1980s, similarly, Iran was the victim of a series of
preventive strikes by its wartime opponent, Iraq, while the latter was engaged in war with an US-led coalition when its own nuclear facilities were attacked in 1991. There are only two exceptions: neither Israel nor the United States had fought or was otherwise poised to fight Pakistan.

A third characteristic generally shared by prospective attackers was that they considered their targets to be somewhat "alien," perhaps aggravating the sense of threat and loosening psychological prohibitions against attack. An ideological barrier separated the United States from the Soviets and Chinese, and continued to divide North Korea from both the South and its American patron in the 1990s. Religion may have been a factor in other cases. Israel was pitted against a Muslim Egypt, and, with the United States, against the Muslim Iraq and Pakistan. Likewise, the secular, Sunni-dominated government of Saddam Hussein confronted a Shi'ite fundamentalist Iran, while the Hindu-Muslim divide followed the Indo-Pakistani border.

Albeit uncomfortable, fourthly, most states considering a preventive strike enjoyed a technological edge on their potential or actual target; the exception was Egypt when it faced Israel. This military superiority made action seem feasible, although not equally so in all cases. A related nuclear advantage on the side of the attacker may also have provided an added incentive to eliminate a rival program which could endanger a distinctive status. It was a nuclear United States which planned raids on the Soviet Union, China, Pakistan, 1991 Iraq and North Korea; a nuclear Israel which confronted 1981 Iraq and Pakistan; and a nuclear India which considered striking Pakistan, again, in the early 1980s.

A fifth similarity linking the cases where preventive strikes were pondered was that countries other than the potential attacker opposed weaponization by its target. Nuclear non-proliferation was a general goal that brought states together. A sense of personal threat or alliance loyalty
likely inspired a degree of reassuring unity around the chief actor as well. However, these are rather vague generalities. Of greater concern are the differences that separate the three cases in which preventive strikes took place from those where the idea was never translated into reality. It is these eight differentiating characteristics that will be examined next.

DIFFERENTIATING CHARACTERISTICS: FACTORS DISTINGUISHING REALIZED STRIKES

In this discussion of factors common only to realized strike proposals, one qualification must immediately be noted. Eight criteria for launching a preventive strike will be gleaned from the ensuing analysis. With very few exceptions, the criteria are met by actualized military operations alone, and are satisfied by all three of these cases. On the other hand, not every factor which forms part of this pattern need be decisive. The fact that the three (sets of) preventive strikes coincide in so many particulars which are absent from remaining cases may, to some extent, be fortuitous; the evidence available is too limited to isolate sufficient from necessary or even from mere supplementary conditions for military action. What may safely be said is that a preventive strike is likeliest in a scenario where more of the differentiating criteria to be raised here are satisfied. Their order of importance will be speculated on in the course of this chapter.

I. Friends and Detractors

Certainly an important factor underpinning decision-making in the preventive strike context seems to involve the balance of support which a potential attacker could expect. In no case, of course, has a potential attacker been completely alone in desiring an end to its proposed target's fledgling nuclear arsenal; no nuclear weapons acquisition earns more than scattered praise. However, countries which specifically saw a larger number
of influential fellows to be on their own side than on their target's were
the ones more inclined to implement their strike plans. Because other
states saw nuclear proliferation by the target to be unusually troubling,
each country which used its military option was less deterred by the threat
of diplomatic, economic or even military retaliation from the victim's
allies or the international community as a whole.

As part of the most extensively documented case, Israeli appraisals of
potential sympathizers in 1981 provide the basis for comparison. Israel
knew, in fact, that a range of states would be pleased by an end to the
Iraqi nuclear weapons program. Perhaps most significantly, the Israeli
government expected a favorable response to the Osiraq raid, or at worst
neutrality, from the United States. On November 13, 1980, Begin was allegedly
promised by President Jimmy Carter that Israeli fears would be raised
with the incoming Reagan Administration. The American government may even
have known of, and acquiesced to, the Israeli raid in advance: the US
Nuclear Regulatory Commission told Israeli experts in October 1980 of the
likelihood that a nuclear plant of Osiraq's size would be destroyed by the
type of bombs later used. Ultimately, of course, the American government
publicly criticized the attack, but there was no question of abandoning
Israel to its opponents: President Ronald Reagan "affirmed" the countries'
"strong and deeply rooted relationship" to the Israeli ambassador, and
helped to block UN sanctions against Israel.

France too was probably counted on for quiet sympathy. Although
complacent about Osiraq in public, a French government reluctant to aid
weapons development had already been suspected, with Libya and the CIA, of
complicity in an April 6, 1979 bombing at La Seyne-sur-Mer, where Osiraq's
core was being prepared for shipment. Openly opposed to nuclear prolifera-
tion even while desirous of cultivating Arab business, the newly elected
François Mitterrand was hoped to be particularly understanding. To preserve his support, Israel took pains not to endanger French technicians at Osiraq; it chose Sunday, when they were expected not to be working, for the raid. There was even a (doubtful) report that the one French technician killed during the attack was an agent of the SDECE, planting a homing device for Israeli bombs; if true, Israel would have been sure of French backing. Privately, French officials did express relief after the raid, and took the opportunity to announce more rigorous safeguards, sketched out beforehand in a secret review, on future nuclear sales.

Less promisingly, Deputy Israeli Prime Minister Yigael Yidan felt that an Israeli attack could "lead Arab states to a general reconciliation." On balance, however, Israel guessed that Islamic disapproval would be perfunctory. Israeli Military Intelligence Director Yehoshua Saguy declared in the autumn of 1980 that a nuclear Iraq would be a "threat to all the states in the region, including Iran, Saudi Arabia and Kuwait." In tacit agreement, the Saudi government demanded French assurances in 1978 that Osiraq would not serve weapons goals, and speaking privately after the raid, Saudi King Khaled "expressed satisfaction." In turn, Israeli Foreign Minister Yigal Alon claimed during a March 1977 discussion with his French counterpart to have "information" that Osiraq was of concern to Syria as well. Syria too urged the French government not to provide Iraq with highly enriched uranium, and a defensive Mossad may have suspected Syrian involvement in the July 14, 1980 murder of Yahya el-Meshad, a nuclear expert working for the Iraqi Atomic Energy Commission. For his part, Egyptian President Anwar Sadat told his Camp David partner, Begin, only three days before the raid that he considered Saddam Hussein "even more vicious than Qaddafi," and an Israeli Foreign Ministry spokesman afterwards claimed that "some Egyptian officials have expressed quiet satisfaction." Finally,
engaged in a war with Iraq and, under the Shah, fairly close to Israel, Iran
was not expected to object to a raid; Israeli officials had inquired rather
confidently about Iranian sentiments toward the Iraqi nuclear program as
early as February 1977. Although Iran was wary of condoning preventive
strikes when it had its own nuclear goals, both the Shah and the Khomeini
government complained about Iraqi intentions for Osiraq to France and Italy,
and Iraq openly blamed Iran for sponsoring the Israeli raid.

Alternately, at the time of Iraqi attacks on Bushehr, it was Iran that
had few friends. A United States wounded by the hostage crisis would
certainly not come to Iran's defense; its eventual favorite in the Iran-
Iraq War was Iraq, with which diplomatic relations were reopened in November
1984. Iraq was probably further comforted by US willingness to defend Saudi
and Kuwaiti tankers carrying Iraqi oil in 1987, even as Bushehr was under
attack. It faced the prospect of criticism only from peripheral states,
such as Syria, which had not been alienated by Khomeini's fundamentalism but
which were also presumably concerned enough about the Iran-Iraq War as a
whole to worry much about its relatively minor preventive strike component.

Although artificially inflated by disapproval for Iraq's violation of
Kuwaiti sovereignty, another imbalance in favor of countries contemplating a
preventive strike occurred in January 1991. Iraq was isolated internationa-
ly through sanctions imposed by no less encompassing a body than the UN;
although Arab publics demurred, even their governments showed little sympa-
thy for the widely mistrusted Saddam Hussein. Indeed, Saudi, Egyptian and
Syrian troops joined the Coalition side, with their contributions adding to
those of the thirty-one other states from around the world which provided
some kind of assistance. Angry protest was expected and heard only from
states and bodies such as Jordan, Yemen and the PLO.

The preventive strikes that were rejected would have faced stiffer oppo-
sition. For example, risking a new European war by attacking Soviet nuclear facilities would have outraged US allies.\(^{108}\) France, in particular, was also inclined to be conciliatory toward Mainland China at the time of new American strike considerations. Diplomatic relations were re-established in January 1964, and French Foreign Minister Maurice Couve de Murville was insisting by October 1965 that "[w]hat is needed is solutions reached through agreement, or at least resulting from some modus vivendi."\(^{109}\)

An outright military response to an American attack on China, in addition to the further protest expected from allies like a Japan increasingly interested in Chinese trade, even seemed possible from the Soviet Union. Admittedly, the CIA had reported in April 1961 that Sino-Soviet divisions were deep, and in January 1963 that "for most practical purposes, a 'split' has already occurred."\(^{110}\) Hawks in the US Navy and Air Force thus contended that Moscow would avoid military confrontation with the United States, as it had done over Cuba and Vietnam, if the preventive strike was clearly limited to the nuclear program which it had lobbied since 1958 to stop.\(^{111}\) On the other hand, some ambiguity remained. Khrushchev openly forbade Harriman to discuss other "Socialist countries" with him, and Chinese Premier Chou En-lai asserted in October 1963 that the 1950 Sino-Soviet Treaty of Friendship, Alliance, and Mutual Assistance was "still very much alive." There were even reports of Chinese scientists continuing to work at the Soviets' Joint Nuclear Research Institute in Dubna as late as January 1964.\(^{112}\) In addition, Sino-Soviet relations appeared to improve with Khrushchev's downfall. Moscow turned its attention to German nuclear access, and pointedly refrained from criticizing China on disarmament issues until 1966.\(^{113}\)

The prospect of external condemnation probably impeded Nasser as well. France had recently plotted against Egypt during the Suez Crisis, and was supportive enough of Israeli weaponization to provide help in weapons design
and manufacture.\textsuperscript{114} It was therefore likely to condemn Dimona's destruction. In turn, although the United States was upset by Israel's concealment of its nuclear efforts from the Eisenhower Administration and demanded that Dimona be subject to outside inspection,\textsuperscript{115} it could not condone an Egyptian attack on a Western, democratic bulwark in the Middle East.

A raid on Pakistan would also have triggered protest. Simplest may have been an American preventive strike in 1979: European states were becoming wary of selling Pakistan nuclear technology, and relief would obviously have been felt by India and Israel. The situation for these states, however, was more complex during their own planning process, for the Soviet invasion of Afghanistan in December 1979 brought the United States into Pakistan's corner. Although viewed with little real "affection," Zia was offered 3.2 billion dollars in US aid in 1981; Pakistan was duly exempted from the Symington-Glenn Amendment to the US Foreign Assistance Act, which proscribed aid to producers of unsafeguarded nuclear material.\textsuperscript{116} By 1985, Pakistan was in fact the fourth largest recipient of American security assistance,\textsuperscript{117} and the United States seemed prohibitively reconciled to Pakistani weaponization. The commander-in-chief of the US Central Command, General George Crist, said in 1987 that Pakistani nuclear weapons "would present quite a great deal more deterrence to the Soviets should they decide to move through Pakistan." More solidly, a nuclear Pakistan was hoped to counter India's challenge to American military dominance in the Indian Ocean.\textsuperscript{118}

The Chinese reaction to any of the three proposed strikes promised to be negative as well, certainly in diplomatic terms. China was a major backer of Pakistani nuclear weapons development, which was valued as a means of balancing against that of the countries' joint rival, India (and thus more than the program of an occasional customer like Iraq). Chinese scientists may even have worked at Kahuta, and there were allegations in 1983 that
China was providing Pakistan with information on weapons design. The states further concluded an agreement on nuclear cooperation in September 1986. Additional disapproval for a preventive strike against Pakistan would surely have come from other Muslim states. After all, Zulfikar Ali Bhutto had said that Pakistani weaponization would be a victory for "Islamic civilization." In this respect, India was particularly worried about cooperating with an Israel already disliked by Muslim states, and may have rejected Israeli strike proposals in 1988 partly in order to preserve friendly relations with the wider Middle East.

Finally, an attack on North Korean facilities was again sure to inspire criticism. Of course, the country was not popular, especially with accessible neighbors like Japan. Former allies too were cooling toward the Kim Il Sung regime; doubts even arose as to whether Russia would aid the North, as pledged in their 1961 treaty of mutual assistance, should war be provoked by either side in Korea. However, despite also demanding hard currency for exports to the North and increasing ties with Seoul, Beijing remained protective. Pleased to retain a socialist buffer while assuming the bulk of North Korean trade, China seemed confident that Northern nuclear weapons would not be directed against it. Accordingly, Chinese Prime Minister Li Peng could tell UN Secretary-General Boutros Boutros-Ghali in December 1993 that "China favor[ed] a proper settlement of the issue through dialogues and consultations, instead of imposing pressure and sanctions." The Chinese government further announced that its own 1961 security pact with North Korea would (only) be honored "in the event of an unprovoked attack on her ally." Perhaps as the last straw, even a once-likely partner in an American-led strike, South Korea, softened its position; President Kim Young Sam began to suggest that, in the interests of drawing the North out of its self-imposed isolation, coercive measures should be avoided.
Some note must also be taken of the various international playing fields on which teammates and opponents were lining up; the strategic environment in which preventive strike deliberations took place may have affected their outcome. In 1981, neither superpower was an Iraqi champion. The Soviets were even suspected of backing a Syrian plot to assassinate el-Meshad, while the United States was still only thinking about replacing Iran with Iraq as its regional bastion against Soviet influence. 

Washington had, however, made up its mind in time for Iraqi raids on Bushehr. By 1991, in turn, the Cold War was over, and Soviet Union joined in anti-Iraqi sanctions by cutting off arms supplies. More generally, the end of the Soviet veto in the UN may have freed members to engage in cooperative operations at a time that extended deterrence against such legalized attacks, certainly on the level of a nuclear retaliatory threat, was unlikely to prevail in reality. As has been discussed, Cold War tensions instead colored rejected preventive strikes against one-time Soviet ally China; strategic imperatives dictated caution as well against Pakistan, the neighbor of Afghanistan and enemy of Soviet-backed India.

II. The Likelihood of Operational Success

A second factor in determining whether a state engaged in a preventive strike was the assumed probability of its success, measured in terms of disabling or destroying all the targeted proliferator's nuclear weapons facilities. Greater perceived difficulty surrounding the operation's practical details has in the past meant that it would not be attempted. In rejected strike plans, the facilities to have been hit seemed disconcertingly numerous, concealed or impenetrable by conventional means.

When Israel attacked Osiraq, the only supposed Iraq nuclear weapons site, it could be fairly certain of accomplishing its mission. On June 2,
1980, Israel received its first shipment of US F-16s, in which Israeli military planners had greater faith than the Skyhawks and Phantoms originally contemplated for the raid.\textsuperscript{127} Duly equipped, Israel took its preparations for the operation very seriously, examining the failed American assault on Teheran for lessons applicable to its own circumstances; repeated practice attacks were then undertaken on a mock-up of Osiraq in the Sinai Desert.\textsuperscript{128} Indeed, Israeli training priorities had already shifted after 1973 from dogfights and air defense to various sorts of "attack missions," the success of which had been manifest at Entebbe in 1976.\textsuperscript{129}

Training aside, the Israeli assault force still faced the risk of being intercepted on its way to or from Osiraq, which was nearly one thousand kilometres into Arab territory. However, Israeli planners seemed confident, despite acute sensitivity to the possibility of a pilot being captured, because Saudi AWACS were hoped to be concentrating on developments in the Iran-Iraq War.\textsuperscript{130} Destroying Osiraq itself, once at the target, was rightly considered feasible. Iraqi defenses at the site were known to Israeli officials, as Military Intelligence Director Saguy revealed in late 1980; by May 1981, Israel was undoubtedly aware that Iraq had cannon and various surface-to-air missiles around the reactor.\textsuperscript{131} As a precaution, the Israeli plan called for an attack around 18:30 Iraqi time, when Israeli planes could approach from the sun; as had been forecast, anti-aircraft fire began only after the raid's completion.\textsuperscript{132} Israel also knew what weapons to use and where they should be directed. It may have seen US or Iranian reconnaissance photographs of the site; destroying the reactor was then entrusted to dependable target point bombs, which US scientists had confirmed would be effective. Each bomb was in fact presumed capable of penetrating up to 3.6 metres of concrete, more than adequate for Osiraq.\textsuperscript{133}

The other two sets of preventive strikes were presumably viewed with
some optimism by decision-makers as well. Apparently the only significant (non-research) foundation for a nuclear weapons program to have emerged in Iran, Bushehr was "lightly defended" and easily accessible to Iraqi MIGs. Furthermore, the Iranian Air Force was suffering from a shortage of both aircraft and spare parts, so was unlikely to intercept attacking Iraqi planes.\textsuperscript{134} In 1991, the United States was even better equipped to destroy Iraqi facilities, calling into service its own Tomahawk cruise missiles, precision-guided munitions, and Stealth F-117 fighter-bomber. Early attacks on air defense control centers and radars were also supposed to allow unimpeded access to Iraqi sites. Of course, failure was likelier than at Osiraq and Bushehr insofar as the United States could have anticipated its inability to destroy all Iraqi facilities; the Osiraq raid was known to have pushed Iraq to disperse its nuclear installations and put some underground.\textsuperscript{135} On the other hand, Desert Storm was a special case, considering that the Coalition expected, at some point, to emerge victorious from what would anyway be a full-scale war: Bush proclaimed on February 1, 1991, "Achieving our goals will require sacrifice and time, but we will prevail."\textsuperscript{136} As the victorious party, the Coalition could plan on forcing Iraq to dismantle facilities which had escaped damage during the preventive strike portion of the war.

Although it is impossible to be certain of what exactly other decision-makers knew of their proposed targets and, regardless, of how confident they felt, it is likely that most were considerably less sure of operational success. Characteristically, the very number and location of Soviet nuclear facilities were closely-guarded secrets; sites were at best known by code-names or postal codes. Indeed, a 1959 US treatise on Soviet atomic energy was still speculating on whether a nuclear complex in the Chelyabinsk area, from which foreigners were barred, even existed.\textsuperscript{137} The considerable efforts made to harden reactors also suggested that had the US government in
fact located Soviet facilities, it would have had to reconcile itself to using nuclear weapons in order to have a reasonable chance of destroying them. Advanced conventional weapons available by the early 1980s may not have been able to penetrate more than ten metres of concrete; Chelyabinsk-65 was topped by seven metres of reinforced concrete, and a lake, thirty years earlier. However, the US nuclear option too may have been impracticable, even if Truman had not said of the atomic bomb (although not of the ardent SAC) in 1948 that "[i]his isn't a military weapon," never to be used except in response to Soviet attack. The United States possessed only two atomic bombs in December 1945, when Groves was championing the preventive strike option, nine in July 1946, and thirteen in July 1947. American delivery systems still had limited range and reliability as well.

Similar problems dogged American scrutiny of a preventive strike against China. Had the United States been able to rely on Soviet assistance, it could have used detailed Soviet information about the location and configuration of Chinese nuclear facilities. Alone, it had to depend on U-2 spy planes, which flew over China from bases in Taiwan. How close these planes got to the Lanzhou gaseous diffusion plant, for example, which was to be instrumental in producing China's first nuclear devices, is unclear. After all, Chinese leaders had chosen the site partly because of its remoteness, and it was only the October 1964 nuclear test, which used enriched uranium instead of the expected plutonium, that convinced Western skeptics of Lanzhou's existence. Of course, US ignorance, and the Kennedy and Johnson Administrations' own recognition of it, cannot be overplayed. Secretary of State Dean Rusk knew enough to predict only two weeks before the Chinese nuclear test that one was imminent, although the newly erected blast tower on which this prediction was based was unusually easy for U-2s to spot; the United States also knew of the plutonium reactors at Paotow, in
Still, an undetermined number of Chinese nuclear facilities were likely presumed to have been hidden underground and, as reports said, scattered "throughout" the country. In order at least to destroy proven nuclear installations, the United States had three options. One was conventional bombing, but this alternative does not seem to have been mentioned often. In theory, nuclear weapons may have been a preferred choice because of their superior ability to penetrate hardened facilities and to compensate for possible targeting inaccuracies: at least for missile attacks, it was the mid-1970s before the United States felt that any less than two or three, ten megaton weapons (or their equivalent) would have even a fifty percent chance of disabling a nuclear reactor. Encouragement for US nuclear use lay in China's supposed inability to shoot down B-52s, and certainly missiles. Although not expressly in nuclear terms, the National Review thus claimed in January 1965 to have been "assured by an unimpeachable, fully qualified source within our military command structure that, from a military-technological standpoint, the mission of destroying the present Chinese nuclear capability a) is entirely feasible and b) would not entail major damage." However, the nuclear option may not have counted in reality; perhaps it would have been contemplated only had the Chinese threat to the United States been strong, which was not the case. It may be no accident that nuclear use has apparently not been discussed for a preventive strike since then; at work is a nuclear taboo which has now moved the Pentagon openly to dismiss the "employment of nuclear weapons for counter-proliferation purposes." If this dismissal were already implicit in 1963-65, American decision-makers would have had no viable strike options left: their third alternative, a ground attack, would have been difficult to carry out. The Lanzhou complex could be accessed only by two highways on which traffic was screened, while a variety of
"diversionary tracks" led the unsuspecting into the surrounding desert.150

Operational problems marred other proposed strikes as well. Egypt's conventional forces were simply unable to destroy Dimona when military action was discussed; Nasser himself noted that a strike had to be postponed until Arab militaries were stronger.151 Furthermore, although Egypt may not have known this, approaching and destroying Dimona would not have been an easy task for a sophisticated air force. Israel was predictably conscious of Dimona's security: in 1967, even a stray Israeli fighter was shot down in the vicinity. In addition, plutonium reprocessing at the site was done in a secret facility, up to six stories underground.152

India, by contrast, was equipped to act against Pakistan, as were the United States and Israel with Indian cooperation. However, all again faced a range of obstacles in doing so effectively. American intelligence revealed that by December 1982, Kahuta was surrounded by French-made Croatale surface-to-air missiles. Further complicating an air strike was the fact that part of the centrifuge facility may have been placed underground, while (Indian) intelligence about the plant's exact configuration was supposedly patchy.153 On the ground, additionally, Kahuta was ringed with security forces diligent enough to have assaulted a sightseeing French ambassador.154 Also noteworthy here was US Ambassador Arthur W. Hummel Jr.'s 1979 warning that even destroying Kahuta would not stop Pakistani weaponization; as in other states where nuclear facilities could have been concealed, operational success needed to be more widely defined.155 After all, Pakistan would retain an ability to produce plutonium in civilian-oriented or perhaps undisclosed reactors; there were reports too of enrichment facilities being hidden underground.156 In this vein, Pakistan seemed suspiciously wary of the 1988 agreement against preventive strikes: the involved exchange of information on the "latitude and longitude of...nuclear instal-
lations and facilities," as well as notification "whenever new facilities were built," was seen to bring the risk of divulging "nuclear secrets."

Comparable uncertainty clouded the prospects of a successful strike on North Korea. It was "difficult to believe that the somewhat paranoid North had not taken the obvious precaution of keeping a large part of its nuclear program hidden," especially after (but surely also before) the more open Iraq and South Africa had proved it could be done. Duly worrying were 1991 reports from defectors that secret Northern facilities had been built underground; officials in the Bush entourage on a January 1992 visit to South Korea actually complained that they would need a "mandate to roam North Korea's heavily guarded military sites at will" to know exactly what they were dealing with. Furthermore, even destroying the North's seven

known nuclear sites might have been costly for an attacker; Yongbyon's anti-aircraft defenses, for example, were improved by 1993.

The pattern, then, seems to be that easier, conventional operations held greater appeal for decision-makers. The Osiraq raid was relatively simple to accomplish, at one extreme, and it was carried out; at the other extreme, a US strike on the Soviet Union posed operational (among other) problems, and it was not. However, this variable is likely not the deciding one. An outside observer may assess difficulty to be high when governments, sensing an urgent need to strike, downplay risks and uncertainties. Another necessary factor to consider is thus the degree of threat felt by the states which contemplated preventive strikes.

III. Threat Perceptions: Degree and Proximity in Time and Space

The best starting-point here is, once more, 1981 Israel, the country which was most vocal about its motives for engaging in a preventive strike. In fact, Israel professed certainty that its choice was one between "bombing
and being bombed." Although all potential attackers felt somewhat uneasy when confronted by nuclear proliferation and, indeed, even threatened in terms of status and other foreign policy goals, no other state expressed such dramatic concerns. Certainly for those which decided against military action, a status quo altered only by the addition of nuclear weapons was not alarmingly unacceptable. In cases where preventive strikes were rejected, the nuclear threat was not seen to be immediate, geographically close, or ultimately directed against wavering attackers' own territory.

However, numerous statements were attributed to Saddam Hussein which suggested that his eventual goal was the destruction of Israel; although not unusual rhetoric, it was apparently enough to frighten those Israelis who, like Begin, were constantly watching for the emergence of a new Adolf Hitler. The Iraqi leader declared in 1978 that the "essence of the Iraqi regime's stand on the Arab-Israeli conflict is principled and immovable on a total rejection of any political solution." The October 28, 1978 edition of the Ba'athist newspaper, al-Jumhuriya, added, "We must combat Zionism with the oil weapon, with our armies and in any manner possible." Even worse, discussing in August 1980 whether to punish states which moved their embassies to Jerusalem, Saddam Hussein said, "A better decision would be to destroy Tel Aviv with bombs. But we have to use the weapons available until it is actually possible to respond to the enemy with bombs."

Especially after its sluggish reaction in 1973, Israel was prepared to take such rhetoric at face value; Saddam Hussein was seen capable of acting on his threats. Iraq had refused even to join fellow Arabs in armistice negotiations with Israel after their repeated wars. In September 1980, furthermore, it had shown itself ready to launch an "unprovoked attack" on a neighbor, in this case Iran. More personally, the so-called "Butcher of Baghdad" fared badly in an April 1981 Israeli intelligence report. With
regard to an Iraqi nuclear arsenal, the paper said that "considerations of conscience and morality would not stop Saddam Hussein from using it...[if in his estimate the use of atomic weapons would give him the chance to strike Israel, and gain for himself at the same time a leadership position in the Arab world." As will be seen in the next section of the chapter, Israeli analysts also dismissed the efficacy of appealing to the Iraqi leader's instincts for survival, by threatening retaliation for a future Iraqi nuclear attack. Begin ended up by counting on a new Holocaust once Iraq acquired nuclear weapons in perhaps as little as two to four years. 167

His statement to the Israeli Cabinet on October 28, 1980, was illustrative:

A great clock is hanging over our heads, and it is ticking. Somewhere on the banks of the Tigris and Euphrates, there are men plotting to annihilate us, and they are preparing means for implementing their criminal design...Saddam Hussein is a blood-thirsty tyrant who seized power by killing his best friends with his own hands. He will not hesitate to employ weapons of mass destruction against us. 168

Begin pursued this theme at his post-strike press conference. "Another Holocaust would have happened in the history of the Jewish people," he proclaimed, speaking of the future had Osiraq not been destroyed. "Never again, never again!" 169

Stakes in the other actualized strikes also seemed high. For their part, Iraq and Iran were embroiled in a bloody war, with Iran itself ready to violate international conventions on chemical weapons use and Red Cross access to prisoners of war for its own advantage. Saddam Hussein may have therefore been worried by the prospect of another Iranian weapon of mass destruction likely, on precedent, to be used in practice. At least in October 1988, then-Iranian speaker and commander-in-chief Hashemi Rafsanjani was actually saying that "With regard to chemical, bacteriological, and radiological weapons training, it was made very clear during the war that these weapons are very decisive." 170 Although an Iranian nuclear arsenal would
not be built until well in the future, the Iran-Iraq War had already lasted four years by the time of Iraq's first attack on its neighbor's reactor.

Coalition views of Iraq in 1990 and 1991 are better documented; along familiar lines, Iraq was portrayed as exceptionally hostile toward the United States and its allies. Although Iraqi chemical delivery capabilities remained dubious, at best, a sign of what was to come seemed Saddam Hussein's April 2, 1990 remark that he had the binary chemical weapons "to cause fire to devour half of the Zionist entity." The second part of his statement, which limited Iraqi chemical weapons use to a situation where the "Zionist entity, which has atomic bombs, dared attack Iraq," was consistently downplayed.\textsuperscript{171} After all, an initially unprovoked Iraq had used chemical weapons against Iran perhaps 195 times since 1983, and, as in the March 1988 attack on Halabja, against its own Kurdish population.\textsuperscript{172} Speaking for the US State Department, Margaret Tutwiler thus called the apparent Iraqi threat "inflammatory, irresponsible, and outrageous."\textsuperscript{173}

The Iraqi past was linked explicitly to the nuclear issue. Addressing US troops on the subject of Saddam Hussein in November 1990, Bush declared, "No one knows precisely when this dictator may acquire atomic weapons or who they may be aimed at down the road...But we do know this for sure: He has never possessed a weapon he has not used."\textsuperscript{174} The possibility of Iraq's somehow targeting the United States was raised as well, an uneasy complement to National Security Adviser Brent Scowcroft's pre-war warning that Iraq might be mere months from a crude nuclear device.\textsuperscript{175} In reality, Iraq's "longest-range ballistic missile" could only travel eight hundred of the nine thousand kilometres separating the country from the United States, although this was enough to target other US allies and neighboring oil producers, and predictions of imminent Iraqi weaponization were alarmist.\textsuperscript{176} This is not to say, however, that none of the fears expressed were genuinely
felt by the US government as well as a duly galvanized US public: Coalition troops received vaccinations in case that Iraq chose to use biological weapons, a mere rung below the nuclear option, against them.

Threat perceptions in other cases where preventive strikes were under consideration seemed more restrained. Of course, late 1945 found agreement among "most American policy advisers and military planners...that Soviet aggression and intransigence...[were] the most serious threat to American and world security."\textsuperscript{177} Senator James D. Eastland uttered an extreme version of U.S. fears in December 1945: "Russia is a predatory aggressor nation, and...today she follows the same fateful road of conquest and aggression with which Adolf Hitler set the world on fire."\textsuperscript{178} In this context, a Soviet nuclear weapon was clearly unwelcome. President Truman noted in 1949, "I know the Russians would use it on us if they had it," while Senator Brian McMahon argued in 1947 that a Soviet rejection of international controls on atomic energy should be interpreted as an "act of aggression."\textsuperscript{179}

However, antipathy did not prevent the Soviet nuclear threat from appearing distant in both time and place; technological assessments tempered US worries somewhat during this period. Most important to the chief preventive strike proponent, General Groves, may have been his estimate that the Soviets were still between fifteen and twenty years away from a nuclear capability. Testifying before Congress in October 1945, Groves asserted that they had only low-grade uranium sources which they were unable to refine. At least without information gained through espionage, another problem attendant upon the Soviets' alleged lack of trained engineers and scientists was simply to build nuclear plants.\textsuperscript{180} Groves' estimates reflected an army position accepted over that of skeptical scientists by Truman, who attributed nuclear success to the unique "American system of enterprise."\textsuperscript{181} The other services making up the Joint Chiefs of Staff (JCS) were more realis-
tic, but also composed enough to predict in 1948 that it could be as late as 1960 before Soviet leaders had the requisite confidence in the size of their arsenal to attack the United States. Minimal US air defense preparations until the early 1950s suggested, as well, that the American government was hoping for a substantial period of time to elapse before long-range delivery systems for Soviet nuclear devices were built in large numbers.

Twenty years later, American views of a nuclear China were similarly controlled. Admittedly, Kennedy believed that a Chinese nuclear test might be the pivotal moment of the 1960s, and that "relatively small forces in hands of people like CHICOMS could be very dangerous to us all." Kennedy's concerns reflected those of Khrushchev, who found China's notorious dismissal of nuclear weapons as "paper tigers" to be reckless. Particularly troubling here was Mao Tse-tung's April 1960 "Long Live Leninism!" editorial, which promised that "[o]n the debris of a dead imperialism, the victorious people would create with extreme rapidity a civilization thousands of times higher than the capitalist system." A nuclear war seemed poised, in Chinese eyes, to bring a "truly beautiful future." A less dramatic fear than nuclear use was that a nuclear-backed China would be emboldened to replay or even to exceed the Soviet "expansionism" of the late 1940s. In 1962, Kennedy thus remarked, "These Chinese are tough...It isn't just what they say about us but what they say about the Russians. They are in the Stalinist phase, believe in class war and the use of force, and seem prepared to sacrifice 300 million people if necessary to dominate Asia."

As Kennedy intimated, however, any danger was largely confined to Asia and the American role in the regional balance of power; Chinese distance and philosophy alike made any threat indirect. Despite some discussion of Chinese weapons being smuggled into foreign ports on junks, little danger faced a United States to which Chinese diplomats had made "friendly
gestures" in 1961 and 1962. Indeed, a CIA report in late July 1963 noted that the "Chinese have thus far shown marked respect for US power, and we do not expect them to change this basic attitude." The American military concurred. In his August 1963 Senate testimony, General Maxwell D. Taylor claimed that Khrushchev and Kennedy had exaggerated Chinese rashness; there was actually a "pretty hardheaded group of Chinese in Peking." The NSC therefore envisioned that at most, a China backed by nuclear weapons would constrain US freedom of action against North Vietnam and eventually pressure for an American retreat eastward.

Furthermore, just how much of a Chinese nuclear threat would emerge to US allies within Asia, like Thailand and Japan, was open to debate. The CIA noted that the Chinese "over the past few years, in spite of their war-like oratory, have followed a generally cautious policy." Internal problems were the supposed priority, and drove Chinese restraint toward both India and Taiwan. Chinese rhetoric itself softened after the country's nuclear test, with Chou En-lai stressing that "at no time and in no circumstances will China be the first to use nuclear weapons." Reacting on October 18, 1964 to the Chinese test, President Johnson thus told the American public that "[i]ts military significance should not be over-estimated... there is no reason to fear that it will lead to immediate dangers of war." In addition, echoing Groves' earlier relief at the apparent time which would elapse before a Soviet arsenal was even built, Johnson emphasized that "[m]any years and great efforts separate the testing of a first nuclear device from having a stockpile of reliable weapons with an effective delivery system."

Whether Egypt saw Israel as the same kind of threat that Israel later perceived a nuclear Iraq is even more dubious. Although the Arab League's Secretary-General cautioned in December 1965 that Israel could make use of a nuclear arsenal in a future Arab-Israeli war, Nasser was reluctant to be-
lieve that Israel was in the process of developing one. When media reports about Dimona surfaced in late 1960, Nasser suggested that Western states had concocted the story, pretending that Israel could develop nuclear weapons which would be given to it ready-made. Alternately, he hinted that Israel itself, in an effort to intimidate Egypt, was responsible for misleading press reports. In either case, when asked whether Dimona was being used to produce nuclear weapons, he replied as late as July 1964 that "according to the information we have got, I think it is not." Citing other Arab sources, his friend Heykal added two months later that nuclear status was "simply outside Israel's present capabilities." Therefore, while Israel was viewed as an expansionist state with which Egypt might again go to war, Nasser felt that he had the luxury of time to deal with the nuclear issue.

The case of Pakistan is again more complex, for three countries were independently assessing Pakistani intentions toward them. Most evident is that, a former ally in SEATO and CENTO, Pakistan was not seen to have belligerent designs toward the United States. The Carter Administration was instead taking a principled stand on the importance of nuclear non-proliferation. To the extent that it had more practical concerns, they were with ensuring the stability of a physically distant South Asia, where Pakistani nuclear development would invite Chinese, Soviet and Indian responses; indeed, a State Department official warned in 1979, "If I had to guess which two countries were most likely to fight a nuclear war before the end of the century...it would be India and Pakistan." Whether for humanitarian or strategic reasons, the United States thus had to be alert, but its own territory was safe. Then-presidential candidate Reagan went further in January 1980, the Soviet invasion of Afghanistan fresh in his mind. "Right now there's an immediate crisis...And a crisis so great that very frankly I have to wonder why there's so much concern with [Pakistani weaponization]."
Conversely, neighboring India could have been at direct risk from Pakistani nuclear weapons carried on F-16s, Q-5 Fantans, or Mirages. However, bilateral relations showed periodic improvement while a preventive strike was being considered. Zia proposed a non-aggression pact in September 1981 and again in June 1982. By early 1984, the joint commission established to consider the pact was meeting regularly, and US sources claimed that India was reluctant to engage in military action when such talks were ongoing. Furthermore, the South Asian Association for Regional Cooperation was formed in December 1985; this ushered in a period of apparent Pakistani contrition, gratifying to India, for its own role in past South Asian conflicts. Also in 1985, Zia traveled to New Delhi for discussions on normalizing relations and settling border disputes over the Siachen Glacier. Of course, India and Pakistan were at best in a state of "cold peace," but the regular relaxation in tensions may have made Pakistani nuclear weapons seem more an irritating damper on India's conventional and global power than a pressing security threat.

Likewise, Israel's view of Pakistan was suspicious but not panicked. Israel feared the possibility of nuclear technology flowing from Pakistan to more proximate Israeli enemies, since Zia had announced in 1986, "When we acquire the technology, the entire Islamic world will possess it with us." In fact, Zulfikar Bhutto had reportedly established ties with Libya in 1973, which provided Pakistan with uranium and funds for enrichment. Financing for Kahuta also came from Saudi Arabia, which in March 1988 purchased nuclear-capable CSS-2 missiles (with a range of 2000-2700 kilometres). Pakistan extended nuclear cooperation to Iran as well. An official agreement was signed in 1987, and uranium enrichment expert Abdul Qadir Khan supposedly toured Bushahr in February 1986 and January 1987. Again, however, the scenario differed from that in which Israel portrayed itself in
1981. Pakistan itself did not threaten Israel directly, and US intelligence sources even questioned Pakistan's willingness to share nuclear secrets, certainly with more probable aggressors such as Libya, in practice.206

The same qualified fears characterized relations between North Korea and the states considering a preventive strike. The Koreas signed an Agreement on Reconciliation, Non-aggression, Cooperation and Exchange on December 13, 1991, presumably providing some reassurance of Northern peaceableness. Even after North Korea defied the subsequent Declaration on the Denuclearization of the Korean Peninsula, the prospect of its using nuclear weapons in an aggressive fashion was deemed unlikely. Although US Secretary of Defense Dick Cheney claimed Korea to be where the "risk of no-warning attack" against the United States or an ally was the most pronounced, he assumed that risk to be low.207 South Korean experts largely agreed that regime survival was the North's priority, even under the eccentric Kim Il Sung; at most, a North backed by its new arsenal was expected to demand US force reductions or to urge reunification on Northern terms.208 More important but less threatening per se was that North Korea stepped into the role of China in the 1960s, when Kennedy worried that it would serve as the model for fifteen to twenty new proliferators by 1975.209 North Korean nuclear development provided an incentive for Southern and Japanese weaponization, while the North might eventually export nuclear technology to the Middle East.

A pattern in terms of threat perceptions thus seems to exist. Every state which considered preventive strikes thought that its territory, status or other interests would be safer if the budding proliferator could be stopped. Publicly, however, it was the Israeli government that had the most to fear, complaining in 1981 that sixty thousand Israelis would be killed should an Iraqi nuclear bomb hit Tel Aviv.210 It carried out a preventive strike against this backdrop. Ten years later, US officials claimed that
they feared both for their allies and (dubiously) for their own country; Iraq too may have earlier contemplated Iranian nuclear weapons use against its territory. The other cases, in which no preventive strike occurred, seemed brushed aside as less dangerous; a nuclear-tinged status quo was not intolerable. Either the nuclear threat was relatively distant in time or place, or that threat was directed only to prestige, regional influence or the non-proliferation regime as a whole. On the other hand, little more can be said from an objective standpoint of the threat posed by 1981 and 1991 Iraq, as well as 1980s Iran; it is only natural that governments which actually decide to engage in a preventive strike, for whatever reason, would seek sympathy by playing up a danger perhaps known to be moderate, at most. Certainly, then, threat perceptions alone cannot be relied on to explain decision-makers' acceptance or rejection of the preventive strike option.

IV. An Option among Many?

Military action, even if feasible and directed against a deservingly hostile target, is still unlikely to be a first resort. Although varying in intensity, the risks involved remain significant. A fourth factor in decision-makers' calculations will thus probably be whether less extreme options can instead be exploited to deal with nuclear proliferation's perceived dangers. Such options may include diplomacy, "bribes" of conventional military aid, punitive sanctions or sabotage to stop a nuclear arsenal from being built, in addition to export controls and multilateral agreements like the NPT. However, while the latter restrictions have increasingly come to the fore, in no case have they been relied upon alone; enforcement has been notoriously lax and/or selective even as more suppliers and importers have emerged to be monitored. Other options could be improved defenses and retaliatory capabilities to counter future arsenals in rival states.
According to Israeli leaders in 1981, all non-violent and even clandestine alternatives had failed or otherwise been ruled out before the raid on Osiraq took place. Although the UN Security Council claimed to be unconvinced, Israel felt that it had undertaken major diplomatic efforts to block Iraqi weaponization. Notably, the French government was repeatedly pressed for assurances that Osiraq would not be used for weapons development, but officially downplayed Israeli concerns. Israel believed that France, as well as fellow supplier Italy, had little interest in being seen to offend Iraq. The latter provided twenty percent of French and thirty percent of Italian oil, while France produced one quarter of Iraq's weapons. When threatened with reduced deliveries of American enriched uranium for its own nuclear plants, France did push Iraq toward accepting weaker fuel for Osiraq, but even then it did not push too hard: Saddam Hussein easily prevailed in July 1979 by vowing to seek other fuel sources if France reneged on its original promises. Ultimately, even new Foreign Minister Claude Cheysson announced on May 26, 1981, that France would meet obligations undertaken by the previous regime, reportedly increasing Begin's determination to carry out the preventive strike.

Israel had made other diplomatic overtures before accepting this extreme course of action. In particular, the government had expressed its concerns about Iraq to the United States since early 1976. However, this avenue too proved disappointing, as had an August 1980 approach to West Germany. In September 1980, US Defense Secretary Harold Brown informed Israeli Foreign Minister Yitzhak Shamir that the United States had few means of influencing Iraq. Secretary of State Alexander M. Haig also allegedly told Begin early in 1981 that American efforts to persuade France and Italy not to cooperate with Iraq in nuclear fields had simply been "in vain." Of course, a preventive strike was not the only alternative to diploma-
cy. Also pursued, without much effect, were terrorist tactics in Europe and proxy military action in Iraq. Israel may have been involved in the April 1979 bombing at La Seyne-sur-Mer, and was suspected in the el-Meshad murder. Given similar attempts to derail the Egyptian missile program in the early 1960s, even likelier was Israeli complicity in a campaign of bombings and threats against European firms involved in Iraqi nuclear development. In another move intended to keep its own involvement covert, Israel tried, unsuccessfully, to goad Iran into doing its dirty work: on September 28, 1980, Israeli Military Intelligence Director Saguy said publicly, "If I were an Iranian, I too would be worried, knowing that Iraq will unquestionably be a nuclear power at the end of the 1980s."

Another Israeli option was to do nothing, and let Osiraq be built. However, Israel did not trust the IAEA with preventing Iraqi weaponization from the basis of a peaceful nuclear program. The blanket fitted around Osiraq's core were the plutonium route to have been pursued would not have been visible to inspectors. In fact, Israel felt that those inspectors, already chosen at Iraqi discretion, could not even detect a diversion in Osiraq's highly enriched fuel. Although an IAEA inspection proceeded in January 1981, Iraq had indicated in November 1980 that the ongoing Iran-Iraq War made such visits too dangerous. French technicians who might help the IAEA to notice a diversion of fuel were also largely withdrawn in October 1980 - a troubling precedent, despite their February 1981 return, for an Israeli Atomic Energy Commission sure that "there is no effective method for detecting violations other than round-the-clock, continuous on-the-spot control." Simply signing the NPT, which Iraq had done in October 1969, was supposed not to count in an "area characterized by the repeated violation of international obligations." Several years later, an Iraq again escaping IAEA censure for its revived nuclear program probably had similar worries
about leaving the agency to look after and constrain Iran.

Passively accepting Iraqi weaponization, finally, was out of the question for Israel; hawks were adamant that mutual (nuclear) deterrence would not hold in the Middle East. This view was plain at an October 14, 1980 meeting of select Israeli Cabinet ministers and advisers. Deputy Prime Minister Simha Ehrlich said, "I do not believe in a Mideastern 'balance of terror' similar to that prevailing between the two global blocs...if the Iraqis get nuclear weapons, they are quite capable of using them." Commander-in-chief Eytan agreed: "A nuclear balance implies accepting that Israel will not continue to exist. The Arabs are more capable than we of paying a heavy price, and it will therefore be impossible to deter them." Technology aggravated cultural prejudice, for Israel was seen as too dependent on a soft, physically concentrated, aircraft-based delivery force to have a second-strike capability; Israeli missiles, likewise, were not in hardened silos.

Again important here are the threat perceptions previously outlined. In this vein, neither Iraq in the mid-1980s nor Coalition forces in 1991 felt that relying on deterrence logic was an option: the targeted proliferator was seen to be blindly hostile enough to use the nuclear weapons that it built. Unfortunately, neither Iran nor 1991 Iraq could be counted on to renounce its nuclear option voluntarily, particularly when it would be retained by rivals like Israel. The diplomatic or economic pressure needed at least to nudge potential targets toward such a renunciation, furthermore, could not even be attempted when (otherwise motivated) military action was already in progress and had severed peaceful ties.

On the other hand, options seemed to remain open wherever preventive strikes were rejected. When the United States was contemplating raids on Soviet nuclear facilities, for example, proposals to eliminate nuclear
weapons themselves were still under consideration. The Baruch Plan, which called for an International Atomic Energy Authority to "acquire complete control over raw materials and atomic plants throughout the world," reached the UN only in June 1946. Soviet acceptance of the American nuclear monopoly envisioned until the plan's final stage was unlikely, as the US government knew, but more optimistic officials could at least take comfort in Stalin's December 1945 agreement to a UN "Atomic Energy Commission that would recommend a system of control."226 The Americans could and did pursue more concrete alternatives as well, including the seizure of German uranium and a joint Anglo-American buy-up of world uranium stocks before Moscow could gain access.227 After the Soviet nuclear test, in turn, a United States backed by technology control measures sought refuge in quantitative superiority and the hydrogen bomb. Believing that his country was "certainly in the lead," even General Groves could feel that a viable US option in 1949 was reconciliation to an apparently containable Soviet challenge.228

In dealing with China, the United States looked instead to the Partial Test Ban Treaty. Although the link with non-proliferation was tenuous and his motives arguably wider, Kennedy said in January 1963 that China was "a principal driving force" behind the treaty.229 It was suggested, rather vaguely and implausibly, that once the treaty was concluded, world opinion would prevail upon an isolated China to forgo nuclear testing, or that the Soviets could exploit some yet-unsevered means of extorting Chinese signature. In either case, China would have been bound not to carry out the above-ground test which it eventually did conduct in October 1964.230 Speaking after the treaty was initialled on July 25, 1963, Kennedy thus called it a "shaft of light into the darkness."231

During the Johnson Administration, the United States also began to think of living with Chinese nuclear weapons - even without the cultural and
trade contacts that would later be embraced to defuse the threat itself. By September 1967, Defense Secretary Robert McNamara was supporting JCS proposals for an anti-ballistic missile system behind which the United States could, in practice, shelter from China— if not from the Soviet Union in the thicker version originally planned and preferred. Johnson himself envisioned deterrence as well as defense, stressing in 1964 that "if and when the Chinese Communists develop nuclear weapons systems, free-world nuclear strength will continue to be enormously greater." China could not have failed to notice the US ability to retaliate for any nuclear use.

The range of alternatives to a preventive strike was even wider in the other instances where military action was rejected. If Israel was not dissuaded from nuclear development by the threat of preventive war, Egypt wanted a superpower security guarantee to deter Israeli nuclear use. The New York Times suggested that in December 1965, assistance had, in fact, been promised by a visiting Soviet marshal; "certain nuclear guarantees" were also reported in February 1966 to have been made by Deputy Soviet Defense Minister Andrei Grechko. Another option for Egypt was to deter Israeli nuclear attack by acquiring unconventional (as well as more conventional) weapons of its own with which to threaten retaliation. Nasser thus declared in 1961 that if Israel went nuclear, "we will secure atomic weapons at any cost," and asked for Soviet and Chinese help in developing a nuclear arsenal. A related possibility was a chemical deterrent. Egypt was already using chemical weapons in North Yemen by 1967, and Egyptian Minister of War General Abdal Ranny Gamassy specified in 1976 that "Egypt has...the capability of retaliating to an Israeli nuclear blow by making use of these weapons." At least in the 1970s, finally, Egypt looked at additional options to block an Israeli arsenal from even being built; it pressed Israel to sign the NPT as a non-nuclear weapons state and to support Egypt's
periodic UN resolutions for a regional nuclear-weapons-free-zone.²³⁶

Some choices also remained for slowing Pakistani weaponization. The US task force considering the issue (before the Soviet invasion of Afghanistan led Pakistani weaponization to be conveniently overlooked) saw at least two avenues other than a preventive strike. A "carrot" could be offered in the form of conventional arms to make a Pakistani nuclear deterrent seem extraneous. The "stick" consisted of threats to limit private US investment and stop international lending institutions from dealing with Pakistan if it continued its nuclear efforts. Such economic sanctions were urged on the United States by India, and would have reinforced Carter's April 1979 announcement of a forty million dollar cut in economic subsidies for the year.²³⁷ Furthermore, the United States was working through diplomatic channels, with almost weekly supplications for countries playing some role in Pakistani nuclear development to curtail technological exports.²³⁸ The Carter Administration may have been buoyed to an extent by its successful efforts in France, which was convinced to end its involvement with a Pakistani reprocessing project in 1978. Of course, the United States would ultimately have less success, but by then it was also less interested.

India too still appeared to have some leeway. One alternative, also available to Israel and the United States, was terrorism: in early 1981, telephone threats and bombings targeted Swiss and German firms which provided components for Kahuta and Pakistani reprocessing facilities. Claiming responsibility for this effective campaign of intimidation was the "Group for Non-Proliferation for South Asia," but suspected culprits included India as well as the CIA and Mossad.²³⁹ Another Indian option was to build a nuclear deterrent should a Pakistani bomb emerge. In this regard, Prime Minister Charan Singh said in 1979, "We do not want to join the race to make a bomb, but if Pakistan sticks to its plans to assemble a bomb, we will
perhaps have to reconsider the whole question." \(^{240}\) Similarly, although Mrs. Gandhi remarked in July 1981 that she did "not believe in the theory of deterrence," her government oversaw a new design program and the opening of additional reactors and plutonium extraction facilities in the early 1980s. \(^{241}\) Just before the last rumoured Indian strike plan, in August 1985, India also began operating a new plutonium-producing reactor at Dhruva; two months earlier, Rajiv Gandhi had suggested that India was already in possession of the components needed to build nuclear weapons. \(^{242}\)

Finally, a combination of negotiation and threat was the alternative to a preventive strike against North Korea. US and South Korean efforts, accompanied by promises of economic aid, were aimed at persuading the North to recommit itself to the NPT and IAEA safeguards. Another possibility was continued reliance on deterrence, which had apparently worked against a conventional Northern threat since 1953. Speaking in July 1993, Clinton was thus careful to point out, "When you examine the nature of the American security commitment...it is pointless for them to try to develop nuclear weapons, because if they ever use them it would be the end of their country." \(^{243}\)

The pattern here is again not unexpected. If its statements were sincere, the Israeli government believed that its options for dealing with Iraq had been exhausted; a preventive strike was its only recourse. Because a strong sense of threat also undermined the deterrence option in the Bushehr and Gulf War cases, while warfare cut diplomatic or economic means of influence, options were similarly limited. However, cases where military action was rejected apparently left room for negotiation, deterrence and milder forms of coercion. Preventive strikes could remain an untapped last resort.

V. "Hot" Facilities

Of course, preventive strikes themselves are not all alike. Specifical-
ly, military action against an operating nuclear facility is the last of last resorts. An attack, even with conventional weapons, against a hot reactor is dangerous: "[a] high explosive bomb, when used against a nuclear target, would acquire some of the radioactive attributes of a nuclear bomb." The risk is highest in the case of a nuclear power station, where more radioactive material is present, but a direct hit on any reactor poses problems. Destruction of the reactor containment vessel could lead to an explosion of steam, which would carry radioactive material from the reactor into the atmosphere and over hundreds or perhaps thousands of square kilometres. Destruction of the reactor's cooling system or control room, in turn, might cause a melt-down involving another escape of radiation. Assuming adverse weather patterns, a large explosion at a major reactor could lead to damage greater than that resulting from the Chernobyl explosion in 1986. In general, then, it seems significant that preventive strikes have apparently been carried out only against cold facilities; rejected attacks would have instead targeted operating facilities.

The Osiraq raid provides a useful case in point. Although twelve kilograms of reactor fuel were present at Osiraq ("stored for safekeeping" since September 1980 in Transit Channel 2 of the reactor), the fuel was not yet in use. However, Saddam Hussein was pressing for Osiraq to be operational by July 14, 1981, Iraq's Revolution Day; France agreed in May 1981 to dispatch additional workers, and Israel predicted that the reactor would become hot either in July or September. Stressing that this was a central concern, its official post-raid statement said that an operating reactor would have been off-limits: "In such conditions, no Israeli government could have decided to blow it up. This would have caused a huge wave of radioactivity over the city of Baghdad and its innocent citizens would have been harmed." Osiraq was only about twenty kilometres southeast of Baghdad, and "no proper
emergency organization" for dealing with nuclear accidents existed.\textsuperscript{247}

The honesty of Israeli statements, and thus the real importance of whether targeted facilities posed contamination risks in this and other cases, were questioned at the time. A Congressional Research Service report on the Osiraq raid declared that "it would be most unlikely for an attack with conventional bombs upon the reactor when operating to have caused lethal exposures to radioactivity in Baghdad, although some people at the reactor site might receive some exposure." A commission appointed by the UN Secretary-General reached the same conclusion. However, perhaps sensitive to the fact that damage would vary according to which part of the reactor was hit, it did point out that Israeli concerns were "not unrealistic."\textsuperscript{248}

In fact, the specter of thousands dead allegedly crossed Haig's mind even when the reactor was cold: his first worry upon hearing of the raid was about radioactive contamination, and whether the United States could send humanitarian relief to Iraqi victims. Science aside, nuclear forces inspire suspicion and fear, and Begin was warned by advisers in March 1980 that any perceived risk would draw criticism.\textsuperscript{249} Perhaps more practically, condemnation for an Israeli attack on a hot reactor could have been expected regardless of the damage caused within Iraq; such an attack might have set a dangerous precedent for future Soviet strikes on NATO.\textsuperscript{250}

Iraq also attacked Iranian reactors, eighteen kilometres southwest of Bushehr, when they were not operational. Indeed, when work was abandoned at the site in 1979, the reactors were only sixty and seventy-five percent finished respectively, and no nuclear fuel was present in 1984, when Iraqi raids began.\textsuperscript{251} However, confident that Iraq would take fewer liberties with such fuel in the area, the Iranian government decided at least to move some nuclear material to Bushehr in February 1987; after a series of Iraqi attacks in November, it promptly (but inaccurately) complained that
another Chernobyl had been unleashed. Iraq itself seemed reluctant to target nuclear facilities which were actually in operation, warning in May 1987 that raids on "nuclear installations," even with conventional weapons, were "tantamount to the use of radiological weapons because of the release of radioactive materials that could result therefrom." Strangely less clear is whether the two reactors attacked during Operation Desert Storm were operational. Presumably they too were not: as research reactors, both were supposed to be shut down regularly even if impending war had not made this a sensible precaution. In any case, each reactor was far smaller than Osiraq, where US agencies had discounted the potential for contamination in 1981. The Soviet IRT-2000 generated "no more than two megawatts," while Isis was only an "experimental prototype." No radiation was, in fact, found to have escaped when they were attacked. At the very least, in this regard, the Coalition was careful not to damage containment vessels; relatively accurate Tomahawk missiles were employed to ensure that only the control building would actually be hit.

Whether Soviet or Chinese nuclear facilities were operational at the time of a preventive strike would not have mattered as much, considering that nuclear weapons were already the likely means of destroying them. Still, those facilities did or were supposed to become hot while preventive strikes were being decided against. The Soviets' first nuclear reactor may have been built by 1946, and the plutonium-producing reactor at Chelyabinsk became operational in June 1948. In turn, a Beijing reactor had operated since September 1958; more importantly, US intelligence estimates in December 1960 speculated (erroneously) that the "first Chinese production reactor could attain criticality in late 1961." Perhaps partly in response to fears of radiation, as well as of direct casualties, even the militant National Review suggested that a warning be given to China two or three
hours before any preventive strike to allow for evacuation of the area.  

Although there is no specific evidence of concern in the relevant governments, other cases of rejected military action likewise involved operating facilities. Egypt would have faced the threat of radioactive contamination in destroying Dimona: construction on the reactor finished in December 1963. More recently, fear likely surrounded the bombing of North Korea's Yongbyon reactor, which is ninety-six kilometres from Pyongyang and began operating in 1987. The apparent exception here is Pakistan, which was not attacked despite the absence of reactors, hot or cold, on the target list. However, a reprocessing plant was on that list, and the bombing of such a plant could also "release radioactivity of an order of magnitude larger than the Chernobyl disaster." Although presumably too small to have this extreme an impact, the New Labs in Rawalpindi, near Islamabad, were expected to begin reprocessing plutonium at any time in December 1982, when Indian strike plans were made public. The facility actually became operational in 1984, probably affecting Israeli planning as well.

In sum, the preventive strikes undertaken by Israel and Iraq targeted reactors known to be cold; the same can effectively be said of Coalition attacks in 1991. In every other case where a preventive strike was contemplated, the relevant nuclear facilities were already hot or due to come into operation. In these cases, military action was not taken.

VI. International Law

The order of past sections has not been random, for how well a preventive strike met other criteria helped to determine how closely it could approximate legal requirements for the justified use of force. Because violating international law may yield practical results, such as sanctions, in addition to the more dependably negative world opinion,
countries likely consider the prospect in their deliberations. Of course, the weight of legal factors in this calculus may vary with the extent of expected support on bodies such as the UN Security Council, which in practice determine whether violators of international law will be punished.

It must first be pointed out that, as isolated acts, preventive strikes have traditionally been deemed illegal. Anticipatory self-defense may be an inherent right subsumed under the UN Charter's Article 51, but it is limited to a necessity that is "instant, overwhelming, leaving no choice of means, and no moment for deliberation." Preventive strikes against a possibly remote nuclear option do not meet this rigorous standard. Anthony D'Amato counters that preventive strikes may still fall within the bounds of Article 2(4), which prohibits the "threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the purposes of the United Nations." A preventive strike neither removes territory from the target nor decreases its government's "authority vis-à-vis other sovereign governments." In addition, it is consistent with Article 11's goal of "disarmament and...regulation of armaments," and may serve humanity by lessening the threat of nuclear war. For the moment, however, the preventive strike concept remains shady.

On the other hand, the situation may change when preventive strikes are put in context; under specific conditions, a potential attacker may decide that action would not be blatantly illegal, or, more rarely, not illegal at all. First, the state contemplating a preventive strike may rest its case on nuance. Military action which is effective, responds to a strong sense of threat, appears to be a last resort, and only inflicts damage proportionate to its objective (in this case not trading the health of thousands for a building) should be nearer to the requirements of the customary international law that surrounds Article 51, as well as to its roots in a "just
war" tradition which upholds restraint, proportionality and discrimination. Second, an attacker may claim outright legality when the preventive strike targets a wartime opponent; action then fits within more general, ongoing military operations instead of requiring an independent appeal to Article 51. "By way of illustration, international law permits the bombing of a non-nuclear electric generating plant of a hostile and belligerent power inasmuch as such a plant may be helpful in the waging of war." The three (sets of) preventive strikes which have occurred took advantage of one or both of these legal justifications; the rejected strikes, by and large, could not.

For its part, Israel chose to emphasize the relationship between Article 51 and an efficient, responsibly limited attack launched only after other options to address the supposedly grave Iraqi threat had been exhausted. At his June 9, 1981 press conference, Begin thus stated the Israeli case: "Ours is a just cause." The raid was an act of "supreme, legitimate, self-defense." Begin's message was repeated on July 13 to Robert MacFarlane, one of Haig's advisers: "I studied law...including international law. I know very well what is self-defense. I know of no self-defense clearer and more decisive." Admittedly, with UN Security Council Resolution 487 calling the Osiraq raid a "clear violation of the Charter of the United Nations and the norms of international conduct," Israel did not succeed in gaining legal approval, but its persistence suggested that it had a more hopeful view of its chances before the strike was undertaken.

Notably, Israel has been the only state for which circumstances justified a peacetime raid; the other two countries which engaged in preventive strikes did so during war. Of course, some Israeli proponents argue that, strictly speaking, Israel did as well: Israel and Iraq were still in a declared state of war in 1981. However, "[i]f far more importance
than a 'state of war' as a legal concept or theory is a state of war as a factual condition," and the countries had not met in battle since 1973.268 Genuine wartime justification fell to Iraq when it attacked reactors in Iran, with which it was involved in a de facto as well as de jure conflict at the time. Remembering that Iran had escaped condemnation for its own attack on Osiraq in 1980, Iraqi leaders worried about the legality of striking Iranian reactors might well have looked to this war-related logic.269 Perhaps Egyptian or South Korean leaders thinking of attacking either Israeli or North Korean facilities reasoned along similar lines, although their cases would again have relied, more dubiously, on de jure conflict.

Preventive strikes against Iraq during Operation Desert Storm were under the same legal rubric as those against Bushehr, with the added benefit that war itself was legally sanctioned. UN Security Council Resolution 678 of November 29, 1990, authorized Coalition members to use "all necessary means to restore peace and security in the area."270 Of course, the resolution did not explicitly call for Iraq's nuclear facilities to be destroyed, but a preventive strike could have been interpreted as part of a general quest for stability. In a more familiar sense, it could have been disguised as part of overall military operations, particularly under the assumption that Iraqi nuclear weapons would have otherwise been produced and used offensively before a longer war had ended.

The other cases, where preventive strikes were considered but not engaged in, lacked this legal veneer. Without an ongoing war but with, instead, a limited nuclear threat whose attempted elimination would be characterized by inefficacy, haste and large-scale damage, preventive strikes against the Soviet Union, China, or Pakistan would have been exposed as unquestionably illegal. Indeed, the United States, which might have been party to each strike, became especially aware of how difficult gaining legal
approval for offensive military operations could be. During the Cuban Missile Crisis, Kennedy's self-defense groundwork for obstructing or destroying shipments of Soviet ballistic missiles - a far more immediate danger than a nuclear plant - faltered. A report for the US Attorney-General said that it was "clear that preventive action would not ordinarily be lawful to prevent the maintenance of missile bases or other armaments in the absence of evidence that their actual use for an aggressive attack was imminent," and Kennedy went on never to mention Article 51.271

In the wake of the 1991 Gulf War, legal calculations about preventive strikes may, of course, be somewhat altered. A joint communique agreed upon in January 1992 by states on the post-Cold War Security Council pronounced the proliferation of weapons of mass destruction to be a "threat to international peace and security." This language recalls Chapter VII of the UN Charter, which permits the use of force in response to such a threat under Security Council supervision.272 Cooperative preventive strikes, legalized under UN auspices, may be a new trend about which past experience gives few clues. However, actual cooperation against nuclear proliferation during the 1991 Gulf War only occurred when states were provoked by Iraqi policies unrelated to its nuclear program. This precedent suggests that independent military action, and the attendant gamble with illegality, will continue to dominate future preventive strike consideration.

VII. Military Retaliation

Thus far, discussed reactions to preventive strikes have been from countries other than the target. Clearly, states considering a preventive strike have felt more confident knowing that significant powers or the international community as a whole would not be forceful, legally justified opponents. A more direct concern for decision-makers, however, would have
been the expected reaction from the target itself, and specifically whether, after it had failed (or in addition to its having succeeded) in raising an international outcry through diplomatic or economic pressure; it would retaliate militarily for the preventive strike.

The answer in the cases where preventive strikes were carried out was a cautious "no." Of course, Israeli leaders did consider the possibility of an Iraqi reprisal attack if Iraq was not too "shamefaced" to admit that the Osiraq raid had even occurred.273 There was some question whether Iraq might back out from the Iran-Iraq War and, with Arabs united behind its own 190,000-strong army, declare war on Israel. The Israeli Air Force also made plans should Iraq strike back, more modestly, at certain targets within the country.274 Begin seemed ready to take the risk of either: speaking to his Cabinet on October 28, 1980, he affirmed, "Even if the enemy attempts a military response, it will be immeasurably less severe than the terrible danger in store for Israel should nuclear weapons fall into the enemy's hands."275

On the other hand, these brave words were easier to utter knowing that a large-scale retaliatory attack was improbable. Meeting earlier in October 1980 with his advisers, Begin determined that it was an "opportune moment" to strike Iraq because its military was preoccupied with and "weakened" by a surprisingly resilient Iran.276 Furthermore, the Israeli government counted on blocking the avenue of Iraqi attack that was the least unlikely. Soon after the Israeli preventive strike, Begin apparently told King Hussein that his consent to an Iraqi assault (presumably, to make Jordanian consent meaningful, a ground assault) would imperil Jordan's future. Jordan heeded the warning, allegedly rejecting suggestions for a "reprisal raid" to be staged from Jordanian territory,277 and Iraq ultimately launched no military reply to the Israeli attack. Iraqi Foreign Minister Saadoun Hammadi merely stated that "military action cannot be excluded as part of the Arab response."278
Iraq itself was also fairly secure, in terms of a retaliatory danger distinct from the ongoing Iran-Iraq war, when it attacked Bushehr; it was unlikely to sustain additional damage. Iran was already expending its full efforts, including terrorist sponsorship, in winning the bilateral conflict; replying to yet another Iraqi attack on its territory could not be done in any dramatic new fashion or with much greater intensity. The same logic likely applied to a preventive strike against Iraq, against which a war was already being fought in 1991. The United States may have counted on retaliation being subsumed by regular fighting with Iraq's (dubiously armed and qualified) military; Iraq was mistakenly expected to be fighting at its full capacity, in order to win, from the start. Escalation to Iraqi chemical weapons use was still possible as the result of a preventive strike, but had already been threatened and avoided by Iraq in reaction to the commencement of Desert Storm as a whole.\^\textsuperscript{279}

In contrast to the circumstances surrounding actualized preventive strikes, a US raid on Soviet nuclear facilities would have been militarily dangerous for the United States and its allies. When Groves first proposed a preventive strike late in the summer of 1945, the Red Army boasted over eleven million troops who could march westward in retaliation. Although demobilization proceeded, it was still estimated that the "Soviets could mobilize 10.5 million men in thirty days, thus enabling them to occupy Western Europe in a matter of weeks."\^\textsuperscript{280} In fact, even if the United States was willing to incorporate preventive strikes into a wider preventive war where nuclear weapons were used extensively, Moscow would remain able to retaliate. The Harmon Committee reviewing American plans for nuclear war concluded in May 1949 that Soviet capabilities to occupy Western Europe and the Middle East "would not be seriously impaired" by SAC.\^\textsuperscript{281} Certainly by 1953, as well, retaliation for a (belated) American raid could be inflicted on the
United States itself, by nuclear-capable Soviet bombers or submarines.282

A US attack on Chinese nuclear facilities may have been somewhat safer in terms of military retaliation by the target, but far from risk-free. Only seven months after the first Chinese nuclear test, a twenty kiloton bomb was dropped from a Chinese airplane: Mao was moving fast toward his goal of six nuclear weapons, which he felt were enough to ward off attack by either superpower, and which presumably could be used to retaliate for a mistimed preventive strike.283 Even before such a strike was by definition futile, however, China could turn to other means of retaliation. As Chou En-lai asked in May 1966, "If you can come from the sky, why can't we fight back on the ground?"284 Although domestic economic setbacks and the denial of Soviet aid had weakened the Chinese military, an open threat conveyed through France in 1966 was that China would directly join the war in Vietnam should Chinese targets be attacked.285 China might also have struck US forces in nearby Korea, Japan or Taiwan.

Likewise, Egypt had to be wary of Israeli military retaliation. Israel had escaped defeat by several Arab armies in 1948, and pushed far into Egypt in 1956: it was clearly strong enough to reply to an Egyptian preventive strike. Reports further emerged in January 1965 that Israel was to purchase French medium-range ballistic missiles, which could strike Egyptian targets.286 In addition, although Nasser disputed Israeli nuclear advancements, Israel was said in 1963 to have conducted an underground nuclear test in the Negev; the prospect of Israeli nuclear retaliation for an Egyptian attack that came too late, as well as a plain conventional response, may have at least crossed the minds of Nasser's advisers.287

In turn, while the United States and Israel were fairly safe from Pakistani retaliation, the same could not be said of India. Of course, the Indian military is and was considerably larger than that of Pakistan, which
in theory made it capable of deterring or easily rebuffing a Pakistani retaliatory offensive. In the mid-1980s, India had just over double the military manpower, and nearly triple the combat air-power. On the other hand, much of the Indian military was garrisoned near the borders of China and Bangladesh, making its advantage on the Pakistani frontier more slight; there might be the "semblance of numerical equality" in a brief military conflict. More plausible and more worrying than the prospect of provoking conventional war, however, was a Pakistani retaliatory attack on Indian nuclear facilities near Bombay. Pakistan had F-16s, which were used, in a modified form, against Osiraq; the American aid package in 1981 provided for the sale of forty of these airplanes, and the first ones arrived in December 1982. It was reportedly in large part this threat of reprisal which convinced the Gandhis against engaging in a preventive strike. Finally, of some concern may have been CIA estimates, at least by the time that Israel approached India about a cooperative strike in 1988, that Pakistan had already assembled three nuclear weapons. Khan and Zia had previously hinted at similar capabilities, which have since been openly admitted. A mistimed preventive strike which provoked the same kind of Pakistani attack that it was intended to avert in the future would scarcely be appealing.

Perhaps even more disturbing was North Korea's potential reaction to an attack on its own nuclear installations. The Northern army was already the sixth largest in the world by the late 1970s, with 995,000 troops in 1991 to compare with the South's 655,000. An impoverished North would eventually lose a new war, but the cost of fighting one was predicted to be 300,000 lives; "unlike Iraq,...[North Korea had] the proven ability to fight tenaciously." An additional worry, certainly before the South's April 1994 acquisition of 192 Patriot missiles, was that North Korea possessed the Scud-B; this missile had a range of between 280 and 300 kilometres and,
possibly, a chemical warhead. The country also tested the 960-kilometre No-Dong missile in May 1993; even without it, however, North Korea could strike perhaps four Southern nuclear power stations and, as the South feared, devastate Seoul, which is only twenty-five kilometres from the border. 294 A final problem, again, was timing: Clinton was told by the CIA late in 1993 that in all probability North Korea had already assembled one or two nuclear weapons, which could be used in response to a US raid. 295 

At any rate, the North was unlikely to let preventive strikes go unanswered, although it too might have been somewhat constrained by fears of prolonged conflict. In November 1993, North Korean Vice-Marshall Kim Kwang-chin announced, "Answering dialogue with dialogue, war with war, is our stand." 296

Once more, a pattern can be discerned. Preventive strikes occurred against states unable or unlikely to react militarily; victims were already fighting another war or concentrating simply on gaining an advantage in the broader, otherwise justified, conflict of which preventive strikes were a part. Preventive strikes were rejected against countries which were expected to reply with conventional or chemical warfare, or which, thanks to ambiguity about their nuclear progress, could undertake nuclear retaliation.

VIII. Domestic Public Opinion

Together, the seven factors noted above helped to shape how a preventive strike would be seen by the citizens of states considering it as an option. Certainly in countries whose leaders were democratically elected, such as the United States and Israel, domestic public opinion was an important factor in its own right for governments to weigh when balancing the costs and benefits of military action. Generally speaking, the preventive strikes that were engaged in could have been counted on not to alienate domestic support; perhaps, more actively, they were hoped to bolster it
instead. What this effectively means is that less costly operations against seemingly greater threats were again the ones likeliest to be carried out.

Information on how governments assessed or manipulated domestic public opinion is not available in all cases; the proposed Egyptian attack on Israel, the Iraqi raids on Iran, and the three planned strikes against Pakistan will, accordingly, not be discussed in further detail. However, some evidence is present for the Osiraq raid. The Israeli government was confident of popular support; the attack may have even been timed for effect before June 30, 1981 general elections, in which Begin had previously been unsure of victory. Pre-raid polls showed his Likud Party "neck and neck" with Labor, and some predicted defeat; he may have felt that a successful, high-profile attack undertaken against an external enemy would boost his popularity among Israelis forever alert to threats and accustomed to self-help methods. This would have been an accurate prediction, for Likud had gained an edge of between twelve and fourteen seats by mid-June.

Public opinion about another preventive strike, in the form of the 1991 Gulf War, was also expected to be favorable; the nuclear issue won official attention only after a public outcry, although at least partly because US leaders had already chosen to demonize Saddam Hussein. A poll in the autumn of 1990 showed that fifty-nine percent of Americans believed nuclear non-proliferation to be a "very important" foreign policy objective. A poll released on November 20 then revealed fifty-four percent to feel that preventing Iraq from developing nuclear weapons was an "adequate reason to fight" — more so than on behalf of Kuwait or to secure the oil supply. This result allegedly moved Bush to insert passages about potential Iraqi weaponization into prepared Thanksgiving speeches. A January 1991 poll further showed sixty-three percent of the electorate to be in favor of war; it was when greater casualties were predicted that support decreased.
In this vein, the American public had far less sympathy with the idea of preventive action when significant costs and a (subjectively more) limited threat were involved. Average citizens, here allowed to express their views, tend to accept "really bold action" only with the promise of "painless victory" or in response to "great anger or great fright." The wariness that otherwise prevails was evident when a preventive strike on Soviet nuclear facilities was under consideration, with morality and perhaps common sense allowed to come to the fore. Interestingly, the involved prospect of American nuclear use was not at issue: most respondents to a November 1947 poll agreed that the United States could strike first, if necessary, against (unspecified) enemies. However, in a context where the Soviet nuclear test in 1949 excited little public interest, much less fear, and where Soviet conventional retaliation for a preventive strike would have been likely, Truman concluded in September 1950, "We do no believe in aggression or preventive war. Such a war is the weapon of dictators, not of free democratic countries like the United States." It seems reasonable to surmise that similar background conditions would also have dictated public caution about an American preventive strike on China in the 1960s.

These sentiments were apparently carried forward to the 1990s. Singapore's Lee Kwan Yew believed that the US government extrapolated from the negative public reaction to American losses in Somalia; these losses would have been dwarfed by those incurred had North Korea launched a major retaliatory attack on the South.

Nobody believes that an American government that could not sustain its mission in Somalia because of an ambush and one television snippet of a dead American pulled through the streets in Mogadishu could contemplate a strike on North Korean nuclear facilities like the Israeli strike on Iraq.

With respect to South Korea, in turn, the defense minister who spoke openly about a preventive strike against the North in 1991, regardless of the low
level of nuclear threat but high retaliatory risk, was forced to resign; popular disapproval had been strong. A similar fate could be expected for the government which actually put such rhetoric into action.

**SUMMARY**

This chapter, then, has identified major similarities and differences among the ten known preventive strike proposals. Compared have been US military plans against the Soviet Union, China, Pakistan and Iraq; joint US-South Korean designs on North Korea; Egyptian threats against Israel; planned Indian raids on Pakistan; Israeli schemes against both Pakistan and Iraq; and Iraqi raids on Iran. Five general characteristics spanned all cases, and appear to be useful indications of when military action against a new proliferator's nuclear facilities is likely to be considered. Discussion in each instance took place in countries which viewed the prospective target as some kind of threat, although one of varying severity. This unease and willingness to address it by military means were usually increased by a recent, contemporary or looming wartime context, and a sense of the target's ideological or religious aloofness. Every attacker but Egypt also had the technological lead to see a proactive, military role as feasible, while all could be assured that they were not alone in wishing to end nuclear proliferation.

Conditions otherwise differed, however, in the three preventive strikes which were actually carried out. Eight factors have emerged in this study to distinguish instances where military action occurred from those where it was rejected; these suggested criteria for engagement are presented in tabular form on the following page. Actualized preventive strikes were those where greater support on the side of the target was not expected to outweigh a non-proliferation consensus; neighbors and particularly super-
<table>
<thead>
<tr>
<th>Attacker vs. Target</th>
<th>Significant Friends/Few Detractors</th>
<th>Operational Success Likely</th>
<th>High Degree of Proximate Threat Felt</th>
<th>No Other Options Seen</th>
<th>Cold Facilities Targeted</th>
<th>Perceived Closer to Legality</th>
<th>Unlikely Military Retaliation</th>
<th>Domestic Public Support**</th>
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<tbody>
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<td>US vs. USSR</td>
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* Table 1 - How the Ten Proposed/Realized Strike Plans Met Suggested Criteria for Engagement
A "+" shows the case tending to satisfy the relevant criterion; a "−" indicates that the criterion has not been fulfilled.
* These cases occurred during war; legality was assumed and retaliation meant escalation; ** no information where "?"
powers, in a favorable international context, would not object to a counter-proliferation raid in a strenuous fashion. The attacker could thus derive comfort from the presence of significant friends and/or few potential detractors. Where attempted, the preventive strike itself was further predicted to have a good chance of destroying all the nuclear weapons facilities (ideally few and unconcealed) in the new proliferator through conventional bombing; operational success was likely and, with only cold facilities targeted, no risk of radioactive contamination was otherwise incurred. Of course, even with such assurances, prospective attackers did not act lightly. They still preferred to strike only when other, non-military options had been exhausted or discredited, and confined their responses to a nuclear threat that was considered especially strong, as well as relatively proximate in time and place. Either on the basis of such factors or in the context of an ongoing hot war, the operation also had to appear closer to legality; only in one case was a preventive strike risked without a de facto conflict already raging. Finally, the likelihood of military retaliation (or wartime escalation) by the target was deemed to be low and, at least if important for electoral purposes, domestic public opinion was hoped to be favorable. Voters were suitably riled but promised that a preventive strike would bring minimal retaliatory (or other) costs.

Almost invariably, cases were sharply divided with respect to these factors; the Osiraq, Bushehr and Desert Storm raids consistently fulfilled criteria which the seven rejected operations failed. As mentioned earlier, however, some of the eight differentiating characteristics outlined may be less important than others: the fact that certain criteria were satisfied when every past preventive strike occurred may have merely provided reinforcement for decision-makers or been the result of chance. It seems possible that, for example, a potential attacker would be prepared to risk
some degree of international disapprobation or conventional military retaliation by the target for the sake of destroying a greatly feared nuclear program, especially once other options for eliminating that program had failed. In this regard, the strictly necessary conditions for deciding on military action may well be limited to three factors: a high degree of perceived threat, a lack of other options, and a strong probability of operational success. The absence of other factors can in exigent circumstances be overlooked, but without each of three mentioned above being present, military action would be a pointless risk. By extension, with three criteria that must be satisfied, none of them is sufficient; certainly, as well, the fulfillment of more cannot but provide additional encouragement for decision-makers.

These rather contorted qualifications can be simplified to provide a reliable formula for prediction. A future scenario which meets every criterion highlighted in this study is one where a preventive strike is virtually assured. Conversely, a scenario which fails one or two, particularly if among the three emphasized above, is less likely to involve military action. These broad guidelines will be put to use in the next chapter, to assess the probability of preventive strikes occurring against contemporary proliferators.
Preventive strikes are not simply of historical interest; Israel and the United States, at least, are both potential actors. After the Osirak raid and until 1985, the Israeli government regularly proclaimed itself ready to stop any perceived enemy from acquiring nuclear weapons "with all the means at its disposal." More recently, Israel purchased F-15Es "specifically for a long-range disarming strike," and "senior officials have warned that Israel would have to 'consider an attack' if any country in the region gets 'close to achieving a nuclear capability' and political means of preventing it fail." After the 1991 Gulf War, in turn, Bush told the Defense Department "to develop new capabilities to defend against proliferants, including capabilities for pre-emptive military action." Clinton's own Nuclear Counter-Proliferation Initiative in December 1993 was duly feared to be (or praised for being) oriented toward preventive strikes. More widely, unofficial proposals remain for military action against "rogues" such as Iran, which has, accordingly, gone on to choose a new reactor site near the Caspian Sea (despite the earthquake threat) instead of one more accessible from Iraq or the Persian Gulf. Still to be explored, then, is the question of whether military action is actually probable.

The proliferation risks to be examined here are Libya, Iraq, Iran and Syria: all, perhaps to be joined by countries like Algeria in the future, are potential targets of an American or Israeli preventive strike. Nuclear weapons development by any of these states would upset US and Israeli decision-makers; US Secretary of State Warren Christopher's branding of Iran as an "international outlaw" for its terrorist connections fits all of them to some extent. Furthermore, each proliferator is psychologically distanced from prospective attackers like the United States and Israel by
religion, and all but Iran have been involved with one in a militarized dispute or war. In addition, both the United States and Israel could be confident of technological superiority over any target (certainly in terms of an existing nuclear arsenal), and of widespread support for the non-proliferation goals that preventive strikes would be intended to advance (although in practice, independent action might undermine the idea of a multilateral regime). It is safe to assume that military action against each of the four proliferators mentioned will be up for official discussion.

However, the four cases' fulfillment of the criteria previously met by realized strike plans is mixed. In terms of the balance of support, Libya and Iraq remain almost friendless, but Iran and Syria do not. China has allegedly helped Iran with EMIS and calutron technology; it would likely be displeased and obstructive on other issues were its handiwork destroyed. In a similar vein, military action against Syria would be generally unpopular, especially while the very Middle Eastern peace settlement that is hoped to entrench Syrian goodwill is being pursued. Finally, regardless of the target, NATO allies have decided not to back "any military action" unless it is "an unambiguous case of self-defense" or under UN auspices.

Second, the likelihood of operational success, at least with respect to finding all relevant facilities in the suspect proliferators, is small. The United States may be improving conventional, "deep-earth penetrators" to destroy known facilities, but after the shock of finding much of the Iraqi nuclear program left intact in 1991 despite heavy bombing of the country, potential attackers will probably not take success for granted: nearly three years after the Gulf War, radiation-detecting helicopters were still searching for some of Iraq's more than twenty rumoured nuclear sites. In this regard, it may be increasingly difficult to determine when facilities will become hot, and thus to plan raids which do not risk contamination.
Fortunately, the degree of threat to prospective attackers from the four budding proliferators is generally not high. Although Israel has complained about a supposed Iranian menace, Iran and Syria are both seen (presumably even by the Israelis) to have become more pragmatic; there is no sign that either would use nuclear weapons offensively. For its part, Iraq has shown itself responsible enough not to engage in a vindictive terrorist spree, while the US raid on Tripoli in April 1986 had a restraining effect on Qaddafi, who then concluded a peace agreement with Chad and vowed to decrease backing for terrorist groups. Qaddafi apparently does not countenance unprovoked nuclear use either, saying in 1987, "We undertake not to drop the atomic bomb on any state around us...However, if someone is going to threaten our existence and independence...then we should drop it on them. This is an essential defensive weapon." Even if not reassured by these statements, foreign decision-makers may find the remoteness of these proliferators' arsenals in terms of time and (especially for Americans) geographical distance more comforting. Currently, Libya's only reactor operates at between two and ten megawatts, and would take ten years to produce enough plutonium for a nuclear weapon. In addition, none of the four proliferators yet has the means to deliver an eventual device to the United States.

This point suggests the possibility of options other than a preventive strike being used to deal with emergent nuclear arsenals. Although imperfect, the Missile Technology Control Regime may be an example of multilateral technical restraints able at least to slow Third World states' acquisition of delivery systems; other potential delivery systems, including submarines, admittedly remain to be addressed. Diplomatic pressure by individual countries could also supplement the monitoring and export controls of the IAEA and Nuclear Suppliers Group, to which more attention can be devoted with the removal of Cold War blinkers. In the category of unilateral
action, the American refusal to educate Libyans in nuclear science during the 1980s already aggravated Libya's scientific backwardness, while in a bilateral framework, the United States was successful in pressing India and Argentina to cancel nuclear deals with Iran in 1991 and 1992. Likewise, either multi- or unilateral sanctions could be placed or, in the Iraqi case, continued, on new proliferators, while a "scaled-down Star Wars" program might be directed by one or more countries against extreme states which supposedly cannot be deterred. A final, more direct but again non-military, option which remains available is sabotage. This alternative may even have gained popularity: a mysterious explosion destroyed an Iraqi military plant in August 1989, a fire allegedly swept the Libyan chemical plant under construction at Rabta in March 1990, and biological weapons equipment ordered by Iran was targeted in 1992-93.

Especially with these non-military avenues open and no wars ongoing, a new preventive strike outside UN supervision would be criticized for its illegality; this may effectively condemn any military action in the near future, for Gulf War cooperation in the United Nations occurred only under a special (or unique) set of circumstances. Perhaps even worse, military retaliation by targeted states seems probable. Syrian retaliatory capabilities include chemical weapons, Scuds, and SS-21 missiles which could certainly hit the neighboring Israel; even Iraq may still have up to two hundred Scuds, wielded by a trimmer military. In turn, spurred on by his government's possession of chemical weapons, possibly three hundred Scuds, and now the No-Dong missile (which can reach Israeli territory), Iranian Air Force Commander Brigadier-General Mansur Sattari has openly declared that "any adventurism by Israel against Iran 'would cost it dearly.'" Iran may also have several nuclear warheads from Kazakhstan with which it could retaliate (assuming that it knew how to fire the sophisticated Soviet
models) for what a misinformed attacker had considered a preventive strike.\textsuperscript{323} Libya seems the most vulnerable target: its response to the US bombing raid in 1986 was limited to funding terrorist operations, which may provide a reassuring precedent for attackers. On this basis, public approval within the United States or Israel for a relatively costless preventive strike might well be forthcoming, particularly against a demonized leader.

Although Libya and perhaps Iraq come closest, then, none of the proliferators mentioned here meets all the criteria satisfied by past preventive strikes. Notably absent are an overpowering sense of threat (or at least strong public statements about such a threat), and confidence in operational success; present, instead, is a seemingly wide range of alternatives for slowing or countering proliferation. As a result, a preventive strike against one of the four Middle Eastern proliferators now seems improbable.

Nuclear proliferation in the former Soviet Union, if undertaken despite new NPT commitments by Ukraine, Kazakhstan and Belarus, raises rather different questions. It has been argued that Russia might launch a preventive strike against a proliferating Ukraine,\textsuperscript{324} but a cultural and political affinity absent in other cases where such strikes were considered exists here. The case is further disqualified from the preventive strike category defined in this study because an attack would target existing missiles, with which Ukraine could retaliate, known to be left over from the Cold War. For its part, although now apparently cooperating with Russia and the United States to eliminate its portion of the Soviet arsenal, Kazakhstan had announced in May 1992 that it would undertake its own nuclear research at Semipalatinsk.\textsuperscript{325} Even if the country were to revive these plans, however, it would not seem obviously threatening - assuming it was left alone. At the same time, the weapons remaining on its territory could make it dangerous if provoked, again making a preventive strike belated and unattractive.
PREVENTIVE STRIKES: INEFFICIENT AND IMPLAUSIBLE

Preventive strikes have occurred in the past only under an unusual set of circumstances, and this pattern is likely to hold in the future. Of the ten cases where preventive strikes against nuclear facilities are known to have been pondered, only one took place in peacetime, and just three were carried out in all. Considering the requirements that may have to be met, this limited use of the military option is unsurprising. Past preventive strikes have been restricted, efficient and (almost) legal uses of conventional force as a last resort. Mild reactions have been sought at home, in the target, and worldwide, while the prospect of removing a greatly feared threat has had to compensate for remaining risks.

What has not yet been considered is whether preventive strikes are, purely from an anti-proliferation standpoint, a good idea. Should they be encouraged? Evidently, Israel acted in 1981 at little cost. Punishment came only in the form of a delayed F-16 shipment, a stalled US reactor deal and uranium transfer, and the removal of IAEA status, with an annual 100,000 dollars in technical aid, for three years. The largest financial cost was Israel's eight million dollars in operational expenses. What the strike yielded, however, was also minimal. The Iraqi nuclear program was not stopped, but merely slowed by perhaps three or four years, while Iraqi scientists were encouraged to display their ingenuity in developing three, hidden nuclear programs at once - even as their country remained within the constraints of the NPT/IAEA regime. Saddam Hussein stayed in power, and the raid may have given him another grudge to nurse when deciding whether or not to use his new program for offensive ends. In a similar vein, Iraq's attacks on Bushehr failed to prevent Iran from seeking nuclear weapons, while the 1991 Gulf War has not removed the fund of technological knowledge that Iraq would need to re-start its own nuclear program. Estimates suggest
that an Iraqi arsenal could still emerge within three to six years after the lifting of UN sanctions, barring "constant foreign inspections."\textsuperscript{328}

Perhaps this record of preventive strikes, however well-executed and operationally successful, failing to do more than impair nuclear development now also weighs on decision-makers who contemplate military action, unless that impairment is counted on to last long enough for a dramatic softening or socialization of the target's leadership. Even in circumstances where a preventive strike would be likely judging by historical patterns, independent of any learning process, wary governments may hold back. Still, this possible ninth decision-making factor does not overcome or distort the previous eight. Even the known likelihood of an Iraqi nuclear revival was not of great concern to Begin, who said in 1981 that merely deferring Iraqi weaponization, through a comprehensive strike, would at least save a generation; he further expected his successors to follow the precedent of attack that he had set.\textsuperscript{329} Conversely, the US government was not buoyed by indications in the early 1960s that China would be too impoverished to rebuild its nuclear program after a preventive strike.\textsuperscript{330} The eight factors outlined in this thesis will thus probably retain both their importance to the decision-maker and their predictive value for the observer.
ENDNOTES

1. Mark Walker, *German National Socialism and the quest for nuclear power* (Cambridge: Cambridge University Press, 1989), 119; McGeorge Bundy, *Danger and Survival* (New York: Random House, 1988), 22-23. Although there was no proof of a major German nuclear weapons project, the Allies launched bomber and commando attacks on a Norwegian heavy water plant. Barry R. Schneider also mentions US attacks on Japanese nuclear laboratories; see "Nuclear Proliferation and Counter-Proliferation: Policy Issues and Debates," *International Studies Review* 38 (October 1994): 226. Also of note is that Schneider uses the term "pre-emptive counter-proliferation measure" in place of "preventive strike."


June 1981, 27; Nakdimon, 309.

13 Schweller, 261; Bundy, Danger and Survival, 251-253; Russell D. Buhite and Wm. Christopher Hamel, "War for Peace: The Question of an American Preventive War against the Soviet Union, 1945-1955," Diplomatic History 14, no. 3 (Summer 1990): 381.


16 Zaloga, 50-52; Professor Michael D. Wallace, suggestions to the author, 19 July 1995, explains that the US eventually found the Chelyabinsk facility in this fashion.


20 Buhite, 384.


22 Ibid.

23 Ibid., 40.


28 Chang, 1304.

30 Bundy Memorandum for the Record, 15 September 1964, McGeorge Bundy - Memoranda to the President, vol. VI, 7/1-9/30/64, quoted in Chang, 1308.


33 Schurmann, 514.


38 Evron, "Arab Position," 22.


41 Evron, "Arab Position," 23, 26; Hedrick Smith, 8.


43 There is one indication, however, of Israeli concern; Major General Ariel Sharon said in 1975, "If we discover the Egyptians to be working on nuclear weapons of their own, we'll have no choice but to wipe them out." See Steven J. Rosen, "Nuclearization and Stability in the Middle East," in Nuclear Proliferation and the Near-Nuclear Countries, ed. Onkar Marwah and Ann Schulz (Cambridge, Mass: Ballinger Publishing Co., 1975), 174-175.


45 Bar-Joseph, Handel, and Perlmutter, 57; Nakdimon, 55, 70; Power, 851, insists that Osiraq was to operate at 40, not 70, MW.

Feldman, "Bombing," 117; Nakdimon, 63, 75, says Caramel was 20–25 percent enriched uranium instead. Using the uranium for bombs would have been difficult, because fuel rods were irradiated by France to impede handling.

Spector and Smith, 187; Nakdimon, 64; Feldman, "Bombing," 118; Bhatia, Nuclear Rivals, 76.

Iraqi spokesman quoted, without further reference, in Nakdimon, 115.

Al-Usbu Al-Arabi (Lebanon), 8 September 1975, quoted in Ibid., 59.

Ibid., 109, 163.


Nakdimon, 85; Bhatia, Nuclear Rivals, 83.

Spector and Smith, 383.


Krosney, Deadly Business: Legal Deals and Outlaw Weapons (New York: Four Walls Eight Windows, 1993), 189; this report may have been planted.

Barnaby, 125; Spector and Smith, 375.

Ibid., 209.

Ibid.

Krosney and Weissman, 161.


Ibid., 74; David Albright and Mark Hibbs, "Pakistan's Bomb: Out of the Closet," The Bulletin of the Atomic Scientists 48, no. 6 (July/August 1992).

Reiss, 237; Krosney and Weissman, 214-215.

Ibid., 213; Spector and Smith, 77.

Richard Burt, "U.S. Will Press Pakistan to Halt A-Arms Project," New York Times, 12 August 1979, 1; Krosney and Weissman, 192. Wallace, 19 July 1995, suggests that the news report may have been a convenient leak which in reality did not amount to much. The case is considered here because of its reappearance in Krosney and Weissman, its reflection in the sources below,
and the fact that Carter did not appear to have much to gain by a deliberate leak of false information - the hostage crisis was not yet in progress.

66 Akhtar Ali makes a distinction between the US "institutions" which allegedly encouraged Indian action and US decision-makers, but considers both important components of the American government; see Pakistan's Nuclear Dilemma (Karachi: Economist Research Unit, 1984), 89. For his part, Onkar Marwah adds that "senior Indian government officials" claimed to have been approached "by the West" to strike Kahuta after Israel's raid on Osirak; he does not specify whether American or (more probably) Israeli diplomats were involved. See "The Non-Proliferation Policies of Non-Nuclear Weapon States," in Nuclear Non-Proliferation and Global Security, ed. David B. Dewitt (London and Sydney: Croom Helm, 1987), 117.

67 Reiss, 242.


70 Spector and Smith, 66.


72 Bhatia, "Israelis plot A-plant raid on Pakistan," The Observer, 27 March 1988; Cohen, 15; the New Labs may also have been a target.

73 Bhatia, "Israelis plot.

74 Nakdimon, 307; Spector and Smith, 188.


76 Israel itself sent word to Iraq that no preventive strike was under consideration, and there seems nothing to substantiate Iraqi suspicions that Israeli strike plans were, in fact, being made. Therefore, the case is not explored here. Lester H. Brune, America and the Iraqi Crisis, 1990-1992 (Claremont, California: Regina Books, 1993), 33; Dilip Hiro, Desert Shield to Desert Storm: The Second Gulf War (London: Harper Collins, 1992), 67; Evron, Israel's Nuclear Dilemma (London: Routledge, 1994), 200.

77 Krosney, 222.


79 Austin Bay and James F. Dunnigan, From Shield to Storm (New York: William Morrow and Company, Inc., 1992), 155. They say the five percent
includes missions against "Scuds," but the figure would be too low if they counted attacks on launchers, especially after Israel was hit.


83 Cordesman, 163, 169.


86 Kyongsoo Lho, "Writing the Final Chapter: Inter-Korean Rivalry in the 1990s," in Asian Flashpoint, 154-155; Mack, 10.

87 Cumings, 16.

88 Lee Se-wan, "South Korea: South Korea Prepares for Any Eventuality with North," Reuters 10 November 1993, quoted in Mack, 8.

89 "North Korea," A4.

90 Schneider, 227.

91 Rubinstein, 37.

92 Schneider, 225, agrees with several of these "conditions."

93 McCwire, 15.


95 Power, 853.


97 Bar-Joseph, Handel, and Perlmutter, 70.

98 Nakdimon, 200; Timmerman, 101.

Nakdimon, 160.

Ibid., 156.

Krosney and Weissman, 236; Bar-Joseph, Handel, and Perlmutter, 117.

Ibid., 73; Nakdimon, 78; Krosney and Weissman, 236; Power, 854.

Russell, 27; Nakdimon, 25.

Ibid., 73.

Ibid., 306; Krosney and Weissman, 236.

Freedman and Karsh, 6.

Daniel Yergin points out that France was not even willing to consider its traditional Russian ally as its likeliest new enemy; it may not have been convinced to do so until 1948. See Shattered Peace: The Origins of the Cold War (New York: Penguin Books, 1990), 395.


Schurmann, 398, 450.


Segal, 125.


Cohen, 18; Bar-Joseph, Handel, and Perlmutter, 34.


Wirsing, 82.

119. Ibid., 50; Spector, Nuclear Proliferation Today, 101.

120. Chellaney, 59.

121. Bhatia, "Israelis plot."

122. Choung-Il Chee, 308, describes the Japanese position as more firmly anti-North Korean than does Rubinstein, 30; Spector and Smith, 132.


124. Ibid., 32.

125. Ibid., 26; Bracken, 151.

126. Krosney and Weissman, 236; Power, 854.


128. Krosney and Weissman, 9; Nakdimon, 117.


130. Barnaby, 90; Nakdimon, 213; Timmerman, 100.


137. Zaloga, 50-54; Arnold Kramish, Atomic Energy in the Soviet Union (Stanford: Stanford University Press, 1959), 121; however, see note 66.


139. Schweller, 261.

140. Buhite and Hamel, 383.
Herken, 295-296.

Richard Fieldhouse does note even here that duplicate sites in locations to which the Soviets had (presumably) not had access were built by the end of the 1960s. See "China's Mixed Signals on Nuclear Weapons," The Bulletin of the Atomic Scientists 47, no. 4 (May 1991): 40; Robert Guillain, "Ten Years of Secrecy," The Bulletin of the Atomic Scientists 21, no. 2 (February 1965): 24.

Candlin, 57; Frank, 14; Lewis and Xue, 115.


Candlin, 58; Lewis and Xue, 115.

Ramberg, The Destruction, 63.

Schurmann, 450; "Should We Bomb?," 9.

Ibid.


Bhatia, Nuclear Rivals, 35, 40; Bundy notes the first public mention of Israeli reprocessing was not until 1977, Danger and Survival, 506.

Krosney and Weissman, 192; Rikhye, 35.

Krosney and Weissman, 193.

Burt, 1; see the conclusion for another interpretation of Hummel's remark.

Rikhye, 35; Ashok Kapur, Pakistan's Nuclear Development (London, New York, Sydney: Croom Helm, 1987), 208; Spector and Smith, 68.

Chellaney, 70.

Mack, 18.

Bracken, 152; Cumings, 17.


163 Nakdimon, 97.
165 Perlmutter, 40; Shoham, 206.
166 Krosney and Weissman, 19-20.
168 Nakdimon, 163, had access as Begin's former media adviser.
169 Ibid., 240.
170 FBIS 19 October 1988, Near East and South Asia, quoted in Cordesman, 97; Spector and Smith, 211.
171 Hiro, 73.
172 Spector and Smith, 189.
173 New York Times, 3 April 1990, quoted in Jean Edward Smith, 47. How inherently irresponsible Saddam Hussein actually seemed in American eyes is, of course, open to question. A senatorial delegation went to Iraq later in April, and leader Robert Dole said "there might be a chance to bring this guy around." Bernard Reich, "The United States in the Middle East," Current History 90, no. 549 (January 1991): 7.
175 Ibid., 211; Christopher Layne, "Why the Gulf War was not in the National Interest," Atlantic Monthly 268, no. 1 (July 1991): 65.
177 Buhite and Hamel, 370.
178 Sivachev and Yakovlev, 217.
179 Schweller, 261; McCwire, 17.
180 Herken, 111; "Keep Bomb Secret," 3.
181 Bundy, Danger and Survival, 174; Yergin, 136.
182 The army, still dissenting, put the figure at ten years from a Soviet nuclear test expected between 1949 and 1952; the rest of the JCS said seven to eight years instead. See Herken, 233.
183 Kennedy to Harriman, 15 July 1963, cable, quoted in Chang, 1300, 1293; Fetzer, 180.


186 "Should We Bomb?" 9; Schurmann, 388; Chang, 1309.


188 Committee on Foreign Relations, "Nuclear Test Ban Treaty," 15 August 1963, quoted in Ibid.

189 Ibid., 1290. Schurmann, 451, notes more dramatically that Kennedy believed "all of Southeast Asia would fall" to a nuclear China.

190 "Possibilities of Greater Militancy," quoted in Chang, 1309.

191 Hsieh, 102; Fetzer, 183.

192 Halperin, 91.

193 Ibid., 88, emphasis added.

194 Ibid.

195 Gaffney, 64.


197 The Observer, 5 July 1964, and Mid-East Mirror, 5 September 1964, quoted in Ibid., 30-31.

198 Burt, 1.

199 Krosney and Weissman, 321.

200 Barnaby, 116.

201 Benjamin, 11; Spector, Nuclear Proliferation Today, 50.

202 Wirsing, 85.

203 Chellaney, 49; Spector and Smith, 95; Kapur, 230.

204 Cohen, 14.

206 Spector, Nuclear Proliferation Today, 77.

207 Spector and Smith, 136.

208 Ibid., 136; Rubinstein, 27. Claiming instead that the consensus was on nuclear North Korea's irrationality is David C. Kang, "Preventive War and North Korea," Security Studies 4, no. 2 (Winter 1994/1995): 375.

209 Schlesinger, 897; Cumings, 21; Mandelbaum, 33.

210 Bar-Joseph, Handel, and Perlmutter, 162.


212 Snyder, 581; Shoham, 214; Nakdimon, 57, 76, 100.

213 Krosney and Weissman, 12, 265; Bar-Joseph, Handel and Perlmutter, 89.

214 Nakdimon, 73, 75, 102.

215 Ibid., 146.

216 Ibid., 60, 203.

217 Ibid., 149, 186.

218 Snyder, 579-580; Krosney and Weissman, 244-247; Bar-Joseph, Handel and Perlmutter, 77.

219 Snyder, 581; Krosney and Weissman, 5. Again, Iran did not appear to bomb Osiraq intentionally; Iranian attack did not, at any rate, result in Osiraq's destruction.


221 Shoham, 212; Nakdimon, 168; Barnaby, 94; Bar-Joseph, Handel, and Perlmutter, 101; Government of Israel, "The Iraqi Nuclear Threat - Why Israel Had to Act" (Jerusalem: 1981), 19, quoted in Feldman, "Bombing," 120.

222 "Iraqi Nuclear Threat," 44, quoted in Snyder, 582.

223 Nakdimon, 160-161.


226 Yergin, 149, 238.

227 Zaloga, 45.


230 Sorenson, 736; Chang, 1294. Hopes of Soviet success were slim, of course, since Moscow retained few peaceful avenues for exercising influence. China itself called the test ban treaty a "big fraud."

231 Schlesinger, 910.

232 Segal, 132; Schurmann, 519; Halperin, 87.


234 Bhatia, Nuclear Rivals, 48; Evron, "Arab Position," 20; Hedrick Smith, 8.

235 Feldman, Israeli Nuclear Deterrence, 69.

236 Ibid., 67; Friedlander, "Armageddon Factor," 152.

237 Burt, 1; Krosney and Weissman, 45; Spector and Smith, 77.

238 Benjamin, 11.

239 Krosney and Weissman, 296-300.

240 Spector and Smith, 65.

241 Ibid.; Krosney and Weissman, 309.

242 Spector and Smith, 66.


244 Chester L. Cooper, "Nuclear Hostages," Foreign Policy, no. 32 (Fall 1978): 131.

245 Spector and Smith, 131; see also Conrad V. Chester and Rowena O. Chester, "Civil Defense Implications of the U.S. Nuclear Power Industry During a Large Nuclear War in the Year 2000," Nuclear Technology 31 (December 1976); Wallace, 19 July 1995.

246 Nakdimon, 182; Snyder, 580; Krosney and Weissman, 289.


248 Albert Carnesdale, "June 7 in Baghdad," The Bulletin of the Atomic Scientists 37, no. 7 (August/September 1981): 12; Snyder, 585; Nakdimon, 256.
Ibid., 228, 114.

Wallace, 19 July 1995, says that several US generals told him NATO would lose out should a precedent be set for attacking hot reactors.

Cordesman, 103; Spector and Smith, 209.

Ibid.; Bhatia, Nuclear Rivals, 82.


Hiro, 408; Nakdimon, 44.


Kramish, 121; Zaloga, 51; Lewis and Xue, 109.

"Should We Bomb?" 9.

Gaffney, 60; Power, 847.

Rubinstein, 23.

Müller and Reiss, 146; Benjamin, 1; Bhatia, Nuclear Rivals, 69.


Anthony D'Amato, "Israel's Air Strike upon the Iraqi Nuclear Reactor," The American Journal of International Law 77 (July 1983): 584-587.

Mallison and Mallison, 419.

Arthur J. Goldberg, quoted in Nakdimon, 256; Ramberg says that wartime attacks even on facilities containing "dangerous forces" but with military value are excused by rudimentary environmental law; see The Destruction of Nuclear Energy Facilities in War: A Proposal for Legal Restraint (Princeton: Center of International Studies, Princeton University, 1978).


Nakdimon, 275.

UN Security Council Resolution 487, quoted in Mallison and Mallison, 447-448.

Ibid., 433.
270 Hunter, 26.
271 D'Amato, 588; Nakdimon, 275; Pogany, 416. Some international lawyers did feel that the U.S. bombing of missile sites would be justified, however; see Mallison and Mallison, 423.
273 Nakdimon, 215.
275 Nakdimon, 164.
276 Ibid., 159.
277 Ibid., 304.
279 Of course, Iraqi chemical production may have deterred Israel from an independent preventive strike. See Barnaby, 78; John K. Cooley, "Pre-war Gulf Diplomacy," Survival 33, no. 2 (March/April 1991): 126.
280 Zaloga, 30; Sivachev and Yakovlev, 230; Buhite and Hamel, 370.
281 Sagan, 18.
282 Buhite and Hamel, 384.
284 Schurmann, 513. See also Lewis and Xue, 216.
285 Hsieh, 114; Schurmann, 515.
286 Gaffney, 65.
287 Cohen, 4; Evron, "Arab Position," 25.
288 Wirsing, 89.
289 Rikhye, 52; Spector, Nuclear Proliferation Today, 90.
290 Benjamin, 1; Bhatia, "Israelis plot."
291 Ibid.; Spector and Smith, 96-97.

293. Mack, 18; Cumings, 22.

294. Spector and Smith, 130, 132; Choung-Il Chee, 304; Rubinstein, 24. Major civilian casualties were feared should North Korea attack Seoul from the air or ground; Professor Brian L. Job's suggestions to the author, 11 July 1995.

295. Ibid., 33.

296. BBC SWB-Asia Pacific, 4 November 1993, quoted in Mack, 8.

297. Snyder, 583; Schweller, 265-266; Nakdimon, 327.

298. Ibid., 316.


300. Hiro, 247, 250.

301. Freedman and Karsh, 18.

302. Schweller, 241; Brodie, 239.

303. Herken, 311.


309. Schneider, 225; Müller and Reiss, 143.


311. Elaine Sciolino, "Taking on Iran and Iraq, but Separately," New York Times, 11 April 1993; Schneider, for example, adds Algeria to the list of potential proliferators considered here.

312. Krosney, 249; Brune, 149.

313. Müller and Reiss, 149.
314 Cordesman, 175; Chubin, 96; Kirchner and Pilat, 162.


316 Bhatia, Nuclear Rivals, 70; Micallef, 14; Evron, Israel's Nuclear Dilemma, 25.


318 Krosney, 242, 249.


320 Krosney, 197; Spector and Smith, 179; Hiro, 67.

321 Ibid., 157; Evron, Israel's Nuclear Dilemma, 199; Cordesman, 232.

322 Krosney, 266; Chubin, 92.

323 Cordesman, 91.

324 Steven E. Miller, "The Case Against a Ukrainian Nuclear Deterrent," Foreign Affairs 72, no. 2 (Summer 1992): 73. Ukraine, Belarus and Kazakhstan each signed the NPT since this time, but Iraq showed that a nuclear weapons program could be pursued regardless.

325 Spector, "Repentant Nuclear Proliferants," Foreign Policy, no. 88 (Fall 1992): 33.

326 Krosney and Weissman, 21, 322; Barnaby, 90; Nakdimon, 225, 243.

327 Feldman, "Bombing," 141; Albright and Hibbs, "Iraq's Bomb."

328 Ibid., 32; Cordesman, 160, 275; Schneider, 227.

329 Nakdimon, 335.

330 Hsieh, 107; "Should We Bomb?", 9.
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