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THE NUCLEARIZATION OF THE MIDDLE EAST AND THE SUBCONTINENT

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Abstract

The nature of conventional warfare in the Middle East is changing. Contrary to the model of previous regional conflicts war consists now of attritional contests between states the political goals of which are no longer self-evident. Not only is this changed mode of warfare less responsive to megapolicies but because of the potential economic importance of the contestants the ability of normally minor states to develop significant action capabilities in the global arena has been notably enhanced. The possibilities for nuclear proliferation have, therefore, increased proportionally.

This study seeks to document the development of regional nuclear options in a changed environment and to demonstrate the impact which the nuclear status of states outside the Middle East has had on the nuclearization of the traditional belligerents. A model of peacetime horizontal proliferation for the Middle East will be proposed and an attempt to fit this model to the strategy and tactics of nuclear deterrence under conditions of conflict will be made. Thus, it can be shown that a nuclear deterrent strategy based on mutual assured destruction is theoretically possible and, in point of practical fact, may be necessary for the long-term stability of the region.

Concluding with the assertion that the actual state of bilateral relations between the superpowers is inadequate for the management of regional nuclearization in the event of uncontrolled escalation, this study will suggest that a global approach to the problem must be reformulated before the hypothetical becomes the real.

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"Un grand principe de violence
commandait à nos mœurs."

Saint-John Perse---Anabase VIII

Introduction

Of all the problems which bedevil the practitioners of arms control, the issue of nuclear proliferation must surely be the least tractable. It is, moreover, the issue around which a ponderous body of theoretical obfuscation has evolved. It has its own mythmakers and moralists; it has developed its own clearly opposing schools of right belief which have been only too quick to embody their anxieties in scenarios of lurid specificity.

This study does not seek to validate any of the existing theoretical arguments. Nor does it intend, by taking one side or the other, to throw more fuel on the already well-stoked fires of advocacy. Instead, this study proposes to cast a dispassionate eye on the problematical issue of nuclear proliferation in the Middle East and to suggest that if there are no solutions to the quandaries raised by the spread of nuclear technologies, there is at least a common discernible thread of reasoning which informs the impulse of regional states to invest in the development of a nuclear potential.

To understand that impulse, the reader should be aware of certain elementary facts of Middle Eastern political existence. Middle Easterners are not socially pathological. Neither are they less sensitive than other peoples to the nightmare of nuclear incineration on a mass scale. They do not entertain fantasies of wreaking a terrible, swift, and final vengeance upon their enemies. What is perceived as instability in their regimes and which, as a consequence, relates directly to the West's fear

of uncontrollable nuclearization is not perforce the influence of deviant personalities, militant religion, or unregenerate tribalism but rather of the immaturity of political institutions confronted by, and succumbing to, the pressure of the global and regional environment.

The regional environment in which the politics of nuclearization slowly but inexorably advances is multipolar. Everything in the Middle East is connected to everything else. The global environment, on the other hand, is perceived by Middle Easterners as bipolar where the desiderata of the superpowers work invidiously towards a suborning of all subsystemic responses to their articulated megapolicies. While not specifically encouraging the intervention of the superpowers, regional political activity cannot but help court such intervention. Although regional interests take precedence over superpower interests in the eyes of the Middle Eastern principals, no one state finds itself strong enough to exercise complete independence of superpower rivalry. What obtains in the region, then, is an overwhelming inclination to view politics as a zero-sum game in which, inasmuch as one side's loss is perceived as the other side's gain, piecemeal *faits accomplis* accrue formidable significance. Under these peculiar circumstances, the nuclearization of the Middle East has found a fertile ground for growth.

There seems little probability that nuclear proliferation in the region can be prevented. This does not, nevertheless, preclude the possibility of control over the process. For the present, however, a mysterious ambiguity shrouds the question and makes it less and less amenable to rational analysis. It is perhaps one of the most widely known secrets in the region, for instance, that Israel, Pakistan, India, and Iraq

possess nuclear potential far exceeding levels appropriate for peaceful purposes, and that Libya strives mightily to equal them. Yet because none of these states has agreed to be candid about its weapons program no position on nuclear strategy has been elaborated which in itself would constitute a tentative step towards deterrence by establishing the preliminary rules for a nuclear regional dialogue.

The implication of this situation is painfully clear and the need for control of nuclearization, lest a nuclear arms race commence in the region, is all the more imperative. So that the reader may grasp the full import of this admonition, this study will explore first the conflict over the definition of the nuclear environment. Second, it will address the political, economic, social, technological and military circumstances which attend the great push forward of regional states towards credible capability. And third, it will suggest the possible directions nuclear deterrence strategy may take to insure that order ensues in the creation of a rational nuclear regime in the region.

CHAPTER I

The Environment

a. The Subcontinent

Today the nuclear principals number six--The US, The USSR, Great Britain, France, China and India--seven, if one is inclined to count Israel whose status on the threshold of nuclearization remains ambiguously defined. Of these nations with clear capacity but with as yet no fully declared pretensions to the inner circle of nuclear potentates we may name still more: Brazil, Argentina, Taiwan, South Korea, Pakistan, Iraq, Egypt, Syria, South Africa and, perhaps, Libya. These nations lie on the geographic periphery of the superpower blocs. But it takes no great insight to recognize their centrality to superpower concerns, particularly those nations of the Middle East, and the Subcontinent, the most interpenetrated regional subsystems of the global political and economic environment, in whose hands may reside, for the short-term at least, the industrial health of the industrialized West and Japan. It is here, as expertise accumulates in one nuclear domain and is transferred to another, that the routes to the nuclear age have indeed converged and become interchangeable.¹

Among the moralists it is already a foregone conclusion that the decision to embark on a nuclear regime must needs signify the intent to produce deliverable nuclear weapons. Such a conclusion must bear our scrutiny, if only as an example of the kind of deterministic thinking which is applied, *in grosso modo*, to this problem. But this theoretical preoccupation should not detain us at this moment. The more pressing question is how,

in the case of Pakistan, India, Libya, Iraq and Israel--the nations with a discernible nuclear option--this state of affairs came to be.

Born in 1947 out of the chaos of the disintegration of British India, Pakistan rejected the pluralist solution to post-World War II decolonization and sought to integrate, in a state separated into two federal regions by the subcontinental mass of Hindu India, disparate ethnic communities under the aegis of a unifying Islam. The notion that nations should march into the future by recreating a mythological past is nothing new and that Pakistan should feel from the outset of its experiment centrifugal pressures working against the fulfillment of this idea is not surprising either. Pakistan had been created from confessional strife and the failure of religion to provide a basic ideology for the harder task of national integration deprived Pakistan, on the most fundamental psychological level, of even an elementary security system. Complicating this insecurity was the physical presence of an India which, in an effort to come to terms with her own colonial past and the new bipolar view of global politics, chose to follow a path of positive neutralism. This path was to lead India, as it had led Egypt before her, to an open Soviet connection. Rearmed by Moscow and susceptible, therefore, to the penetration of Marxist atheism, India represented both a physical and moral threat to her Muslim neighbor.

This threat found expression in a series of limited wars fought between India and Pakistan which in 1972 culminated in the dismemberment of Pakistan and the stillbirth of Bangladesh, a nation destined to become the ward of the international system. The interim period saw Pakistan turning by default to alliances with the West in the name of regional collective security. But the efficacy of these pacts to stabilize the situation in the

Subcontinent proved illusory and, as Britain began its final withdrawal from imperial pretensions east of Suez, the United States became progressively mired in the Vietnamese conflict, and the Soviet Union turned its attention to the Africans and the Arabian peninsula in an attempt to break the cordon of pacts which had been designed to neutralize her access to the Middle East, Pakistan deepened in response her relationship with mainland China.

The China card, while not a trump, was under the circumstances a good trick for Pakistan to play. The logic of Chinese consolidation and expansion after 1950 became in the early 1960s all too obvious following the skirmishes in the Himalayas. India, vulnerable and chastened, was determined to resist and maintain her predominance in the Third World Bloc. Once China entered the nuclear club, it could be argued that India, inasmuch as she perceived a physical and ideological threat from this new Asian giant, was honor bound to follow suit.

Thus, when in the spring of 1974 India exploded an underground nuclear device in the Rajasthan desert, the shock waves were immediately felt in Islamabad across the frontier. With East Pakistan gone, the Soviet Union involved in a program of arms transfers to India, and the Chinese suffering the effects of an internal post-Maoist upheaval, Pakistan faced the uncertainty of adequate military defense.

Despite the protestation of the Indian government that the explosion of a nuclear device on Indian soil was to be viewed as a peaceful means of acquiring nuclear power, little doubt of its military implications remained in Pakistani minds. This perception of Indian potential may not at all have fit the nuclear strategy the Indians had woven around it, but

since it is perceptions which alone count, India was once again seen in the middle 1970s as a clear and present danger to the fragile Pakistani state. The argument erupted on the ideological level. Many Pakistanis came to believe that the Indian explosion was a response to the failure of Indian secular democracy to integrate the residual post-partition Muslim population into the state and to hold at bay the success of Pakistani Islam to mobilize national loyalties against an unstable India.² India, for her part, viewed her political success as the stimulus of Pakistan's failure and her nuclear potential as a means to quarantine her adversary's politically corrosive force. Both these views were, of course, illusion and have shed little light on the Indian need for the nuclear option. The Indian decision did not come about because of such narrow regional considerations. On the contrary, the decision reflected the evolution of India's self-image filtered through the prism of interacting bureaucracies and consensus-forming constituencies in the public domain. The result was to define further the direction of national policies, goals, and actions. Thus, in contradistinction to the prevailing Western perception, India's entry into the nuclear age could not have been conditioned by a small authoritarian elite.³

It would appear that since 1974 India, having acquired a nuclear option, has nevertheless remained a non-nuclear weapon state. This points to the fact that whereas India has exhibited the material base for the development of nuclear weapons, that is, the possession of reactors, a fuel source, and technology under national control, such a base does not necessarily carry any political implications for weapons assembly or for the creation of a nuclear deterrence strategy.⁴ The superpowers produced

their weapons under different historical and psychological circumstances and then exercised the option for non-use in a deterrent format which required a strike force and a lack of ambiguity about the rules of provocation. India, in eschewing a strike force and a deterrence strategy for the moment, may not run the risk of being resented by the Third World, as are the superpowers, for wanting a controlling interest in international security management. Yet on the other hand, she must convince her neighbors, through self-restraint and concessions, of her good faith lest she is forced by an arms race into an open nuclear deterrent posture. The absence of a deterrent posture is calculated to provide India with the prestige she seeks as a leading Third World country. This prestige came about, primarily, as a logical extension of the diffusion of global power which accelerated in the 1970s and secondarily, as the result of India's successful struggle against the monopoly of the European colonial powers over nuclear energy.

This model of horizontal proliferation, however, has a number of serious drawbacks. Most important is that the burden of restraint to equal India, especially among other potentially nuclear-capable states in the region, rests with the superpowers which, by consenting to this nuclear world-view, can induce constraint only through diplomacy and a control of nuclear resources and technology. The awesome paradox is that this constraint depends wholly on the influence of the superpowers in the Third World without the deterioration of which India herself would never had been able to develop nuclear capacity.

So it would seem that nuclear assets in the region will not remain frozen forever. Since the coming of Bhutto to power in 1971 Pakistan

has been moving to free itself of encumbrances. The problem for Pakistan is one of reaction both to Indian policy and superpower initiatives to arrest its progress towards nuclearization. Pakistan has observed a scrupulous silence about its nuclear program. This silence was complicated by the fall of Bhutto from power in 1977, the Soviet invasion of Afghanistan in 1979, the relaxation of nuclear transfers to India in 1980 and the possibility that competing subnational groups within the country and pressures from without--namely Libya--might erode the consensus of the Pakistani state in this crucial matter. Thus, there is no clear indication that Pakistan will follow India's example of self-restraint. The strategic environment in which Pakistan operates, tenuous at best and fraught with tensions unique to the Pakistanis, may favor a quantum leap to a force structure and an unambiguous deterrence posture. The Pakistanis show every indication of continuing--like Israel of which we will speak later--with the technological momentum that eventually will produce an unqualified explosion, and by extension evince a weapons capacity. Both these feasibilities exist because the Pakistanis possess the necessary infrastructure for turning the hypothetical into the real.

The choice of model to follow with respect to proliferation depends on the choice of a technological route toward nuclear power. There are three generally agreed upon paths, technologically speaking, to independent nuclear capacity. First, we may mention in passing the "quick fix" approach. This need not concern us here. As far as we know, no nuclear weapons state has consented to export a finished nuclear weapon to a non-nuclear weapons state. Second, there is the uranium regime and third, the plutonium regime.

Uranium is an element that exists in a natural form which, unless enriched molecularly, cannot by itself produce a fissionable reaction. Most natural uranium consists of the U-238 isotope. U-235, the rarer and more fissionable isotope of natural uranium makes up a small fraction of the ores mined and is uneconomical for the production of weapons. U-235, moreover, must be enriched by more than twenty percent in order to obtain weapons grade material. This enrichment process, sometimes called isotopic separation, relies on physical rather than chemical principles for its success. Two technologies employed in this process are gaseous diffusion and gas centrifuge separation. The difference between the two is not essentially one of efficacy but of economy. Both technologies consume vast amounts of electrical energy. Diffusion technology is large-scale and expensive whereas gas centrifuge separation can be maintained at lower levels of capital input. U-238, on the other hand, can undergo irradiation in the core of a reactor to produce the artificial substance plutonium which then has to be separated from the spent fuel before being incorporated into a weapon. The reprocessing of spent fuel is carried out by a relatively simple chemical process but the facilities for reprocessing are sophisticated, costly, and dangerous work environments in which the toxic plutonium requires effective shielding and remote handling equipment. Once accomplished, however, the extracted plutonium makes excellent fissionable material for nuclear explosives.

It is generally conceded that the plutonium regime represents the easiest route to nuclear weapons for a number of reasons. First, it is the natural by-product of a nuclear power program. Since 1955 and the beginning of the Atoms for Peace Program initiated by the Eisenhower

administration, the proliferation of nuclear information and technology has been encouraged to satisfy the Third World demand for cheap electricity. Second, the reprocessing technology has been relatively accessible because plutonium is considered the best substitute for the dwindling source of natural uranium reactor fuel, and third, the greater the purity of the plutonium, the less would be needed--about five kilograms of pure PU-239--⁶ for a critical mass.

Plutonium, unfortunately, emerges from the reactor core in a more or less impure form. That is to say, PU-239 is often mixed with other isotopes which tend to be unstable because they fission at different rates. Hence, detonation of a bomb constructed with impure plutonium can be unpredictable or the yield and the efficiency of the explosion can be altered.⁷ The degree of impurity depends largely on the type of reactor in which the plutonium is created. Heavy water reactors produce a less impure grade of fissionable plutonium than light water reactors but the longer the uranium fuel is burned in heavy water reactors the higher the risk of isotopic pollution of the final product. Therefore, greater amounts of fuel are required to make ever diminishing quantities of pure grade plutonium.⁸ So once again cost is a factor in the short route to the bomb, to say nothing of the fact that the frequent replacement of the fuel interferes with the production of electricity and raises its price per kilowatt hour to the customer. The consumption pattern of fuel can thus be noted--if the reactor is safeguarded--making the diversion of the spent uranium for reprocessing a matter of public observation. Due, however, to the possibility of loading the heavy water reactors with fuel without shutting the core down, covert diversion can

theoretically be accomplished even under safeguarded conditions.

In the case of highly enriched uranium U-235, fifteen to twenty kilo-⁹grams is required for a minimal critical mass. Although the design of a uranium bomb is simpler than that of a plutonium bomb the enrichment process demands procedures which recapitulate the separation steps in order to distinguish between isotopic forms of the same element so that incrementation becomes a lengthy procedure, especially since the feed-stock--a rarified gas--must be used in enormous quantities to recover¹⁰ highly enriched uranium in a solid state.

With the coming of Zulfikar Ali Bhutto to power in 1971 and the subsequent loss of Bangladesh in the next year, Pakistan embarked upon a diversified nuclear program that stressed all the above mentioned routes to nuclear capacity. It is fairly certain at the present time that Pakistan will have produced several nuclear weapons by the middle of the present decade.

The progress of Pakistan towards the bomb has been the subject of no small interest and international commentary. In April of 1979, it was disclosed in the British Parliament that as early as 1977 the Pakistan government had purchased a large number of inverters (high-speed motor drives) from Emerson Electric, Ltd. and were seeking the purchase of¹¹ many more through Weargate, a Welsh intermediary. The Pakistan government claimed that this technology was required for its textile industry, but the British authorities ascertained that these inverters were intended to power gas centrifuges which revolve fast enough to separate the gaseous isotope of U-235 from ordinary uranium. The most profitable way to accomplish this was to link thousands of such centrifugal units together

into "cascades." The Pakistanis, it appears, maintained a network of dummy organizations to obtain this technology and the list of suppliers included Great Britain, West Germany, the Netherlands, and Switzerland. Later in 1977, through the intermediary of a Dutch engineer, a copy of a Pakistani order for an enormous quantity of martensitic ageing steel was produced, a metal used for the construction of jet plane engines and gas centrifuges. At the same time the Pakistan Atomic Energy Commission declared its intention to build a nuclear power plant which would depend on enriched uranium for its fuel source. Various intelligence agencies in the US and Europe were able subsequently to corroborate the allegation that a Pakistani nuclear scientist had been successful in familiarizing himself with the secret centrifuge process for enriching uranium at the Dutch-British-West German nuclear installation at Almelo, Holland. Finally, there were indications from Arab sources that Colonel Mu'ammarr Qadhafi had pledged 30 million Libyan petrodollars as early as the autumn of the previous year to finance a Pakistani enrichment plant at Kahuta, southwest of Islamabad.

In May 1979, the US announced that the Pakistani government had already made a purchase of inverters from a California company.¹² It was discovered in December that two Swiss companies had sold Pakistan special valves necessary for the gas centrifuge process.¹³ Moreover, reports had been received four months earlier in Washington that Pakistan was preparing an underground test site for the detonation of a nuclear device.¹⁴

The Pakistani government has also embarked on the reprocessing route to nuclear weapons. After 1971, plans for a laboratory reprocessing facility--a "hot" cell--moved ahead with Belgian help and negotiations

with France for a commercial-scale reprocessing plant were initiated
in 1973.¹⁵ However, the unsettled political situation within Pakistan
caused by the overthrow of the Bhutto regime in July 1977, and the
previous explosion of a nuclear device by India in 1974, influenced the
French to suspend the contract in 1978.¹⁶ Unfortunately the blueprints
for the plant had been transferred and work on a scaled-down version of
the French reprocessing plant has continued to limp along to this day
at Chasma in the Rajasthan desert. Pakistan has also tried to buy sen-
sitive equipment for this facility from France, Switzerland, and other
countries.¹⁷ More significantly, a clandestine reprocessing facility
was reported to be assembled in September 1980 near Rawalpindi outside
the fences of the Pakistan Institute of Science and Technology and is
one-tenth the size of the Chasma operation but able, nonetheless, to
produce ten to thirty kilograms of plutonium per year, enough for one or
two weapons.¹⁸ The discovery that condensers and resistors for the gas
centrifuge inverters had been smuggled out of Canada¹⁹ refocused atten-
tion on the diversity of Pakistan's nuclear program and the use to which
Pakistan's only heavy-water reactor, estimated in the past eight years
to have turned out spent fuel containing 220 kilograms of plutonium, may
be put in diverting plutonium to the clandestine reprocessing facility.²⁰
Furthermore, the Pakistani government announced in early September 1980
that it was manufacturing its own fuel rods from uranium obtained in
Niger.²¹ It also came to light in June and July of 1981 that a West
German firm had designed and exported to Pakistan a plant capable of pro-
ducing uranium hexafluoride gas, a crucial element in the enrichment of
natural uranium,²² and that Turkish companies had cooperated with Pakistani

authorities in the diversion from Europe of American electric equipment
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necessary for the enrichment process.

Thus, the evidence points, with little margin for doubt, to a nuclear weapons capability for Pakistan no later than 1982. The implications are self-evident. The resulting military tensions between India and Pakistan could conceivably lead to a nuclear escalation of the conflict in the Subcontinent and, if nuclear war were not actually to break out, the financial drain on the economies of the antagonists might trigger an internal dislocation in these countries which would be difficult to control. The possibility of Chinese and Soviet involvement in subcontinental nuclear politics is no longer a remote possibility and may render more likely a Chinese-Soviet nuclear confrontation. Far more ominous is the effect that nuclearization in the Subcontinent might have on the traditional heartland of the Middle East and on its endemic rivalries.

b. Libya and the Islamabad Connection

The Libyan role in regional nuclear proliferation has been conditioned almost entirely by an implacable political and military stance towards Israel and an avowed determination to lead a coalition of regional states towards a radical solution of the Arab-Israeli conflict. Colonel Qadhafi has, to this effect, attempted to secure both a preponderant conventional military position against Israel through a unified Pan-Arab armed forces command and a nuclear option, first in the form of a "quick fix," and second, by means of an exchange with Pakistan of financial support for nuclear technology.

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Well-substantiated reports emanating from Egypt claimed that in 1970 Major Abdessalem Jelloud, vice-chairman of the Libyan Revolutionary Command Council, spoke to Gamal Abd al-Nasser of Libya's unsuccessful attempt to buy a bomb from the People's Republic of China. In the following years, rumors were plentiful concerning one million dollars in gold which had been deposited in Switzerland as a reward for the delivery of such a weapon.²⁵ An enterprising Lebanese was understood to have claimed that reward after producing a fake atomic warhead and the discovery of this fraud cost him his life not long after.²⁶

More convincing were the plans laid by Qadhafi to create his own national nuclear potential. In 1974 Libya signed a protocol with Argentina for the transfer of uranium prospecting equipment and the exchange of scientific training programs. The next year Libya received the promise of a 10 megawatt reactor from the Soviet Union and later an agreement providing for two much larger reactors was concluded. In 1976 the French

said they would assist the Libyans in the sale and construction of a 600 megawatt nuclear power plant. A subsequent agreement was negotiated with India in 1978 for technical assistance but was abrogated because of Libya's link to Pakistan's nuclear program. By that time the Soviet Union had responded to the Libyan request for additional support and two reactors were projected, the first a 440,000 kilowatt nuclear complex and the second a 300 megawatt plant for the desalination of sea water. These deals were made on the basis of guaranteed oil supplies at discounted prices.

It may be asked why such an underpopulated country which possesses such enormous quantities of petroleum would consider nuclear energy as an alternative source of energy if not for the purpose of the surreptitious development of fissionable weapons. Nor is it difficult to imagine the potential for the diversion of spent fuel for this aim given the disproportionate investment in such energy programs. In the final analysis Libya did not succeed, due partially to the limitations of Nuclear Non-Proliferation regime and the suspicions of the nuclear supplier nations which worked for rather than against an embargo of critical material to nonnuclear nations, in obtaining her desire for an unfettered nuclear capacity since it soon became obvious that the Soviet Union, France and India would not remain complacent about the conditions under which they might furnish Libya with the material necessary for an expansion of her nuclear industry. For these reasons the Libyan regime turned in her quest to Pakistan in 1977.

The nature of the Tripoli-Islamabad connection remains a subject of hypothesis and speculation. Until his fall from power, Bhutto enjoyed

a warm rapport with Colonel Qadhdhafi on a number of regional and international issues and it is quite possible that a private arrangement was worked out between the two men whereby the Libyans would finance the Pakistani enterprise with large sums of untraceable money in return for the services of Pakistani military advisors. Inasmuch as a substantial injection of cash into the ailing Pakistani economy could free up monies for use in purchasing reactors, such an arrangement might have indirectly served the Libyan purpose of circumventing restrictions imposed on her nuclear ambitions from the outside, for the Libyans no doubt calculated that Pakistan could be prevailed upon at the right moment to grant access to Islamabad's nuclear arsenal. Whether this meant the delivery of a weapon is not known but it is certain that the convergence of motives and expectations on both sides made such an understanding a reasonable assumption.²⁷

If this hypothesis is plausible then much of Qadhdhafi's subsequent behavior in Africa becomes clear and unequivocal. For a number of years previous to the departure of Libyan troops from Chad in late 1981, the Qadhdhafi regime has been engaged in supporting Muslim rebels in their attempt to secede from Chadian central authority. In December of 1980, Libya launched a full-scale invasion of Chad with the stated intention of "throwing open the borders and unifying the two countries."²⁸ The result of Libyan intervention was to leave the Aozou, a 6,000 square-mile strip of land in the north of the country, in the hands of the Libyan army. Politically speaking, this invasion, and the reason given in justification of it, coincided very well with the grand design of Libyan imperial policy in the African Sahel. Libya's geopolitical orientation,

like that of Egypt and Algeria, has always had both an African and Arab aspect and Libya has already shown increased receptivity to the demands of the Polisario for aid in its guerrilla war with Morocco over the possession of the Western Sahara. More important, Libya entered into a tripartite alliance with Chad, Ethiopia, and South Yemen the objective of which was the encirclement of the Sudan and the denial to Egypt of Nile water resources. Judged by this yardstick alone, Libyan interference in the affairs of Sahelian Africa possesses an obvious logic of its own. The rumors of as yet untapped uranium resources in the Aozou which had been circulating since 1969 when the French began an extensive mineral survey in the Strip have added a compelling degree of credibility to the Libyan machinations. Although the Libyans have recently withdrawn from Chad there is reason to believe that their presence will continue to be felt in the Sahel and that as a *quid pro quo* the Libyans will enjoy unlimited access to Chadian resources.

Qadhafi's adventures in Chad, however, did not take on quite the tone of urgency, at least not among the European powers, as when the Libyans were found in 1979 to have become deeply enmeshed in the politics of neighboring Niger, a republic France is under treaty sworn to defend and where COGEMA, a subsidiary of the French Atomic Energy Commission, mines and exports through the French owned National Transport Company of Niger (NTCN) 70 percent uranate, or yellow cake.

In November 1979 it was revealed that a truck of the NTCN carrying twenty tons of uranate had disappeared. The truck was later found empty by a group of nomads on a camel track one hundred miles south of the
29
Libyan border. The hijacking had been denied by COGEMA and by the state

of Niger in early November. Then, at the time of the discovery of the truck, COGEMA announced that the Libyans had no need to hijack the truck³⁰ as Niger had been supplying both Libya and Pakistan with uranium. In fact, in 1976, the two countries received 258 and 400 tons respectively which amounted to more than one-third the annual production at Arlit, one³¹ of Niger's two principal mines and enough to make two bombs. As the Libyans were in possession of only a small 10 megawatt research reactor it was assumed that the quantity destined for Libya went instead to Pakistan. Although Niger has complained bitterly to the Organization of African Unity about the interference of Libya in its internal affairs, for practical reasons Niger is obviously giving tacit consent to the exploitation of its resources in return for a commitment by Colonel Qadhafi not to make further demands on Niger's northern territory as Libya had previously done in Chad.

To some observers Libyan nuclear policy is unambiguous. The Libyans want both to produce a bomb--there is functioning at this very moment in Tripoli an Arab think tank, the Arab Development Institute, dedicated to pure nuclear research--and buy a "quick fix." The constraints, however, have been formidable. While Qadhafi's relations with Bhutto may have been termed excellent, the present Pakistani leadership has, for a number of reasons--namely the invasion of Afghanistan, the collusion of the Soviets with the Libyans, and a belligerent India--backed away from any agreement Qadhafi might have made with Bhutto to deliver a weapon. The Europeans, too, have become more cautious in their dealings with Tripoli. Despite the inducement of increased shipments of petroleum, the French have declared that although they are committed to the construction of a 600

megawatt plant in Libya they would not provide the means to produce heavy

³²

water. The West Germans have also had second thoughts when, in December 1981, it was announced that OTRAG, a firm which develops rockets, was withdrawing its personnel and abandoning its launching base at Jermah,

³³

430 miles south of Tripoli.

c. The Iraqi Nuclear Program

The Iraqi government has shown a lively interest in nuclear power since 1969 when a research center and an IRT-2000 reactor were supplied by the Soviet Union. Since 1968 the Iraqi government has accelerated and expanded its nuclear programs with the aid of the French government which, in exchange for an assured delivery of 30 million tons of Iraqi oil per annum, has found in Iraq an excellent trading partner for its weapons and nuclear technology.³⁴ In 1975 Iraq signed a bilateral agreement with France for the construction of a new "nuclear city" at Tuwaitah near Baghdad equipped with a 70 megawatt reactor to replace the IRT-2000 which generated approximately 2 thermal megawatts. A condition of this contract stated that France would supply Iraq with a quantity of weapons-grade uranium sufficient for the replenishment of the reactor core three times and which, after processing, represented enough fissionable material for three bombs. The French policy, utilitarian in motive and justified on the grounds that Iraq had signed the Nuclear Non-Proliferation Treaty of 1970, nevertheless raised a storm of protest from the nuclear powers in Europe and in 1977 forced France to adopt a stricter non-proliferation position. For three years the French attempted to convince the Iraqis to accept a low enriched (6.8%) "caramelized" fuel but with no results. In early 1980 the French gave in to Iraqi demands and consented to ship to Baghdad fuel enriched to 92 percent.

In the meanwhile the core of the 70 megawatt reactor and the two smaller research reactors earmarked for Iraq's "nuclear city" were mysteriously sabotaged on 6 April 1979 while awaiting shipment at a port

near Toulon. It was rumored that Israel's external secret service,
Mossad, was directly responsible.³⁵ This incident put Iraq's program
behind by about six months. On 13 June 1980 Yahia al-Mashad, an Egyptian
physicist in the employ of the Iraq Atomic Energy Commission and one
of its intellectual pillars, was murdered in Paris. Once again the
Mossad was implicated.³⁶ Despite attempts to contaminate crates of
enriched uranium with plastic explosives after the French relented to
Iraqi demands in 1980, the reactor was installed at Tuwaitah. On 30 Sep-
tember 1980 during the initial phase of the Iran-Iraq war the reactor
was bombed but not significantly damaged by Iranian aircraft. Again
the hand of the Israelis was suspected. These reverses were serious
but not insurmountable and the reactor was scheduled to come on line
in 1981. This provoked ambiguous threats by the Israeli government to
take unilateral action against Iraq in order to prevent the reactor
from going "hot."³⁷

The new research "nuclear city" opened to Iraq both the uranium
and plutonium routes to nuclear weapons. Under the agreement signed by
the French, but avowedly contrary to French intentions,³⁸ it is theoret-
ically possible for the Iraqis to divert enriched uranium for weapons
production by adjusting the cooling system of the 70 megawatt reactor
to compensate for the hot Iraqi climate. Blankets of natural uranium
can be irradiated to produce plutonium. The separation of plutonium
from the spent fuel would require a large chemical separation plant
which Iraq does not yet possess. Italy agreed, however, to sell Iraq
a small "hot" cell in March 1980 which, although intended for use in
the manufacture of small amounts of radio isotopes for medical and

agricultural purposes, could produce as a by-product traces of plutonium³⁹ which over time might be assembled into a bomb.

By the spring of the next year the Iraqi question became the focus of the scrutiny of the US State Department and the US Senate and it was projected that Iraq would theoretically possess a nuclear arsenal by the middle of the decade.⁴⁰ Thus, under the pretext that the Iraqi nuclear program had reached a critical point which, were it to progress further, would threaten Israeli security, Israel carried out, on 7 June 1981, an air raid against the Iraqi nuclear installations at Tuwaitah and destroyed the reactor.

d. Israel and Her Neighbors

Israel's nuclear program has occasioned much controversy. But there is little disagreement today that of all nuclear capable states of the region Israel is the one which has developed both weapons and a system to deliver them. How many bombs Israel possesses, how it plans to deploy those weapons and under what circumstances they will be used are all questions the answers to which are shrouded in a deliberate ambiguity which has surrounded the proceedings of the Israel Atomic Energy Commission since its creation within the Ministry of Defense in 1952.

From the earliest days of the State of Israel, the government has shown its interest in atomic energy. By 1949 Israeli scientists were being sent abroad to Europe and the US to obtain practical experience in atomic technology. Simultaneously a potash mining industry sprang up in the Negev desert which, apart from the fertilizers it produced, had the added importance of being a source of uranium-bearing phosphate ore.

The training of Israeli scientist paid an initial handsome dividend. First among the patents applied for by Israeli scientists was the Dostrovsky method of heavy water distillation for nuclear reactors. This was an altogether logical direction for the first thrust of Israeli nuclear technology since it was heavy water which had been partially embargoed by US non-proliferation policies of the 1950s.⁴¹ In 1953 fruitful collaboration was already in place between France and Israel whereby the French exchanged technology for Israeli phosphates and heavy water in an effort not to allow the US to close them out of the nuclear

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club. In 1957, spurred on by the Franco-Israeli cooperation in the Suez War, the construction of the Dimona reactor, a 24,000 kilowatt thermal unit, was begun in the Negev with French assistance and was completed in 1964. The Dimona reactor is a gas centrifuge unit for the enrichment of uranium whose operation was immediately put under a blanket security.

In December 1960 the US formally asked Israel whether she was preparing atomic weapons. The answer was negative and the Dimona reactor was inspected at least once a year by American scientists until 1967. These visits were insufficient to determine if fissionable material had been diverted for use in weapons.⁴³ Previous to the construction of the Dimona reactor, the US had supplied Israel with \$3 million to build a 5,000 kilowatt thermal reactor at Nahal Soreq under the auspices of the Atoms for Peace Plan. The Nahal Soreq reactor, begun in 1955 and completed in 1960, served essentially research purposes and there the first generation of Israeli nuclear technicians and scientists was trained. No inspection has been permitted of this reactor since 1965.⁴⁴ Since the middle 1960s Israel has maintained a policy of ambiguity on the question of nuclear weapons potential. The reason given, on the other hand, for Israel's expanding interest in atomic energy has been that her source of fuel supply from abroad is and will continue to be insecure because of the state of war which exists between her and the Arabs. Thus Israel has a built-in rationale for the production of plutonium fuel. Based on the capacity of the Dimona reactor alone, it has been estimated that since 1966 Israel has produced enough plutonium for the manufacture of one 20 kiloton bomb a year.⁴⁵ If one were to figure into the bargain the production of Israel's

atomic water desalination plant, which is rated at 350 megawatts electrical, the number of 20 kiloton bombs, based on the equation of one megawatt to one kilogram of plutonium, would increase to 70 per year.⁴⁶

One outstanding problem faced Israel in making its first generation of weapons and that was the question of fuel. Extraction of ore from potash is a long and laborious process. The only other alternative was to purchase enriched uranium, plutonium, or large quantities of uranium ore on the international black market.

Several incidents point to the exercise of this option by the Israelis. In 1965, 206 lbs of highly enriched uranium mysteriously disappeared from the Nuclear Materials and Equipment Corporation plant in Apollo, Pennsylvania. The Corporation president, Zalmon Shapiro, who worked as a sales agent for the Israeli Defense Ministry, came under investigation for alleged theft and it was confirmed that President Lyndon Johnson sought to cover up the affair out of chagrin.⁴⁷ On 17 November 1968, an even stranger event took place. The freighter, Scheersburg A, set sail from the US bound for Genoa with a cargo of 200 tons of natural uranium. Fifteen days later the ship docked in Iskenderun, Turkey with an empty hold. The vessel returned to Sicily where the captain and crew promptly disappeared. The owner of the ship turned out to be an agent for the Israeli Secret Service and it was subsequently believed that the uranium found its way to Israel.⁴⁸

These facts, while not conclusive in themselves, engender suspicions that Israel possesses nuclear weapons and is, as a result, interested in procuring a means to deliver a nuclear riposte to any Arab attack. This suspicion was first stated privately in 1974 and then publically in 1978

when the CIA published a memorandum which expressed the US government's belief that Israel had clandestinely amassed a significant arsenal of nuclear weapons and was investing in a missile system designed to accommodate nuclear warheads. ⁴⁹ Furthermore, there is reason to think that Israel, in cooperation with South Africa, tested a weapon on the open seas off the Cape of Good Hope on 22 September 1979, an event which, when reported by a Tel Aviv based ABC newsman Dan Raviv, resulted in the ⁵⁰ loss of his Israeli press credentials.

Whether or not Israel actually has the bomb, or was ready to use a nuclear weapon as early as 1973 when, as reported by an ABC investigatory ⁵¹ team, the tide of the October War was initially going against Israel, is a secret guarded jealously by the highest circles of the Israeli decision-making apparatus. The public debate, however, has been remarkably open. For a number of years the Israeli press has concentrated on questions of strategy and the tactics of deterrence. This has, in point of fact, contributed steadily, given Israel's obdurate refusal to ratify the Nuclear Non-Proliferation Treaty of 1970 and her abstention from the 1979 UN proposal to create a nuclear-free zone in the Middle East, to a whittling away of her credibility as a non-nuclear power. But it was not until 1981 that any Israeli official acknowledged what had been generally known ⁵² about Israel's nuclear capability with the caveat that Israel would not be the first to use nuclear weapons in the region.

However academic a discussion of Israel and nuclear weapons may be at this moment, it seems clear that the proliferation of such armaments into the region must be considered an eventuality for the near future. Israel will by that time have already assembled a formidable array

of delivery vehicles. Much of the material Israel has previously purchased or has developed in its own armament industry to serve the purposes of conventional warfare is equally convertible to conflict in the nuclear mode. The short distances between the heart of Israel and the surrounding Arab industrial and demographic centers renders advanced ballistic missiles illogical.

Today Israel continues to produce medium and short range missiles *en masse* and, inasmuch as her Air Force includes nuclear capable fighter-bombers, she appears to have adopted a tactical concept of multi-purpose nuclear deployment heavily dependent on the weight of numbers. While the advanced air defense systems of the Arab countries tend to make the accurate delivery of a nuclear weapon from Israel's nuclear configurable A-4E or Phantom F-4E fighters irrelevant or problematical at best, the combination of an air-to-surface arm with that of an surface-to-surface arm makes the chances of success more likely, and given the fact that the Arab armed forces are deployed over a narrow front one well-placed weapon would serve the same purpose that elsewhere might require nuclear saturation. To fit these circumstances, Israel purchased as early as 1966 thirty Diamant-class missiles from France with a range of 500 miles and since 1971 has manufactured at a rate of 60 to 80 a year her own Jericho missile which carries a 1500 lb warhead and has a range of up to 300 miles. Far more accurate short range missiles--the Lance in particular which is specifically configured for a nuclear tip--were provided Israel in 1975 by the US and can pinpoint targets at distances of five to one hundred and twenty-five kilometers.

CHAPTER II

Perceptions of Regional Nuclear Strategy

a. The Indo-Pakistani Confrontation

Unable to trust wholly in the guarantees of her Soviet patron and unwilling to remain a passive instrument of superpower bilateralism in the Indian Ocean, India has struck out on an independent course which accepts as inevitable horizontal nuclear proliferation in a global environment of diffused power. The strategy of India has been to acquire a nuclear option and then diplomatically to practice its non-use. The immediate strategic objective is to deter her enemies from further encroachments, but in the long term India's goal is to diminish the possibility of superpower intervention or interference in a region over which she claims, by virtue of her size, power, and geopolitical preeminence, to exercise hegemony.

These goals are coherent with India's self-image. As heir to the Gandhian world-view India has, since the middle fifties, translated Gandhi's morality into the politics of non-alignment and contributed positively to the process of decolonization. And yet, frustrated by an absence of superpower recognition India persists in seeking the preeminence owed, she believes, to her demographic preponderance, her ancient civilization, and her high technology. Not only has India been ignored; she perceives a mortal threat from both her regional rivals, China and Pakistan, in the redistribution of global and regional influence.

Thus, the acquiring of a nuclear option has served India to redress the balance. On the practical level, the nuclear option represents a

short-term answer to defense and security needs. On the ideological level, the nuclear option purports to disabuse the superpowers of their imperial and elitist view of a decolonized world wherein power must necessarily be kept from the technologically and politically immature. In this respect, India has pressed the theoretical point that proliferation cannot be a matter of pure technological determinism. By choosing a process of gradual and calculated escalation of the nuclear option, India may, in fact, be sensitizing the superpower bureaucracies to the need for a rethinking of the implications of their actions and, thereby, challenges the capacity of the superpowers to win uncontested approval of their nuclear policies in multinational fora.

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From the Indian perspective, this strategy best suits Indian geopolitical requirements. In simplest terms, the strategy is based on a model which requires, first, a demonstration of nuclear capacity and, secondly, self-imposed restraint and externally induced constraint. To this effect, Pakistan and China must accept as an article of faith India's nuclear credibility and enter into protracted negotiations so as to enhance the possibility for regional security. At the same time the superpowers will be obliged to relax their control over the management of the international nuclear environment. To be valid, the model presupposes the ability of the superpowers to maintain influence over other pre-nuclear regional states, control the proliferation of nuclear technology, and support regimes against subnational subversion. If the state is to remain the principal actor in the nuclear drama, then the possibility that nuclearization will be frozen at a low level is good. Otherwise, the

diplomacy which India believes to be the consequence of her nuclear position cannot occur and new nuclear positions may have to be devised.

From the above it should be clear that the Indian nuclear strategy differs in kind and in degree from a superpower model. In Western nuclear strategic thinking forms of deterrence have been based on a previously demonstrated use of the bomb. The Indian strategy did not evolve from such a case, but rather from an ambiguity concerning the forms of deterrence New Delhi might apply to crisis situations. It is this minimum ambiguity which the Indians have employed for maximum political effect. Such ambiguity is not available to the superpowers. It can be said, therefore, that the Indian model reflects most realistically the basic characteristics of Third World nuclear behavior.

In the early months of 1982 the Indians made an attempt to apply this strategy. In response to a reiteration by General Zia ul-Haq of the pledge that Pakistan had neither the capacity nor the intention to produce nuclear arms, Mrs. Gandhi's government opened discussions with Islamabad on the subject of a non-aggression pact. Although no agreement has been forthcoming at this early date, the progress of these talks bears scrutiny for their impact on other potential nuclear states.

The state for which these talks may have the most relevance is Israel. Much of what has been said of India applies, *mutatis mutandis*, to the Jewish state, for Israel conforms to a variant of the Indian model in that Israel has also preserved ambiguity--here to a maximum degree--about her nuclear capability but has as yet--discounting the rumors of a joint Israeli-South African nuclear exercise in the South Atlantic--provided no demonstrable evidence of an explosion.

b. Nuclear Warfare in the Heartland

I.

In 1957 Israel decided to build the Dimona nuclear facility. Since that time statements about Israel's nuclear posture and capability have been extremely guarded. Yet it is possible to discern a movement among Israel's defense elite towards the gradual elaboration of a position which effectively postponed a strategy of nuclear deterrence in favor of greater reliance on conventional weaponry. This position was given its first form in 1968 when Prime Minister Levi Eshkol proposed that Israel would not be the first to introduce nuclear weapons into the region but, on the other hand, would not permit the Arabs to win a nuclear arms race.⁵⁸

Little was added to the ambiguity of this declaration other than the acknowledgement in 1974 that the nuclear potential existed to back such an intention.⁵⁹ Thus, by the mid-1970s, speculation on the passage from the theoretical to the real was possible. How Israel might move from potentiality to an open option; what weapons had been produced and if they had been secreted as "bombs in the basement"; what delivery systems for these weapons had been perfected; could the Israeli potential be negotiated in the context of a solution for regional problems; was a model available for both the deployment and employment of such weapons in event of a major crisis: all these were questions which surfaced as a result of the important changes in the fastly deteriorating Israeli political-strategic environment. The holding of occupied territories after 1967 had brought no political concessions. The War of Attrition had encouraged the Soviets to increase their support for Egypt and may have forced Israel

to consider a nuclear riposte to a possible Egyptian invasion. Then the October War demonstrated Israel's vulnerability to peace on Arab terms. The US, after the signing of the Israel-Egyptian peace treaty, was no more forthcoming than before with *carte blanche* for conventional weapons. And Egypt was beginning to show the telltale indications of interest in nuclear energy. In this climate, Israel decided that, whereas the superpowers might encourage the Arabs to remain non-nuclear, this was not a sufficiently compelling reason to sign the Nuclear Non-Proliferation Treaty. Rather the nuclear option was maintained as a bargaining chip in the tenuous arms transfer relationship with the US in the hope that the possession of such an option would exact no great political cost.

Although it would be safe to say that within the Israeli defense community these changed circumstances did not produce a definitive theoretical approach to the employment of nuclear weapons, there was an attempt nevertheless to fit the hitherto undefined nuclear factor into the framework of Israeli security policy. After the June War arguments had begun to surface which split the political decisionmakers along the conventionalist and non-conventionalist lines. By this is meant not so much a debate over the appropriateness of a nuclear option with its long-term prospects for political and physical survivability in the global environment, but rather to what degree the nuclear option should be allowed to impinge on Israeli relations with the US over questions of short-term regional security. Thus there was no disagreement about the usefulness of the nuclear option as it related to Israel's ultimate longevity, instead it was the impact of the option which had to be weighed against the fact:

an increasing alienation of Israel from her principal Western sponsor.

To the conventionalists, like former Prime Minister Rabin, Defense Minister Peres, and Foreign Minister Allon, the nuclear option was not meant to limit Israel's ability to wage conventional war. To these men a winning conventional strategy depends on control over the territory-in-depth afforded by the retention of the occupied territories as a hedge against a diffuse but escalating threat from the Arabs. The territories are used as bargaining chips--"a piece of territory for a piece of the peace"--or should this fail, a territorial buffer to prevent conflict from reaching the Israeli heartland. To realize these aims the supply of conventional arms from the US must not be jeopardized. Therefore, a nuclear strategy or nuclear threat directed against the Arabs would be counterproductive. At best, a Nuclear Free Zone in the region like the one proposed by the Rabin government in 1975 would help to sustain, on one hand, US support and, on the other hand, avoid the rigorous limitations of the Nuclear Non-Proliferation Treaty.⁶⁰ The non-conventionalists, represented by the late Moshe Dayan, argued that such optimism was foolhardy, that Israel could not control the Arabs indefinitely from a base in the occupied territories or, even after peace, from severely reduced geostrategic margins, and that the unswerving willingness of the US to underwrite the Israeli military effort was illusory. As a consequence Dayan proposed that an overt nuclear strategy would not only secure autonomy for the Israelis in their relationship with the US but, coupled with territorial concessions to the Syrians and the Egyptians, might succeed in preserving⁶¹ an Israeli presence in the West Bank.

One can see quite clearly that the split between conventionalists and non-conventionalists is one of degree and not of kind. The fundamental primacy of military security as the first and last line of physical defense is challenged by neither side, nor is the notion that Israel bears responsibility as an advocate for the safety for all Jews within or beyond her borders. This acts to insure the socialization of Israelis not only to the idea of survival but sensitizes them to the question of nuclearization over which there appears to be little popular disagreement. Both points of view are, ideologically speaking, consistent with nationalist tenets and are reconcilable with the two divergent but not necessarily exclusive strands of normative Zionism represented, on one hand, by the moderate Herzlians who see Israel's ultimate fate tied to a maintaining of the international sanctions which preserve her legitimacy in the outside world and, on the other hand, by the Revisionists, who in decrying the inefficacy of these sanctions, demand Israel's autonomy from the international political regime. The ambiguity of Israel's nuclear policy may represent, then, a temporary response to the regional security environment and, at the same time, a compromise between two conflicting political orientations.

The single most important variable in the equation of Israeli nuclearization is the relationship of economic, military and political dependency between Israel and the United States. This relationship has clearly demonstrated in past decades an increasing susceptibility to strain and misunderstanding and manifests itself in an ever-widening divergence of interests and an asymmetry of political views. The economic facts of modern life in the US have significantly altered, if not polarized, American domestic opinion with respect to the prioritization of issues confronting the Middle East in the search for durable peace and have, as a consequence, affected the perceptions of strategy and tactics available for an equitable solution. The US has accepted in theory the primacy of the Palestinian question to the continued stability of the region and has applied its diplomatic offices to a resolution of the impasse. On this basis a treaty was signed between Egypt and Israel which the Israeli government has consistently viewed, insofar as it concerns the Palestinians, as a bilateral issue between the two countries. Unwilling to offer a credible or acceptable guarantee of security to Israel in exchange for concessions on this question, the US has not been able to change the progressively eroding status quo. Subsequently the actions of Israel have become more and more uncoupled from megapolitical considerations while at the same time the Arabs, and in particular the Saudi government, have exerted even greater pressure for a termination of the diplomatic process which shows no sign of attaining in the future what was impossible for them to obtain in the past. Gradually the question of maintaining an

interim balance of power through conventional arms transfers to Israel has become increasingly problematical.

The alternatives to Israeli dependence are limited by a number of factors. An arms industry, by means of which Israel could substitute domestically produced weaponry for the military materiel she receives from abroad, is technologically feasible. Yet technological superiority in no way compensates for the lack of economic means to support such an industry. As Arab economic power grows the appetite of the Arabs for the most modern and sophisticated armament has grown proportionately whether for reasons of prestige, security, or as a litmus test of relations with the US. This growing power, in terms of quality and quantity of weapons, has threatened Israel's conventional superiority so that any attempt to right the balance either through a domestic arms industry or a continued source from abroad must necessarily strain Israel's already overheated economy to the breaking point. Israel cannot afford to continue buying arms indefinitely at even preferential rates of interest, nor can she expect to receive these arms as forgivable grants. And the subsidizing by the government of a national arms industry in the interest of complete military autarky would at present rates of inflation severely damage the social fabric of the country. To the Israelis the acceptance of security guarantees from the US is no alternative either. Despite Washington's movement in that direction under the guise of "strategic consensus" US credibility is not high in the wake of the Iranian revolution and arms transfers to Saudi Arabia. Moreover, Israel is predisposed by history never to allow a major superpower decisive leverage over her own security

interests. Thus, if a nuclear strategy can be convincingly substituted for a policy of dependence and succeed in both maintaining a ceiling on defense expenditure and a limit on superpower pressure, then it is logical for Israel to adopt an open posture of nuclear deterrence.

Were the Israeli government to announce an overt nuclear policy, what eventualities could such a policy hope to deter? Might a nuclear policy serve to program the Arabs for compliance and concession on issues of Israeli security? Could the US be coerced into a more favorable posture towards Israel if the "bomb" comes out of the "basement?" These are just some of the questions which must be answered before the dimensions of a credible nuclear strategy can be elaborated.

The logic of nuclear strategy demands that the effectiveness of the deterrent of a small state be absolute as such a state cannot absorb the nuclear punishment a larger state may be expected to take from its enemies and still survive. The notion that all threats to small states are potentially suicidal is organic to its conditions and makes absolute deterrence a credible position.⁶² On the other hand, a small state that relies exclusively on nuclear punishment as an absolute deterrent must by logical extension rely on a doctrine of massive retaliation and while this may decrease expenditure on conventional weaponry and ease the restraints of alliances, it requires that the nature of the offenses actuating the deterrent be understood. This is a policy of low credibility.⁶³ In Israel's case, the absoluteness of such a deterrent is mitigated by an asymmetry of vulnerabilities. The Arabs, being the nations with the lower level of socio-economic integration and the higher ratio of territory in depth, are less vulnerable to nuclear punishment than Israel with its concentrated demographic and industrial zones.⁶⁴ This is not to intimate that the Arabs are insensitive to costs; it serves only to point out that absolute

deterrence and the doctrine of massive retaliation are, theoretically speaking, logical only for industrialized Western nations. The conditions, then, under which Israel would consider an absolute nuclear riposte are those which make possible an attack of unacceptable consequences on the Israeli heartland.

Thus, the threshold of threat is the most important analytical tool in the consideration of the Israeli situation. ⁶⁵ The actions of an enemy which may trigger an Israeli nuclear reaction are, in principle, four: First, there is the perceived inferiority in conventional means to program the Arabs for compliance, a cardinal principle of the Israeli Defense Forces; second is the corollary that inferiority in weaponry may lead to a permanent embargo on weapons to Israel which Israeli industry cannot compensate for in quantity or quality; third is the additional corollary that the reduction in capability limits the success of the Israelis to wage an air war against the Arabs, singly or collectively; and fourth, there is the question of the possession of nuclear weapons by an Arab state or states. ⁶⁶ These conditions create a situation in which a nuclear deterrent becomes a last resort. The perception that the enemy has crossed the threshold is in many respects subjective and psychological. It is also a passive situation in which the defender must await an enemy move so as to justify the use of nuclear weapons or, lacking such a move, must hedge against uncertainty through preemption thereby leaving the conditions, *post hoc ergo propter hoc*, to be rationalized as a result of the decision.

It is possible that under such conditions a last resort situation

may be almost impossible to define. Even if an enemy penetrates into Israeli territory as a consequence of fulfilling the above mentioned four conditions, the definition of the actual threshold of threat could be limited by external and internal political considerations, indecision among the political elite, conflict over the relative weight accorded to physical or political survival. Hence there would most certainly reign a confusion as to a strategy to be employed against the invader and, therefore, whether such strategy would consist of preemptive or interdictory modes of action. This could not help but affect the employment of nuclear weapons as a deterrent since the concept of deterrence here becomes⁶⁷ inextricably blurred with that of defense. In such a case the use of nuclear weapons to insure absolute deterrence is extremely circumscribed and inasmuch as such weapons would be deployed under circumstances which approximate only imperfectly a doomsday situation, this notion of deterrence has very low credibility to an enemy unsocialized to Israeli perceptions of their own security needs. In a word, the conventional military stand-off between Arabs and Israelis and the possibility of conventional military engagements in the future may not be appreciably changed by a declared Israeli policy of absolute nuclear deterrence.

When one speaks of deterrence in the Arab-Israeli environment, one assumes that it is a nuclear Israel which now confronts a non-nuclear Arab world. But the assumption that the Arabs will remain indefinitely non-nuclear is at best illusory. No less illusory is the notion that the region cannot be penetrated by the superpowers and is therefore immune to their political desiderata. The prime focus of concern for

the superpowers remains the management of détente and while in theory the superpowers agree that the dependency of their clients serves to facilitate this process, there is the overriding fear that the independent actions of their clients in a subsystem uncoupled from the global political environment would lead to an uncontrollable escalation of tensions between the patrons. So the superpowers strive to decrease their involvement with the regional antagonists yet at the same time attempt to increase their leverage and control. For this reason the US is concerned not so much with the basic belief that Israel has acceded to nuclear capacity but with the fact that such capacity encourages Israel to adopt the role of renegade in the international nuclear system. In this instance Israeli nuclear capability works to coerce the US into support of Israel conventionally and to limit the tendency to balance the equation by means of reciprocal gestures to the Arabs. The result has been a careful reorchestration of Israel's bargaining position and a declaration that she will not be the first nation to introduce weapons into the region if this means she will have to restrain her options. The *quid pro quo*, however, for conventional support, would be the demand that Israel sign the Nuclear non-Proliferation Treaty. For Israel the treaty represents the adoption of a Western model for the nuclear option which substitutes political guarantees of security for military ones, a step which Israel has always argued does not fit the threat that confronts her. Moreover, should she relinquish her nuclear card Israel would be obliged to move closer to integration in the arrangements of the NATO nations and thereby she fosters ties to an organization already under the political pressure of the oil-rich

Arab states. In this way one can see that an Israeli nuclear policy *qua* a policy of compellence or coercion against her patron has limited value.

The assumption that the Arabs have not yet obtained nuclear weapons presupposes that a massive conventional threat to Israel may be best deterred by a nuclear strategy. But this threat, were it to present itself in the form of subnational violence against Israel for which the surrounding Arab regimes cannot be individually or collectively be held accountable, is not deterrable by a nuclear strategy. What is deterrable is a threat to the heartland of Israel itself and this, in the worst-case scenario, cannot materialize until the threat takes on the form of a military attack or, in the best-case scenario, until the indications of such an attack are so indisputable as to warrant a preemptive or preventative nuclear strike. In both situations the propensity for miscalculation will be high and the political disadvantages great. The definition of what constitutes the heartland of Israel is in itself a political question and subject to the vicissitudes of the politico-military environment. Should Israel declare that an attack against the occupied territories constitutes an attack against the country proper, she automatically confirms in the Arab mind her expansionist proclivities and makes it unlikely that they will take seriously any Israeli attempt to bargain for a negotiated peace in return for zones under Israeli physical control. On the other hand, should Israel declare specifically that the occupied territories remain outside the umbrella of her nuclear protection, she allows the Arabs *carte blanche* to nibble away at her thin margin of secure territory-in-depth. Such ill-defined contingencies could lead to nuclear brinkmanship and a constantly shifting pattern of military escalation.

Practically speaking, ambiguity makes sense only in the short run for Israel. The Israeli nuclear potential is no doubt operable and it is a function of the number of bombs available for use, their concealment and the speed with which the Israeli Defense Forces can deploy the weapons that keep the Arabs in a state of uneasy imbalance. The Arabs are unambiguous in their unequivocal belief that Israel has such weapons of mass destruction and will use them. Thus there exists an asymmetry of perceptions which leads to the conclusion that although Israel may prevent the Arabs from annihilating the Jewish state through the use of nuclear weapons she cannot halt the inevitable progress of Arab nuclear proliferation. A "bomb in the basement," with all its attendant uncertainties, has not acted as an incentive to arms control, nor has it lessened the possibility that an unstable nuclear balance in the region will come about. ⁶⁸ The Arabs want the bomb and, as the recent raid on Baghdad has proven, they will take accelerated steps to obtain it.

One must assume that for the purposes of prestige and the unacceptability of a Soviet nuclear umbrella the Arabs will initiate a nuclear arms race with Israel. Of those Arab nations with the capacity to lead the region into a balance of terror, Egypt and Iraq are the most prominent candidates. Setting aside the gratuitous and unfounded presupposition that the belligerents are susceptible to irrationality in the employment of nuclear weapons, one may advance a plausible argument that such a balance of terror can be a stabilizing factor in the endemic struggles between the Israelis and the Arabs. This argument must be based on an accepted principle of nuclear parity and its corollary issues of unacceptable

damage, second strike capability, and mutual assured destruction.

A nuclear balance of terror in the Middle East is within the realm of theoretical possibility and as such worth consideration in the calculus of regional nuclearization. It is extremely difficult to predict which state will become the first Arab nuclear power in the Middle east, under what circumstances, and in what time frame this event will transpire. As a guarantee of her recently restored territorial equilibrium and as an instrument which can deter Libya or other radical Arab states from nuclear blackmail, Egypt stands most to benefit from a nuclear balance of terror. Moreover, Egypt has the technical capability for a future nuclear posture. Syria and Iraq, on the other hand, have least to benefit from a nuclear balance of terror inasmuch as the issues of war between these two states and Israel have not yet been resolved. No matter which Arab state takes the lead, one thing is for certain: the move towards Arab nuclearization will be gradual and the Israelis will surely play an important role in its unfolding.

Taking it for granted that nuclearization is inevitable for the Middle East it can be argued that all the strategic characteristics of an Israeli nuclear retaliatory force--mobility, dispersal, hardening, secrecy, and quantity--are today present in embryonic or fully mature military form.

Previously it had been thought that nuclear strikes and counter-strikes would be carried out by bombers and that the sophisticated air defense networks in place in the region would obviate the usefulness of the bomber as a nuclear platform. Furthermore, bombers cannot be hardened

sufficiently in positions immune from nuclear attack. Thus as preemptive attack becomes more attractive but less liable to success the capability to retaliate is subsequently reduced. This argument for an unstable environment does not take into consideration either the dispersal of large numbers of aircraft in inaccessible Arab areas and also the possibility, well within Israeli capability, of designing a warhead for its Jericho missile, a weapon which is not cost effective for conventional explosion⁷¹ used against tactical targets. Siloed Jericho missiles can be hardened and their short range increases accuracy. Whether such missiles will survive a nuclear strike and be effective in the retaliatory mode depends on the kill probability on their silos. This may be measured as a function of the variable of accuracy in terms of circular error probability, yield, and hardness of silos to peak overpressure.⁷² At the present time there exists no Arab missile with accuracy and yield great enough to nullify Israeli capacity in this essential technology. Besides, should such missiles exist, their effect could be dissipated by numbers, permitting the acceptable kill probability to be a matter for political decision. Technology, however, will close the gap making it possible for the Arabs to absorb first strikes and mount second strikes with an equal chance of survival.

It would appear that the basic preconditions of a mutually assured destruction capability are inherent in the military situation within the Arabo-Israeli zone of confrontation. The balance of terror can furthermore be enhanced by adding collateral arms to the already preexisting systems of missiles and bombers in the form of seaborne ordnance creating

in miniature an interlocking TRIAD nuclear weapons system for the belligerents. Both Israel and Egypt, for example, have shown themselves, in the past war and in preceding conflicts, adept at the use of naval launched surface-to-surface missiles. This increasing naval capability, once the weak link in the military chain of conflict, demonstrates the greater potential for the deployment of submarine launched nuclear missiles. In addition to the uncertainty accruing to this kind of undetectable attack, land-based missiles need not be silo-housed but may be dispersed in desert areas of the Arab countries on a continually rotating basis as envisaged for the US MX missile system. Nor would these missiles require the complicated mode of circulation necessary for the MX because of the comparably smaller area of deployment and the smaller size of the warheads. In fact, missiles like the Lance are air transportable, air droppable and even amphibiously positionable. This leads to the conclusion that no surprise attack can be assured of complete success in destroying the enemy's nuclear forces and since the level of acceptable damage in this zone is very low as compared to the damage which, *ceteris paribus*, the superpowers would be willing to sustain, the uncertainty generated makes all nuclear strikes suicidal propositions.

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The remote environment is a natural alternative for the Arabs in the event they become too vulnerable in the race for sophisticated technology. From these environments which Israel does not possess, the Arabs can keep a strategic number of missiles as a hedge against a devastating first strike and the only way the Israelis could deal with this alternative would be with aircraft, thus indicating their intentions. The Israelis' counter to technological parity in the nuclear arms domain would take

the form of a deployment of missiles in heavily populated Arab areas of the heartland thus rendering these populations hostage to the good behaviour of their neighbors.⁷⁴

Here one can see in theoretical operation the numerous checks and balances which constitute a system of mutual assured destruction. The risks are appreciably greater given the fact of numerous belligerents, uncertain command and control systems, the assymetry of technological development and sociopolitical integration of the Arabs, the unresponsiveness of the belligerents to megapolicies and the internecine quality of the conflict. No one state in the region is willing, nor will oblige itself to rely on a nuclear arm alone for fear of escalation through miscalculation. Each side will continue to depend on a flexible response which mixes nuclear and conventional arms. This does not answer all the questions, especially that of subnational attack on Israel, for example, by the PLO or other such organizations, nor the possibility of a "Samson" complex being activated against the Arabs by the Israelis. Despite these counterarguments nuclearization may nevertheless have a positive effect on the permanent crisis of Arab-Israeli relations. Inasmuch as it is certain that for the present a nuclear posture on Israel's part can only be truly viable, strategically speaking, to protect the Israeli heartland under last resort circumstances, and the Israelis are unable to define what constitutes an attack on the heartland for deterrent purposes, then an unavoidable consequence of nuclearization is negotiation for the return to Arab authority of areas of high Arab demographic concentration outside the 1948 armistice lines. In this way, a nuclear deterrent posture, formalized in a mutual assured destruction system, could conceivably lead to the return of the West Bank to Arab control.⁷⁵

The nuclearization of the Middle East cannot be halted. Whether it takes the form of an uncontrollable scramble for nuclear armaments or a judicious and painstaking elaboration of a nuclear deterrent theory wedded to a realistic practicum depends heavily on the time available for the antagonists to socialize themselves to the new socio-political, economic, and military circumstances of this latest phase of regional conflict. The problem, then, remains not the possession of the bomb itself, which is a foregone conclusion, but rather how and in what context each regional nation will accede to nuclear power. On the politics of nuclear transition, therefore, rests the future direction of this new regional phase. The process of transition to which this study has pointed is, however, beyond the scope of its analysis. To understand this process for the purpose of prognostication requires both a conceptualization and empirical data as yet undeveloped or not readily accessible. Moreover, a methodology which clearly identifies relevant institutions and individuals, value systems and policy-making situations, feasible alternatives, and projective strategy analysis is still in a stage of intellectual infancy. This study can only distinguish within the historical context of the development of the regional nuclear option some of the important national, regional, and interregional variables and thus accentuate the need for an integration of views for a regional nuclear policy.

As things stand today, the principle of ambiguity, much tarnished and definitely eroded, still holds sway in the Middle East and Southwest Asia. The Israeli raid of June 1981 which temporarily destroyed Iraq's nuclear

potential, has demonstrated that if Israel is not going to be the first to introduce nuclear weapons into the Middle East, she unambiguously opposes the Arabs taking the honors.

Israel has chosen at this moment to exercise an explicit nuclear monopoly over the region. In contravening international law which denies to a nation the right to interfere in the internal affairs of another nation outside of the act of war Israel will incur the further odium of the Arabs and suffer the disapproval of the world community.

Despite the damage that this posture has done to Israeli-American relations by further undermining the notion of an evolving strategic consensus between patron and client Israel has gained some short-term advantages. She has won a temporary zero-sum game where Arab losses translate into Israeli gains. In other words Israeli security has once again been purchased at the price of absolute Arab insecurity. The ineffectual reaction of the US administration to the Israeli raid has also compromised American credibility with the Arabs to Israel's benefit. Though in the long run this may prove counterproductive the Israeli position is altogether logical at a time when the balance of conventional forces has perceptively shifted against Israel.

By establishing the ground rules for a nuclear monopoly Israel is serving notice to the Arabs that she intends to control proliferation of nuclear weapons in the region. To believe, however, that proliferation can be managed by the force of arms is to take an extremely short-sighted view of the matter. The Arabs not only believe that Israel has nuclear capability and will use it, they have little faith that Israel will deploy

nuclear weapons defensively. As long as Israel declines to negotiate a regional balance of terror the possibilities for a nuclear arms race in the region will surely escalate. The argument which informed the Baghdad raid was that of the conventionalists. Its intent was to decouple nuclear arms from the conventional military environment and to maintain Israeli superiority over the surrounding Arab armies with the objective of holding on to the remaining occupied territories. The results unfortunately have been to signal the shaky beginnings of the Atomic Age in the Middle East.

Conclusions

Israel has chosen not to adopt the Third World model of nuclearization evinced by India. In essence, this action will postpone a critical analysis of the nuclear option by the Israelis and its relation to overall security policy until the hypothetical Arab bomb becomes a fact. Driven by the Holocaust mentality to accept a short period of technological safety for the long term benefits of comprehensive stability, Israel today maintains the very kind of military asymmetry which the Arabs have always claimed is so disadvantageous to equitable peace and regional equality. This has occurred at a time of deteriorating relations between Israel, the European powers, and the US.

The present US administration is now confronted with the additional and more threatening nuclear dimension of conflict which cannot help but complicate the process of elaborating a comprehensive policy towards Israel and her Arab neighbors. The history of American determination to prevent nuclear proliferation has been a very sad story of miscalculation and misunderstanding. During the middle 1950s the belief that the generating of nuclear power for civilian development would not lead to a concomitant military dimension has proven false. The Nuclear Non-Proliferation Treaty and subsequent various unilateral acts of American government have been promulgated for the express purpose of nullifying the steps already taken. Too little has been too late. Measures taken with respect to the transfer of nuclear technology, the proliferation of the reprocessing technique, the implementation of a viable safeguard regime, the state

of weapon grade nuclear matériel abroad, and the limitations of nuclear armaments both on the horizontal and vertical levels has come at a moment when the economic security of the US is at its most fragile point. Until recently the US has taken certain steps which have hurt the nuclear power industry at home and abroad by withdrawing licences for the construction of nuclear power plants and by denying the newest nuclear technology to overseas buyers. The results, while salutary for the environment as a whole and for the cause of nuclear disarmament in particular, has nonetheless produced an adverse effect on energy independence and has permitted a market abroad to be captured by others with more far-reaching political implications.

The answer, in short, does not lie in crippling the American capability militarily, economically, or politically but in strengthening the international regime as to the efficacy of nuclear safeguards, technology transfers, sale of fuels, and inspection regulations. Denial of nuclear material only makes easier the argument for imperialism on the part of those countries denied nuclear assets and sets in motion alternative methods of obtaining nuclear materials without adequate supervision. The slowing down of the inevitable process of proliferation through the implementation of strong controls on a *quid pro quo* basis with nuclear-potential countries allows for time, politically and militarily, to adjust and be socialized to changing circumstances. Time is the most important element in the working out of nuclear relations between friends and enemies alike, for it is the crux of the problem of escalation through miscalculation. This is most true for the Middle East and Southwest Asia where conflict in all its aspects has reached an intractable stage than for any other region of the global environment.

Footnotes

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3. Ashok Kapur, *International Nuclear Proliferation*, New York, Praeger, 1979, p. 25.
4. *Ibid.*, pp. 55-56.
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6. Jones, *op. cit.*, p. 16.
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8. *Ibid.*
9. *Ibid.*, p. 16.
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14. Richard Burt, "US Aides Say Pakistan is Reported to Be Building an A-Bomb Site," *New York Times*, 17 August 1979, p. 6.
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18. *Ibid.*
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25. Micallef, *op. cit.*, p. 14.
26. Maxine Cheshire, "Qaddafi's Two Tries to Buy the Bomb," *Washington Post*, 16 May 1980, p. D1.
27. John K. Cooley and Lisa Kaufman, "Deterring a Qaddafi Bomb," *The Washington Post*, 23 December 1980, p. 15. Also cf. Jones, *op. cit.*, p. 49 and Micallef, *op. cit.*, p. 14.
28. Micallef, *op. cit.*, p. 15.
29. Edward Girardet, "Is Qadhafi Financing Pakistan's Nuclear Bomb?" *The Christian Science Monitor*, 19 December 1979, p. 4.
30. *Ibid.*
31. *Ibid.*
32. Micallef, *op. cit.*, p. 14.
33. Judith Miller, "West German Concerns End Rocket Project," *The New York Times*, 27 December 1981, p. 7.
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58. Shlomo Aronson, "Israel's Nuclear Options," ACIS Working Paper No. 7, Los Angeles: Center for Arms Control and International Security, UCLA, 1977, p. 2.
59. "It has always been our intention to develop a nuclear potential." An address by the President of Israel, Ephraim Katzir, to a group of science writers, 1 December 1974, as cited in Lawrence Freedman, "Israel's Nuclear Policy," *Survival*, May-June 1975, p. 114.
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61. *Ibid.*, p. 24.
62. Yehoshua Harkabi, *Nuclear War and Nuclear Peace*, Jerusalem: Israel Program for Scientific Translation, 1964, p. 34.
63. Jones, *op. cit.*, p. 73.
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67. Yair Evron, "Israel and The Atom: The Uses and the Misuses of Ambiguity, 1957-1967," *Orbis*, vol. xvii, Winter 1974, p. 1333.
68. Haskelkorn is incorrect in this assumption. Cf. Haselkorn, *op. cit.*, p. 175.
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73. *Ibid.*, p. 17.
74. *Ibid.*, p. 18.

75. *Ibid.*, p. 22.

76. Cf. Yehezkel Dror, "Small Powers Nuclear Policy: Research Methodology and Exploratory Analysis," *Jerusalem Journal of International Relations*, vol. 1, No. 1, Fall 1975, for this point.

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